

# Bait al-Hikmah (House of Wisdom) of Baghdad: A Name of the Beautiful Management

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**Abstract:** *Bait al-Hikmah of Baghdad was one of the first well-organized libraries that contributed to the glorification of the Islamic golden age. This paper aims to show the outstanding management of the Bait al-Hikmah library in Baghdad. This paper studies the well-functioning administrative system and good preparation of Bait al-Hikmah Library. The study uses the qualitative method of historical research. The researcher analyzes the articles, newspapers, historical documents, and books to review the related literature. The study shows that the structure of Bait al-Hikmah (House of Wisdom) is excellent. The current research shows the organizational structure of the Bait al-Hikmah of Baghdad and its departments and services provided to researchers, scholars, and readers. The study shows a robust administrative style of the library. It provides an overview of the library's beautiful management, including the shelves, translation office, collection and preservation, copying, bookbinding, accommodation, multipurpose hall, etc. These arrangements prove that the Bait al-Hikmah is the name of beauty management.*

**Keywords-** Bait al-Hikmah, Library, Bureau of Translation, Observatory, Management and Baghdad

## 1. INTRODUCTION

The Library played a significant role in the medieval Islamic period for knowledge and research, producing eminent scholars and scientists in almost every field of knowledge. Bait al-Hikmah was such a place where knowledge was explored, acquired, and distributed. Many libraries were established on its model in all most every important place like Baghdad, Khurasan, Nishapur, Aleppo, Tripoli, Damascus, Syria, Muslim Spain, Cairo, Al-Qayrawan city of Tunisia, and Fez of Morocco. For developing research and knowledge in the arts, science, and technology, this Library became very popular in Muslim lands and Western Europe. Many libraries were built in Toledo, Seville, Cordova, Granada, and elsewhere (Celeste, 2016). For outstanding research and advanced knowledge, Bait al-Hikmah drew the attention of scholars and researchers from various parts of the world with different cultural backgrounds. It quickly turned these all into an intellectual hub.

Library upholds the image of Muslim civilization by advancing knowledge, shaping researchers' intellect, creating many scholars in nearly every field of science, and having unbelievable interior design. Muslim libraries, especially Bait al-Hikmah, had established a legacy of knowledge and research well-organization, which could be compared with the libraries of the modern days (Sadique, 2017). The quality of Muslim libraries was in good condition and satisfactory level while similar to Muslim libraries were not found in the West. Muslims' libraries were the first to develop knowledge and scholarship and to structure education and research fields as people know them. There was substantial encouragement for the Western scholarship by these Muslim research centers (Chandio, 2021).

With significant efforts of the library for knowledge and research, Bait al-Hikmah made a significant reflective feeling to whole Muslim lands and drew up the attention of Europe. Even those times are usually said to have been a Classical Age of Islamic Civilization. Great philosopher Zakaria (2019) acknowledged that Muslim education and research institutes like Libraries had a rich legacy full of spirituality. History of education noticed the contribution of Muslim libraries to other civilizations, especially to western Europe. The achievements and research outcomes need to be presented scholastically and widely to show the outstanding contribution of Bait al-Hikmah.

Muslims Libraries were, a long time ago, the envy of the world, and up to day, they are very close to Islamic scholarly heritage. Nevertheless, despite this rich legacy, in the present day, very few know about Muslim libraries. Therefore, this paper has brought together a rich history of Bait al-Hikmah, which should be considered for its excellent management and shining legacy worldwide.

## 2. REVIEW OF THE LITERATURE

### 2.1 LIBRARIES

Libraries in those centuries played an essential role in teaching and learning, in addition to research work. There were different types of libraries: public and private, imperial, academic research libraries, palace libraries, madrasa libraries, and libraries in hospitals. Public libraries were known to Muslims by various names such as Bait al-Hikmah, Khizanat al-Hikmah, Khizanat al-Kutub, Dar Al-Kutub, Dar al-Ilm, Bayt al-kutub, Kitab Khana (Iran), and Kutubhane (Turkey), respectively (Celeste, 2016 & Mohammad, 1980).

Most small libraries were attached to the madrasa and mosque, while others were large and independent. The purpose of the small libraries was to translate Greek, Pahlavian, Syriac, and Sanskrit scriptures into Arabic (Stuart, 2009) and to serve religious

and spiritual needs, while modern and advanced knowledge was practiced in the large independent libraries (Nancy, 2011). Usually, the libraries were used for research activities, such as Higher Learning Centers or Higher Research Institute.

## 2.2 A SHORT HISTORY OF BAIT AL-HIKMAH

The Abbasid Caliphs once owned a private library in Baghdad called Bait al-Hikmah. The Bait al-Hikmah (House of Wisdom) library of the Abbasid Caliphs in Baghdad was regarded as the most extensive and first library of the period (Chandio, 2021). Caliphs Al-Mansur, Harun al-Rashid, and Al-Ma'mun took the initiative to conduct groundbreaking scientific research in Baghdad by founding Bait al-Hikmah. Within this library, writing and research cultures were created among Muslim scholars, and it belonged to the period of Islamic history referred to as the 'Golden Age of Islam.'

In the history of Islam, the Abbasid period (750–1258 AD) is called the 'golden age of knowledge and science.' Undoubtedly, this is the most significant era of Muslim civilization, culture, and knowledge (science practice and development). The Abbasid rulers built a vast empire covering parts of Asia and Europe. During this period, the method of learning and education-initiation reached new heights. The Abbasid Caliph Al-Mansur declared Baghdad the new capital in 762 AD. Since then, under the direct patronage of the influential Abbasid caliphs, Baghdad has become a brilliant place of pilgrimage for all kinds of knowledge—scientific acquisition, translation, and research. Al-Mansur's patronage of learning led to an unexpected increase in book-loving in Muslim society. Caliphs started collecting books and manuscripts from various educators, researchers, scholars, and other states. Even to locate lost collections, priceless books, and study materials, numerous experts and translators were dispatched to areas like India, Iran, Constantinople, and many others. These collections were gathered in one of the large closets of the palace, which was eventually transformed into a library. This library was the first simple and extensive library established by the state at his time, and later it became the famous Bait al-Hikmah library. He also included written works on literature, history, and prophetic tradition (hadith).

Historian Ibn al-Nadim argued that Bait al-Hikmah was founded during the reign of Harunur Rashid, a Muslim ruler of the Abbasid era. Caliph Harun al-Rashid founded a fantastic library to collect all the manuscripts and books that his predecessor had collected (Stewart, 2007). Initially, it was known as Khizanat al-Hikmah (Al-Hikmah Bookstore). Hunayan ibn Ishaq, a Syrian Christian, was the director general and Abu Sahl Fazl ibn Nubakht was the executor of Khizanat al-Hikmah on behalf of King Harunur Rashid (Wilkins, 1994).

After three decades of Caliph Harun al-Rashid, Ma'mun took power and paid particular attention to the library. He built this library in Baghdad as a center of global knowledge and science practice. It cost about \$7 million at the time (Hitti, 2002). He gathered as many books and manuscripts of varied knowledge from as many sources as possible. He saved many books from the monarch of Sicily's abandoned home and put them at the Bait al-Hikmah Library. The collection got too enormous as new fields of knowledge were added, so the caliph built a new administrative structure and increased the library's original complex (Wilkins, 1994). As a result, Bait al-Hikmah (The House of Wisdom), a prominent public academy, was named after it in 830. (Sadique, 2017). Sahal bin Haroon was the Director of the library (Wilkins, 1994). Famous copyist Ilan Shaubi was hired for the library with the approval of both Harunur Rashid and Mamunur Rashid.

Al-Azzawi claims that Khizanat-al-Kutub al-Ma'muniya, also known as the Ma'mun Bookstore, was the name of Bait al-Hikmah (The House of Wisdom) during the Ma'mun period. Khizanat al-Kutub is an Arabic phrase for a store; hence, it is also known as a bookstore. This phrase referred to the modern library as Khizanat al-Kutub (Rahim et al., 2012). The caliph separated Bait al-Hikmah into three sections: libraries, classrooms, and translation centers (Wilkins, 1994).

According to Hitti (2002), its prosperity peaked during the reign of Caliph Al Mamun. By the middle of the 9th century, Bait al-Hikmah was the most extensive library in the world. This vast book center was a library, translation center, educational and research institute, and observatory. Rahim et al. (2012) argued that Bait al-Hikmah was initially established so translators could translate and reserve their priceless works.

However, after reviewing various data about Bait al-Hikmah, it is known that the library was founded during the reign of King Harunur Rashid and developed during the reign of Mamunur Rashid and became a great laboratory. Bait al-Hikmah inflamed Europe through its influential role and the entire Asian region. Bait al-Hikmah was considered the intellectual house of Baghdad.

## 2.3 THE FUNDING SOURCES

The library received a great deal of attention from Caliph Haron al-Rashid. The construction cost considerable cash and gold, and a sizable fund was set aside to expand the library and complete the essential tasks. The library received a great deal of attention from Caliph Haron al-Rashid. The construction cost considerable cash and gold, and a sizable fund was set aside to expand the library and complete the essential tasks. Large sums of money and gold were spent on funding the library. There was a fixed budget from the house of wisdom To provide all its employees' salaries. Funds were also allocated for translators, authors, binders, lecturers, debaters, and servants, etc. the budget also compromised other facilities such as habitation, food, book, pens, papers purchase, and others. The library has a designated fund to hire a multilingual employee.

Aside from that, Caliph Al-Ma'mun had allocated consistent resources or endowments (Awqaf) to be spent on the library, ensuring long-term funding from caliphs and ministers (Muntasir, 1971). The money spent on the house of wisdom during al-Ma'mun's reign was estimated to be nearly two hundred thousand dinars (Durant, 1964).

## 2.4 ARRANGEMENT OF THE LIBRARY

The library got an administration building (Wilkins, 1994). Sahal bin Haroon was the library director during the reign of Mamun. Abu Salah and Abul Fazal were in charge of the Administrative Department, which expanded the library based on demand. The organizational structure was so beautiful that it served to handle the library's management division and Finance division.

Apart from this, the Bait al-Hikmah complex was decorated and arranged respectively. Shelving, classification, Reading Room, Observatories, Research unit, individual room for scientists and Debate hall, and Collection and Reservation section prove that the Bait al-Hikmah library was well managed. According to Ghanima (1953), the ground floor contained several divisions and departments for book closets and sections for translating, authoring, copying, binding, reading as well as studying all subjects of knowledge, sciences, and literature for the upper floor was devoted to residents from authors, translators, students, and employees. Nevertheless, many rooms were provided for preserving the collected books, maps of different countries, city photos, astronomical and space-related images, etc. The ground floor was for translation, copy, binding, preservation, and collection sections and studying sciences and literature.

## 2.5 BUREAU OF TRANSLATION

The library consisted a bureau of translation. The translation movement at the House of Wisdom was inaugurated with the translation of Aristotle's works. According to Dimitri (1998), many essential texts were translated during this movement, including a book about the composition of medicinal drugs, a book on this mixing and the properties of simple drugs, and a book on medical matters by Pedanius Dioscorides. These, and many more translations, helped with the advancements in medicine, agriculture, finance, and engineering. An essential goal of translation was to create a comprehensive library that contained all of the knowledge gained throughout this movement. The primary focus of the translation bureau was to translate foreign works. Books and texts translated during this period were written in Greek, French, Aramaic, Kalvi, Kibati, Semitic, Hebrew, Syriac, Latin, and Indian Sanskrit. Numerous books and documents on several scientific concepts, philosophical subjects, and proposals in different languages were translated into this house (Omar & Chakib, 2020). Thousands of Greek and Roman Manuscripts and literary canon, including Aristotle, Ptolemy, and Plato, were translated into Arabic. Famous scholars and eminent translators rendered books into Arabic. According to Dimitri (1998), authors translated include Pythagoras, Plato, Aristotle, Hippocrates, Euclid, Plotinus, Galen, Sushruta, Charaka, Aryabhata and Brahmagupta.

The translation work began with the establishment of the Abbasid state. During this period, translation began to flourish, officially promoted by the Abbasid caliphs, who supported the translators. Among the caliphs, Al-Mansur first encouraged translating works from Greek, Indian and Persian into Arabic (Omar & Chakib, 2020). Calilah and Dimnah is a book of the Sanskrit language, which constituted one of the beginnings of fictional literature. It was translated by Abdallah ibn al-Muqaffa into Arabic. It is a book of great interest, purposeful, and benevolent. Among the Greek works translated into Arabic during the reign of al-Mansour were the works of Aristotle, the 'Almagest' of Ptolemy, the 'Elements' of Euclid, and the 'Great Astronomical Tables of Sindhind,' an Indian astronomical manual with tables for calculating the cardinal points. This book has been translated by scholars such as Habash ibn Abdallah Al-Baghdadi, Mohamed Ibrahim Al-Fazari, Ibn Al-Adami, Mohamed ibn Moussa Al-Khawarizmi and others (Bsoul, 2019). Translators were appointed to translate different foreign intellectual works into Arabic. Translators worked almost in every subject and language (Wilkins, 1994). Hindu, Christian, Jewish, and Persian scholars were equally deemed estimable. They were paid handsome salaries.

However, the translation movement gained significant momentum during the reign of caliph Harun al-Rashid, who, like his predecessor, was personally interested in scholarship and poetry. The Harun al-Rashid appointed well-known translators and prominent scholars in the Bureau of Translation. Persian, Hindu, Sanskrit, Jewish, Christian, and Greek scholars worked in the Bureau of Translation and were paid a good salary by the Caliph (Wilkins, 1994). Hindu scholars were invited to translate Sanskrit books and texts into Arabic. Sanskrit texts concerned medicine, mathematics, and astronomy, but other disciplines, especially philosophy (Mohadi, 2019). Yahya bin Khalid Barmaki, a famous Iranian scholar, was appointed in the translation section. Many Persian manuscripts and research works were translated into Arabic by him. Even Yahya Barmaki appointed Abu al-Fazal and Abu Sahal to translate Persian books into Arabic (Mohadi, 2019) and Physician Yohanna ma-Sawiyya to translate Greek works into Arabic (Chris, 2002). Al-Kindi, a famous Muslim Arab philosopher, was appointed to supervise the Greek scientific and philosophical texts in Arabic (Bsoul, 2019 & Adamson, 2020). On the other hand, an Italian translator, Gerard of Cremona, translated Al-Kindi's scientific book from Arabic into Latin (Humairaa, 2016).

The contribution of caliph al-Mamun in the translation work was also visible. By the time of Al-Ma'mun, translators had moved beyond Greek astrological texts, and Greek works were already in their third translations (Rosenthal, 1975 & Adamson, 2006). According to Jim (2011), translation was precious work of knowledge that came courtesy of Caliph Al-Mamun. He used to reward translators with gold coins worth the weight of the translated work in return for the translation. As to Durant (1964) reported that Caliph al-Ma'mun offered Hunayn ibn Ishaq, a famous translator, the weight of the books he translated in gold as a wage for the latter's contribution

Caliph appointed a Persian poet, astrologer, and doctor named Sahl Bin Harun as a chief librarian of the Bayt al-Hikma and Gave him big money to translate the precious books of the Majusi civilization. Caliph also appointed Hunayn ibn Ishaq in the translation section, who then became the most celebrated translator of Greek texts. Hunayn ibn Ishaq translated the entire collection of Greek medical books, including famous pieces by Galen and Hippocrates. Hunayn ibn Ishaq, an Arab Nestorian Christian physician and scientist was the most productive translator, producing 116 works for the Arabs. Thus,

Caliph appointed Yousoof ibn Matar, a Sabian Mathematician, and translator, to translate valuable manuscripts secured from the Byzantines. He was known for translating Euclid's works (Wilkins, 1994). Another Sabian translator Tabit ibn Qurra also translated great works by Apollonius, Archimedes, Euclid, and Ptolemy (Mohadi, 2019). Al-Firist of Ibn al-Nadim claims that some translators, such as Tabit Ibn Qurra and Ibn al-Asam, received monthly salaries of more than 500 dinars (Omar & Chakib, 2020). Having shown much potential, Caliph appointed Mohammad Musa and his brothers Ahmad and Hasan in the library and enrolled them in the House of Wisdom translation center in Baghdad (Josep, 2007). Banu Musa and Yahya bin Abi Mansor's translation of astronomy, Al-Kindi's translation of the works of Aristotle, Hunayn bin Ishaq's translation of the Book of Animals (Kitab al-Haion), Musa al-Kawarizmi's translation of mathematics, and Syed bin Harun's translation of religious works were the most famous works of the translation bureau (Al-Mas'udi, 1968). According to Jim (2011), These Muslim translators collected valuable texts from ancient Mesopotamia, Roman, Chinese, Indian, Persian, Egyptian, North African, Greek, and Byzantine and compiled them through translation. Notable translators, writers, academics, authors, copyists, and penman performed their duties in the library. To Suzy (2017), if Muslim scholars had not collected and translated these valuable books and disseminated them throughout the world, this golden science would have died in the womb of the age. House of Wisdom was known for being a space for intellectual growth and contribution, significantly contributing to the Translation Movement. However, Jim (2011) stated that the Translation Movement started in this House of Wisdom and lasted over two centuries. Over a century and a half, primarily Middle Eastern Oriental Syriac Christian scholars translated all scientific and philosophic Greek texts into Arabic in the House of Wisdom.

## **2.6 COPY SECTION**

Bayt al-Hikmah has a variety of sections that include copying. The ground floor contained this section, where rare and valuable manuscripts were copied (Ghanima, 1953). The copy section often had a staff list that sometimes reached hundreds of copyists. (Mackensen, 1932). The Caliph appointed Elan al-Shaobia, a prominent scholar in the library's copy section, to copy the ancient manuscripts.

This section was associated with the bureau of translation. Once the assigned task was completed, the product was transferred to a writer with a distinctive handwriting style. The writers and their writing styles were selected by Caliph al-Ma'mun personally. When the copy is ready, it will be devolved into another section for binding and decorating (Al-Mas'udi, 1968).

Al Hamawi (1966) mentioned an 'Al-Warraaq' (writer) who was in the copy section of Bait al-Hikmah to duplicate and rewrite books. This viewpoint was confirmed by Ibn al-Nadim, who noted in his work Al-Fihrist that Abu Sahl al-Fadl Ibn Nubakht was also present near the copy department and book storage area (Stewart, 2007).

## **2.7 BOOK BINDING SECTION**

Caliph appointed Ibn Abi al-Haresh for the bookbinding section on the library's ground floor (Mohadi, 2019). This section was associated with the copy section. Once the copy is completed, then transferred to the binding section for preparation. When a copy was ready, the Caliph would have a copy of every product housed in the library. Some copies would go to other libraries outside Baghdad, the Tunisian House of Wisdom, and Cairo's Dar al-Hikmah (Al-Mas'udi, 1968).

Leather was used for binding the books, and the calligraphy of some manuscripts was made of silver and gold. Bookbinding became a high art, producing beautifully decorated covers. The binding techniques of a book were one of the local high technologies of that period.

The English recovered around two thousand books, some of which had a binding of jewels. These books were transported to England in 1838, where they eventually found a home at Windsor Castle's British Royal Library (Zakaria, 2019).

## **2.8 COLLECTION AND RESERVATION SECTION**

The collection and reservation section was located on the library's ground floor. The library had firewood bookshelf and closets for housing the collected books and valuable scientific works. Representatives were sent to the other land to collect rare books and manuscripts. Thus, the library got a considerable collection of Sanskrit, Persian, Greek, Latin, Hebrew, Aramaic, Zend-Avesta, Spanish, Syriac, and Coptic languages. Scholars and translators were sent to India, Iran, Constantinople, and many other places to find rear collections, precious books and manuscripts, scientific research and data, and valuable research works and bring them back to the library and preserve them (Rahim et al., 2012).

The early name of the library was 'Khizanat ul-Hikma' meaning Storehouse of Wisdom, which derives from its function as a place for the collection and preservation of rare books and poetry, a primary function of the House of Wisdom until its destruction.

Inside the library, got a Bookshelf Thesis that reduces the contributions of Islamic scholars to mere translation, preservation of Greek texts, scientific and technological reports, results, information, and other sources. Thus, the preservation corner collected many geographical maps, manuscripts, astronomical photographs, and pictures of the earth with its seas, mountains, valleys, etc. (Jim, 2011).

The caliph al-Ma'mun had assigned a group to purchase books from Roman and Greek libraries and paid high prices for them. Therefore, the caliph's efforts in the purchase process led to a considerable collection of the intellectual treasury in the library from Constantinople and Cyprus (Aman, 1962).

Caliph al-Mansur also advised the authority to collect the rear books and manuscripts from the other libraries. Caliph himself made a lot of efforts for that library. He ordered a lot of valuable research work, manuscripts, exceptional books, and

collections of Arabic and Persian for that library, and it became a well-known resource center in his time. Bait al-Hikmah Library in collections development focused on the completeness of collection by purchasing, gifts, and book translation.

When the Caliphs had a massive collection of books and many translations, maps, manuscripts, etc., they had to construct an appropriate place for these collections. Historians have consented that the caliph has gathered all collected books in a big room on the library's ground floor. That was the nucleus of the house of wisdom (Al-Diyaji, 1975), which later became the library's independent collection section. To Hitti (2002), Books on all faculties of science were collected in this library. Over six lakh books are stored here in the library.

## **2.9 CORNERS OF THE LIBRARY**

Separate corners were established in the library for reading, books, study, newcomers, and lone scholars. This area's purpose was to inform scholars about fresh and recent research collections, and the library's ground floor housed this corner.

This new space was focused on collecting and displaying the valuable contributions of prominent scholars, scientists, philosophers, and well-known researchers. Each corner has its shelf containing scholarly works, rare texts, scientific and technological reports, results, information, and other sources. In this way, a personal corner was created in the library in the name of more or less every famous person, and the precious works of each were kept in that corner. For example, Imam al Ghazali, ibn Sina, ibn Rushd, al Hitham, Khawarezami, al-Kindi, al Biruni, Humayun ibn Ishaq, and al Rashid Corner were very notable. In addition, there were corners named after many other later scholars, including Socrates, Plato, Aristotle, and Thales. Abu Sahl al-Fadl Ibn Nubakht was in charge of these corners and found him at the 'Al-Rashid' corner.

## **2.10 BOOK LENDING**

The second floor of the library contained many rooms and halls. One of the halls was devoted to readers, with some staff who provided help, comfort, and other services for those who frequently came to the library. There had also been external but conditional lending, in which books were lent to people who value them. Therefore, they must make a pledge and pay a refundable cost for the lent book in case of damage or loss to preserve all book collections within the library.

Borrowing books and manuscripts from the library was an orderly tradition of the medieval Bait al-Hikmah. Students, teachers, and scholars could borrow books and manuscripts from the library for a specific period with particular requirements. For example, Al-Qawl al-Mutabar, a work by Abu Abd Allah Muhammad al-Ajmawi, and Kitab al-Ibar by Ibn Khaldun were to be lent to its students and researchers for two months. To look after this task, the authorities appointed a fellow inside the library (Osti, 2017).

## **2.11 LIBRARY CATALOGUE AND INDEX**

The library prepared a list of all the sources for researching the work, called a Catalogue or Index. To find books, manuscripts, and research works quickly, Bait al-Hikmah library introduced this cataloging and indexing system. Books and Manuscripts were arranged into specific fields and categorized with an alphabetic index for easy finding the book. Books were stored in sandalwood cabinets, with a list showing books in each cabinet (Rifai & Subchi, 2020). For advanced studies, some books and valuable documents from medicine to astronomy were stored neatly on shelves in the library with the subject-wise catalog.

The bibliographical compilation listed all the scholarly activities of Muslim researchers, scientists, and philosophers. Ibn al-Nadim started compiling Al Fihrist (The Catalogue) in 987 as a helpful reference index for book buyers and sellers (Sardar & Davies, 2007). He accumulated thousands of authors' names, biographies, and works over a period of time by visiting local libraries and book collectors regularly and actively participating in Baghdad's thriving literary scene at the time (Stewart, 2007). The Kitab al-Fihrist is a reference work from the eleventh century that references about 10,000 books and 2,000 authors.

Some scholars have made indexes for their writings. For instance, Al-Biruni has listed and indexed his books and the books of Mohammad Ibn Zakariyah Al-Razi (Algeriani & Mohadi, 2017). Ibn al-Qifti's Yun al-Anba fi Tabaqat al-Atibba' medical index, and Ibn Juljul's Tabaqat al-Atibba wal-Hukama' index book of Muslim Spain. Even so, bibliographers and scientists of the present day for the Islamic sciences, including George Starton, George Makdisi, John Makdisi, Carl Brockel Mann, and Fuat Sezgin, identified and mentioned research works, written books, and valuable manuscripts of Muslim scientists up to the 13th century (Mustafa, 1990).

According to Algeriani and Mohadi (2017), in Bait al-Hikmah, each collection was housed on a separate shelf. When there was a precise cataloging method of book titles and manuscripts, books inside the house of wisdom were indexed in the same way as in modern-day libraries. Books inside the house of wisdom were indexed accordingly, in the same way as in modern libraries when there existed a precise cataloging method of book titles and manuscripts.

With a scholarly approach and skill in documentation, Al-Nadim laid the foundation of the 'Science of Cataloging' in this work. Al-Fihrist is regarded as the first standard subject-wise 'catalog' covering all areas of knowledge.

According to Jim (2011) Ibnul Abrar wrote in the book 'Takmila li Kitabis Silah,' At that time, the number of index books containing the list of books in the library was 44 volumes.

## **2.12 RESEARCH WORK IN THE LIBRARY**

The Bait al-Hikmah in Baghdad was a well-known library and a center for research. One of the floors of the Library is only used for high research work. Bait al-Hikmah has remarkably adapted to the culture of scholarly research. Researchers from many fields cooperated on discoveries and scientific data while researching Greek, Persian, and other languages. According to Nancy (2011), the House of Wisdom was built to promote modern scientific research and technological investigation, to produce scholars,

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and to develop Muslim scholarship. Bait al-Hikmah had researched in a variety of languages and almost every subject. Language matter research included Sanskrit, Persian, Greek, Latin, Zend-Avesta, Hebrew, Aramaic, Spanish, Syriac, and Coptic. The subject matter of research and study initially was philosophy and theology in the Library. Later, subjects such as science, mathematics, medicine, algebra, trigonometry, geography, chemistry, physics, optics, biology, engineering, and astronomy were studied over time.

During Mamun's time, its research activities grew so much. He built independent thematic laboratories. This intellectual research center gathered many translators, scientists, philosophers, writers, and intellectuals. According to the area of knowledge, the center opened various sections. The library's research center allowed scholars and scientists to pursue their research on higher education. Thus, the House of wisdom became the leading center of knowledge in the history of Islam (Aman, 1962).

Scientists in this research center were engaged in relentless research, observation, and writing day and night. For centuries, India, China, the Middle East, Africa, Europe, and other essential parts of the world have been used to gather knowledgeable people to practice knowledge in this research center. Its researchers were the greatest thinkers and scientists of the age.

Ja'far Muhammad Ibn Musa Ibn Shakir, Al-Kindi, a translator of Aristotle's works, Hunayn Ibn Ishaq, Sahl Bin Harun, Thabit Bin Fera, Umar Bin Farukhan Al Bibar, the distinguished mathematician Al Khayrizimi, and others were notable in the library. The research center allocated separate rooms for scientists, researchers, editors, annotators, manuscript writers, and their associates. Al-Kindi produced more than 260 volumes, significantly contributing to physics, geometry, medicine, philosophy, and logic. However, most of his creations have vanished over time (Humairaa, 2016). Gerard of Cremona, an Italian who translated scientific literature from Arabic into Latin, preserved some of his great works (Bsoul, 2019 & Adamson, 2006).

### **2.13 OBSERVATORIES AND SPACE RESEARCH CENTERS OF THE BAIT AL-HIKMAH**

One of the subjects of Bait al-Hikma was the establishment of observatories and space research centers. Wilkins (1994) mentioned library was well organized, having different sections for different tasks, including an astronomical observatory for astronomical research. The observatory was directed by the scholars of the House of Wisdom, and many, including the senior astronomer, Yahya ibn Abi Mansur, and the younger, Sanad ibn Ali al-Aliyahudi, were engaged in research and space observation at the observatory, which was very different from the Indians, Greeks, and Persians. Muhammad al-Idris was a famous Arab geographer who worked and served in the observatory and contributed to world maps.

The astronomical research facility was constructed by Al-Ma'mum around 800 (Jim, 2011). It was intended to carry out cutting-edge scientific research (Nancy, 2011). Mohammad Musa, with his brothers Ahmad and Hasan, contributed to studies in the House of Wisdom and worked in the astronomical observatories under Abbasid Caliph Al-Ma'mun (Josep, 2017). According to Meri and Jere (2006), the new Astronomical Observatory has been appended to the newly relocated library to facilitate the progress of major research projects involving a team of astronomical scientists.

Algeriani & Mohadi (2017), for instance, observed an image called Al-Sura al Ma'muniyyah (picture of al-Mamun) at the observatory that was created by several academics during the reign of al-Ma'mun. It depicts the entire world, including the sun, moon, planets, land, oceans, and populated areas of different countries. A wide range of astrologers from around the world and from different religious backgrounds studied planets, stars, and astrology. Such cutting-edge equipment in a library from that time is undoubtedly admirable. Inside the observatory, they got maps of different countries, city photos, astronomy, space-related images, etc.

### **2.14 MULTIPURPOSE HALL**

A hall in the library was for lectures, debates, and intellectual discussions on various religious, scientific, and philosophical topics. Inside the library was a large multi-purpose hall that served as a meeting place for men of literature, science, cultures, religions, etc (Attallah, 1989). The caliph called for munajarah (debates) in the library to discuss and solve contemporary problems. The caliph invited renowned scholars, philosophers, and researchers to the library on specific topics and paid them handsome fees. Caliph arranged debates among the scholars in the library, which would have opened the door to knowledge (Dimitri,1998). Al Ma'mun was a man of letters and knowledge, to whom he took great interest and support in their debates and invited them to the library (Aman, 1962). The library was a major center of the debate, thought, and research on Muslim civilization. The caliph commissioned experts to rewrite ancient writings and translate them into Arabic so scholars could understand and discuss unexplained accounts and adequately classify them (Lyons, 2009). Al-Ma'mun was personally involved in the daily life of the House of Wisdom, regularly visiting the scholars and participating in academic debates. Al-Ma'mun loved pursuing knowledge and regularly initiated discussion groups and seminars for philosophical debates between theologians and experts. During such debates, scholars discussed their fundamental Islamic beliefs and doctrines in an open environment. The famous Persian philosopher Jafar was among them (Brentjes & Morrison, 2011). According to JOHNSON (2021), In the House of Wisdom, where there were frequent open debates between the Christians, the Muslims, and the Jews, Hunaun bin Ishaq was a Muslim debater who defended until the end.

### **2.15 ACCOMMODATION**

The library had adequate accommodation for the residents. It was another part of the beautiful management of Bait al-Hikmah. The accommodation was provided to the researchers and employees especially those from outside. The upper floor housed residents such as author, translators, students, and employees (Ghanima, 1953). Rooms were also allocated for researches, editors, annotators, manuscript writers, and their associates.

### 3. CONCLUSION

Bait al-Hikma contributed to constructing a modern library through appropriate decoration and good management. Bait al-Hikmah had excellent facilities for the staff, researchers, scholars, readers, and administrators. Bait al-Hikmah opened new horizons for knowledge and intellectual practice in the Muslim world, and the modern concept of research in knowledge practice emerged. Bait al-Hikmah was the first and most extensive well-organized library in the history of Islam and the entire world. At a time when the rest of the world was still at the primary level, Bait al-Hikmah was far ahead of all others with its advanced facilities. The Bait al-Hikmah's fine facilities continue in today's modern library. Bait al-Hikmah played an essential role in developing and shaping modern libraries. The contemporary university libraries are modern-day examples of Muslim Bait al-Hikmah's influence.

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