

**CHRONOLOGICAL ARRANGEMENT OF HADITHS: A PROPOSAL FOR A
SOFTWARE-BASED PROPHETIC BIOGRAPHY**

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Abstract	<p><i>In the past, huge efforts were made in writing the biography of the Prophet Mohammed, peace be upon him, to draw lessons from his life. But in fact, we find that the well-known Sīrah books present his biography in the form of important events and facts in a chronological sequence by collecting the events that occurred in a particular year or in certain months of his life. The hadiths of the Prophet constituted an essential source for writing the biography of the Prophet, especially those that relate to specific events. But the question that remains is: Did we benefit from all or most of the hadiths in writing the biography of the Prophet? Is it possible to take advantage of the abundant number of authentic hadiths for a new, more accurate, and more detailed Sīrah of the Prophet's biography? This research aims to put forward a huge project that represents an initiative to rewrite the biography in a more detailed chronological order than it is now. The proposed methodology is based on benefiting from computer software in the chronological order of the authentic hadiths and thus including them in the books of the Prophet's biography to give a more detailed presentation and be closer to practical application and deriving legal rulings from his biography. The researcher presented a practical proposal to arrange the hadiths of the Prophet according to a chronological sequence. The researcher also proceeded to apply this proposed method to one of the hadiths of Ṣaḥīḥ al-Bukhārī (as an example to clarify the idea), through which the researcher was able to reduce the period of possibility for the hadith to be received and reduce it from more than ten years to a period not exceeding tens of days. Therefore, it can be concluded that the proposed algorithm can be applied to rewrite the biography of the Prophet P.B.U.H.</i></p> <p>Keywords: <i>Computational, Historiography, Sunnah, Sīrah, Software.</i></p>
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INTRODUCTION

The importance of the Sunnah of the Prophet cannot be denied, as it is the second source of Islamic legislation (*Sharī'ah*) after the Holy Qur'an. There is a large number of writings related to the biography of the Messenger Muhammad (P.B.U.H) "*Sīrah*", by studying the important facts and events that occurred in his life. These valuable references about the Prophetic biography are worth studying as it enables us to draw lessons from his life (P.B.U.H). The majority of Prophetic biographies are presented in the form of important events and incidents that took place during and before the mission of the Prophet, in a chronological manner. Typical biographies present events that took place in a certain year or in a certain month during the life of the Messenger Muhammad (P.B.U.H), in chronological manner but with wide range of periods (years, or months at most). Qur'an and Prophetic Hadiths represent an important biography source - if not the most important- besides literature that focus on holly battles and evidences of prophecy.

Despite the importance of hadith books as a source of writing Prophet biography, hadiths were not fully utilized for this purpose. This research aims to making use of the abundant amount of Hadiths to rewrite the Prophet's biography in more detailed (with narrow time gap between incidences) so that we link the Prophet's daily life -if possible- in a chronology manner without missing important events and incidents presented in typical *sīrah* books. This accurate chronology will give a new understanding of the Prophetic biography and Sunnah. It will also help us learn more about the daily life of the Prophet (P.B.U.H) and link hadiths of the Prophet's (P.B.U.H) to events and circumstances in which hadiths were narrated. By doing this, we are thus also giving a more lively and realistic example of following the Messenger and imitating him. An interdisciplinary branch of computer science called data mining deals with techniques from the fields of artificial intelligence, machine learning, and database systems.¹ Data mining techniques were recently used in humanities as well as in the field of Islamic studies, such as: classifying and reclassifying results, modeling the interdependence of variables and clustering results into meaningful subgroups. Hence, data mining has great potential to be applied in the proposed project of this article to utilise advancement in data mining in extracting data or seeking knowledge from this massive hadith documentations.

RESEARCH OBJECTIVES

Propose an algorithm which can be used in developing computer software to arrange Prophetic Hadiths in order to rewrite the Prophetic biography in more detailed manner.

RESEARCH ELEMENTS

1. Highlighting the general approach of well-known *sīrah* books that present the chronological recording of the Prophet's biography.
2. Identifying the elements that help in rewriting the Prophetic biography in a more detailed manner than it is today.
3. Generating a flowchart which can be used to develop algorithm for automatic generation the Prophetic biography using software.
4. An applied example taken from Ṣaḥīḥ al-Bukhārī.
5. Hypotheses and problems associated with the proposed method presented in this research.

PRESENTATION APPROACH IN WELL-KNOWN PROPHETIC BIOGRAPHICAL BOOKS

There are well-known Prophetic biographical books which include for example; *al-Sīrah al-Nabawiyyah* 'The Life of the Prophet' by Ibn Hisham, *al-Bidāyah wa al-Nihāyah* 'The Beginning and the End' by Ibn Kathīr, The History of the Prophets and Kings, more commonly known as *Tārīkh al-Ṭabarī* written by the famous historian Muhammad ibn Jarīr al-Ṭabarī, Ibn Ishāq major book: *al-Mubtada' wa al-Ba'th wa al-Maghāzī*, and *ar-Rahīq Al-Makhtūm* on biography of the Prophet, which was written by Safiur Rahman Mubarakfuri. Looking at these famous Prophetic biographical books and similar ones that follow a chronological method in writing *Sīrah*, we find that the topics in these books are very close. However, topic coverage varies from one to another, as some books make brief references to the most important events. In contrast, others elaborate more on details regarding topics related to the Prophetic biography. Prophetic biographical books that follow the chronological method also differ in that some may address events and situations that are not discussed in others. Some of the most important topics of the Prophetic biographical books that follow a chronological manner are:

- Pre-Islamic era and the political, social, and religious situation in the Arabian Peninsula.

¹ Azhari et al. (2023). *Deep learning implementations in mining applications: a compact critical review*. Artif Intell Rev, 1-5.

- The world's political, social, and religious situation.
- Important events before the Prophet's mission (P.B.U.H), focusing on the period between the Prophet's birth (P.B.U.H) and his mission. This period includes various events such as the death of his parents and grandfather, his infancy, signs of prophecy, his marriage, the building of the Kaaba, Hilf al-Fudul, etc.
- The post-mission period in Mecca includes several events such as the Prophet Muhammad's first revelation (P.B.U.H), secret invitation, first Muslims, the Meccan boycott of the Hashemites by the Quraish, Quraysh's harming of the Prophet (P.B.U.H) and Muslims, the death of his uncle and his wife Khadija, migration to Abyssinia, a trip to Taif, Isra' and Mi'raj, the first and second pledge at al-Aqabah, and Hijrah to Medina.
- The post-mission period in Medina includes topics such as the city's status before the Prophet's arrival (P.B.U.H), how Medina's people received the Prophet, building mosques, the Brotherhood between Muhajirun, and Ansar, his attitude towards Jews in the city. Also, the dealing of the city hypocrites and imposing jihad, battles, invasions and what happened through it, his invitation to the princes and kings, treaty-making and delegations to the city, Conquest of Mecca and Farewell Pilgrimage, and his death.

IDENTIFICATION OF THE ELEMENTS THAT HELP IN REWRITING THE PROPHETIC BIOGRAPHY IN A MORE DETAILED CHRONOLOGICAL MANNER

We can utilize all authentic Hadiths to establish a general plan that enables us to rewrite the Prophetic biography in a more detailed manner than it is today. Elements that could assist in this process include:

Timing Reduction Using Biography Of The Prophet's Companions Who Narrated Hadiths

This step involves knowing the biography of the Prophet's companions (which already exist in the literature) such as; information about their lives, the time of their conversion to Islam, the periods in which they accompanied the Prophet (P.B.U.H), and the events and incidents in which their names were mentioned. For example, it is quoted in one of the famous companion biography that Abu Hurayrah converted to Islam in the 7th year A.H in Khaybar.² It was stated in Abu Hurayrah's section (God be pleased with him) that: "*He came to Khaybar (month of Khaybar) in 7th A.H. It is also known that Khaybar was in Safar which is the second month of the Islamic (hijri) calendar. Meanwhile, we know that the Prophet (P.B.U.H) died in Rabi' al-Awwal which is the third month of the Islamic (hijri) calendar in the 11th year A.H, which means that Abu Hurayrah accompanied the Prophet for four years. This information about the period of companionship was also confirmed by Hamid bin Abdul Rahman al-Humairi*".³

On the other hand, it was reported that Abu Hurayrah wrote that he accompanied the Prophet for three years only.⁴ This reporting makes the four years estimation more acceptable. Abu Hurayrah is known as one of the great narrators of Hadiths and the most prolific narrator of hadith as he narrated few thousands of hadiths. Although Abu Hurayrah continued collecting hadith after the death of the Prophet, but there are many narrated hadiths indicate the presence of Abu Hurayrah such as hadiths start with "I have seen", "I heard the Prophet", ... etc. All these reported events and sayings of the Prophet can be classified and dated within those last four or three years of his Prophet's life. Hence, we can classify all those large number of hadiths narrated by Abu Hurayrah, which indicate his presence during the hadith, within that period (the second month of the Islamic [hijri]

² Ibn 'Abd al-Barr. (1415H). *Al-Isti'ab fi ma'rifat al-ashab*, 2, 69.

³ Ibn Hajar. (1991). *Fath al-Bārī*. Bayrut: Dār al-Rayyān, Vol. 6, 608

⁴ Hadith. Al-Bukhārī. Bab 'alāmat al-nubuwwāt fi al-Islām. No. 3591

calendar 7th A.H and the 3rd month of the Islamic [hijri] calendar in the 11th year A.H.). There are -for example-other, companions of the Prophet who died in The Battle of Uhud, which means that many of the Hadiths they narrated can be associated with the period before the date of Uhud (Shawwal of the 3rd year A.H) ⁵, and so on.

Timing Approximation Using Revelation Time Of Qur'anic Verses Related To Occasions Or Circumstances Of Revelation (*Asbāb Al-Nuzūl*)

This process can be illustrated with the prayer *ibadah*. For example, the hadiths that relate to prayer, we know that they were mentioned after the imposition of prayer (i.e., after the event of the Isra' and Mi'raj), as well as those hadiths that relate to ablution (which precede the prayer), and so on. Also knowing the times of revelation of verses related to important events can also give us indication about the time span of the hadiths related to these events (e.g. prayer, fasting, pilgrimage, jihad, ...etc). In other words, the hadiths that talk about a specific incident and were mentioned in the Qur'an, we can determine the time of these hadiths by knowing the time of revelation of the verses related to the incident. For example, if we know the time of the revelation of the verses of surath al-Nur that talk about the incident of *Ifk*, we can relate all the hadiths on this subject to the period of revelation of the verses.

Approximating Time By Intersection

That is, we look if a number of companions narrated a specific hadith with one meaning, but in different ways, this gives a great possibility of their meeting at the time of mentioning the hadith or the action of the Prophet (P.B.U.H). But, if the hadith was repeated at different times, the synchronization is inconsistent. For example, if we know that companion A narrated a specific hadith, and A accompanied the Prophet (P.B.U.H) from the first year Hijra until the eighth year of Hijra. If the same hadith was narrated, for example, by Abu Hurayrah, whom we know that he accompanied the Prophet (P.B.U.H) from seventh year of hijra until the death of the Prophet, then this means that the hadith/event took place in the seventh or eighth year of Hijra, because Abu Hurayrah didn't accompany the Prophet (P.B.U.H) before the seventh year, or that during the period before the seventh year in which A has accompanied the Prophet (P.B.U.H).

Also, if several companions narrated a particular Hadith/event with same meaning but in different ways, it gives a great possibility of them meeting together when Hadith/event took place and we can try to do more approximation by knowing the common dates they were accompanying the Prophet (P.B.U.H). That means we can omit several years if we know the companionship period of several narrators of the same Hadith.

On the other hand, this approach can also be used in checking validity and authenticity of Hadiths. Thus, it is always helpful to know -whenever possible- biographies of companions (e.g. when narrators converted to Islam, what period they accompanied the Prophet, death time, ...etc).

Approximating Time By Linking Hadiths To Incidents

If a group of companions narrated a hadith about a specific incident, and they narrated another hadith that is not directly related to the incident, then the repetition of their narration of the other hadith may necessitate its occurrence in the same time period as the first hadith. This is taking into account that they did not narrate a lot of hadiths, because large number of narration makes the possibility of their narration of several hadiths coming together a possibility and probable. It will also be better if we start of the groups of companions who don't have large number of narrations.

⁵ Wahid Bali. (2007). *al-Khulāṣah al-Bahiyyah*. Dar Al Fikr, 37.

Approximating Time By Adding Poor-Narration Companion's Hadith

If a group of companions narrated different hadiths and we know the time of their occurrence and one of them narrated another hadith (or other hadiths), then this other hadith/hadiths can be appended to the same time period for the common hadiths, given that this companion is not known of high narration (poor-narration companion). The justification is that, it is possible that the hadith was mentioned in the same period, but the rest did not narrate it for one reason or another. This is still week possibility.

Reflecting on Hadith

Reflecting on a hadith helps us know whether the hadith gives any information regarding the time at which it took place and whether it may relate to a particular incident in time. An example of that would be Hadith, narrated by al-Bukhārī. Zaid bin Khalid (R.A.) said: The Messenger of Allah (P.B.U.H.) led the Fajr prayer at al-Hudaybiyyah after rainfall during the night. After prayer, he turned toward the people and said, "Do you know what your Lord has said?" They replied: "Allah and His Messenger know better." Upon this, he remarked, "He has said: 'Some of My slaves have become this morning as believers and some as unbelievers. He who said: We have had a rainfall due to the Grace and Mercy of Allah, believes in Me and disbelieves in the stars; and he who said: We have had a rainfall due to the rising of such and such star, disbelieves in Me and affirms his faith in the stars'.⁶ Although this hadith may not be mentioned in the Prophetic biographical books regarding 'The Treaty of Hudaybiyyah' because it tells nothing about it, it is clear that it occurred at that time and can therefore be classified within that specified period.

ESTABLISHING A GENERAL PLAN FOR REWRITING THE PROPHETIC BIOGRAPHY AND FLOWCHART FOR THE SOFTWARE DEVELOPMENT

This general plan includes two main steps; gathering all the information needed to complete the task and then developing ranking procedure based on the time of occurrence of an event/hadith.

Information Gathering

We can start by working on a famous Hadith book, Ṣaḥīḥ al-Bukhārī, for example, as follows:

1. Listing all companions' names who narrate al-Bukhārī's Hadiths.
2. We get acquainted with their biographies to find out details that are useful in determining the time at which they narrated their hadiths, such as the time of their conversion to Islam, the time of their death, the period they accompanied the Prophet (P.B.U.H), and any other information that is useful in giving any timing indication.
3. We repeat the previous step for all the narrators among the Companions (from famous and authentic books other than Ṣaḥīḥ al-Bukhārī such as Ṣaḥīḥ Muslim, Musnad Ahmad,....etc) and put that in a database because we will later need to know information about the *al-Mutāba'āt* and *al-Shawāhid*. *Al-Mutāba'āt* referred to the similarity of utterances or meanings of hadith among the reporters. The reporters shared the same teachers (first *rāwī* or first narrator in the narrators chain). A reporter serves as *al-Mutabi'* to other reporters who have the same Hadith and teacher (first *rāwī*). *Al-Shawāhid* refers to the similarity of utterances or meanings of hadith among the Prophet's companions. This indicates that the Hadith was reported by more than one companion. A companion serves as the *Shāhid* to another companion.⁷

⁶ Yahyā an-Nawāwī. *al-Nahy 'an Qawl al-Insani: Matarina Binaw' Kadha*, Book 17, no. 1731. Sunnah.com. Riyad-us-Saliheen: The Book of the Prohibited actions. <https://sunnah.com/riyadussalihin>

⁷ Nor Hanani Ismail. (2018). *The Use Of Naqd Hadith Method To Establish Data Validity: A Conceptual Analysis*. The Journal of Social Sciences Research Special, 6, 232.

4. Extracting hadiths related to acts of worship "Ibadat" or rituals "Sha'air", and then relate those hadiths to the time for imposing these acts of worship and rituals, such as prayer, zakat,... etc.
5. We can know the time of significant events, incidents, and battles in the Holy Qur'an by tracing Ibn Hisham's biography, for example, or *al-Bidayah wa al-Nihayah* by Ibn Kathīr, or any authentic series of Prophetic biographical books that provide the dates of those events.

Time-Ranking Steps

To arrange events according to the time constraint, we can carry out the following steps.

1. Arrangement according to the narrators: We begin by placing the hadiths in a preliminary order (according to the conversion of the narrator to Islam, the period he accompanied the prophet, and the time of his death). For example, all hadiths narrated by Abu Hurayrah can be placed after the 2nd month of year 7AH (after his conversion to Islam at the time of Khaybar battle). This means that all hadiths narrated by Abu Hurayrah took place after that date without knowing until this point in which year after 7 AH. It could be 7th, 8th, 9th, 10th, or 11th. We can give every Hadith mentioned in Ṣaḥīḥ al-Bukhārī a code that contains six digits. (a) (b) (c) (d) (e) (f). (a), (b), and (c) represent the earliest day, month, and year in which Hadith may have been narrated (the day, month, and year of the companion's conversion to Islam -for example- or the beginning of his companionship to the Prophet (P.B.U.H) if possible, which is better than the time of his conversion since it will be more accurate. For example, if a narrator converted to Islam in the 8th year but he only met the Prophet (accompanied him) after 10th year, then we are going to select the 10th year since it will give shorter time-span. If it is not possible to know the date of companionship, then the time of his conversion to Islam is to be noted. (d), (e), and (f) represent the farthest day, month, and year in which the hadith could have been narrated (the day, month, and year of the companion's death, or the date of the death of the Prophet, if the companion died after him). The time span can be shortened further if we know the time during which the narrator was not accompanying the Prophet. By doing so, we will know the time of each Hadith in a more confined manner, but it may be within a large time sphere such as many years or months. So the following tasks are to shorten these periods gradually.
2. Knowing the times of Ibadat, such as prayer, fasting, zakat,..etc. It should be noted that many Hadiths regarding Ibadat may not be included in the Prophetic biographical books, but only in jurisprudence books "Fiqh books". It is worth noting that this is a huge source that can be utilized in rewriting the biography of the Prophet. By noting down the times of Ibadat whether from the Sunnah or from the Qur'an, we can use the dates with the process mentioned in the previous step to further shorten the time span of hadith/event. For example, if we used step.1 to shorten the time span of a hadith and it was found out to be 15-01-7 AH to 15-1-11 AH, and we know the hadith is about how to do pilgrimage. Since we know that the Prophet conducted pilgrimage after 25th of month 11 in year 10, then we can shorten the first time span from 15-01-7 AH to 15-1-11 AH to the span 25-11-10 AH to 15-1-11 AH. If Hadith is related to any of the Fard and Ibadat that we know the time of their imposition, it gives us a chance to replace the first, second, and third digits that we gave to each Hadith with (a*), (b*) and (c*) whereby a* is less than a, b* is less than b, and c* is less than c. By doing this, we reduce the first range with a smaller one regarding a large number of Hadiths, but not all of it because not every Hadith is associated with a Ibadat.
3. Establishing a database for companions, containing the all periods in which they may have accompanied the Prophet (P.B.U.H), and it could be more than one period. This will also help us in reducing the time span of when the hadith took place.
4. Using *al-shawāhid* hadiths to shorten the time span of the hadith. *Al-shāhid* means that the hadith comes with its wording or meaning from another companion, so if you have

a hadith of Abu Hurayrah and a hadith with its meaning or wording comes from the hadith of Anas or from the hadith of Ibn Omar, then this is called *al-shāhid*, so it is required for the *al-shāhid* that the companion be different. This indicates that the hadith was reported by more than one companion even if it is by close wordings and meaning. A companion serves as the *al-shāhid* to another companion. Now comes another issue of how to point out if the hadith is *al-shāhid* or not? And how much two hadiths are similar or almost similar. To do this we can apply artificial intelligence by selecting a percentage of the similarity in hadith's main text, and ask the software to point out all the hadiths that have similar meaning or slightly different wordings. We can do a computer search of all available Hadiths (by selecting a specific set of Hadith books as database, like the nine Ṣaḥīḥ hadith books). We can set the percentage of analogy (80% or 90%, for example). Then the computer will extract all Hadiths that are *al-shawāhid* based on the percentage of similarity set by us. It should be noted that there are many available web-based sources with extensive databases, so using such database will make the research process much easier. Examples of such web-based sources include: Encyclopedia of Hadith,⁸ which is a comprehensive encyclopedia contains 1400 sources of hadeeth in addition to biographies of 70,000 narrators of the hadith. Aldorar Alsaniiyah⁹ which consists of a vast database that can be very helpful, hadith books from *Shamela*.¹⁰ There are also several websites that contain lists of many companions of the Prophet (P.B.U.H), which can be used to know during which period the companions who narrated Hadiths accompanied the Prophet (P.B.U.H). Examples of such sites include: Islam Story website¹¹, and companions of the Prophet website.¹²

There are also number of well-knows resources for biographies of companions such as

- Ibn Ḥajar al-‘Asqalānī, Aḥmad bin ‘Alī. 1415H. *al-Isābah fī Tamyīz al-Ṣaḥābah*. Ed. Adil Abd al-Mawjud and Ali Muawwad (In Arabic). Bayrut: Dar al-Kutub al-‘Ilmiyyah.
- *Usd al-Ghābah fī Ma‘rifat al-Ṣaḥābah*, commonly known as *Usa al-Ghābah*, is a book by scholar ‘Ali ibn al-Athīr.
- Ibn ‘Abd al-Barr, Abū ‘Umar Yūsuf bin ‘Abdullāh, al-Qurṭubī. 1415H. *al-Isti‘āb fī ma‘rifat al-aṣḥāb*. Tahqīq: ‘Ali Muhammad Moawwad and Others. Bayrut: Dar al-Kutub Al-Ilmiyyah.
- *Siyār A‘lām An Nubalā’* written by famous Islamic scholar and historian Imam Al-Dhahabī.

Data mining is a set of processes by which knowledge is extracted from huge amounts of data. There are successful application of data mining in the field of hadith studies,¹³ Islamic biographies,¹⁴ Islamic law¹⁵ and Arabic text mining in general.¹⁶

⁸ Islamweb.com. Islamic library. <https://www.islamweb.net/ar/library/index.php?page=booklist&subject=1>. (accessed on 1-07-2023)

⁹ Dorar.net . almawsueat alhadithia. <http://www.dorar.net/enc/hadith>. (accessed on 1-07-2023)

¹⁰ Shamela.ws. <https://shamela.ws>. <https://shamela.ws/category/6>. (accessed on 1-07-2023)

¹¹ Islamstory.com. Almaktaba. <https://islamstory.com/ar/cat/247>. (accessed on 1-07-2023)

¹² Sahaba.rasoolona.com. sahabat rasul allah. <https://sahaba.rasoolona.com> (accessed on 1-07-2023)

¹³ Saloot, M. A., Idris, N., Mahmud, R. et al. (2016). *Hadith data mining and classification: a comparative analysis*. *Artif Intell Rev*, 46, 113–128; Beriḥan R. Elemery. (2020). *The Effect of Clustering Classification and Pre-processing of Text on Improving the Accuracy of Hadith*. 2, 1, Part 1, 550-560; H. M. Abdelaal, B. R. Elemery & H. A. Youness. (2019). *Classification of Hadith According to Its Content Based on Supervised Learning Algorithms*. *IEEE Access*, 7, 152379-152387.

¹⁴ Hadeel, S., Emad, M., & Raheem, S. (2023). *Towards a Better Understanding of Tarajem: Creating Topological Networks for Arabic biographical Dictionaries*. *Journal of Data Mining & Digital Humanities*. 2, 1-5.

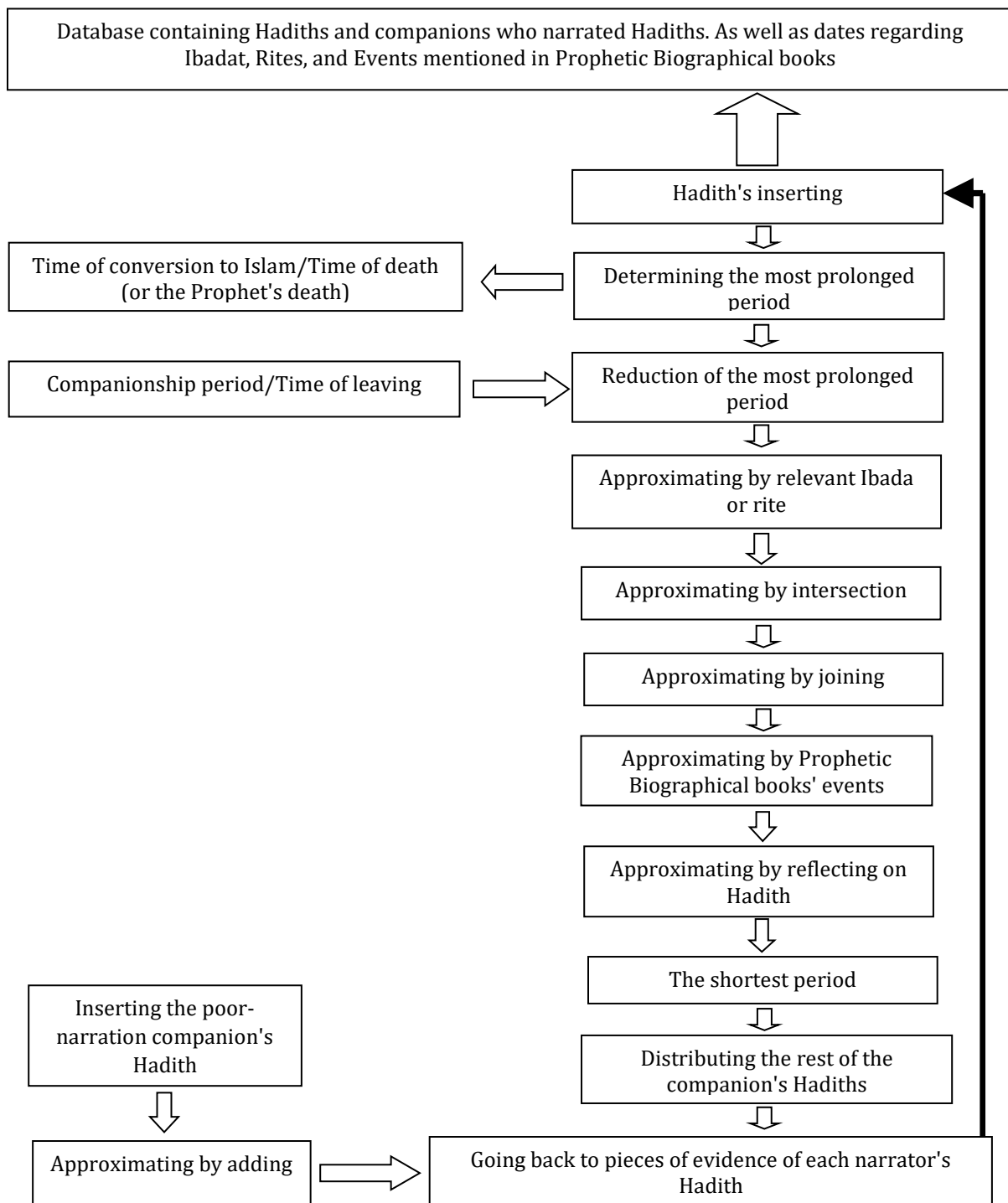
¹⁵ Christian Lange, et al. (2021). *Text Mining Islamic Law*. *Islamic Law and Society* 28, 234-281

¹⁶ Nur Alifah Roslan, et al. (2022). *Systematic literature review and analysis for Arabic text steganography method practically*. *Egyptian Informatics Journal*. 177-191.

5. Approximation by intersection: If the hadith was narrated by a group of narrators with similar wording, then we look at the periods of companionship of the narrators and we consider that the hadith occurred in the least period of time of the narrators. Here we ask the computer to compare the time periods of all narrators of similar hadiths and take the minimum time range. The numbers given for the particular hadith are then replaced by the numbers of the similar hadith from the evidence.
6. Approximation by common narrators: It is to collect the hadiths that we know the exact time of their occurrence, and we ask the computer to display all the narrators of the known hadith and its time, and then we ask the computer to search for the hadiths in which these narrators or a group of them participated (for example, three or more). Hence, we can append the period of occurrence of these hadiths to the previous known period.
7. Approximation by addition: by which we mean adding the hadith of the Companions who narrated very few hadiths to specific incident of time. Here we identify the hadiths of the narrators who narrated two hadiths for example or a little more, and then search whether any of these hadiths has a known time, and thus the other hadith (or other hadiths) can be assigned to the same known time, since there is high possibility that the hadith/s of unknown time occurred at the same time of the hadith that we know its time.
8. Approximating time by reflecting on the Hadith itself. As an example, the hadith of “ *The rain was because of a certain star....etc*” is mentioned in the hadith books under the chapter of “Chapter of Omens” or “Chapter of Praying for Rain (*al-Istisqa*)”. If some one read the hadith carefully, it was mention at the beginning of the hadith that the Prophet led Subh prayer at Hudaibiyyah after it had rained on them during that night, which clearly indicate the it took place during the time of Treaty of Hudaibiyyah.
9. One could also start vice versa by adding hadith to the existing Prophetic and companions' biographies, where we can add more details. This means fitting the hadiths that we have come to know their times of occurrence to existing historical/biographies books such as *al-Bidāyah wa al-Nihāyah*, Ibn Hisham's biography, where more details/events (hadiths) can be added.
10. For the ease of conducting this huge work, one can begin by researching the companions who accompanied the Prophet for short periods or converted lately to Islam because it will be easier to determine the periods of Hadiths they have narrated. We then move to the *al-Shawāhid* of their hadiths to know who might have accompanied them from other companions. Hence we can move to hadiths narrated by other companions who have more records of hadiths.

The following chart sets up a preliminary algorithm to determine the times of Prophetic Hadiths.

Flow-chart 1: Determination of Hadiths' period



AN APPLIED EXAMPLE TAKEN FROM ṢAḤĪḤ AL-BUKHĀRĪ

Step 1: Hadith Inserting

The author selected the first Hadith from the book of Faith in Ṣaḥīḥ al-Bukhārī for demonstration purpose.

Ibn ‘Umar reported God's messenger as saying, “Islam is based on five things: the testimony that there is no god but Allah and that Muhammad is His servant and messenger,

the observance of the prayer, the payment of zakat, the Pilgrimage, and the fast during Ramadan".¹⁷

Step 2: Determining the Most Prolonged Period

Since the narrator is Abd Allah ibn Umar, he was reportedly born after the Prophet's mission for a short time and he was 14 years old in The Battle of Uhud, and died at the end of the 73rd A.H.¹⁸ Therefore, the most prolonged period may span more than ten years, ending with the Prophet's death (P.B.U.H). So we need to reduce the period by examining Hadith's connection with an *Ibada* or a rite.

Step 3: Approximating by Ibadat or Rites

When examining Ibadat and rites mentioned in Hadith, we notice that Hadith said a prayer, zakat, fasting, and pilgrimage. This means that the hadith took place after the imposition of all those Ibadat. Prayer was imposed in Mecca before Hijra in Isra' and Mi'raj, Zakat was charged in the 2nd year A.H, fasting during Ramadan was charged in Sha'ban of the 2nd year A.H in Medina as well, and finally, pilgrimage was imposed in Hudaibiyyah in the 6th year A.H.¹⁹ We conclude that this Hadith was mentioned after Hudaibiyyah (Dhu al-Qadah of the 6th year A.H).

Based on this step, we can reduce the previous period -which spanned more than ten years- to almost four years, from the Treaty of Hudaibiyyah to the Prophet's death (Dhu al-Qadah of the 6th year A.H to date of the death of the Prophet on 12 of Rabi' al-Awwal of the 11th year A.H).

Step 4: Listing All Other Similar Hadith's Narrators (Percentage Of Similarity For Checking Other *Al-shawāhid* Can Be Set To 90%, For Example)

The following are four Hadith narrators who reported almost the same hadith about pillars of Islam:

1. 'Abdullāh Ibn 'Umar (The Previous Hadith's Narrator)

Ibn 'Umar reported God's messenger as saying, "Islam is based on five things: the testimony that there is no god but God and that Muhammad is His servant and messenger, the observance of the prayer, the payment of zakat, the Pilgrimage, and the fast during Ramadan."

2. Jarīr ibn 'Abdullāh al-Bajalī

Jarīr ibn 'Abdullāh al-Bajalī reported God's messenger as saying, "Islam is based on five things: the testimony that there is no god but God and that Muhammad is His servant and messenger, the observance of the prayer, the payment of zakat, the Pilgrimage, and the fast during Ramadan".²⁰

3. Abū Hurayrah

Abū Hurayrah reported God's messenger as saying, "Islam is based on five things: the testimony that there is no god but God and that Muhammad is His servant and messenger, the observance of the prayer, the payment of zakat, the Pilgrimage, and the fast during Ramadan".²¹

4. 'Abdullāh Ibn Mas'ūd

'Abdullāh ibn Mas'ūd reported God's messenger as saying, "Islam is based on five things: the testimony that there is no god but God and that Muhammad is His servant and messenger, the

¹⁷ Hadith. al-Bukhārī. *Bab du'awukum 'imānukum*". No. 1.

¹⁸ Aḥmad ibn Ḥajar al-'Asqalānī. (1995). *Taqrib al-Tahdhib*. 528.

¹⁹ Wahid Bali. *op.cit*, 37.

²⁰ Sulaymān at-Ṭabarānī. (1997). *Al-Mu'jam al-Saghīr*. Dar Al Fikr. Part 2, 8.

²¹ Aḥmad al-Baghdādī. (1997). *History of Bagdad*. Dar Al-Kutub Al-Ilmiyyah, 463

observance of the prayer, the payment of zakat, the Pilgrimage, and the fast during Ramadan".²²

Step 5: Reducing Period By Intersection

Here we look at the periods of companionship of the narrators in step 4 and we consider that the hadith occurred in the least period of time of companionship. This is done by comparing the period of narrators' conversion to Islam to their death date or to the death date of the Prophet (P.B.U.H) in case one of them died before the Prophet. We then consider the shortest period of time. Looking at the biographies of the above four companions who narrated the hadith: 'Abdullāh ibn 'Umar, Jarīr ibn 'Abdullāh al-Bajalī, Abū Hurayrah, and 'Abdullāh ibn Mas'ūd, one can search their companionship of the Prophet and consider that hadith took place during the shortest period of time. In case that we couldn't know their companionship periods, one can search for their conversion to Islam date. By doing so, we find that the one who accompanied the Prophet the least is Jarīr ibn 'Abdullāh.

After carefully examining Jarīr's biography, we discover that it was reported that he converted to Islam 40 days before the Prophet's death.²³ This has been confirmed by Ibn 'Abd al-Barr.²⁴ Therefore we can assure that the hadith took place with 40 days before the death of the Prophet, between second day of the 2nd month (Safar) of 11 A.H. and the 12th of third month (Rabi' al-Awwal) of 11 A.H.

On the other hand, it was also reported in the literature that Jarīr converted to Islam on the 10th of Ramadan of 10 A.H.,²⁵ which makes Hadith's period span to 82 days instead of 40 days. Ibn Hajar reported the second date based on another information that Jarīr (God be pleased with him) was on a farewell Pilgrimage because he narrated a hadith on that farewell Pilgrimage that the Prophet (P.B.U.H.) ordered him during him to "Ask the people to listen".²⁶ Even though Ibn Hajar reported the second date but he favored a third date that he converted to Islam before even the 10th year A.H. because of another hadith reported in al-Bukhārī which was narrated by Jarīr Farewell Pilgrimage, which support that he converted to Islam in Ramadan of 10 A.H. On the other hand it was reported that Jarīr converted to Islam on the 9 A.H. since he narrated the Prophet's hadith about the death of Negus 'al-Najashī': (Today a pious man has died).²⁷ It is known that Negus died before the 10th year, which makes the period span to the 9 A.H. also possible. In all, this step has reduced the previous period from 4 years to 40 days or 82 days or a year and seven months at most.

Step 6: Reducing Time By Relevant Events That Were Mentioned In Prophetic Biographical Books

When following Jarīr's biography, we find that the Prophet(P.B.U.H) has sent him to demolish *Dhul Khalasa* of Tabalah in Yemen,²⁸ which is about eight days walking from Mecca (16 days back and forth).²⁹ In addition to that, Jarīr would have spend some time there to complete the job, which makes his journey more than 16 days. It was also reported that Jarīr was in Yemen for meeting *Dhu al-Kala* al-Himyarite and the Prophet (P.B.U.H) died when he was in Yemen.³⁰ All of these periods can be omitted from the period of possible span of time regarding the occurrence of that particular hadith. Hence, the time period

²² Aḥmad al-Bayhaqī. (1900). *Shu'ab al-Iman*. Dar Al-Kutub Al-Ilmiyyah, 1102

²³ 'Ali al-Qārī. (1900). *Jami' al-Wasa'il*. Dar al-Aqsa, 8.

²⁴ Aḥmad Ibn Hajar. (1996). *al-Isābah Fi Tamyiz al-Ṣaḥabah*. Dar Al-Kutub Al-Ilmiyyah, Part 2, P.190

²⁵ *Ibid*, 191.

²⁶ Hadith. al-Bukhārī. *Bab Hajjat-ul-Wada*. No. 4405.

²⁷ Aḥmad Ibn Hajar. (1996). *op.cit.* 191.

²⁸ Hadith. al-Bukhārī. *Bab Manāqib Al-Anṣār*. No. 3776

²⁹ Sauress.com. Salman Almalaky. Dhu Alkhalasat - 'ism sanam 'am 'ism makan? <https://www.sauress.com/ajl/1002644>. (accessed on 01-06-2023)

³⁰ Islamweb.net. Jarīr ibn 'Abdullāh al-Bajalī, yusif hadhih al'uma. <https://www.islamweb.net/ar/article/221833> (accessed on 10-06-2023)

becomes well below than 40 days (or 82 days). It should also be noted that the Prophet's companion Jarīr has narrated 117 Hadiths,³¹ which can be distributed over that period of time, which is not long.

HYPOTHESES AND PROBLEMS ASSOCIATED WITH THE TIME REDUCTION METHOD PRESENTED IN THIS RESEARCH

1. A companion's narration of a particular Hadith using a word other than "I heard the Prophet...", "I saw the Prophet", "I was with the Prophet when..." -such as "The Prophet said"- may not mean that he directly heard the Prophet (P.B.U.H). Therefore, we cannot say for sure that he was there when Hadith/event took place, even if we confirmed the authenticity of the Hadith. Hence, we can limit our automated search results to words that demonstrate direct hearing, although this will affect the number of Hadiths we can use. Nevertheless, we can also put Hadiths that do not mean immediate hearing in a position of speculation (in a presumptive rank) below those hadiths which indicate direct hearing or seeing.
2. The method presented in this research assumes that the significant match of two Hadiths narrated by two companions was a proof of their presence when hadith was mentioned or when the event took place. This does not have to be 100% true because the Prophet (P.B.U.H) may have repeated the same hadith on another occasion using the exact words. But, we can still reduce the effect of the possibility of the same hadith taking place at different times by confirming at least the two or more companions who narrated the same hadith could have met at some point of time and/or place (e.g. they live in the same city or there are other confirmed events that proof they were together in many occasions). Also, the presence of a large number of *al-Shawāhid* (with high percentage of similarity) for a particular hadith reduces the possibility that the Prophet had repeated the same hadith (with almost same wording) on different occasions. In other words, a large amount of similar hadith minimizes the hypothesis that the Prophet's (P.B.U.H) repeated the same hadith using (using almost similar words) many times on different occasions.
3. Given that not all events' dates (in the Prophet and the companions' biographies) perfectly match in all references, application of the proposed time reduction process must be preceded by scrutiny to reach to the most probable time of events.
4. The proposed time reduction process (which mainly uses hadiths and hadiths' books) becomes efficient as the number references increase. Therefore, having large number of references as database for the events' searching process is advisable. Also, relying solely on the authentic hadiths (classified as Ṣaḥīḥ Hadith), may affect the efficiency of the time reduction process.

CONCLUSION

Making use of Prophetic hadiths -which are not fully utilized in Prophetic biographical books- and adding them to biographical material helps greatly in chronologically rewriting the Prophetic biography in a more detailed manner than it is today. Although the process of including the hadiths of the Prophet in the biography is not an easy process, benefiting from the development that occurred in software and computer science makes this task less difficult. This include the use of artificial intelligence, fuzzy logic, natural language processing, and intelligent classification processes.

The researcher tried to present general guidelines and an algorithm through which the time period for the possibility of the hadiths to be included in the biography can be reduced. Using programming and artificial intelligence, thousands of hadiths can be rearranged chronologically. In addition to benefiting from the chronological arrangement

³¹ Islamweb.net. Hadith encyclopedia. <https://www.islamweb.net/ar/library/index.php?page=booklist&subject=1>. (accessed on 15-06-2023)

of the hadiths to re-write the biography, this can also be used to weight between conflicting hadiths and to link the ruling contained in the hadith to the accompanying incident. The author demonstrated the proposed process to one hadith narrated in Ṣaḥīḥ al-Bukhārī, as an example of illustration. In the presented an example of Jarīr's hadith, the author was able to reduce the Hadith's possible time of occurrence (hadith's period span) from ten years to 40 days. This doesn't only apply to the single Jarīr's hadith example, but can be extended to distribute the 117 hadiths narrated by the same companion over that short period of time.

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