

A REVIEW OF MUSLIM MARITIME TRADITION

Omar Bin Yaakob*, Mohamad Pauzi Abdul Ghani, Faizul Amri Adnan

Marine Technology Centre,
Universiti Teknologi Malaysia,
81310 UTM, Johor Bahru, Johor

* Corresponding Author: omar@fkm.utm.my

Abstract

The ocean covers more than 75% of the earth surface. This vast expanse of water promises a wealth of opportunities as well as challenges. This paper describes a historical perspective of development of maritime ventures in the Islamic World from the time of the Prophet (pbuh) until the present day. The expansion of the Muslim caliphate entailed among others rapid growth in communication and transport system as well as the need for a well-organised naval fleet. The peak of Muslim naval power was during the rule of the Ottoman Empire when their warships held sway over the Mediterranean, the Red Sea and parts of the Indian Ocean. A survey of the present status of maritime military, commercial, education and R&D capacity in Muslim countries is presented and proposals put forward for improving collaboration in this field.

Keywords: Muslim maritime, maritime technology, economic impact, commercial ventures

1.0 Introduction

The ocean, which covers more than 75% of the earth surface, supplies various needs of the human being. Besides the ubiquitous seafood, the ocean provides sources of various kinds of minerals and ornaments. It is a means of commerce, providing more than 95% of the transportation needs of international trade. For the coastal states, it is a means of defense while for the aggressive nations; the sea is an avenue for imperial expansions. In the latter half of the twentieth century, the ocean strategic and economic importance was enhanced particularly after the discovery of oil and gas in the Gulf of Mexico.

The history of involvement of the Muslims in sea ventures was very colourful, with various illustrious figures contributing to the overall science of navigation, shipbuilding and maritime technology. The rise of the Muslim sea power reached its height during the

Ottomans when they held sway over the Mediterranean, the Red Sea and most of the Indian Ocean.

This paper presents a historical review of maritime capability of the Muslim empires and the present status of maritime capability of Muslim countries.

2.0 The Sea is Part of the Bounties of Allah

Man is reminded that the sea is actually one of the bounties from Allah, the Creator and Sustainer of the World. The Quran contains many verses regarding the bounties of Allah and these include bounties from the sea.

A selection of the verses related to the uses of the sea for mankind is given below. In these verses, mankind is clearly reminded that the ocean is indeed part of the blessings and bounties from the Almighty Creator. Among others, the uses of the sea mentioned are for shipping, extraction of ornaments and of source of food. The verses also mentioned the challenges provided by the sea; the large waves and the changing winds. All these are mentioned so that the humble servants do not forget His signs and lead them to become grateful.

164. Behold! In the creation of the heavens and the earth; in the alternation of the night and the day; in the sailing of the ships through the ocean for the profit of mankind; in the rain which Allah Sends down from the skies, and the life which He gives therewith to an earth that is dead; in the beasts of all kinds that He scatters through the earth; in the change of the winds, and the clouds which they Trail like their slaves between the sky and the earth; - (Here) indeed are Signs for a people that are wise.(Quran – AlBaqarah: 164)

22. He it is Who enables you to traverse through land and sea; so that ye even board ships; - they sail with them with a favourable wind, and they rejoice thereat; then comes a stormy wind and the waves come to them from all sides, and they think they are being overwhelmed: they cry unto Allah, sincerely offering (their) duty unto Him saying, "If thou dost deliver us from this, we shall truly show our gratitude!" (Quran -Yunus: 22)

14. It is He Who has made the sea subject, that ye may eat thereof flesh that is fresh and tender, and that ye may extract there from ornaments to wear; and thou see the ships therein that plough the waves, that ye may seek (thus) of the bounty of Allah and that ye may be grateful. (Quran – AnNahl: 14)

12. Nor are the two bodies of flowing water alike, - the one palatable, sweet, and pleasant to drink, and the other, salt and bitter. Yet from each (kind of water) do ye eat flesh fresh and tender, and ye extract ornaments to wear; and thou see the ships therein that plough the waves, that ye may seek (thus) of the Bounty of Allah that ye may be grateful. (Quran - Faatir: 12)

19. He has let free the two bodies of flowing water, meeting together: Between them is a Barrier which they do not transgress: Then which of the favours of your Lord will ye deny? Out of them come Pearls and Coral: Then which of the favours of your Lord will ye deny? And His are the Ships sailing smoothly through the seas, lofty as mountains: Then which of the favours of your Lord will ye deny? (Quran -ArRahman: 19-25)

3.0 The Ship

A recurrent mention in the above verses is the ship which “sails through the ocean for the profit of mankind” (Albaqarah: 164). One point to note is that although the life history (*seerah*) of the Prophet (pbuh) did not record any instance of him boarding any sea going vessel, the description the ship ‘*ploughing the waves*’ (An-nahl: 14), and the fear and anxiety as well as the silent prayers of the sea farers (Yunus: 22) are very realistic. This may add to the argument that the Quran is not based on the Prophet’s personal experience but rather revelation from the All-Knowing Creator.

Ships or a floating vessel of all kinds and shape provide the means through which man derive benefits from the sea. Using ships, sea-borne commerce can work, passenger movement happens, sea defenses are initiated, and fish and other seafood are harvested while the minerals, oil and gas are being explored, extracted and transported. Indeed the ship is undeniably an important sign of Allah’s greatness and a symbol of His mercy.

Today, we have taken the ship for granted but on deeper thought, the fact that heavy steel or even a concrete structure can float is by no means straightforward. It is due to the nature of things set by Allah that a body immersed in a fluid is supported by a force equivalent to the weight of the fluid it displaces. This *sunnatullah* was in about 250 B.C. named *Archimedes* principle, after the person who discovered it. It is important for teachers of ship science to emphasize this point when teaching the physics of floatation and hydrostatics.

The subject of the ship takes us to the large ship often mentioned in the Quran when describing the early stages of human history; the Noah’s ark. The ark was described in the

Quran as built under the inspiration from Allah, i.e. the design and construction was made by the Prophet Noah under the guidance from Allah.

37. "But construct an Ark under Our eyes and Our inspiration, and address Me no (further) on behalf of those who are in sin: for they are about to be overwhelmed (in the Flood)." (Quran-Hud: 37)

As for the size and shape of this ark, no details were given in the Quran and Hadith. This contrasts with the Bible (Genesis 6), which presented a detail account of the structure; its length, breadth and depth as well as the persons who were on board together with Prophet Noah. The difference between the Biblical account and Quranic accounts does not stop there. The well-known writer Harun Yahya described other major dissimilarities between them in his book [1].

Interests among Muslims and non-Muslims on this Ark linger. A lot of effort was spent, particularly by Christian literalist groups to search for the remains of the Ark in Mt Ararat, the ark's resting place according to the Bible (Genesis 8:4). Interestingly, some Christians also believed, through deductions based on geological knowledge that the ark rested on Mount Judi, the resting place mentioned by the Quran, for example ref. [2]

The open-ended nature of the Quran in the stories of Prophet Noah and the people of old serves two purposes. First, as noted by Sayyid Qutb in his tafsir *Fi Zilalil Quran*, is to ensure that the Muslims are not engrossed with the details, while losing the meaning and lessons to be learnt from such stories. Secondly, the present authors contend that such details, if given, will necessarily reflect the level of technology and knowledge at the time of the Quranic revelations which might not be similar in other culture and time, thus creating confusion. The Biblical account of the type of material used for building the ark and the cubit unit of measure are examples of potentially contentious issues when details are included.

4.0 Maritime Commercial Ventures in the Muslim World

The Muslims involvement in international trade is not new. From pre-prophethood period, Makkah was seen as the centre for international trade between the regions of Yemen in the South and Syria in the North. The annual pilgrimage season is an avenue for international mingling and trade. When the Islamic domain developed and expanded, both domestic and

international trade also increased. Besides taking the land route to faraway places such as China, goods also travel by sea.

Reference [3] and [4] describe the golden age of Muslim sea power. Maritime commerce thrived under the Umayyads. From late 7th century A.D. onwards, Arabs were frequently sailing to China. The port of Basra founded in A.D. 636, expanded to become a major trading port under the Abbasids. Other important seaports are Muscat, Aden and Jeddah.

5.0 Muslim Naval Power

Further detailed descriptions of development of Muslim sea power in the military and commercial sense are given in by Fahmy [5] and Hourani [6]. The need to protect the Muslim maritime traders and the defense of the Muslim lands from attacks from the enemies necessitates the formation of a strong naval power. Prior to the middle of 7th Century A.D, the Mediterranean is wholly controlled by the Byzantium naval forces. This status quo changed when Amir Muawwiyah established the first Muslim naval mission and occupied Cyprus in 648 A.D. According to ref [7], the Muslims held sway over the sea in the tenth century of the Christian era. By then, Islam's naval forces had established its complete supremacy owing to its effective control over the North African Seaboard and Spain and its occupation of Sicily, Sardinia and Southern Italy. When Muslim sea power began to wane with the decline of the Abbasids, the Christian powers re-emerged as masters of the Mediterranean. It was noted that according to Ibn Khaldun, the establishment of Christian naval supremacy was the chief factor in losses of the Muslim territory in the Mediterranean and Spain [7].

The Muslim naval strength returned in early sixteenth century when the Ottomans took over the caliphate and became the de facto leader of the Muslim world.

A number of papers presented in an international conference held in Istanbul focused on the historical development of the Ottoman navy. Among them, ref [8], [9], [10] described the superiority of Ottoman Naval powers in the Mediterranean and beyond.

During early 16th century, the Barbary corsairs played a major role in the Western Mediterranean as described in [11]. According to ref. [12], the dominance of the Ottoman Navy was enhanced with rise to prominence of Khayr al-Din Barbarossa. Khayr al-Din Barbarossa not only rise to the prominence of an international actor in the sixteenth century international balance of power system, but also was appointed as the Grand Admiral of the Ottoman Navy in 1534.

Reference [13] described the development of the Ottoman maritime arsenals (naval base), the shipyards and logistic support system which was responsible for upkeep of one of the biggest naval fleet in the world. The activities to protect the territories and maritime commerce from the Venetian and Genoese fleets and match them at sea were initiated by Sultan Bayezid I in 1390. In 1515, Sultan Selim I ordered the construction of the Istanbul Naval Base. By the middle of the sixteenth century, this Naval base and dockyard became the biggest in the world, rivalled only by Venice.

The reformation and modernisation of the Ottoman Navy was initiated by grand Admiral Mezemorta Hüseyin. With the issuance of the naval code in 1701, the Ottoman Navy underwent an important change and transition [14]. Golden Horn, Istanbul maritime arsenal that would serve as the constructive and administrative centre of the navy was established, with construction of 150 warships.

The naval superiority of the Ottomans not only influenced the political landscape, but also trade and the spread of Islam across the Indian Ocean [15].

At one point, the Ottomans were controlling the whole of the Mediterranean Sea, the Red Sea, The Black Sea, and some portions of the Indian Ocean, keeping check over the Portuguese exploits. To support these activities, the Ottomans established naval bases in Suez, Basra and on the Danube in Hungary.

Ref [16] and [17] described the expansion of the Ottoman empire towards the Indian Ocean particularly the confrontations with the Portuguese imperial navy. The domain of suzerainty of the Ottomans extended to Aceh in North Sumatra. Reference [18] described the development of strong relationships between the Ottomans and the Sultanate of Aceh in North Sumatra. Aceh regarded itself as a vassal of the Ottoman Empire and to underscore this link, the Ottomans, at the request of the Aceh Sultanate sent military aid to help stem the Portuguese's military expeditions, [19]. Sultan Suleiman responded by establishing a military academy to train naval commanders and cannon makers and setting up a cannon factory. Sultan Suleyman and Selim II also sent cannons and gun-making expertise to Aceh to help them in their fights against the Portuguese. Remarkably, Aceh used its Turkish equipment to attack the Portuguese colony in Malacca in 1568 and again in 1570 and 1573.

Muslim maritime prowess was also shown earlier in the East through the voyages of Zheng He (Cheng Ho) from 1405 to 1433. A description in the Time magazine, which published a feature article on this Ming Dynasty's Admiral, is given as follows [20]:

“His armada of giant junks was several times bigger than any of the fleets Columbus commanded nearly a century later. And his ships were five times longer than those of the celebrated Portuguese explorer Vasco da Gama. With more than 300 ocean-going vessels and a crew of nearly 30,000 men, Zheng He helped transform China into the region's, and perhaps the world's, 15th century superpower”.

Ref [21] describes the contribution of Zheng He's voyages to the development of Islam in south East Asia.

6.0 Development of Maritime Technology and Knowledge

The technology and knowledge need to be in consonant with the development of the maritime ventures. Foremost in the development of the technology for maritime activities is the ship. Ref [3] describes the use of lateen sail and made use of the knowledge of the monsoon winds to operate the maritime trade. For shipbuilding, no other materials were used other than timber, oak, pine, chestnut and teak being the most common for large vessels. In the early days of the Muslim empire, most shipbuilding materials were imported. However, during the Ottoman's rule, the materials including timber, iron, tar, and sailcloth were sourced out from the various regions of the vast empire [7].

The Muslims imported foreign technology, utilised them and developed them further. Compasses, imported from China were used in the 11th century, much earlier than the Europeans. The Muslims invented the astrolabe for positioning at sea. Sultan Mehmet I who was also accredited with the building of the largest canon in the world had to introduce the most novel way of transporting warships on dry land into the Golden Horn to bypass the Byzantium blockade during the Conquest of Constantinople in 1452.

Ref [3] enumerates examples of the various records of Arab seafaring and maritime techniques during the Abbasid Era. Amongst others, he mentioned writings of Ibn Khurdadhib (A.D. 850), the geographer Al-Masudi (A.D. 947) and Al-Maqdisi (A.D.955).

During the peak of Ottomans domination of the sea, the famous Piri Reis wrote his Kitab i Bahriye. This book, written in 1521 contains a very accurate and detailed guide to the islands and coasts of the Mediterranean, perhaps the most detailed work on the subject until modern times; the introduction in verse deals with such things as cartography, navigation and general geography. The book was presented to Sultan Suleyman in 1526, and 29 manuscripts of two different versions survived [22].

Maps are important for maritime ventures. Piri Reis also produced his famous Piri's world map giving a comprehensive description of the explored lands including the new world. Although only a portion of this map survived, an interesting description of its content and the controversy it created are given in ref [23] and [24].

7.0 Development of Legal and Juristic Framework

In addition to the hard sciences and technology, legal and juristic frameworks need to be developed. The merit of fighting at sea is mentioned by one of the authentic Prophetic tradition as follows.

Anas bin Malik, may Allah be pleased with him, reported:

“The Messenger of Allah (may peace be upon him) used to visit Umm Haram bint Milhan and Umm Haram was the wife of 'Ubadah bin Al-Samit. One day the Messenger of Allah (may peace be upon him) paid her a visit. She entertained him with food and then sat down to rub his head. The Messenger of Allah (may peace be upon him) dozed off and when he woke up (after a while), he was laughing. She asked: What makes you laugh, Messenger of Allah? He said: Some people from my Ummah were presented to me who were fighters in the way of Allah and were sailing in this sea. (Gliding smoothly on the water), they appeared to be kings or like kings (sitting) on thrones (the narrator has a doubt about the actual expression used by the Holy Prophet). She said: Messenger of Allah, pray to Allah that He may include me among these warriors. He prayed for her. Then he placed his head (down) and dozed off (again). He woke up laughing as before. (She said) I said: Messenger of Allah, what makes you laugh? He replied: A people from my Ummah were presented to me. They were fighters in Allah's way. (He described them in the same words as he had described the first warriors). She said: Messenger of Allah, pray to Allah that He may include me among these warriors. He said: You are among the first ones. Umm Haram bint Milhan sailed in the sea in the time of Muawwiyah. When she came out of the sea and (was going to mount a riding animal) she fell down and died. (Muslim).”

However, beyond such exhortation, direct Quranic and Prophetic guidance and legal judgement are hard to come by since the Prophet did not have the chance of conducting Jihad at sea. However, since the time of Amir Muawwiyah, the legal structure of maritime warfare began to be developed based on extension of the land-based war legal regime. The development of such rules is described by Khadduri in ref [6] and Chapter 4 of ref [25].

In the commercial world, the developments of maritime laws were modified from the then current practices in the maritime world. These are described by ref [25] and [26]. Terms familiar to present maritime laws practitioners such as general average, salvage, carriage of goods, ship leasing contract, freedom of navigation and collision rules are all available in the codified rules. In addition, ref [25] also describes additional Islamic laws applied at sea such as the criminal laws and religious practices at sea.

8.0 Present Capability

Having seen the rise of Muslim maritime strength from the time of Amir Muawwiyah to its Zenith during the middle of the sixteenth century and its subsequent decline due to the onslaught of the western colonialist powers, we now review the present status of the Muslim maritime capability.

The present status of the naval assets in Muslim countries is given in Table 1, while those of their neighbouring potential adversaries are given in Table 2. It can be seen that the Muslim countries are out-numbered in most cases. To add to this predicament, many other Muslim countries are dependent on foreign assistance.

Table 1 Naval Assets in selected Muslim Countries

	<i>Pakistan</i>	<i>Turkey</i>	<i>Iran</i>	<i>Indonesia</i>	<i>Malaysia</i>
Aircraft carrier	0	0	0	0	0
Submarine	8	14	29	2	2
Frigate	11	17	9	6	4
Destroyer	0	0	3	0	0
Corvette	0	7	3	23	4
Coastal patrol craft	29	43	287	70	25

Source: <http://www.globalfirepower.com> (March 2013)

Table 2 Naval Assets in selected neighbours to Muslim Countries

	<i>India</i>	<i>Israel</i>	<i>Singapore</i>	<i>Greece</i>
Aircraft carrier	1	0	0	0
Submarine	15	4	6	8
Frigate	14	0	6	20
Destroyer	8	0	0	0
Corvette	24	3	6	0
Coastal patrol craft	31	60	12	35

Source: <http://www.globalfirepower.com> (March 2013)

On the civilian side, the ranking of maritime nations are usually measured in terms of the total shipping tonnage owned by the respective countries. United Nations Conference on Trade and Development (UNCTAD) publishes Review of Maritime Transport [27] which gives annual statistics of maritime transport including country rankings. The list of top 35 countries listed in which together own 95% of world fleet is given in Table 3. The table shows that although a number of Muslim countries are listed, they are in the second half of the league table with Turkey, Malaysia and Saudi Arabia leading the pack at no 14th, 20th and 22nd place respectively.

In terms of educational institutions, the International Association of Maritime Universities (IAMU) (<http://www.iamu-edu.org>) website listed 44 member institutions, of which only four are located in Muslim countries. The International Maritime Organisation (IMO) provides a Compendium of Maritime Training Institutes [28] which listed the educational institution as in Table 4. The number of institutions in Muslim countries adds up to 23. Although both lists are not exhaustive, they give an idea of the state of maritime education and training in the Muslim countries, which is below their counterparts in developed countries.

The above lists from IAMU and IMO present a mix of all kinds of maritime training and education institutes, mainly for training of seafarers. Table 5 presents the list of institutions of higher learning offering Bachelor and post-graduate programmes in marine technology related fields. These are available in Turkey, Iran, Egypt, Indonesia, Malaysia and Bangladesh.

Table 3 Position of Muslim Countries in top 35 Maritime Fleets
Source: Review of Maritime Transport 2012, UNCTAD [27]

	<i>Country or Territory of ownership</i>	<i>Deadweight tonnage</i>
		Total
1	Greece	224 051 881
2	Japan	217 662 902
3	Germany	125 626 708
4	China	124 001 740
5	Korea, Republic of	56 185 570
6	United States	54 622 733
7	China, Taiwan Province of	45 485 988
8	Norway	43 099 867
9	Denmark	39 991 334
10	Chinese Taipei	39 045 289
11	Singapore	38 562 727
12	Bermuda	29 996 046
13	Italy	24 988 732
14	Turkey	23 480 628
15	Canada	21 849 996
16	India	21 362 954
17	Russian Federation	20 368 207
18	United Kingdom	18 429 755
19	Belgium	14 521 311
20	Malaysia	14 445 096
21	Brazil	13 761 528
22	Saudi Arabia	12 740 115
23	Netherlands	11 701 244
24	Indonesia	11 592 966
25	Iran	11 464 389
26	France	11 170 913
27	United Arab Emirates	8 796 135
28	Cyprus	7 137 105
29	Viet Nam	6 695 009
30	Kuwait	6 692 219
31	Sweden	6 396 416
32	Isle of Man	6 358 211
33	Thailand	5 153 550
34	Switzerland	4 890 262
35	Qatar	4 627 351
	Total top 35 countries	1 326 956 877
	WORLD TOTAL	1 518 109 503

Table 4 Maritime Training and Education Institutions (data from IMO [28])

<i>Country</i>	
Egypt	5
Iran	3
Turkey	5
Malaysia	3
Indonesia	5
Pakistan	1
Bangladesh	1

9.0 Concluding Remarks

A review of the growth of maritime capability of the Muslim empire indicates a rapid development. It gives us great motivation to learn that at one point in time our predecessors were the unchallenged masters of the sea.

However, the present outlook is not so rosy. The Muslims navies are outnumbered in terms of assets and the control of the maritime transport is not in the hands of the Muslims. In addition, while we have many institutions for training of seafarers, the number of institution of higher learning offering higher degrees, and conducting research and development are still very limited. These are available in six out of the 57 members of the Organisation of Islamic Conference.

It is proposed that the Muslim countries consolidate their effort particularly in the field of education, training as well as R&D. The institutions of higher learning can link up to carry out joint research, credit transfers, student and staff exchange. They can also help established other institutions in other maritime Muslim countries.

Acknowledgement

The authors wish to thank Ministry of Science Technology and Innovation Malaysia who supported the project under the Sciencefund programme. Special thanks are due to staff of Research Management Centre, Universiti Technology Malaysia for their support and assistance.

Table 5 Institutions of Higher Learning offering Higher Degrees Marine Technology Programmes

Country	University	Website	Academic Unit
Egypt	Alexandria University	http://www.alex.edu.eg/	Naval Architecture and Marine Engineering Department
Egypt	Suez Canal University Port Said	http://scuegypt.edu.eg/	Naval Architecture and Marine Engineering Department
Iran	Amirkabir University of Technology	http://www.aut.ac.ir	Faculty of Marine Technology
Iran	Sharif University	http://www.sharif.ir	Department of Mechanical Engineering
Turkey	Karadeniz Technical University	www.ktu.edu.tr	Department of Naval Architecture and Marine Engineering
Turkey	Istanbul Technical University	http://www.itu.edu.tr/	Faculty of Naval Architecture and Ocean Engineering
Indonesia	Hasanudin University	http://www.unhas.ac.id	Department of Shipbuilding
Indonesia	Sepuluh Nopember Technical Institute	http://www.its.ac.id	Faculty of Marine Engineering
Indonesia	Universitas Indonesia	http://www.ui.edu	Department of Ship Engineering
Indonesia	Diponegoro University	http://www.undip.ac.id	Department of Naval Architecture
Malaysia	Universiti Teknologi Malaysia	http://www.utm.my	Department of Marine Technology
Malaysia	Universiti Malaysia Terengganu	http://umt.edu.my	Department of Maritime Technology
Malaysia	Universiti Kuala Lumpur-Malaysian Institute of Marine Engineering Technology (MIMET) Perak	http://mimet.edu.my	Naval Architecture and Shipbuilding
Bangladesh	Bangladesh University of Engineering and Technology	http://www.buet.ac.bd/	Department of Naval Architecture and Marine Engineering

References

- [1]. Harun Yahya, Perished Nations, Harun Yahya International, 2008 available at <http://www.harunyahya.com/pernat11.php> 2 March 2008
- [2]. Bill Crouse, Geological and Historical Reasons Why Noah's Ark Did Not Land on Mt.Ararat In Turkey, Christian Information Ministries International, Richardson, USA, undated. Available at: www.noahsarksearch.com/NoahsArkPaper.pdf 26 February 2008.
- [3]. Richard Price, The Maritime Laws of the Arabian Gulf Cooperations Council States, Graham and Trotman, London, 1986.
- [4]. Ezad Azraai Jamsari et al., The History of the Muslim Naval Army During the 'Abbasid Era, *Advances in Natural and Applied Sciences*, 7(1): 79-83, 2013
- [5]. Aly Mohamed Fahmy, Muslim Sea-power in the Eastern Mediterranean: From the Seventh to the Tenth Century, University of London and The Lawbook Exchange Ltd.1950.
- [6]. George F. Hourani (1995), Arab Seafaring in the Indian Ocean in Ancient and Early Medieval Times, Princeton University Press, 1995.
- [7]. Majid Khadduri, War and Peace in the Law of Islam, Originally published by Johns Hopkins Press, [1955] Baltimore, The Lawbook Exchange, Ltd., 2006
- [8]. Batchvarov, K.N., Design and Construction of a Black Sea Ottoman Ship, in *Between Continents*, Proceedings of the Twelfth Symposium on Boat and Ship Archaeology, Istanbul 2009, Nergis Günsenin Ed.
- [9]. Aydın, Y.A., Technological Developments in the Imperial Dockyard (Tersane-i Amire): Anchor Manufacture for the Galleons of the Ottoman Navy, in *Between Continents*, Proceedings of the Twelfth Symposium on Boat and Ship Archaeology, Istanbul 2009, Nergis Günsenin Ed.
- [10]. Ünver, M., A Lesser Known Branch in the Ottoman Imperial Dockyard: Tîr-i Güverte, in *Between Continents*, Proceedings of the Twelfth Symposium on Boat and Ship Archaeology, Istanbul 2009, Nergis Günsenin Ed.
- [11]. Gürkan, E.S., Ottoman Corsairs in The Western Mediterranean and their Place in The Ottoman-Habsburg Rivalry (1505-1535), Master's Thesis, Bilkent University, Ankara June 2006
- [12]. Gürkan , E.S., The centre and the frontier: Ottoman cooperation with the North African corsairs in the sixteenth century, *Turkish Historical Review*, 1/2 (2010), pp. 125-163
- [13]. Idris Bostan, Ottoman maritime arsenals and shipbuilding technology in the 16th Century, Foundation for Science Technology and Civilisation, FSTC Ltd, Manchester, Publication ID 658, 2007
- [14]. Aydın, Y.A., Reform of the Ottoman Navy and Ottoman Superiority at Sea (1701-1718), in *Mutazioni e permanenze nella storia navale del Mediterraneo*. Secc. XVI-XIX, Yazar: Candiani, Lo Basso ed. , FrancoAnglei, Milan 2010
- [15]. Kadı, I.H., Peacock, A.C.S. , and Gallop, A.T., Islam, Trade and Politics across the Indian Ocean: Preliminary Results of Research in the Ottoman Archives, *British Academy review*, 14(2009), pp. 36-39.
- [16]. Özbaran, S., Ottoman naval power in the Indian Ocean in the 16th century, Crete University Press, Rethymnon, 2002
- [17]. Özbaran , S., Ottoman Expansion Towards the Indian Ocean in the 16th Century, Istanbul Bilgi University Press, 2009.
- [18]. Anthony Reid, The Ottomans in Southeast Asia, Asia Research Institute, National University of Singapore, Working Paper Series No. 36, February 2005.

- [19]. Göksoy, I.H., Ottoman-Aceh Relations According to the Turkish Sources, First International Conference of Aceh and Indian Ocean Studies, Asia Research Institute, National University of Singapore & Rehabilitation and Construction Executing Agency for Aceh and Nias (BRR), Banda Aceh, Indonesia, 24 – 27 February 2007
- [20]. Adi Ignatius, The Asian Voyage: In the Wake of the Admiral, Time, 20-27th August 2001, Vol 158, No 7/8, available at <http://www.time.com/time/asia/features/journey2001/intro1.html>
- [21]. Ibrahim Che Noh, Peranan Laksamana Cheng Ho: Signifikan terhadap Perkembangan Dakwah Islamiah di Nusantara, Seminar Perkembangan Islam Nusantara, Universiti Teknologi MARA, Majlis Islam Sarawak, Kuching, 21-23 Sept 2005.
- [22]. Salah Zimeche (2002), Piri Reis World Map and Kitab I-Bahriye, Foundation for Science Technology and Civilisation, FSTC Ltd, Manchester, Publication ID 4022, 2007
- [23]. Paul Lunde, Piri Reis and the Columbus Map, Saudi Aramco World, pages 18-25, May/June 1992. Available at Saudi Aramco World: Piri Reis and the Columbus Map <http://www.saudiaramcoworld.com/issue/199203/piri.reis.and.the.columbus.map.htm>, 10th March 2008.
- [24]. Paul F. Hoyer and Paul Lunde, Piri Reis and the Hapgood Hypotheses: From the archives of the Ottoman Empire an intriguing—and irresistible—mystery, Saudi Aramco World, pages 18-21, January/February 1980. Available at Saudi Aramco World: Piri Reis and the Hapgood Hypotheses, <http://www.saudiaramcoworld.com/issue/199203/Piri.Reis.and.the.Hapgood.Hypotheses.htm>, 10th March 2008.
- [25]. Hassan Salih Khalilieh, Islamic Maritime Law: An Introduction, BRILL, Leiden. 1998
- [26]. Hassan S., Khalilieh Admiralty and Maritime Laws in the Mediterranean Sea (ca. 800-1050), The Kitab Akriyat al-Sufun vis-à-vis the Nomos Rhodion Nautikos, BRILL, Leiden. 2006
- [27]. UNCTAD, Review of Maritime Transport, The United Nations, 2012
- [28]. International Maritime Organisation, Compendium of Maritime Training Institutes <http://www.imo.org/OurWork/TechnicalCooperation/TrainingInstitutes/Pages/Default.aspx>, The United Nations, 2 March 2013.