THE NETWORK OF ENVIRONMENT HADITH NARRATORS IN *SAḤIḤ AL-BUKḤĀRI*: A SOCIAL NETWORK ANALYSIS¹

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Abstract: This article aims to analyze the social network of hadith narrators and matn hadith which contain environmental messages in the Saḥiḥ al-Bukhāri. This article is the result of an empirical research using a mixed approach (qualitative content analysis and social network analysis). The population of this study is all hadith in the Saḥiḥ al-Bukhāri. The researchers choose 40 environmental hadith purposively as the research samples. The source of research data comes from the Encyclopedia 9 HadithTM application published by Lidwa Pustaka. The results of the study indicate that the message in environmental hadith could be categorized into several themes such as management of natural resources, both in the livestock, agriculture, mining and forestry sectors, management of water resources, ethics towards environmental health; personal health; and resource utilization. We identify 40 environmental hadiths which narrated by 122 narrators (119 male narrators and three female narrators) who had passed away between 36 H - 252 H, domiciled in 14 cities, from generations of saḥābat, tābi in,

¹ This research funded by the Ministry of Research, Technology and Higher Education c/q the Rector of Sriwijaya University through the competitive grants scheme in 2018.

and tābi' al-tābi'īn, and having 53 kunyah. The network of environmental hadith narrator has 301 ties with density levels reaching 0.997 and six sub-groups. In this network, the dominant actor was Muhammad b. Muslim b. 'Ubaydillah b. 'Abdullah b. Shihab and Malik b. Anas b. Malik b. Abī Amir. After Medina, many environmental traditions were narrated by narrators domiciled in Basrah City and Kufah City in Iraq. The researcher discusses the practical and theoretical implications of this finding for hadith research in Indonesia.

Keywords: hadith, *matn*, *sanad*, social network analysis.

Abstrak: Artikel ini bertujuan menganalisis jejaring sosial para perawi hadis yang memuat pesan tentang lingkungan hidup dalam Kitab Saḥīḥ al-Bukhārī. Artikel ini merupakan hasil riset empiris yang menggunakan pendekatan campuran. Pendekatan kualitatif yang digunakan adalah analisis isi kualitatif, sedangkan pendekatan kuantitatif diterjemahkan melalui pendekatan analisis jejaring sosial. Populasi penelitian ini adalah seluruh hadis yang ada di Kitab Sahīh al-Bukhārī. Dari jumlah ini, peneliti memilih 40 hadis lingkungan secara purposif sebagai sampel penelitian. Sumber data penelitian berasal dari aplikasi Ensiklopedi 9 HadistTM yang diterbitkan Lidwa Pustaka. Hasil penelitian menunjukkan bahwa pesan lingkungan hidup yang terkandung dalam hadis-hadis ini meliputi: pengelolaan sumber daya alam, baik di sektor peternakan, pertanian, pertambangan, dan kehutanan, pengelolaan sumber daya air, akhlak terhadap hewan, kebersihan dan kesehatan lingkungan; kebersihan diri; dan pemanfaatan sumber daya. 40 hadis lingkungan yang diidentifikasi peneliti diriwayatkan oleh 122 perawi (119 perawi laki-laki dan 3 perawi perempuan) yang wafat di antara tahun 36 H - 252 H, berdomisili di 14 kota, berasal dari generasi sahabat, tabiin, dan tābi' al-tābi in, dan dengan 53 kunyah. Jika divisualisasikan, jejaring 122 perawi hadis lingkungan dalam KSB memiliki 301 ikatan dengan tingkat kepadatan mencapai 0.997 dan 6 sub-grup. Dalam jejaring perawi hadis lingkungan ini, aktor yang dominan adalah Muhammad b. Muslim b. 'Ubaydillah b. 'Abdullah b. Shihab dan Malik b. Anas b. Malik b. Abi Amir. Setelah Madinah, hadis lingkungan banyak diriwayatkan para perawi yang berdomisili di Basrah dan Kufah di Irak.

Kata kunci: hadis, matan, sanad, analisis jejaring sosial.

Introduction

Environment is one of the global problems that its causes, impacts, and solutions can be found in the Province of South Sumatra. This research will contribute to the scientific debate about changes in socio-cultural values of the community related to the environmental change which constitutes the focus of research at Sriwijaya University. Before focusing on the relationship between socio-cultural value change and environmental change, it is necessary to map the current socio-cultural values on the environment in South Sumatra. Although the people of South Sumatra are heterogeneous, the reference to their daily customs is the Kitab Simbur Cahaya (KSC), a codification of customary law, which was influenced by Islamic teachings, 'ulama', and ijtihad at that time. Although the KSC does not apply juridically, the content of the KSC is still practiced by most of the indigenous people, not including the transmigration areas, in South Sumatra Province. However, how far the influence of Islamic value on the KSC can only be known if we succeed in constructing environmental values contained in Islamic teachings. Among the three sources of Islamic law, this study will focus on hadith for two reasons: (a) the quality of transmission, content, and meaning continues to be the subject of scientific debate among scientists; (b) the character of hadith that allows researchers to apply a social network analysis (SNA) approach.

This research aims to analyze the content of hadith (matn) in the book of Sahīh al-Bukhārī (KSB) which contains messages on environmental protection and structural attributes of social networks of hadith narrators in the KSB using the social network analysis (SNA) method. This research is fundamental and urgent as the environmental issues are one of the crucial problems ensued in the Province of South Sumatra and there are no scientific publications that examine hadith with the theme of environmental preservation, particularly with SNA.

Theoretically, hadith is everything (speech, deeds, determination, character) which refers to the Prophet Muhammad before and after the prophethood. hadith, along with the Qur'an and the life history of the Prophet Muhammad are the foundations of the textual doctrine of Islamic teachings. According to Bill Warner's calculations,² Islamic textual doctrine has divided into three parts: Qur'an, the biography of the Prophet, and hadith. Each part has a textual doctrine in different proportion (Qur'an 14 percent, the biography of the Prophet 26 percent, and the hadith 60 percent). Unlike the Qur'an which is written through one gate, the writing of hadith in the era of the

² Bill Warner, The Hadith: The Sunna of Mohammed (Nashville, Tennesse, USA: CSPI Publishing, 2010).

Prophet was very dependent on the creativity of the companions. It explains why each companion has different number on hadith collections. For example, Ibn 'Abbas had a bulk of 1700 hadith collection, 'A'ishah 2200 hadiths, Anas b. Mālik 2300 hadiths, Ibn 'Umar 2600 hadiths, and Abu Hurayrah 5,300 traditions.3 The collecting and codification of hadith began in the 2nd Century of Hijrah during the reign of Caliph 'Umar b. 'Abd al-'Azīz.⁴

The conventional scholarship of hadith consists of two types of frameworks: riwayah and dirayah. The riwayah hadith is a knowledge which contains talks, attitudes, deeds, character, and anything deal with the Prophet. The dirayah hadith is the branch of conventional hadith science that studies several standards and rule which are being the basis for acceptance or rejection of narrators, narrators' chain (sanad), or rawi (someone who is narrated). The dirayah hadith focus on sanad (the hadith narrators' chain) and matn (the content, substance or the message of a hadith). Based on this typology, the science has developed into many branches such as hadith criticism, typology of narrators, gharib al-hadith, 'ilal al-hadith, takhrij al-hadith, and so on. This typology also becomes the basis for the development of modern hadith interpretations using new methods and approaches, such as artificial intelligence and literary analysis.6

Based on literature review, hadith study could be classified into several groups. First, the study that analyzes hadith using conventional approach (sanad and matn).7 Because hadith content is diverse,

³ Jonathan A. C Brown, Hadith: Muhammad's Legacy in the Medieval and Modern World (Oxford, UK: Oneworld Publications, 2009).

⁴ M M Zein, *Ilmu Memahami Hadist* (Yogyakarta, Indonesia: Pustaka Pesantren, 2013), 60.

⁵ Asep Herdi, Memahami Ilmu Hadis (Bandung, Jawa Barat: Tafakur, 2014).

⁶ S. R. Burge, "Myth, Meaning and the Order of Words: Reading Hadith Collections with Northrop Frye and the Development of Compilation Criticism," Islam and Christian-Muslim Relations 27, no. 2 (2016): 213–228.

⁷ Rohaizan bin Baru and Fauzi bin Deraman, "Pendekatan Al-Jam Dalam Menangani Percanggahan Hadith," Al-Bayan - Journal of Qur'an and Hadith Studies 9 (2011): 49-62; al-Husein N Madhany, "Pooh-Poohing Pluralism: Ijtihading Ḥadīth to Build a Theology of Exclusion," The Muslim World 98 (2008): 407-422; Abbas Esmaeeli Zadeh, Gholamrida Raisian, and Farahnaz Vahidnia, "Analysis of Hadith Wujuh Sawh' in Terms of Chain of Transmitters and Content," The Social Science 10, no. 7 (2015): 2021–2032; Jonathan Brown, "Critical Rigor vs. Juridical Pragmatism:

scientific research theme under this group is also heterogeneous, for example: genetics, ⁸ *kalāla*, ⁹ employment, ¹⁰ human rights, ¹¹ *rahbānīyah*, ¹² muslimah normative image, ¹³ patriarchy, ¹⁴ *'idda*, ¹⁵ accumulation and circulation of wealth, ¹⁶ collaboration, ¹⁷ and corruption. ¹⁸ Included in this category is the study of hadith interpretation, ¹⁹ comparative

How Legal Theorists and Ḥadīth Scholars Approached the Backgrowth of 'Isnāds' in the Genre of 'Ilal Al-Ḥadīth," *Islamic Law and Society* 14, no. 1 (2007): 1–41.

- ⁸ Munirah Abd Razak et al., "Black Color and Its Relationship with Human Genetics and Life Status in Ḥadith Perspective/Warna Hitam Dan Kaitannya Dengan Genetik Dan Taraf Manusia Dalam Perspektif Ḥadith," *Al-Bayan Journal of Qur'an and Hadith Studies* 13 (2015): 47–74.
- ⁹ Pavel Pavlovitch, "Some Sunni Hadīth on the Qur'ānic Term Kalāla An Attempt at Historical Reconstruction," *Islamic Law and Society* 19, no. 1 (February 2012): 86–159.
- ¹⁰ Jawad Syed and Abbas J. Ali, "Principles of Employment Relations in Islam: A Normative View," *Employee Relations* 32, no. 5 (August 2010): 454–469.
- ¹¹ Robert Carle, "Revealing and Concealing: Islamist Discourse on Human Rights," *Human Rights Review* 6, no. 3 (2005): 122–137.
- ¹² Emran El-Badawi, "From 'Clergy' to 'Celibacy:' The Development of Rahbānīyyah between the Qur'an, Ḥadith and Church Canon," *Al-Bayan Journal of Qur'an and Ḥadīth Studies* 11, no. 1 (2013): 1–14.
- ¹³ Adis Duderija, "The Interpretational Implications of Progressive Muslims' Qur'an and Sunna Manhaj in Relation to Their Formulation of a Normative Muslima Construct," *Islam and Christian-Muslim Relations* 19, no. 4 (2008): 411–429.
- ¹⁴ Syed Jamil Ahmed, "The 'Non-Dit' in the Zenana: Representations of Muslim Women in Islamic Canonical Texts, the Neo-Colonial Imagination and a Feminist Response from Bangladesh," *Inter-Asia Cultural Studies* 7, no. 3 (2006): 431–455.
- ¹⁵ G. R. Hawting, "The Role of Qur'ān and Ḥadīth in the Legal Controversy about the Rights of a Divorced Woman during Her Waiting Period' ('Idda)," *Bulletin of the School of Oriental and African Studies* 52, no. 03 (October 1989): 430–445.
- ¹⁶ Ahmad Asad Ibrahim, Radwan Jamal Elatrash, and Mohammad Omar Farooq, "Hoarding versus Circulation of Wealth from the Perspective of Maqasid Al-Shari'ah," *International Journal of Islamic and Middle Eastern Finance and Management* 7, no. 1 (April 2014): 6–21.
- ¹⁷ Alireza Irajpour, Fereshteh Ghaljaei, and Mousa Alavi, "Concept of Collaboration from the Islamic Perspective: The View Points for Health Providers," *Journal of Religion and Health* 54, no. 5 (October 2015): 1800–1809.
- ¹⁸ Mobolaji 'Hakeem Ishola, "Fighting Corruption: An Expectation Augmented Approach," *Humanomics* 28, no. 2 (May 2012): 133–147.
- ¹⁹ Abur Hamdi Usman and Mazlan Ibrahim, "Shihāb's Thought of Ḥadith: A Critical Analysis," *Global Journal al-Thaqafah* 4, no. 1 (2014): 33–40.

study,²⁰ and the status of ḥadith.²¹ *Second*, the study that analyzes ḥadith using modern approach such as literacy approach,²² language approach,²³ critical thinking, decision based on tree algorithm,²⁴ graph theory,²⁵ contextual approach,²⁶ and narrative approach.²⁷ *Third*, the study that examines narrator figure²⁸ or ḥadith compilation.²⁹ *Fourth*, the study that focuses on ḥadith transmission into the outside area of

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²⁰ Muhammad Qasim Zaman, "Maghazi and the Muhaddithun: Reconsidering the Treatment of 'Historical' Materials in Early Collections of Ḥadith," *International Journal of Middle East Studies* 28, no. 1 (1996): 1–18.

²¹ Hüseyin Hansu, "Notes on the Term Mutawātir and Its Reception in Hadīth Criticism," *Islamic Law and Society* 16, no. 3–4 (November 2009): 383–408.

²² Jamal J Elias, "The Hadith Traditions of A'isha as Prototypes of Self-Narrative," *Edebiyat* 7 (1997): 215–233; Burge, "Myth, Meaning and the Order of Words," 213–228.

²³ Faisal Ahmad Shah, "Arabic Language Methods and Their Effects on the Scholars' Differences in Understanding the Qur'an and Ḥadith Texts," *Al-Bayan - Journal of Qur'an and Hadith Studies* 14, no. 1 (2016): 51–73.

²⁴ Kawther Aldhaln et al., "Improving Knowledge Extraction of Hadith Classifier Using Decision Tree Algorithm," 2012 International Conference on Information Retrieval & Knowledge Management (2012): 148–152.

²⁵ Syed Irfan Hyder and Syed Ghazanfar Ahmad, "Towards a Database Oriented Research in Hadith Using Relational, Algorithmic and Data-Warehousing Techniques," *Al Saqafat-ul-Islamia (Islamic Culture):* Research Quarterly Journal of Shaikh Zayed Islamic Center for Islamic and Arabic Studies 19 (2008): 14–32.

²⁶ Jawiah Dakir and Faisal Ahmad Shah, "A Contextual Approach in Understanding the Prophet's Hadith: An Analysis," *Journal of Applied Science Research* 101, no. 8 (2011): 567–578.

²⁷ R Marston Speight, "Narrative Structures in the Hadīth," *Journal of Near Eastern Studies* 59, no. 4 (2000): 265–271.

²⁸ Neal Robinson, "Varieties of Pronouncement Stories in Sahih Muslim: A Gospel Genre in the Hadith Literature," *Islam and Christian-Muslim Relations* 5, no. 2 (1994): 123–146; Ashley Manjarrez Walker and Michael A. Sells, "The Wiles of Women and Performative Intertextuality: A'isha, the Hadith of the Slander, and the Sura of Yusuf," *Journal of Arabic Literature* 30, no. 1 (January 1999): 55–77; Scott Lucas, "Where Are the Legal Hadīth? A Study of the Musannaf of Ibn Abī Shayba," *Islamic Law and Society* 15, no. 3 (September 2008): 283–314; Elias, "The Ḥadīth Traditions of A'isha as Prototypes of Self-Narrative."

²⁹ S. R. Burge, "Reading between the Lines: The Compilation of Hadīt and the Authorial Voice," *Arabica* 58, no. 3 (January 2011): 168–197; Christopher Melchert, "The Life and Works of Al-Nasai," *Journal of Semitic Studies* 59, no. 2 (July 2014): 377–407.

the Middle East.³⁰ *Fifth*, comparative methodology between Shia and Sunni on the study of hadith.³¹

The above reviewed literatures show that the study which analyzes hadith using social network approach is not popular. Even though relational data has appeared in Hyder and Ahmad,³² however, their study focused on applying graph theory to digitizing *sanad* and *matn* into the software so that hadith could be studied using various modern approach. Meanwhile, Dini, Aidi, and Sartono's³³ research have utilized SNA even though it only focuses on the narrator's centrality and narrator's domicile city and ignores the *matn* hadith. This research intends to continue what has been started by Hyder & Ahmad³⁴ and Dini, Aidi, and Sartono³⁵ by applying SNA to construct a new knowledge based on data which refers to *sanad* and *matn* of the hadith.

³⁰ Faisal Ahmad Shah, "Terjemahan Ḥadith Nabi S.A.W Ke Dalam Bahasa Melayu: Analisis Terhadap Kitab Riyad Al-Salihin Terbitan Jakim," *Al-Bayan - Journal of Qur'an and Hadith Studies* 9, no. 1 (2011): 63–93; Ahamad Asmadi Sakat et al., "Implementation of Ḥadith Methodology In Translated Literature of Sheikh Daud Al-Fatani," *Advances in Natural and Applied Sciences* 5, no. 5 (2011): 562–566; Latifah Abdul Majid et al., "Hadith Written in Early Islam in Malay Region," *Advances in Natural and Applied Sciences* 6, no. 3 (2012): 472–477; Asma Sayeed, "Gender and Legal Authority: An Examination of Early Juristic Opposition to Women's Hadīth Transmission," *Islamic Law and Society* 16, no. 2 (2009): 115–150.

³¹ Asma Afsaruddin, "An Insight into the Hadith Methodology of Jamal Al-Din Ahmad b. Tawus," *Der Islam* 75 (1995): 25–46; Serdar Demirel, "The Impact of Hadith Perception on Disputes between Ahl Al-Sunnah and Al-Shiah Al-Imamiyyah Al-Ithna 'Ashariyyah," *Intellectual Discourse* 19 (2011): 245–262; Adis Duderija, "A Paradigm Shift in Assessing/Evaluating the Value and Significance of Hadīth in Islamic Thought: From 'ulūmu-l-Isnād/Rijāl to 'Usūlu-l-Fiqh," *Arab Law Quarterly* 23, no. 2 (2009): 195–206; Seyyed Hossein, Seyed Mousavi, and Hassan Shojae Bahar, "The Blasphemy by Death of Ignorance, Based on Acknowledgement Hadith," *The Social Science* 11, no. 5 (2016): 754–759.

³² Hyder and Ahmad, "Towards a Database Oriented Research in Ḥadith Using Relational, Algorithmic and Data-Warehousing Techniques," 14-32.

³³ Sekti Kartika Dini, Muhammad Nur Aidi, and Bagus Sartono, "Social Network Analysis of Ḥadith Narrator(Case Study: Shahih Ḥadith of Imam Bukhari from Software Ensiklopedi Hadits Kitab 9 Imam)," *International Journal of Scientific & Enggineering Research* 8, no. 2 (2017): 176–181.

³⁴ Hyder and Ahmad, "Towards a Database Oriented Research in Ḥadith Using Relational, Algorithmic and Data-Warehousing Techniques," 14-32.

³⁵ Dini, Aidi, and Sartono, "Social Network Analysis of Ḥadith Narrator(Case Study: Shahih Ḥadith of Imam Bukhari from Software Ensiklopedi Hadits Kitab 9 Imam)."

The social networking is then analyzing the connection among several actors who facilitate interaction among them. In the context of the study of hadith, the process of transmitting hadith from the Prophet to the companion, from the companion to the tabi in, from the tabi in to the tabi al-tabi in, and so on, shows the existence of ties, connection, and social relations. The social interaction that produces a specific pattern regularly will create a social structure that has structural variables such as network size, network density, reciprocity, diameter and distance, clustering, transitivity, centrality, betweenness, and closeness.³⁶ Scientists have developed a popular quantitative method (SNA) to explain social networks and to analyze opportunities and constraints of individual actions and collective actions in particular social structures. The unit of analysis of SNA is not an individual, but a group of actors, a network or social ties among the actors.

This research uses a mixed approach. Qualitative approaches, especially content analysis, 37 are used to interpret hadith that contain environmental messages. To capture the message on the environment in each hadith, this research coding each hadith containing the norms of environmental preservation (orders, prohibitions, or wisdom), physical objects of the environment (fire, water, soil, air, rivers, animals, forests), and certain actions both individuals or collective actions related to the environment. The coding process uses the ATLAS.ti 8³⁸ (qualitative data processing software) application. The coding process is followed by building a matrix of sanad relations and hadith narrators that contain data on the year of death, sex, age, domicile, and type of generation.

The relation matrix is a raw data that will be processed further with the UCINET³⁹ application. Even though the traditions of the hadith are one-way (from A to B), however, the social interactions

³⁶ Stanley Wasserman and Katherine Faust, Social Network Analysis: Method and Applications (Cambridge, UK: Cambridge University Press, 1994).

³⁷ Matthew Lombard, Jennifer Snyder-Duch, and Cheryl Campanella Bracken, "Content Analysis in Mass Communication: Assessment and Reporting of Intercoder Reliability," Human Communication Research 28, no. 4 (2002): 587–604.

³⁸ Thomas Muhr, "ATLAS.Ti" (Berlin, Germany: ATLAS.ti Scientific Software Development GmbH, 1993), https://atlasti.com/about-atlas-ti/.

³⁹ S.P. Borgatti, M.G. Everett, and L.C. Freeman, "UCINET for Windows: Software for Social Network Analysis" (Massachusetts, USA: Analytic Technologies, 2002), https://sites.google.com/site/ucinetsoftware/home.

between the narrators are two-way relationship. Starting from this understanding, the matrix of relations that are reciprocal in nature makes it easier for researchers to calculate the structural attributes of the social network of hadith narrators. While the quantitative approach is used to explain the structural attributes of social networks (centrality, betweenness, and closeness) of environmental hadith narrators. This research uses data from KSB (7008 hadith) in the digital version (the Encyclopedia 9 HadisTM application) published by LIDWA PUSAKA.⁴⁰

The Environment Ḥadīth in Ṣaḥīḥ al-Bukhārī

This research found forty hadiths that could be categorized as environmental Hadith as they contained orders and prohibitions related to environmental elements such as land, water, plants, animals and mining goods. The environmental message contained in these Hadiths includes: (a) management of natural resources in the livestock, agriculture, mining, and forestry; (b) management of water resources; (c) morals towards animals; (d) environmental hygiene and health; (e) personal hygiene; and (f) utilization of resources (Table 1).

Table 1 The number of Ḥadiths and the category of environment message in KSB

No	Ḥadith number	Category of environment message
1.	2102, 2198, 2152, 2167, 2171, 2172, 2439, 2184, 2200	Management of natural resources in the livestock, agriculture, mining, and forestry
2.	2182, 2187, 2195, 6447	Management of water resources
3.	2190, 2191, 2192, 5091, 2155, 2796, 3713, 3063, 1697, 3072, 3054	Morality towards animals
4.	232, 380, 390, 391, 392, 393, 394, 395, 396, 438, 711, 5192, 5819	Hygiene and environmental health
5.	604, 628	Personal hygiene
6.	4974	Utilization of resources

⁴⁰ Lidwa Pustaka, "Ensiklopedia 9 Hadist" (Jakarta, Indonesia: Lidwa Pustaka, 2008), http://store.lidwa.com/get/.

The Network of Environment Hadith Narrators

Forty environment hadiths in the KSB have been narrated by 122 narrators who had passed away between 36 H - 252 H and lived in 14 cities (Baghdad, Basrah, Bukhara, Hait, Himash, Himsh, Kufah, Medina, Maru, Marur Rawdz, Syam, Thabariyah, Yamamah, and Yemen). They come from companion, tabi'in, and tabi' al-tabi'in generations. There were only 3 female narrators: 'A'ishah bt. Abi Bakr, Asma' bt. Abi Bakr, and Hafsah bt. 'Umar b. al-Khattab. 122 narrators of the environment hadith has 53 kunyah: Abu al-Khaththab, Abu 'Abdullah, Abu 'Abd al-Rahman, Abu Ahmad, Abu al-Abbas, Abu al-Aswad, Abu al-Haitsam, Abu al -Harits, Abu al-Hasan, Abu al-Hashin, Abu al-Mundzir, Abu al-Walid, Abu al-Yaman, Abu Amru, Abu an-Nadlor, Abu an-Najasyiy, Abu an-Nu'man, Abu Awamah , Abu Ayyub, Abu Bakar, Abu Bistham, Abu Bisyir, Abu Daud, Abu Hamzah, Abu Hurairah, Abu Ibrahim, Abu Ishaq, Abu Isma'il, Abu Ja'far, Abu Khalid, Abu Lubabah, Abu Muhammad, Abu Nasr, Abu Nu'aim, Abu Rafi ', Abu Raja, Abu Sahal, Abu Sa'id, Abu Salam, Abu Salamah, Abu Shalih, Abu Taubah, Abu 'Umar, Abu Umayyah, Abu Urwah, Abu Usamah, Abu Uthman, Abu Ya' qub, Abu Yazid, Abu Yusuf, Abu Zaid, Abu Zakariya, and Umm 'Abdullah. Figure 1 visualizes a network of 122 environmental hadiths narrators in the KSB. This network has 301 ties with a density level reaching up to 0.997. In other words, almost all narrators in the network are connected to one another.

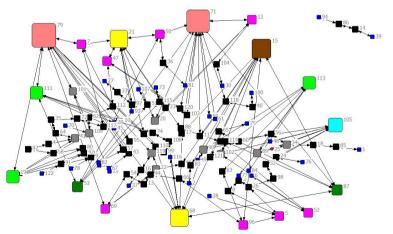


Figure 1 The Social Network of Environment Hadith Narrator

Note:

o I 'Abān b. Yazīd 62 Isra'il b. Yūnus b. Abī Ishāq 2 'Abd al-'Azīz b. Abī Rawwād Mayma'un 63 Ja'far b. Ilyās b. Abī Waḥshiyah Mayma'un 3 'Abd al-Ḥamīd b. Dīnār 64 Jābir b. 'Abdullāh b. Abī Waḥshiyah Haram 4 'Abdul Mālik b. 'Abd al- 'Azīz b. Jurayj 6 Jarīr b. Ḥāzim b. Zayd 5 'Abdullāh b. 'Abbās b. 'Abd al- 'Abdullāh b. 'Abbās b. 'Abd al- Raḥmān b. 'Awf 6 Kathīr b. Kathīr b. al-Muṭallib b. Abī Widā'ah 6 'Abdullāh b. 'Abd al- Raḥmān b. 'Awf 6 Kathīr b. Kathīr b. Lal-Muṭallib b. Abī Wahāb 7 'Abdullāh b. 'Awf 8 Layth b. Sa'ad b. 'Abd al- Raḥmān 8 'Abdullāh b. al-Ḥārith 69 Ma'mar b. Rashīd 9 'Abdullāh b. al-Zubayr b. al- 'Awwām b. Khuwaylid b. Asad 70 Malik b. Anas b. Mālik b. Abī Amīr 11 'Abdullāh b. Dhakwān Abū az-Zanād 72 Mu'āwiyah b. Salām b. Abī al-Raḥmān b. Nawfal b. al-Aswad Yaman 12 'Abdullāh b. Wuḥah b. 'Ubaydillāh b. 'Tallah b. 'Abdullāh b. Waḥab b. 'Abdullāh b. Wahab b. 'Tallah b. 'Abdullāh b. '	N	Narrator name	No	Narrator name
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20	'Abd al-Rahman b. Hurmuz	81	Muḥammad b. Ziyād	
21	'Abd al-Raḥman b. Ṣakhr	82	Mūsā b. Ismāʻil	
22	'Abd al-Razaq b. Hammam	83	Mūsā b. 'Uqbah b. Abī Ayyāsh	
	b. Nāfi'		1 23	
23	'Abd al-Raḥman b. Hurmuz	84	Musaddad b. Musrihad b.	
			Musribal b. Mustawrid	
24	'Abd al-Ṣamad b. 'Abd al-	85	Muslim b. Ibrāhīm	
	Warith b. Sa'id b. Dhakwan			
25	Adam b. Abū Iyās	86	Nāfi' b. 'Umar b. 'Abdullāh b.	
			Jāmil b. Amīr	
26	'Adī b. Thābit	87	Nāfi', mawlā Ibn 'Umar	
27	Aḥmad b. Muḥammad b. al-	88	Nufay' b. Rāfi'	
	Walid b. 'Uqbah al-Azraq b.			
	Amr		_	
28	'A'ishah bt. Abi Bakr al-	89	Qatadah b. Da'amah b.	
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29	Al-Faḍl b. Dukayn b.	90	Qutaibah b. Sa ^r id b. Jamil b.	
	Ḥammad b. Zuhayr		Tharif b. 'Abdullāh	
30	Al-Ḥakam b. Nāfiʻ	91	Rāfi' b. Khudayj b. Rāfi'	
31	'Alı b. 'Abdullah b. Ja'far b.	92	Rawḥ b. 'Ubādah b. al-'Alā	
	Najih			
32	Al-Minhal b. Amr	93	Saʻad b. Mālik b. Sinān b. ʻUbayd	
33	Amr b. Yaḥyā b. Saʿid b.	94	Sa ^c id b. Abi Maryam b. al-	
	Amr b. Saʿid b. al-'Aṣ		Ḥakam b. Muḥammad b. Sālim	
34	Anas b. Mālik b. al-Nadhīr b.	95	Sa'id b. al-Musayyab b. Ḥazan	
	Damdam b. Zayd b. Ḥaram		b. Abi Wahab b. Amr	
35	Al-Rābi' b. Nāfi'	96	Sa'id b. Jubayr b. Hishām	
36	Al-Rābi' b. Muslim	97	Saʿid b. Amr b. Saʿid b. al-ʿĀṣ	
37	Aṣbāgh b. al-Faraj b. Saʿīd	98	Saʿīd b. Jubayr b. Hishām	
38	'Āṣim b. Sulaymān	99	Sālim b. 'Abdullāh b. 'Umar b.	
			al-Khaṭṭāb	
39	Asma' bt. Abi Bakr al-Ṣiddiq	100	Sufyān b. Abī Zuhayr	
40	Al-Sa'ib b. Yazid b. Sa'id b.	101	Sufyān b. 'Uyaynah b. Abī	
	Thumāmah b. al-Aswad		ʻImran Maymun	
41	'Aṭa' b. Abi Rabbāh Aslam	102	Sulayman b. Ḥarb b. Bujayl	
42	'Aṭa' b. Shuhayb	103	Sumayya, mawlā Abū Bakr b.	
			'Abd al-Raḥmān b. al-Ḥārith b.	
			Hishām	

43	'Ata' b. Yazid	104	Shuʻayb b. Abi Ḥamzah Dinār
44	Ayyūb b. Abī Tammimah	105	Shu'bah b. al-Ḥajjāj b. al-
	Kaysān		Warad
45	Al-Zubayr b. al-'Awwam b.	106	Thābit b. Aslam
	Khuwaylid		
46	Bashir b. 'Abd al-Mundhir b.	107	'Ubayd b. Ismā'il
	Zubayr b. Zayd b. Umayyah		
47	Dhakwan	108	'Ubaydullāh b. Abī Ja'far
48	Ḥafṣ b. 'Umar b. al-Ḥārith b.	109	'Ubaidullāh b. Mūsā b. Abī al-
	Sakhbarah		Mukhtar Badzam
49	Ḥafṣah bt. 'Umar b. al-	110	'Uqayl b. Khālid b. 'Uqayl
	Khaṭṭāb		
50	Ḥammād b. Salamah b.	111	Urwah b. al-Zubayr b. al-
	Dinar		'Awwam b. Khuwaylid b. Asad
51	II -11 II - 1 1 7 1	112	b. 'Abd al-'Izz
52	Hammad b. Usamah b. Zayd	113	'Uthman b. 'Asim b. Ḥusayn
32	Ḥammad b. Zayd b. Dirham	113	Waḍḍāḥ b. 'Abdullāh, mawlā
53	Hishām b. 'Urwah b. al-	114	Yazīd b. 'Aṭā' Wāqid b. Muḥammad b. Zayd
33	Zubayr b. al-'Awwam	114	b. 'Abdullah b. 'Umar b. al-
	Zubayi b. ai- /iwwaiii		Khattab
54	Hishām b. Yūsuf	115	Wuhayb b. Khālid b. 'Ajlān
55	Humayd b. 'Abd al-Raḥman	116	Yaḥyā b. 'Abdullāh b. Bukayr
33	b. Auf	110	Tanya b. Mbddhan b. Bdkayi
56	Humayd b. Abi Humayd	117	Yaḥyā b. Abi Kathir Ṣāliḥ b. al-
	i i i i i i i i i i i i i i i i i i i		Mutawakkil
57	Ibrāhīm b. Sa'ad b. Ibrāhīm	118	Yazīd b. 'Abdullāh b.
	b. 'Abd al-Raḥman b. Awf		Kushayfah b. 'Abdullāh b.
			Yazid
58	Isḥāq b. Manshūr b. Bahram	119	Yūnus b. Yazīd b. Abī an-
			Najjād
59	Ismā'il b. 'Abdullāh b.	120	Zayd b. Aslam
	'Abdullāh b. Uways		
60	Ismā'il b. Ja'far b. Abī Kathīr	121	Zayd b. Jubayr b. Ḥirmal
61	Ismā'il b. 'Abdullāh b.	122	Zuhayr b. Rāfi' b. 'Adī b. Zayd
	'Abdullah b. Uways		b. Jashm b. Ḥārithah

Based on their centrality score, there are some dominant narrators in this network: (a) Muḥammad b. Muslim b. 'Ubaydillāh b. 'Abdullāh b. Shihāb (b) Mālik b. Anas b. Mālik b. Abī Amīr; (c) 'Abdullah b. 'Umar b. al-Khattab b. Nufayl; (d) 'Abd al-Rahman b. Sakhr; (e) Layth b. Sa'ad b. 'Abd al-Rahman; (f) Shu'bah b. al-Hajjaj b. al-Warad; (g) Waddah b. 'Abdullah, mawla Yazid b. 'Ata'; (h) 'Urwah b. al-Zubayr b. al-'Awwam b. Khuwaylid b. Asad b. 'Abd al-'Izz and (i) 'Abd al-Rahman b. Amr b. Abi Amr. As dominant actors, Muhammad b. Muslim b. 'Ubaydillah b. 'Abdullah b. Shihab and Mālik b. Anas b. Mālik b. Abī Amīr will influence this network more than other narrators. Based on its centrality score, Muhammad b. Muslim b. 'Ubaydillah b. 'Abdullah b. Shihab will receive from or send the message to 0.107 percent (156 narrators) network members.

The idea behind the centrality score is that the more narrators interact (accept or transmit the hadith) with other narrators, the higher their centrality score. In other words, the narrators with a lot of memorized hadith are not necessarily the dominant narrators in the network of hadith narrators when interactions (receiving or transmitting hadith) with other narrators are minimal. The amount of hadith memorization is not essential, but how many number of interactions between narrators has happened is. For example, Abu Huravrah, a companion who memorized abundant hadith, has only a centrality score of 0.074 percent in this network. This score far below from Muḥammad b. Muslim b. 'Ubaydillah b. 'Abdullah b. Shihab and Mālik b. Anas b. Mālik b. Abī Amīr. Abū Hurayrah only gets the fourth position as the dominant narrators in the environmental hadith network.

This research found one isolated network (network hadith narrator does not connect to the main network) (Figure 1). This network connects four narrators: Sa'id b. Abi Maryam b. al-Hakam b. Muhammad b. Salim, Nafi' b. 'Umar b. 'Abdullah b. Jamil b. Amir, 'Abdullah b. 'Ubaydillah b. Mulaykah, Asma' bt. Abi Bakr al-Siddiq. These narrators narrate hadith number 2.191 (the Encyclopedia of 9 hadith version) or number 2.364 (Fath al-Bari version). The content of hadith number 2.191 or number 2.364 is:

"Having told to us Ibn Abi Maryam (Sa'id b. Abi Maryam b. al-Hakam b. Muhammad b. Salim), having told to us Nafi' b. 'Umar (Nafi' b. 'Umar b. 'Abdullah b. Jamil b. Amir) from Ibn Abi Mulaykah ('Abdullah b. 'Ubaydillah b. Mulaykah) from Asma' bt. Abi Bakr (Asma' bt. Abi Bakr al-Siddig) that the Prophet carried out the salat khushuf (eclipse prayer) then said: "Hell is brought near to me until I say, 'Ya Rabb, I am with them. When at that time I saw a woman". Nafi' said: I assumed he (Ibn Abi Mulaykah) said: "clawed by a cat." I asked: "What caused that? They replied: "The woman held the cat to death because of starvation."

Meanwhile, among the 14 cities where the hadith narrators lived, Medina, Basrah, and Kufah are the three most populated cities of the narrators (see Figure 2). For the Medina, this finding is not too surprising because of its status as the center of Islamic government, both in the era of the Prophet and the *Khulafa' al-Rāshidīn*, except for the reign of 'Alī b. Abī Ṭālib. For the Basra and Kufah (former Persian region), this fact was the impact of the conquest of the Persian Empire in the era of the Caliph Abū Bakr al-Ṣiddīq and the election of the city of Baghdad as the capital of the Abbasid Caliphate.⁴¹

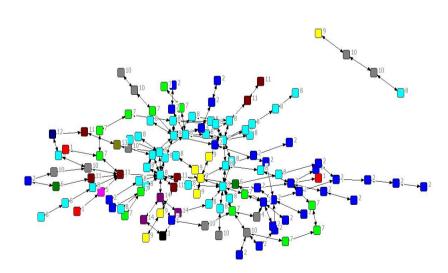


Figure 2 The Cities of Environment Hadith Narrator

⁴¹ J J Saunders, *A History of Medieval Islam* (New York, USA: Taylor & Francis, 2002); John L. Esposito, *The Oxford History of Islam* (Oxford, UK: Oxford University Press, 1999); Ira M. Lapidus, *A History of Islamic Society* (Cambridge, UK: Cambridge University Press, 2014).

Note:

1. Baghdad	4. Hait	7. Kufah	10. Marur Rawdz	13. Yamamia
2. Bashrah	5. Himash	8. Madinah	11. Syam	14. Yaman
3. Bukhara	6. Himsh	9. Maru	12. Thabariyah	

The network of environment hadith narrators has six sub-groups (see Figure 2):: (a) Layth b. Sa'ad b. 'Abd al-Rahman (68), Muhammad b. Muslim b. 'Ubaydillah b. 'Abdullah b. Shihab (79), 'Uqayl b. Khalid b. 'Uqayl (110); (b) Layth b. Sa'ad b. 'Abd al-Rahman (68), Muhammad b. Muslim b. 'Ubaydillah b. 'Abdullah b. Shihab (79), Yūnus b. Yazīd b. Abī al-Najjād (119); (c) 'Abdullāh b. 'Abd al-Rahman b. 'Awf (7), Muhammad b. Muslim b. 'Ubaydillah b. 'Abdillah b. Shihab (79), Sa'id b. al-Musayyab b. Hazan b. Abi Wahab b. Amr (95); (d) 'Abdullāh b. Dhakwān Abū al-Zanād (12), 'Abd al-Raḥman b. Hurmuz (20), Malik b. Anas b. Malik b. Abi Amir (71); (e) 'Abdullah b. 'Umar b. al-Khattab b. Nufayl (15), Layth b. Sa'ad b. 'Abd al-Rahman (68), Nafi', mawla Ibn 'Umar (87); and (f) Hammad b. Salamah b. Dinar (50), Hisham b. 'Urwah b. al-Zubayr b. al-'Awwam (53), and Malik b. Anas b. Malik b. Abi Amir (71).

In this sub-group, Layth b. Sa'ad b. 'Abd al-Rahman (old tabi' altābi in/ died in 175 H/Maru), Mālik b. Anas b. Mālik b. Abi Amir (old tabi' al-tabi'in/died in 179 AH/ Medina), and Muhammad b. Muslim b. 'Ubaydillāh b. 'Abdullāh b. Shihāb (mid tābi' al-tābi'īn/ died 124 H/ Medina) became critical because they participated in more than one sub-group. The only companion generation who participated in this sub-group was Ibn 'Umar ('Abdullāh b. 'Umar b. al-Khattāb b. Nufayl). However, in this sub-group Nafi', the mawla of Ibn 'Umar (ordinary tabifin/ died 117 H/ Medina) position became very central because it became a bridge to connect with tabi' al-tabi'in generations (Layth b. Sa'ad b. 'Abd al-Rahman with Malik son of Anas, son of Mālik, son of Abi Amir). Without Nāfi', mawlā Ibn 'Umar, Mālik b. Anas b. Mālik b. Abī Amīr would be isolated from the sub-group of hadith narrators.

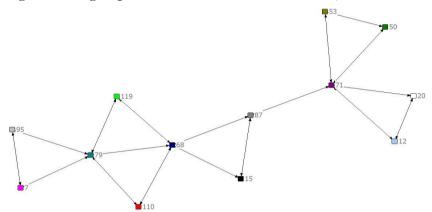


Figure 3 Sub-group in the Network of Environment Ḥadith Narrators

Note:

7	'Abdullāh b. 'Abd al- Raḥmān b. Awf (middle tābi'īn)	71	Mālik b. Anas b. Mālik b. Abī Amīr (old <i>tābi' al-tābi'in</i>)
12	'Abdullāh b. Dhakwān Abū al-Zanād (ordinary tābi īn)	79	Muḥammad b. Muslim b. 'Ubaydillāh b. 'Abdullāh b. Shihāb (middle <i>tābi</i> ' al-tābi in)
15	'Abdullāh b. 'Umar b. al- Khaṭṭāb b. Nufayl (companion)	87	Nāfi', mawlā Ibn 'Umar (ordinary tābi līn)
20	'Abd al-Raḥman b. Hurmuz (middle <i>tābi'īn</i>)	95	Saʿīd b. Abī Musayyab b. Ḥazan b. Abī Wahab b. Salim (old <i>tabi in</i>)
50	Ḥammad b. Salamah b. Dimar (middle <i>tabi'ut tābi'īn</i>)	110	'Uqayl b. Khālid b. 'Uqayl (tābi'īn not meet companion)
53	Hishām b. 'Urwah b. al- Zubayr b. al-'Awwam (old <i>tabi'ul atba</i>)	119	Yūnus b. Yazīd b. Abī al-Najjād (old <i>tābi' al-tābi'īn</i>)
68	Layth b. Sa'ad b. 'Abd al- Raḥmān (old <i>tabi'ut tābi'īn</i>)		

Conclusion

This article aims to analyze the *matn* hadith related to the environmental management and the *sanad* hadith using SNA. From the *matn* point of view, this research found six themes of the environmental hadith in KSB. This finding complements the results of previous studies that have not touched this theme. From the *sanad* point of view, the research reveals the important role of Muḥammad b. Muslim b. 'Ubaydah b. 'Abdullāh b. Shihāb (middle *tābi*' *al-tābi'īn*), Mālik b. Anas b. Mālik b. Abi Amīr Mālik b. Anas b. Mālik b. Abī Amīr (old *tābi' al-tābi'īn*), 'Abdullāh b. 'Umar b. al-Khaṭṭāb b. Nufayl (companion) in the network of environment ḥadīth narrators in KSB. This finding could be a scientific basis for conducting further research on the progress of these three narrators in the narration of the ḥadīth.

As revealed in Figure 1 and Figure 2, the SNA method was successful in revealing the existence of isolated narrators of hadith networks even though the chain of sanads was unbroken so that the quality of the hadith remained valid (sahīh). The question is, why is a hadith only circulating among limited narrators? The isolated narrators, ideally, would be used as a starting point to criticize the degree of hadith validity. Although the narrators met the conventional criteria of hadith narrator (i.e fair, thiqqa, thabit, and hafiz), the hadith which is narrated by the isolated narrators had not undergone a process of triangulation among the narrators so that their validity status could be criticized. In the case of hadith number 2.191, for example, it was very illogical that the sentences of the Prophet were only heard by Asma' bt. Abi Bakr al-Siddig when he finished carrying out eclipse prayers whose assumptions were carried out collectively, except the Prophet had carried out eclipse prayer alone. Also, this hadith tends to stand alone not connected with other traditions in the KSB or other hadith books. Even so, from the matn perspective, hadith number 2.191 still contains a positive message.

SNA is a modern technique that allows researchers to visualize the relations of hadith narrators. If Juynboll⁴² identifies the form of hadith narrator's relation into three types: stand-alone, spider, and combination, then the SNA method can produce a very sophisticated form of narrator's relation, depending on the number of narrators

⁴² G. H. A Juynboll, *Encyclopedia of Canonical Hadith* (Leiden, Netherland: Koninklijke Brill, 2007), xxiii.

and the number of relations between narrators formed in the process of transmission and hadith circulation. The SNA answered Juynboll's criticism of the classical approach to the study of hadith because it was less concerned with the overlapping relations of the hadith narrators. The SNA was able to identify the narrators who were dominant in the hadith and sub-group narrators' in a network of specific hadith. Although the results of the SNA analysis cannot be used as a basis to reduce the degree of hadith validity, from example from sahih to da'if, it will significantly help hadith researchers to find a network of isolated narrators.

Another exciting finding relates to the female hadith narrators. As shown above, there were only three female narrators ('A'isha bt. Abi Bakr, Asma' bt. Abi Bakr, and Hafsah bt. 'Umar b. al-Khattab) participated in the environment hadith narrators. Beside the parentchildren relationship, the husband-wife relationship also makes the quality of hadith more valid. However, the study of the female hadith narrators is still very rare. In the future, the female hadith narrators need to get serious attention from scientists in the country.

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