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Revealing the Hidden Treasures of Reason and the Brain: An Analysis Based on the Thinking of Philosophers and Scientists

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Abstract: This study aims to determine the paradigm shift of scientists who use inner reason to external reason (mind), a concept initiated by Aristotle. The change allegedly occurred because of the strict laws of science. Philosophers basically talk about a topic broadly and deeply about inner reason, while scientists are more focused and narrower (outer reason). Data are obtained from six articles closely related to reason, mind, and brain, then explored and presented by six expert panels for data analysis using the N Vivo 12 QSR tool. The study shows a very strong correlation between the philosophical factor and reason. The results of the cluster analysis describe various comprehensive topics discussed by philosophers regarding reason which are correlated with inner reason and God, while the scientific discussion shows a very strong correlation between the brain and the alpha band. The alpha band is a condition that exists in brain waves. The cluster analysis results illustrate that scientists' discussions are focused and narrow on the brain. Thus, there has been a paradigm shift, where scientists now use outer reason to solve problems in life rather than applying inner reason. An interesting finding from this paper is that philosophers refer to reason as a noun, which means that reason is matter. This information is helpful because until now, based on a literature search, there have been no articles from scientists explaining that reason is a matter.

Keywords: Philosophy, Reason, Brain, Noun, Philosophers, Scientist

1. Introduction

Society often examines and communicates the brain and reason, but it is often inaccurate. Improper delivery is caused by ways of thinking, experience, and knowledge about objects, so sometimes, it can lead to conflict [1]. Therefore, deepening knowledge about the brain and reason is considered very important and different.

Intellect and brain are simple words but complicated to explain. For example, we hear words related to reason in short phrases; "Make sense, use it, use your mind, do not be angry" [2]. Many use the word subtle sense as the core of sentences, from sentences to lengths. The Qur'an pays special attention to reason very carefully. Reason becomes the main subject and is highlighted due to various conditions, including because the mind (reason) moves, thinks, commands, and requires believers to use their reasonable best. With reason, one works, seeks knowledge, understands the hereafter, prays, and fasts solemnly; and with reason, one considers, justifies, or blames something, gives, prays, and approaches God also, because a person's mind does not know his God [3].

In metaphysics, Plato observes the relationship of reason with God [4]. Starting from the most basic sentences, the best comes from reason or The One [5]. Similarly, Shakespeare explains the difference and relationship between reason and senses [6]. That meaning is sometimes synonymous with the 'inner reason,' while the senses are considered 'outer reason'.

The inner and outer senses are concepts derived from the work of Aristotle, which have been gradually developed through philosophy and psychological thought over the centuries. The concept of 'inner reason' comes from the classical view of psychology. The concept of 'outside reason' influenced medieval thought from classical philosophy, finding its most prominent expression at the time, and continues to thrive today.

Aristotle said that the essence of man lies in reason, which makes him a thinking being. He talks more about reason in the context of the soul, senses, and perception (inner reason) [7]. Common sense allows subjects to unify perceptions of the properties of objects, as listed above, in one coordinated center of perception [8]. Ibn Sina tried to explain his opinion in his literature *Al-Isyarat wa tanbihat*. He divides the object of thought into three, namely a). God describes Himself; b). The reason is obligatory as emanating from God and Himself, and c). Reason has good attributes [9]. Thus, Sina explains the reason in terms of nouns, verbs, and adjectives. Al-Farabi in his Literature Multilevel Common Sense; Neuroscience; Islamic education, has tried to explain his opinion but ends by discussing how the neural branch works on the brain (neuro) [10].

Currently, scientists are paying great attention to research on the brain and neurons. In scientific research, the meaning of reason is more specific in discussing the brain, neurons, and senses [11]. Several recent studies using signal processing provide an overview of the differences between electroencephalographic and brain-computer interface waves in the brain. It is very interesting to understand that there are waves in the brain. Light waves are closely related to energy and have a wavelength of 380 nm-750 nm [12]. Physics observes light as energy from visible or invisible electromagnetic waves. Light is electromagnetic radiation and is a packet of particles called photons (wave-particle dualism). So, this property is indicated by light (spectrum) perceived by sight as color [13].

In the discussion of external reasoning in the 21st century, people no longer discuss the relationship between internal and external reasoning. The outer reason produces many things to see and can lead to a better life. The current study is moving toward the brain and cells. The world of senses (outer reason) is the real world, including concrete physical objects that the five senses can perceive. The sense world is a reflection or shadow of the ideal world; there is always an opportunity in this sense-world [14].

Related to outer reason, the philosophy of logic-positivism-logical empiricism says that the meaning of reason is what is visible and visible, which in the end, gives birth to an understanding of materiality and leaves things that are different and deeper than the truth. At the same time, thinking implies abstract metaphysical ideas. This study focuses on clarifying the expert opinion about the reasons. Is it true and why do people today no longer talk about the inner reason and only tend to the outer mind? From that question, a hypothesis was built: In the 21st century, people tend to use outer reason to solve problems in life. In this study, there is a limitation of the term needed, namely the meaning of reason as a verb - it can be seen from what someone does. The meaning of reason as an adjective - can be seen from the adjective that obeys or rejects. The meaning of the noun - has yet to be revealed in various studies. That is the focus of this research.

2. Methodology

The Systematic Literature Review method was used to strengthen the analysis [15] by involving experts in the exact and non-exact fields. Furthermore, phenomenological studies are used to find the true essence of reason, focusing on the text's interpretation and experts' opinions [16]. The keyword essence of reason in this research will produce the actual output. The research begins with a search for various literature by browsing articles/data from dimensions.ia and researchgate. The search found 22 articles on philosophy discussing reason, thought, and the brain and 189 from scientists. Then, six articles were selected, considering the most recent publication year and relevance to the research topic [17]. In the second step, determine groups of 3 experts (reviewers) from the exact and 3 experts from the non-exact. The determination of expert reviewers is done by purposive sampling technique. Six expert panels/reviews, namely, the reviewer group-1 consisting of exact experts (neurologist, physicist, and chemist), while the reviewer group-2 is a non-exact (religionist, psychologist, and historian).

Third, researchers and reviewers examine and give meaning in the form of 5-7 sheets of paper reports from the thoughts of philosophers such as Aristotle, Al-Farabi, Ibn Sina, Al-Arabi, Ibrahim Mustafa, Ibn Rushd and combined in 3 kinds of literature. While three combinations of literature from experts, such as Foster [18], Sejnowski [19], Thompson, and Hielscher, were also combined by three exact reviewers. The combination of articles intended for this step is intended to facilitate analysis with the N Vivo 12 tool. Finally, the researcher and the expert panel gave opinions and came up with six conclusions containing a combination of reviewers' opinions on the relevant literature.

3. Literature Review

This review is based on Aristotle's and other philosophers' explanations regarding reason. The concept of reason meant by Aristotle is about 'inner reason' and 'outer reason. According to him, the concept of reason differs from the concept of the brain. However, the words 'reason' and 'brain' are sometimes used interchangeably by people because of their vague understanding. For example, the concept of 'inner reason' explains 'inner knowledge' (hereafter), then the concept of 'outer reason' is closely related to world knowledge (worldly) [20] and describes it by distinguishing ambition to distinguish rational persuasion from mere persuasion.

Aristotle's concept of reason has given birth to many concepts, including mind mapping, the brain, brain abilities, and nerve energy that are being developed today. By using the concept of 'outer sense,' experts have discussed many

problems of the micro and macro cosmos, human relations with the development of the world, world technology, and technical practices in processing the world [21].

The concept of the 'inner reason' has also provided many concepts, especially discussing the problem of human relations with God, the micro-macrocosm, cosmology (the creation of the universe), lust, and matters of salvation to the afterlife. The approach is inner, spiritual, and the formation of noble character related to God [22, 23]. According to Aristotle, the inner reason is a person's ability to distinguish humans from animals, and only humans have real reasoning thoughts. Common sense can distinguish perception from one sense to another [24]. For example, sight distinguishes dark from light, and taste distinguishes bitter from sweet. Neither can nor any sense organs be able to perceive multiple objects with common sense at the same time. Each sense is different and only perceives one sensory object [25].

Ibn Sina explains that reason is the power that distinguishes humans from animals and other creatures. This power exists in every human being, and the power is different in every human being [26]. Taimiyyah explains that with reason, people understand things, are good at calculating carefully [27], and work in this world for the benefit of the hereafter [28]. This scientific field is called Neurotheology [29]. This multidisciplinary science seeks to understand the relationship between the human brain and religion [30].

Aristotle and Ibn Sina explained reason in the form of a verb [31], quoting from Abu Bakr ibn al-Arabi describing that reason as a trait that produces the perception of knowledge, while Ibn Khaldun understands reason as careful consideration whose results are specific and reliable. Likewise, Ibrahim Mustafa explained that reason is by which beauty can be distinguished from the bad, good from evil, and right from wrong [32]. Zakaria Al-Razi's view of reason is the best gift from God. According to him, the reason is that a noble creature is needed by humans and should not be misused.

Pachniak quoting Al-Ghazali's opinion said the reason is a pile of light of God (source of reason) [33]. In a parable, he said: The tiger is fierce and fierce, but he is still afraid when dealing with humans who use reason, and no one has intelligence except one who believes in his Lord. Animals cannot initiate communication with God, so observe that God is the first to communicate with creatures [34]. For example, we may wonder when a bee received a revelation or inspiration from its Lord to make a nest easily [35]. All the concepts of the reason that the Philosophers describe as 'inner reason.'Philosophy can be divided into two parts, namely conceptual and practical. The theoretical part is man's perfection, which fills his potential to know everything until the perfection of his knowledge is right in his mind. His beliefs are true, and he does not doubt his truth by using his inner sense. The philosopher explained that humans have three strengths: *al-nafs al-bahimiyah* as the lowest power, *al-nafs al-sabu'iyyat* as the middle power, and *al-nafs al-nathiqah* as the highest power. The concept that the eye is seen from the mind and that the eye is responsible for receiving light, or what is, but which is responsible to God is the reason [36].

Likewise, the essence of God is the original creative light, which always illuminates existence. Light is the creation and continues to manifest in the universe and has energy. God's Essential Light radiates throughout the universe in abundant beauty and completeness. Whoever has an enlightened mind, then salvation is for him [37]. So, philosophy aims to obtain happiness by using reason. There are two ways to obtain happiness, namely by way of inner Sufism and by way of thinking and contemplation (inner reason). The level of *ma'rifat* (metaphysics) is reached through reason, not feeling, from the unique sense of objects and universal thoughts to the thought of the creation of the universe. With the teachings and guidance of God, the human mind can know the existence of God through the signs in His creation. Intellect is the producer of civilization, and reason strengthens the existence of God and His creation functions to achieve happiness (inner reason). Thus, it can be understood that Philosophers are interested in talking about the inner reason, nouns, verbs, and adjectives. Moreover, in table 1, only one philosopher discusses the brain.

Table 1. *Opinions of Philosophers and Scientists on Inner and Outer Reason, and the Definition of Reason as Nouns, Verbs, and Adjectives.*

Philosophers/Scientists	The meaning of reason is as follows:			Description/Discussion
	Noun (n)	Verb (v)	Adjective (a)	
Aristoteles (384-322)	v	v	v	Reason: Inner reason
Al-Farabi (872-951)	v	v	v	Reason: Inner reason
Ibn Sina (980-1037)	v	v	v	Reason: Inner and outer reason (brain)
Al-Ghazali (1058-1111)	v	v	v	Reason: Inner reason
Ibn Al-Arabi (1165-1240)	v	v	v	Reason: Inner reason
Ibn Tufail (1207-1273)	v	v	v	Reason: Inner reason
Ibn Taimiyyah (1263-1328)		v	v	Reason: Inner reason
Ibn Khaldun (1332-1406)	v	v		Reason: Inner reason
Syrāzī (1571-1635)	v	v		Reason: Inner reason
Thompson et al. (1957)	v	v		brain
Hielscher, et al. (1998)	v	v		brain
(Foster et al., 2017)	v	v		brain
Sejnowski (2020)	v	v		brain

Source: processed by researchers and reviewers, 2022.

On the other hand, scientists explain that the brain has billions of neurons in the form of codes to store various information for communication. The word communication has a broad meaning, encompassing all transmissions of energy, soul sound waves, signals, and systems in the brain. The word communication is used as a message from one being to another. Likewise, in channeling energy from the senses to the brain there is a process of communication, receiving, and processing information.

The human brain is the most sophisticated computer capable of storing trillions of bits of information [38]. Recent research has revealed that the human brain can store data up to a capacity of 1 million Gigabytes, which is ten times greater than the results of previous studies. One link between nerve cells called synapses in the brain can store 4.7 bits of data, while the human brain has 1,000 trillion more synapses [19]. New measurements of brain memory capacity increase conservative estimates by a factor of 10 to at least 1 petabyte, on average, equal to the World Wide Web [39].

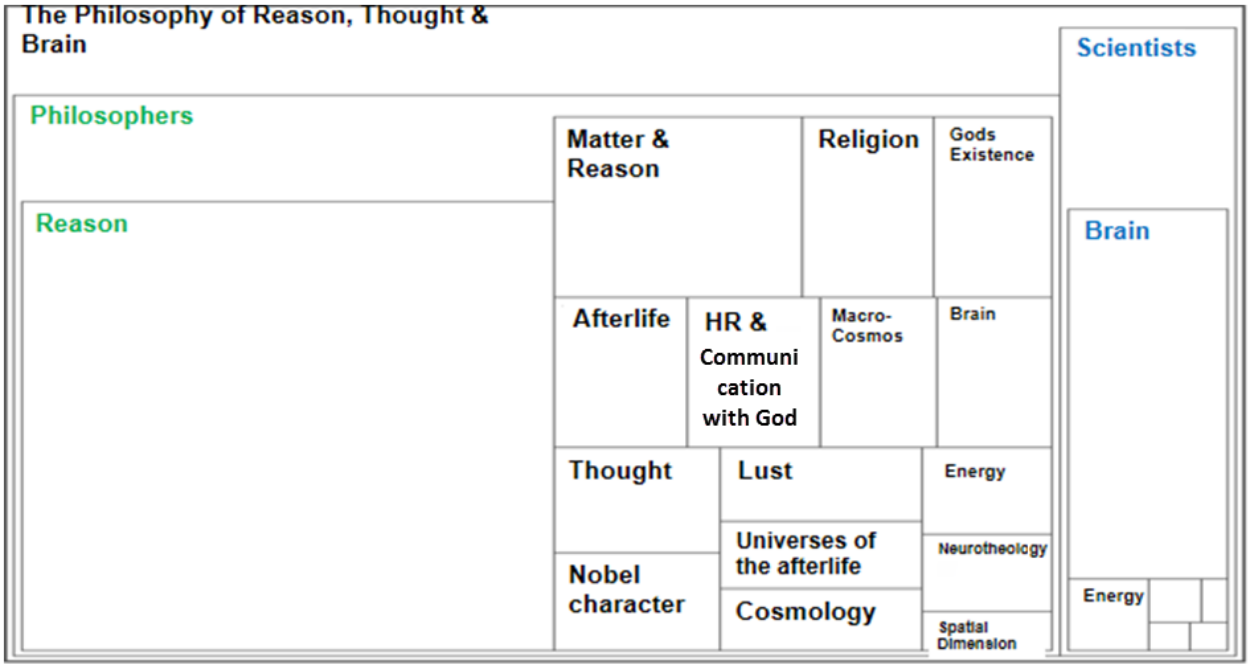
The brain has light waves and memory, and experts have discovered a spike in how the brain works [40]. Brain waves (hertz, 1 Hertz = 1 wave per second) [41]. The concept of light explains that photons and waves are dualism [13], where light is electromagnetic wave energy that can be seen with wavelengths up to 750 nm [42]. In the modern optical era, other properties of light were introduced in terms of diffusion and scattering [43]. Memory is in the brain. Biologists explain reason with the structure of the brain [44], and computer scientists explain it as a computer hard disk [45], while neuroscientists associate it with nerve nodes [46]. Medical experts, psychologists, and communication experts say that the brain's memory has a memory store. Balderas et al. [47] explained that memory consists of short-term and long-term parts. Brain memory is a neural circuit that can store pieces of information and billions of data. Thus, it can be understood that scientists are basically interested in discussing outer reason.

4. Analysis and Discussion

4.1. Word Cloud and Frequency Query

A word cloud (text cloud or tag cloud) is a method for visually displaying text data and is used in text mining for easy understanding. When a word cloud is used, a word frequency overview can be displayed and informative. The more often a word is used, the larger the size of the word is displayed in the word cloud. The bigger the font display in the word cloud, the hotter the problem. Some of the dominant words that are highlighted in this N Vivo 12 analysis tool from philosophers' opinions are the reason, matter, afterlife, though, noble character, religion, human relations and God, lust, universes of the afterlife, cosmology, good existence, brain, energy, neurotheology, and spatial dimensions.

Meanwhile, in Scientists, it is the brain and energy. The dominant word appears because the informant repeats the words in the data source. The reason and brain perspective appear based on the Node output as a factor or variable. The word cloud on the left looks very large, while the word 'reason' indicates that philosophers often discuss it. Meanwhile, in the word cloud on the right, the words are spread out of focus, indicating that scientists are competing on the topic of discussion (multiple topics).



Source: Processed from N Vivo 12

Figure 1. *Word Frequency and Hierarchy Chart.*

Source: Processed from N Vivo 12

Figure 2. *Differences in Word Frequency and Hierarchy Chart (Philosophers and Scientists).*

Table 2. *Highest Weighted Percentage of Word Frequency and Hierarchy Chart.*

	Length	Count	Weighted percentage (%)
Word (Philosophers)			
reason	6	112	6.40%
god	3	47	4.06%
humans	6	19	1.73%
particles	9	19	1.66%
matter	6	15	0.86%
creatures	9	11	1.09%
light	5	14	0.80%
energy	6	12	0.69%
brain	5	10	0.57%
mind	4	9	0.51%
thought	5	9	0.51%
Word (Scientist)			
alpha band (brain)	5	96	1.47%
spatial	7	93	0.85%
attention	9	86	0.79%
learning	8	82	0.75%
Search	6	80	0.73%
time	4	72	0.66%
target	6	66	0.60%
activity	8	65	0.60%
visual	6	53	0.49%

Source: Processed from N Vivo 12

4.2. Word Frequency in Hierarchical Diagram

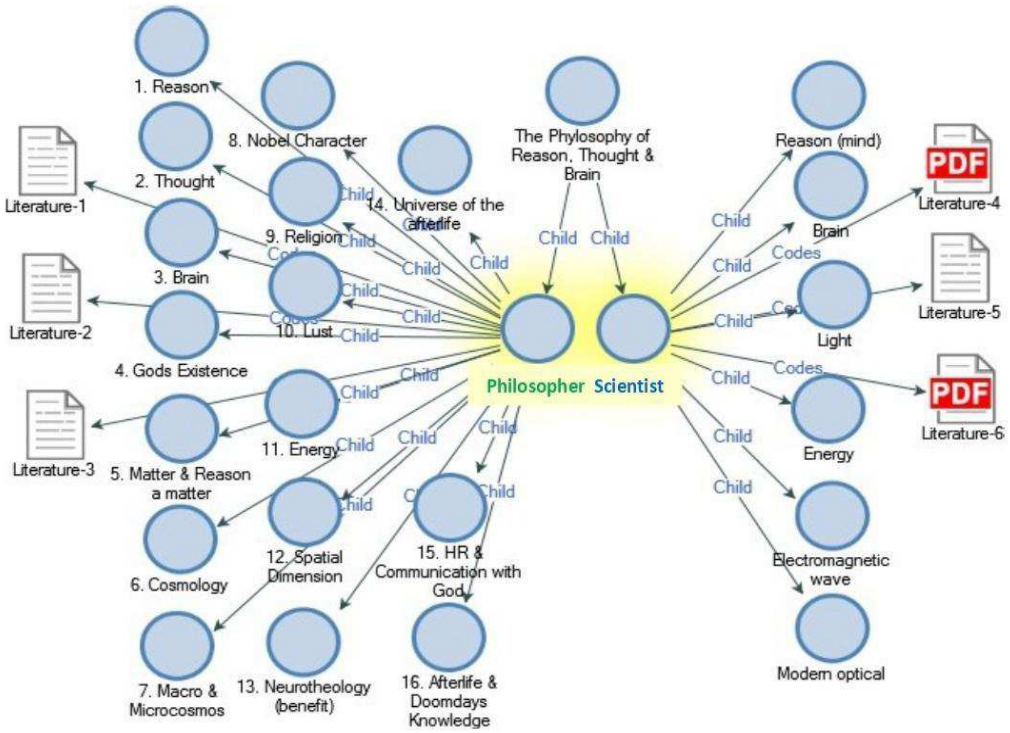
The following diagram is useful to see the dominance of words that should be taken based on the number of coding in the data source. This chart displays hierarchical data in rectangles of various sizes and round shapes, and the number of resulting factors [48]. For example, the number of coding on the Node and the number of code-based references in the article review results. Hierarchy charts are scaled according to the available space so the size of the rectangles should be considered against each other, not in absolute numbers. The largest area is shown at the top left of the graph, while the smallest is at the bottom right. Data sources 'words', which have a lower level of similarity based on the occurrence of nodes and word frequency, will be separated and obtain the Highest Weight Percentage of Word Frequency and Hierarchical Diagram. Cluster analysis can be seen in the image below. The hierarchy chart illustrates the relationship between factors from the opinion of Philosophers and Scientists.

Based on the results of data analysis, 14 words were obtained based on the weights presented, and the most frequently appearing in the philosophers were: reason (6.40%), God (4.06%), humans (1.73%), particles (1.66%), matter (0.86%), energy (0.69%), brain (0.57%), mind (0.51%), thought (0.51%). In comparison, the words that often appear in scientists are alpha (0.88%), spatial (0.85%), attention (0.79%), learning (0.75%), search (0.73%), time (0.66%), target (0.60%), activity (0.60%), and band (0.59%). The word cloud shows that the presentation of words (Calle-Alonso et al., 2018) that most pops out is indicated by big words and small words, the percentage that comes out the least.

4.3. Group Analysis Comparison

Then, to understand the essence of reason, thought, and the brain, according to philosophers and scientists, commitment to the process must be built on these points. Therefore, it

must first be determined by child nodes. Figure 3 illustrates the partial correlation of a node with its child nodes. A total of 22 child nodes were obtained from the data source. All child nodes can be seen in the image below.

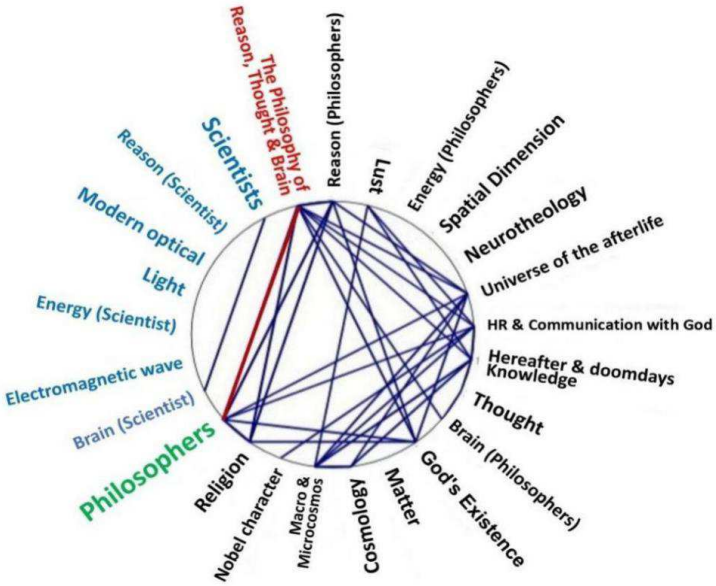


Source: processed from N Vivo 12

Figure 3. *Comparison of Cluster Analysis Nodes with 16 child nodes and 6 child nodes between Philosopher and Scientist.*

4.4. Cluster Analysis

The Cluster analysis is used to determine the correlation of relationships based on the similarity of words in the 'Nodes' data source selected for comparison [49]. Data sources from 'nodes' that have a high degree of similarity are based on the occurrence of 'nodes.' The word frequency will be displayed as a group. Data sources (nodes) that have a lower level of similarity based on the occurrence of nodes and word frequency will be separated. The next feature is the Word Frequency and Hierarchy Chart, which will generate tabulated data and can be analyzed in terms of correlation. The result is



Source: processed from N Vivo 12

Figure 4. *Cluster Analysis of word cloud area between Philosopher and Scientist.*

The results of cluster data analysis produce quantitative data analysis in the form of the Pearson correlation coefficient, which can be interpreted as a very strong, strong, moderate, weak, and very weak relationship. Cluster analysis can be seen in the image below.

Table 3. *Pearson Correlation Coefficient.*

No	Code A	Code B	Pearson correlation coefficient	Value of correlation
1	Nodes\\Philosophers	Nodes\\Reason	0,925656	very strong
2	Nodes\\Philosophers	Nodes\\ Inner knowledge	0,914489	very strong
3	Nodes\\Philosophers	Nodes\\Religion	0,906153	very strong
4	Nodes\\Philosophers	Nodes\\God's Existence	0,809061	very strong
5	Nodes\\Philosophers	Nodes\\Reason as a Noun (matter)	0,806492	Very strong
6	Nodes\\Philosophers	Nodes\\outer reason	0,730106	strong
7	Nodes\\Philosophers	Nodes\\Universe of the hereafter	0,698649	strong
8	Nodes\\Philosophers	Nodes\\HR & Communication with God	0,690896	strong
9	Nodes\\Philosophers	Nodes\\Hereafter & Doomsday Knowledge	0,670308	strong
10	Nodes\\Philosophers	Nodes\\Macro & Micro cosmos	0,657455	strong
11	Nodes\\Philosophers	Nodes\\Outer reason	0,657050	strong
12	Nodes\\Philosophers	Nodes\\Reason as a Verb	0,656446	strong
13	Nodes\\Philosophers	Nodes\\Thought	0,607677	strong
14	Nodes\\Philosophers	Nodes\\Reason as an Adjective	0,602753	strong
15	Nodes\\Philosophers	Nodes\\Nobel Character	0,568733	medium
16	Nodes\\Philosophers	Nodes\\Reason contains energy	0,550414	medium
17	Nodes\\Philosophers	Nodes\\Neurotheology (benefit)	0,545024	medium
18	Nodes\\Philosophers	Nodes\\Lust	0,477267	medium
19	Nodes\\Philosophers	Nodes\\Matter & reason a matter	0,471855	medium
20	Nodes\\Philosophers	Nodes\\Energy	0,393759	weak
21	Nodes\\Scientists	Nodes\\Alfa band	0,801816	very strong
22	Nodes\\Scientists	Nodes\\Brain	0,776943	strong
23	Nodes\\Scientists	Nodes\\Neuro mechanism	0,713338	strong
24	Nodes\\ reason (mind)	Nodes\\Memory	0,572080	medium
25	Nodes\\Reason (mind)	Nodes\\Light	0,335949	weak
26	Nodes\\Scientists	Nodes\\Reason (mind)	0,121481	weak
27	Nodes\\Reason (mind)	Nodes\\Brain	0,118166	weak

Source: processed from N Vivo 12

The relationship between the results of the N Vivo 12 QSR analysis resulting in a correlation coefficient must be accompanied by a narrative. Table 3 illustrates the 'very strong' Pearson correlation coefficient between philosophers and reason (0.906153). Correlation with inner knowledge produces (0.914489), religion (0.906153), God's existence (0.809061), and reason as a noun/matter (0.80649). These five child nodes describe the highest correlation coefficient, and the discussion of reason becomes the main thing for philosophers. Interestingly, philosophers call reason a noun or matter, which implies that reason is a thing. This information is useful because until now, based on a search in many kinds of literature, the scientist's articles need to explain that reason is a matter. Philosophers also explain the reason as a noun with a correlation coefficient (0.657050) and a verb (0.656446). This correlation shows that they also discuss reason in the context that reason is active and has attributes.

The results of the cluster analysis of the word area of philosophers also show a very large and wide number of discussions. Besides discussing reason, they also discussed thought, brain, energy, reason as energy, neurotheology, outer reason, universes, the universe of the hereafter, macro and micro cosmos, human relations and communication with God, lust, and noble character.

In the cluster analysis area, the word from Scientist describes Pearson's correlation coefficient as 'very strong with the brain (alpha band) which is (0.801816). Correlation with brain (0.776943), neuron-mechanism (0.713338), and memory (0.572080). These four child nodes describe the highest correlation coefficient at the focal point of the alpha band. The alpha band is a condition that exists in brain waves. The discussion of the alpha band and the brain is the main thing for scientists regarding neuron mechanisms and brain memory. The results of this Cluster Analysis also show the number of narrow discussions focused on scientists.

5. Conclusion

Philosophers broadly express the broadness of the discussion of the science of philosophy. The discussion of the inner reason is closely related to religion, human relations and communication with God, lust, noble character, the universe of the hereafter, and spatial dimension. Concerning outer reason, philosophers also discuss energy, reason as energy, neurotheology, universes, macro, and microcosmos. This research has answered the hypothesis that there has been a paradigm shift, where scientists now tend to use outer reason to solve problems in life and put aside inner reason.

The findings of this paper reveal that philosophers describe reason as a noun or matter, which implies that reason is a

thing. This information is useful because until now based on searches in many kinds of literature, the scientist's articles need to explain that reason is material.

6. Recommendation

This paper seeks to inspire further researchers to understand and expand the discussion of knowledge about the reason that has not yet been revealed scientifically.

Declaration of Competing Interest

The author declares that it has no competing interests.

Compliance with Ethical Standards

The researcher obtained Ethical Approval from the University before this research (UMJ - Chancellor No. 028/DPP-91-2021).

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