

THE CONTRIBUTION OF TRANSLATION IN THE BEGINNING OF ISLAMIC DEVELOPMENTS OF SCIENCE

Iwan Kurniawan

Author Affiliations

English Education Department UIN Raden Intan Lampung Bandar Lampung, Indonesia

Author Emails

^{a)}Corresponding author: Iwankurniawan@radenintan.ac.id

Abstract. It is believed that to master new knowledge from different cultures and countries, the role of translation is very pivotal. Because people speak and write different languages, the presence of translation as a tool to bridge the two sides is a must. Likewise, in the era of early Islam, such as the Umayyad and Abbasid caliphates, some Islamic and non-Islam scholars translated many scientific works into Arabic from other regions such as Greece, Persia, India, etc. These translated works later were learned and comprehended by Muslim scholars. They also developed those works meticulously to be better ones. There are some articles that discussed the translation practice in early Islamic caliphates but fewer papers that introduced disciplines and works that became the emphases of translation. This paper tries to explore what disciplines and what works became the focuses of translation activities from foreign languages into Arabic, which were carried out by Muslim and non-Muslim intellectuals at the beginning of Islam in the Umayyad and Abbasid caliphates. Using a Systematic literature Review which focuses on seven peer-reviewed articles, it is found there were several disciplines that became emphases of translation activities, such as Literature, arts, chemistry, city design, civil engineering, astronomy, medicine, philosophy, mathematics, etc.

Keywords: Contribution; translation; Islamic development; science

INTRODUCTION

The rise of Islam at the beginning was pioneered by Prophet Muhammad PBUH in the 7th century in Mecca and Madinah. After the death of Prophet Muhammad PBUH, the spread of this young religion was continued by many caliphates or Khalifah Al-Rashidun (S. M. Khan, 2019). In the hands of these four caliphates, Islam rose very quickly and expanded vastly to West Africa, Southeast Europe, and West, South, and Southeast Asia (Haqparast & Salangi, 2024; Kennedy, 2022; Lapidus, 2014). The caliphate leaders were called caliph or sultan (Marsham, 2020). The functions of the caliph were very crucial because they built many aspects of their people's lives such as politics, economy, spirituality, military, education, art, science. The caliphs succeeded brilliantly in pushing their societies to achieve very high levels of glory, and these successes were respected by many non-Muslims during the early development of Islamic civilization. This era was called the golden age of Islamic civilization.

One aspect that developed outstandingly was knowledge and science. These knowledge and science developments were transmitted from distinctive territories through translation because those places had different languages. Translation functioned as a tool of communication and interaction. Translation took place as very crucial role in global development and bridged civilizations from different places and time. Through it, human could transfer knowledge, ideas, know-how, belief, etc. As a results, cultures and civilization flourished because of translation. It also occurred in Islamic civilization which gained its triumph after translating scientific works from Greece, Indian, Persian, etc. (Buden et al., 2009; M. I. Khan, 2023).

According to Montgomery (2018) and Xi (2023) There were some motivations why Muslim caliphates translated many overseas scientific works from the west and east civilizations into Arabic and got benefits like to strengthen their own civilization and develop their backward culture to be prosperous states. Religion is also another reason when Muslim needs Astronomy. For example, to determine the position of Qibla or praying position, and Ramadan for fasting month. The field of medicine and the psychology of healing of injured and ill soldiers from conflicts and territorial expansions. Meanwhile, chemistry played a role in the production of everyday food, beverages, and more.

The practice of translation in Islamic tradition had begun from the early emergence, even though it did not translate scientific works. In the era of prophet Muhammad PBUH, to spread Islam to other non-speaking Arab political rulers and to urge them to worship this new religion, prophet Muhammad PBUH had Zaid Ibn Thabet and asked him to translate letters from Arabic into other languages such as Syriac, Hebrew, Persian and vice Versa (Malik, 2012; Mehawesh, 2014). Scientific translation practices in Islamic civilization had been initiated in Ummayah Caliphate and reached its glory in the era of Abbasid. The translations of activities in Abbasid era took place around 300 hundred years. The scientific works which were translated were not trivial but from famous figures such as Hippocrates, Aristotle, Theophrastus, Euclid, Ptolemy, Dioscorides, Galen, etc. (Malik, 2012; Rababah, 2015a)

In the era of the caliphates, the advancement of knowledge was strongly supported by Muslim leaders by translating many ancient works from other places such as Greece, Indian and Persian (Haqparast & Salangi, 2024; Kennedy, 2022; Lapidus, 2014). For example, in Ummayah period (661-750 A.D), the caliph Omar bin Abdul Alaziz who really encouraged the process of translation practices for knowledge and science transfer. Moreover, prince Khalid ibn Yazid was not only a noble person but also the translator himself. Together with other translators, he translated scientific books in some fields. Umayyad Caliphate was considered as the first step in sequences of Islamic translation practices of scientific works. Even though the pioneer initiating the translation in Islamic tradition, this dynasty produced limited works (Rababah, 2015).

In the Abbasid Caliphate, Caliph Al-Ma'mun established *Bayt al-Hikmah* or the House of Wisdom. This institution functioned as a catalyst for translation activities and as a centre of new knowledge production. It attracted famous scholars like Hunayn ibn Ishaq, who mastered Greek, Syriac, and Arabic, to translate many ancient works in medicine and philosophy into Arabic. These translated works became the foundation for developing the traditions of Islamic medicine and philosophy. In addition, Caliph Al-Ma'mun brought together intellectuals from diverse backgrounds Muslims, Christians, and Jews to work collaboratively and exchange ideas, producing new knowledge in the vibrant intellectual environment of Baghdad (Baiza, 2022; Mir & Anjum, 2025).

Even though there have been some publications that have reviewed the translation practice in the Umayyah and Abbasid eras, few have described the disciplines from both caliphates which become the centre of translators' focus are of translation. This study objectives are to know what disciplines that became the accentuations of translation activities carried out by Muslim translators in the era of Ummayah and Abbasid caliphates and the works which had been translated in the respective discipline. To achieve the objectives, researcher analyzed some literature related to the history of translation in Islamic tradition in Google Scholar and ScienceDirect from the years 2012-2025. This study hopefully will enlarge the readers' horizons about the history of translation, especially in Islamic tradition and disciplines, which become their translation focus.

METHOD

Systematic literature review was employed in this study. Systematic literature review is a research methodology which tries to synthesize, collect, arrange, and assess literature on specific topic. The term of systematic literature review describes a certain type of research, or research methodology and development, that is carried out to gather and assess relevant literature on a given topic or emphasis (Lame, 2019).

To gather the data, the researcher collected articles from Google Scholars and ScienceDirect. The collected articles were taken from publication time of 2012-2025 and the

reason to choose those years because they were relevant with research objectives. To collect the data, researcher used some key words such translation role, translation movement, Islamic development or Arab science development. The number of articles were seven. The reason to choose this number because the scarcity of related article of translation role in Islamic development and the number also has met the research objective. The next step, the researcher read the articles describing the translation on Islamic science developments. The results were then tabulated in the table which included the author names, titles, publication years, journal names, and research results. Next, researcher reviewed the data research results in discussion and conclusion. Eventually, the researcher compared and concluded the study.

RESULTS AND DISCUSSION

Results

Sevent articles which were published and pertinent to the objectives of this study were collected from the year 2012-2025 from google scholars and science directs. These articles were collected to answer research questions of disciplines of translation focus at Umayyad and Abbasid era.

Table 1. The found articles and their themes

Author		Title	Journal	Result and Theme
Mehawesh (2014)		History of Translation in the Arab world: An overview.	US-China Foreign Language	Translation of art and literature Under the reign of King Marawan Ibn Abed Al-Malek, Arabicizing the administration naturally involved a certain amount of translation of official document. Byzantine and Persian songs began to appear in translation during Ummayah period. A great deal of Greek wisdom literature or <i>Gnomologia</i> was translated into Arabic and these translations had strong influence on Arabic Poetry in the 9th and 10 th century.
Rababah (2015)		The translation movement in the Arab world: From the Pre-Islamic era until the end of Ummayah Dynasty (Before 610 -750 A.D.)	International Journal of Language and Linguistics	Translation of Medicine, Chemistry and psychology Prince Khalid ibn Yazid (Ummayah caliph) and other translators had translated books of medicine, chemistry, and mental subject. He was interested in science such as Alchemy, so he requested to translate the works of Greek or Byzantine philosophers and scientists
(Al Ismail, 2022)		Translation in the Ummayah era: Individual experiences	Journal of Education and Social Research	Translation of city design and civil Engineering There were cultural and civilization development as

		shaping the movement		the result of translation movement; Masarjis built new cities and irrigation canals, minting coins, weapon industry. They are examples of expertise which were transferred from Greece and Persia through translating manuals.
Sidek & Abdullah (2012)		Indigenization of Science in the Islamic civilization	The social science Journal	Translation of Literature In Abbasid era, India and Persia were sources of wisdom literature. One of profound Arabic work is <i>The Thousand and One Nights</i> which was translated from Persian and based on Sanskrit story. Besides, they also translated a fable from Persian whose title <i>Kalilag U Dimnag</i> to be Arabic with title <i>Kalilah wa Dimnah</i> .
Khalidi & Dajani (2015)		Facets from the translation movement in classic Arab Culture.	Procedia, Social and Behavioral Sciences	Translation of Philosophy of Plato In Abbasid period, many philosophical books of Plato were translated into Arabic. Some of them, for example, <i>The Sophist</i> was translated by Hunain. <i>Timeus</i> was translated by Ibn Al Betreeq, etc
Montgomery (2018)		Mobilities of Science	Journal Isis	Translation of Philosophy of Aristotle Another focus was Greek philosophy. Considerable effort was expended to translate the entire corpus of Aristotle's works which embraced <i>ethics</i> , <i>metaphysics</i> , and <i>logic</i> .
Mir & Anjum (2025)		The Role of Translation in the Development of Scientific Knowledge in the Premodern Islamic World	MAQOLAT: Journal of Islamic Studies,	Translation of Astronomy, Mathematics, and Medicine The Abbasid translation movement was the integration of multiple ancient civilizations of Greek, Persian and Indian. From Greek was the translation of <i>Almagest</i> , an Astronomy work written by scholar Claudius Ptolemy about Geocentric model of Universe. From India, the work of Brahmagupta

				Siddhanta's Mathematics was translated and brought knowledge of the zero and decimal value system. Medical texts from Persian academy of Gundishapur were translated into Arabic as well by Hunayn and became the foundation of Islamic medical system.
--	--	--	--	---

Discussion

The first objective of this study was to know the disciplines and works which became the emphases of translation in Umayyad caliphate era (661-750 A.D). The first discipline which became the focus of translation activities were arts and literature in the reign of King Marwan Ibn Abd Al-Malek. The examples of art were the songs from Byzantine and Persian. Moreover, the Greek wisdom literature or *Gnomologia* was translated as well into Arabic and had inspired the coinage of Arab Poetries of 9th & 10th century written by some poets like Abu Al-Atahiya and Al-Mutanabbi (Mehawesh, 2014).

The second disciplines which were translated In Umayyad era were medicine, chemistry and Psychology. Prince Khalid Ibn Yazid played very crucial role in translating overseas works of Medicine, chemistry and psychology. He was not only a prince but also a translator. He and other translators translated many sources from above discipline. The translation of Medicine and psychology of heal the wounded and sick soldiers from the wars and conquests of new territory. Whereas, chemistry was involved in the industries of daily food, drinks, etc (Rababah, 2015b).

The third discipline which was translated during Umayyad era were city design and civil engineering. After mastering city design expertise, Umayyad caliph ordered the construction of some new cities like Qayrawan in North Africa, Al-Ramlah in Palestine and Wasit in Iraq. In the field of civil engineering, they built irrigation Canals, minting coins, and developing weapon industry (Al Ismail, 2022).

The focuses of Umayyad caliphate's translation above were really in line with statement of El Ghazi & Bnini (2020) who mentioned Umayyad caliphs ordered the translation of many books like medicine, astronomy, chemistry and architecture. Umayyad was also considered as the pioneer in Islamic translation practices. This caliphate had established the foundation of Islamic translation tradition which sponsored by some figures such as King Marwan ibn Abd Al-Malek and Prince Khalid ibn Yazid. Even though this era was trusted as the beginner, their products of translation were not quantitatively and qualitatively satisfying. One reason which caused it that in Umayyad era, the translation practices were carried out individually and choice of translated text depend on the translator's wish.

The second objective of this study was to know the disciplines and works which became the emphases of translation in Abbasid Caliphate era (750-1258 A.D). The first discipline that was translated into Arabic from Persian was literature and one work was *The Thousand and One night*. This literary work is very well-known around the world and many readers think that it is authentic Arabian story. In fact, it is not and it is translated story from Persian and based on the story from India. Another Persian's literary work which was translated into Arabic was *Kalilah Wa Dimnah*, a Fable collection of Indian tradition. Unfortunately, in Abbasid era, majority of translation practices were carried out to change scientific and philosophical works than literature, except proverbs and didactic texts (Sidek & Abdullah, 2012).

The second discipline which took attention from Abbasid era was Philosophy. The texts and books of Philosophy from Greece were translated especially the work of Plato and Aristotle. Their ideas were introduced into Islamic thought and pushed the awakening of Islamic theology and philosophy. Aristotle's ideas had special place among Muslims because his doctrine was in line with Islamic view toward the world and his analysis was based on reasoning and arguments. The works of Plato were translated into Arabic like *The Sophist* was translated by Hunain and *Timeus* was translated by Ibn Al-Betreeq. Whereas, Aristotle's works which had been translated

such as *categories* and *the soul* was translated by Hunain, *ethics* by Ishaq, etc (Khalidi & Dajani, 2015; Montgomery, 2018).

The last most prominent target of translations in Abbasid era was science which consisted of Astronomy, Mathematics, and Medicine. In astronomy, the most important was the translation of *Almagest*, the astronomical work written by Greek scholar Claudius Ptolemy. This work described the theory of geocentric where the earth was the centre of universe and all celestial objects revolved around it. The translator of *Almagest* into Arabic was Al-Hajjaj Ibn Yusuf. Astronomy is very close to Mathematics and Abbasid's astronomer, Al-Khwarizmi translated Indian mathematician, Brahmagupta's book, *Brahmasphuta Siddhanta* into Arabic as *Al-Sind Hind*. This book introduced Algebra and Indian Numerals like zero and decimal value system. From this book, Abbasid's astronomers could calculate the celestial object movements. Other creations which were translated by Muslim scholars in Mathematics were *Euclid* and *Diophantus*. Euclid explained about the study of Geometry and Diophantus introduced about Algebra. In medicine, Muslim scholars did not only depend on one source or Greek but also from Persia and India. Hunayn, a well-known, translator translated many Greek medical texts which were composed by Hippocrates and Galen. This translated texts served as a medium of Greek medical practice into Arabic medical tradition. From Persian tradition, the medical texts academy of Gundishapur were translated as well and became the bases of Islamic Hospitals. One famous scholar from Abbasid era, Ibn Sina wrote a synthesis of Greek, Persian and Indian medical expertise to be a book which was called *Al-Qanun fi Al-Tibb* or canon of medicine (Mir & Anjum, 2025).

The Abbasid caliphate was believed as heyday of Islamic translation practice in the era of early Islamic dynasty. The reason of this belief because in Abbasid era the number of translated foreign books and texts were much more than in Umayyad and also there was one institution which was responsible to translated scientific works from Greece, Persian, Indian into Arabic. The name of institution was Bayt Al-Hikmah or House of Wisdom, which was established by caliph Harun Al-Rasyid and expanded by caliph Al-makmur. The caliphs treated translation in this institution as government sponsored activity and Bayt Al-Hikmah functioned as an academy of research, library, and translation centre. Here, they translated works from many places like India, Persia, Syriac, Egypt and the most favourite was Greece. Some profound figures of translation in Abbasid era were Harun Al-Rasyid, Al Ma'mun, Al-Mansur, etc. However, there was an opinion if Umayyad was the vanguard, Abbasid was the successor. Abbasid translation tradition was the continuation steps which had been started by Umayyad (Khalidi & Dajani, 2015).

CONCLUSION

Based on the examination of this literature review, it shows how important translation efforts were to the development of early Islamic intellectual and cultural life under the Umayyad and Abbasid caliphates. According to the review, Literature, arts, chemistry, city design, civil engineering, astronomy, medicine, philosophy, mathematics were the main fields that were translated into Arabic. Both Muslim and non-Muslim scholars worked on these translations, which demonstrated the inclusive and cooperative character of the knowledge seekers of the time.

Translation was a meticulous and interpretive process that was more than only transferring language. The translated works were not only understandable but also significant for the society of the time because they were frequently modified and placed into the Arabic-Islamic intellectual framework. Translation thus served as a medium between cultures, which pushed that Islamic intellect was enhanced by the knowledge of Greek, Persian, Indian and other traditions.

REFERENCES

- Al Ismail, Y. A. (2022). Translation in the Umayyad Era: Individual Experiences Shaping the Movement. *Journal of Educational and Social Research*, 12(2), 286–294.
- Baiza, Y. (2022). Are Contemporary Islamic Education and Their Pedagogical Approaches Fit for Purpose? A Critique and Way Forward. In *Supporting Modern Teaching in Islamic Schools* (pp. 17–30). Routledge.
- Buden, B., Nowotny, S., Simon, S., Bery, A., & Cronin, M. (2009). Cultural translation: An introduction to the problem, and responses. *Translation Studies*, 2(2), 196–219.

- El Ghazi, O., & Bnini, C. (2020). Arabic Translation from Bait Al-Hikma to Toledo School of Translators: Key Players, Theorization and Major Strategies. *International Journal of Linguistics, Literature and Translation*, 3(9), 66–80.
- Haqparast, H., & Salangi, M. M. (2024). The impact of Islamic civilization on the European intellectual awakening: An analytical study. *Sprin Journal of Arts, Humanities and Social Sciences*, 3(1), 57–62.
- Kennedy, H. (2022). *The Prophet and the age of the Caliphates: the Islamic Near East from the sixth to the eleventh century*. Routledge.
- Khalidi, H., & Dajani, B. A. S. (2015). Facets from the translation movement in classic Arab culture. *Procedia-Social and Behavioral Sciences*, 205, 569–576.
- Khan, M. I. (2023). Translation: A Tool of Communication and Cultural Exchange. *Strength for Today and Bright Hope for Tomorrow Volume 23: 11 November 2023 ISSN 1930-2940*, 48.
- Khan, S. M. (2019). Islamic Caliphates. *World History Encyclopedia*. Retrieved November, 22, 2022.
- Lame, G. (2019). Systematic literature reviews: An introduction. *Proceedings of the Design Society: International Conference on Engineering Design*, 1(1), 1633–1642.
- Lapidus, I. M. (2014). *A history of Islamic societies*. Cambridge University Press.
- Malik, Z. (2012). The Problems Faced by a Translator. *Al-Idah*, 24(1), 50–68.
- Marsham, A. (2020). The Caliphate. *The Oxford World History of Empire: Volume Two: The History of Empires*, 355.
- Mehawesh, M. I. (2014). History of translation in the Arab world: An overview. *US-China Foreign Language*, 12(8), 684–691.
- Mir, K. H., & Anjum, M. R. (2025). The Role of Translation in the Development of Scientific Knowledge in the Premodern Islamic World. *MAQOLAT: Journal of Islamic Studies*, 3(1), 31–43.
- Montgomery, S. L. (2018). Mobilities of science: The era of translation into Arabic. *Isis*, 109(2), 313–319.
- Rababah, H. A. (2015a). The Translation Movement in the Arab World: From the PreIslamic Era Until the End of Umayyad Dynasty (Before 610–750 AD). *International Journal of Language and Linguistics*, 3(3), 122–131.
- Rababah, H. A. (2015b). The Translation Movement in the Arab World: From the PreIslamic Era Until the End of Umayyad Dynasty (Before 610–750 AD). *International Journal of Language and Linguistics*, 3(3), 122–131.
- Sidek, R. S. M., & Abdullah, M. J. (2012). Indigenization of science in the Islamic civilization. *The Social Sciences*, 7(3), 369–377.
- Xi, M. (2023). The Influence of the Arab Century Translation Movement on Cultural Exchange. *Academic Journal of Humanities & Social Sciences*, 6(15), 101–105.