RESEARCH PAPER

Sri Guru Gobind Singh: Artificial Intelligence tools used in developing the scale for Practical Philosophy

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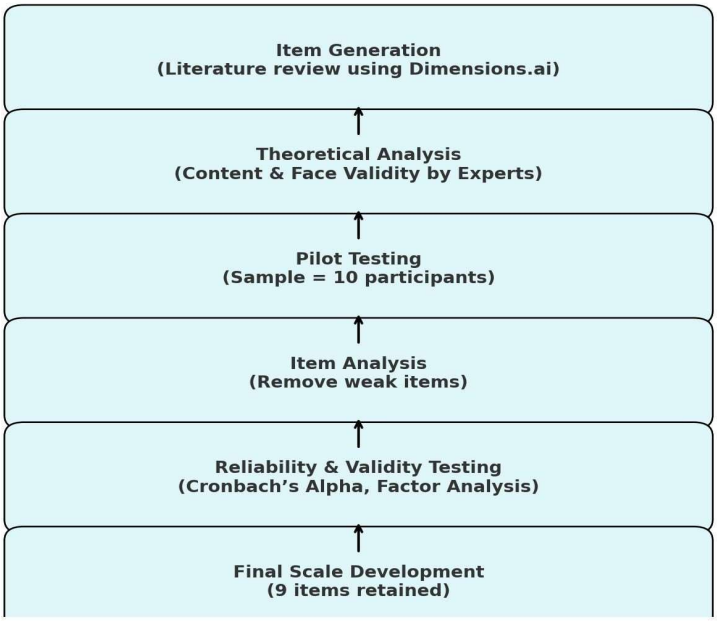
Abstract
Background: The Dasam Granth is attributed to Guru Gobind Singh, contains first chapter discussing a range of philosophical and historical topics. While there isn't a specific chapter titled "Practical Philosophy," the Bachittar Natak (name of the Bani) as a whole delves into philosophical ideas, including those related to practical applications including spirituality.

Objectives: The objective is to quantify the practical philosophy content of the tenth Guru by developing scale by using four AI tools to study and interpret. The possible AI tools are; OpenAI (dimensions.ai), [>_], Dimension reduction, Plagiarism checker, Grammer check.

Methodology: A research query was generated and Scient metric data was collected from the “dimentions.ai” online database on practical philosophy of Sri Guru Gobind Singh. [>_] code is used for scale development involves leveraging its capabilities to automate tasks and streamline processes. This paper will also explore various dimension reduction techniques available in SPSS, including Principal Component Analysis (PCA), Factor Analysis, and Multidimensional Scaling (MDS). This paper highlights the importance of choosing the right plagiarism checker tool based on specific needs.



Result and Conclusion: Conceptual framework is developed through the Artificial Intelligence tools used for Practical Philosophy described in Dasam Granth.

Keywords: Artificial Intelligence tools, spirituality, Sikh ethics, practical philosophy, Scale development
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1. Introduction

Sikhism is introduced by the Gurus, starting with the first Guru, Sh. Guru Nanak (1469-1539) and culminating with the tenth guru, Sh. Guru Gobind Singh (1666-1708). Basically, Sikh relation is an organised collective Institution of devotion to Supreme reality (truth) through service of humanity. The tenth Guru of the Sikhs, Sh. Guru Gobind Singh figures in world history as a great leader, of Fearless Revolutionary Warrior, an adept strategist and an all-sacrificing martyr for the cause of suffering and persecuted humanity. The significance of the teachings of Sh. Guru Gobind Singh is not limited to a particular religion or region only, but a matter of national importance. He introduced new innovations pertaining to social change and social transformation and a universal value pattern through his unique and practical philosophy of life (described in figure no. A.1).

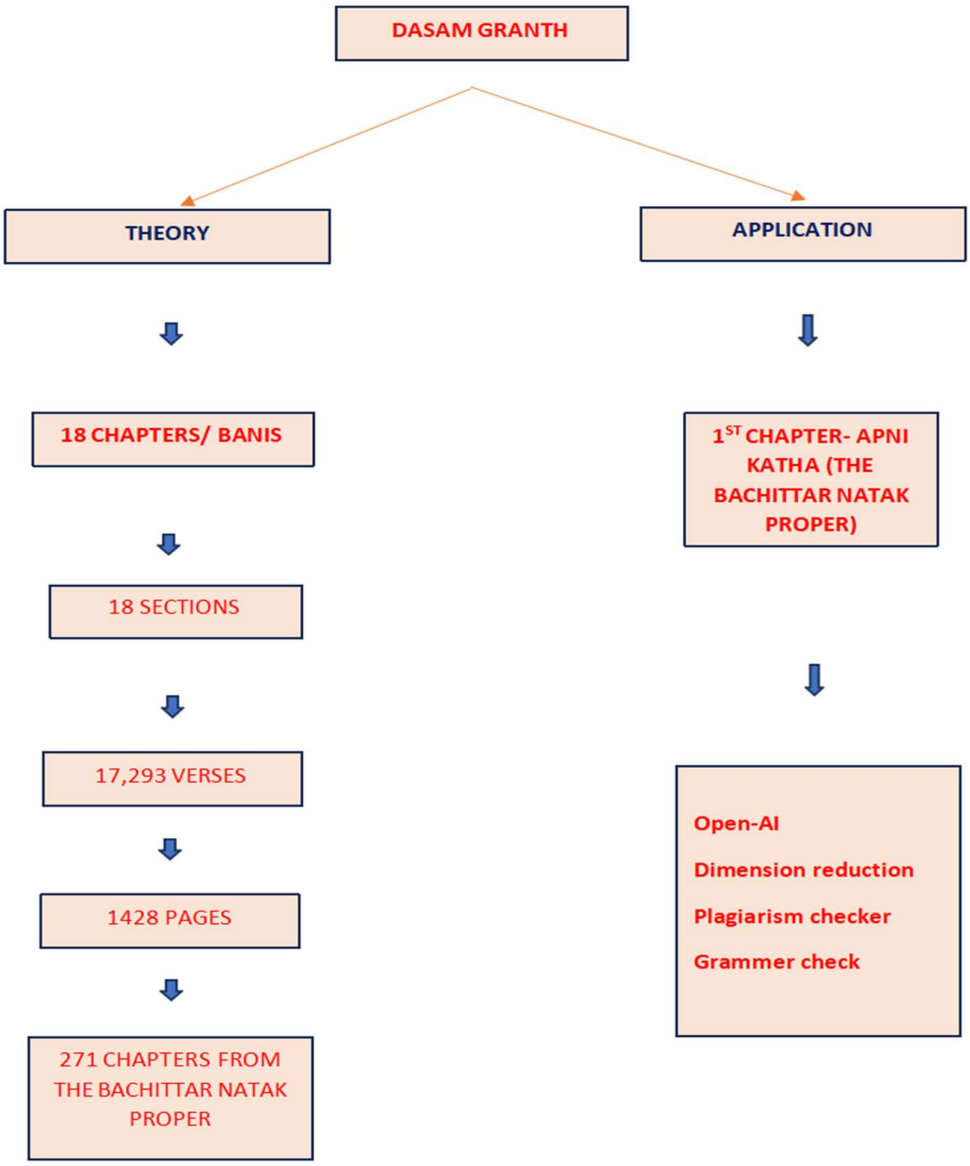


Figure no. A.1.Dasam Granth- Apni Katha (the Bachittar Natak proper)

From 1st guru “Guru Nanak Dev ji” to 10th guru “Guru Gobind Singh ji” of Sikhs has culminated in an innovation pattern having the Practical Philosophy followed by following sub-domains (described in figure no. A.2).

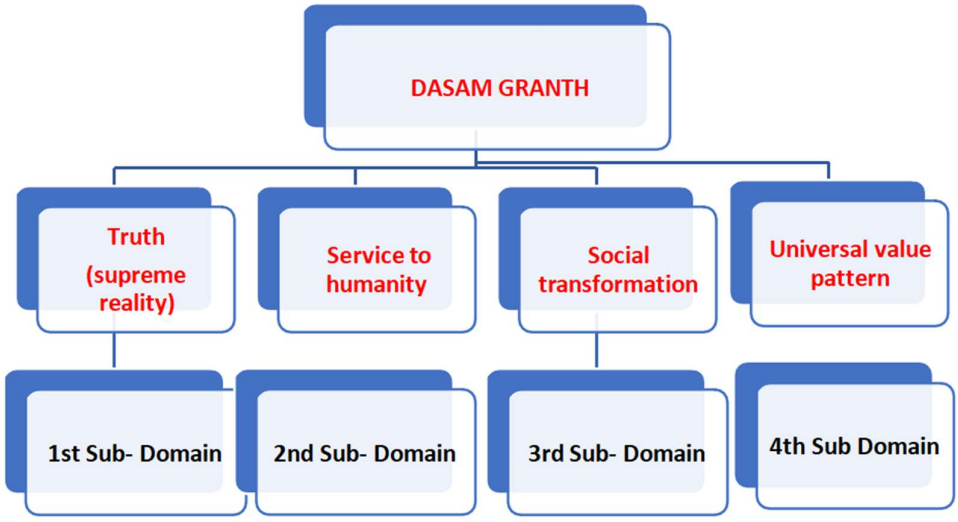


Figure no. A.2 Practical Philosophy followed by sub-domains

i. Truth (supreme reality)

Guru Gobind Singh Ji emphasized the concept of truth (Sat) as a fundamental aspect of Sikh philosophy. In Sikhism, truth is regarded as the supreme reality, transcending all worldly illusions and falsehoods. Adhering to the principles of truthfulness and aligning oneself with the eternal truth are considered essential for leading a meaningful and fulfilling life in accordance with Sikh beliefs.

ii. Service to humanity

Guru Gobind Singh Ji emphasized the importance of selfless service to humanity as a central tenet of Sikh philosophy. By dedicating oneself to the welfare of others, Sikhs strive to embody the principles of Sikhism and contribute to the greater good of humanity.

iii. Social transformation

Guru Gobind Singh Ji emphasized the importance of social transformation as a central aspect of Sikh philosophy. His teachings focused on empowering individuals to challenge injustice, promote equality, and work towards building a more just and compassionate society. Guru Gobind Singh Ji's teachings on social transformation advocate for the empowerment of individuals to challenge injustice, promote equality, and work towards building a more compassionate and inclusive society. By embodying the principles of courage, equality, service, and spiritual awakening, Sikhs strive to create positive change in the world around them.

iv. Universal value pattern

Guru Gobind Singh Ji propagated universal values that are fundamental to Sikh philosophy and are applicable to people of all backgrounds. While he did not explicitly outline a specific "universal value pattern," his teachings encompass principles that are universally relevant and can guide individuals toward a life of righteousness and spiritual fulfilments.

2. Review of literature

2.1. Dasam Granth

The Dasam Granth holds a unique position in Sikh literature. Unlike the Guru Granth Sahib, which is primarily composed of spiritual hymns, the Dasam Granth includes a variety of genres such as poetry, tales, and autobiographical writings. Scholars have debated the exact authorship and compilation history of the Dasam Granth, with some attributing the entire work to Guru Gobind Singh, while others suggest contributions from his court poets and subsequent followers (Grewal, 2011). The complex history of the Dasam Granth's compilation, noting that it was likely assembled posthumously by Guru Gobind Singh's disciples (Mann, 2012). The text was compiled between the late 17th and early 18th centuries, during a period of significant upheaval and transformation in the Sikh community. The Granth is traditionally divided into several sections, each with its distinct style and thematic focus (Mann, 2012).

The Dasam Granth covers a broad spectrum of themes, from divine justice and righteousness to heroism and devotion. The text includes notable sections such as "Jaap Sahib," "Bachittar Natak," "Chandi di Var," and "Zafarnama," each contributing to its rich tapestry of teachings. Singh (2013) emphasizes the theme of divine justice in the Dasam Granth, particularly in the "Bachittar Natak," which narrates the divine mission of Guru Gobind Singh. The text portrays the Guru as a divinely ordained leader, tasked with upholding righteousness and combating evil.

The martial spirit of the Dasam Granth is evident in compositions like "Chandi di Var," which glorifies the goddess Durga and her battles against demonic forces. Grewal (2011) argues that these narratives were intended to inspire the Sikh community to adopt a warrior ethos, essential for their survival and resistance against oppression. Beyond its martial themes, the Dasam Granth

also contains profound devotional poetry. "Jaap Sahib," for example, is a meditative hymn extolling the attributes of the divine. This section reflects the deeply spiritual side of Guru Gobind Singh's teachings, complementing his call for active resistance (Kaur, 2014).

In contemporary times, the Dasam Granth continues to be a subject of scholarly debate and interpretation. Issues such as its canonical status, literary merit, and theological implications are frequently discussed in academic and religious forums. The canonical status of the Dasam Granth has been a contentious issue within the Sikh community. Some factions regard it as an integral part of Sikh scripture, while others view it with scepticism due to its diverse content and historical ambiguities (Dhillon, 2015). Bajwa (2017) explores the literary qualities of the Dasam Granth, highlighting its rich poetic style and complex narrative structures. Theologically, the Granth is seen as a complementary text to the Guru Granth Sahib, providing additional insights into the philosophy and teachings of Guru Gobind Singh.

The Dasam Granth is a multifaceted text that offers valuable insights into the life and teachings of Guru Gobind Singh. Its historical context, thematic diversity, and contemporary relevance make it a vital subject of study for scholars and practitioners alike. Ongoing research continues to uncover new dimensions of this profound work, enriching our understanding of Sikhism and its rich literary heritage.

2.2. Bachittar Natak

"Bachittar Natak" provides an account of Guru Gobind Singh's life, his divine mission, and his struggles against tyranny. It is believed to have been composed between 1688 and 1699, during a period of intense conflict and transformation for the Sikh community (Grewal, 2011). Mann (2012) discusses the historical context of "Bachittar Natak," noting that it was likely composed by Guru Gobind Singh himself or under his direct supervision. The text is considered an important historical document, reflecting the socio-political challenges faced by the Sikhs during the late 17th century (Mann, 2012).

"Bachittar Natak" encompasses a range of themes, including divine justice, righteousness, and the Guru's divine mission. It also addresses the broader philosophical and theological questions relevant to Sikhism. Singh (2013) emphasizes the theme of divine justice in "Bachittar Natak." The text portrays Guru Gobind Singh as a divinely appointed leader, tasked with upholding dharma (righteousness) and combating adharma (injustice). This theme is central to the Guru's mission and is depicted through various historical and mythological narratives.

Kaur (2014) explores the depiction of Guru Gobind Singh's divine mission in "Bachittar Natak." The text narrates the Guru's spiritual journey, his divine calling, and his efforts to establish a just and righteous order. This mission is presented as a continuation of the divine will, aligning with the broader Sikh philosophy of divine sovereignty and justice. "Bachittar Natak" is noted for its rich literary style and complex structure. It combines poetry and prose, employing various literary devices to convey its themes and messages.

Bajwa (2017) highlights the literary style of "Bachittar Natak," noting its use of poetic language, metaphors, and allegories. The text's narrative style blends poetry and prose, creating a dynamic and engaging literary work. This style is reflective of the broader literary tradition of the Dasam Granth, which employs diverse literary forms to convey its messages. The narrative structure of "Bachittar Natak" is complex, interweaving historical events with mythological and theological discourses. Grewal (2011) discusses how the text's structure reflects its dual purpose as both a historical document and a theological treatise. The narrative is divided into several chapters, each focusing on different aspects of the Guru's life and mission.

In contemporary times, "Bachittar Natak" continues to be a subject of scholarly debate and interpretation. Issues such as its historical accuracy, literary merit, and theological implications are frequently discussed in academic and religious forums. Dhillon (2015) examines the historical accuracy of "Bachittar Natak," noting that while the text provides valuable historical insights, it also includes mythological and allegorical elements that may not be historically accurate. This has led to debates about the text's reliability as a historical source.

Theologically, "Bachittar Natak" is significant for its depiction of Guru Gobind Singh's divine mission and his role in the Sikh tradition. Singh (2013) discusses how the text reinforces the theological principles of divine justice and sovereignty, aligning with the broader Sikh philosophy.

"Bachittar Natak" is a multifaceted text that offers valuable insights into the life and teachings of Guru Gobind Singh. Its historical context, thematic richness, and literary style make it a significant subject of study for scholars and practitioners alike. Ongoing research continues to uncover new dimensions of this profound work, enriching our understanding of Sikhism and its literary heritage.

2.3 AI tools

2.3.1Artificial Intelligence Dimension Software

Dimensions.ai is a sophisticated software platform developed by Digital Science that provides comprehensive data analytics for scientific research. Launched in 2018, it offers extensive coverage of various scientific disciplines, indexing over 140 million publications and more than 1.8 billion citations as of 2023. The platform integrates data from research grants, clinical trials, and patents, enabling users to explore and analyse research outputs comprehensively (Dimensions, n.d.; Taqi, M. 2020).

Dimensions.ai is equipped with several AI-powered tools designed to enhance research discovery and interpretation. Its summarization feature allows users to generate concise summaries of research content quickly. Additionally, the Dimensions Research GPT, developed in collaboration with OpenAI, provides an AI-driven conversational interface to answer research queries based on scientific evidence. This tool aims to deliver reliable,

evidence-based responses by utilizing data from open-access publications (Dimensions, n.d.).
Dimensions Analytics, a core component of the platform, offers a powerful search application with advanced analytical views. It supports various research needs, including identifying experts, understanding research trends, and analysing organizational profiles. The platform's extensive dataset includes publications, grants, patents, and policy documents, enriched through natural language processing and other AI techniques (Dimensions, n.d.).

2.4. Dimension reduction techniques
In the realm of data analysis, managing high-dimensional datasets presents significant challenges. Dimension reduction techniques are crucial for simplifying data, improving computational efficiency, and enhancing the interpretability of results. SPSS (Statistical Package for the Social Sciences) offers several robust tools for dimension reduction, including Principal Component Analysis (PCA), Factor Analysis, and Multidimensional Scaling (MDS). This paper aims to provide a comprehensive overview of these techniques and their application in SPSS.

3. Methodology

3.1 Scale Development
Developing a scale involves several steps, including item generation, reliability testing, and validation. AI tools can enhance each of these steps:

3.1.1 Item Generation
AI can assist in generating items for the scale by analysing existing literature and extracting relevant concepts. For instance, the teachings of Guru Gobind Singh can be systematically reviewed using AI tools to generate a comprehensive list of items reflecting his practical philosophy (Mikolov et al., 2013).

3.1.2 Reliability Testing
AI can perform reliability testing by simulating various scenarios and assessing the consistency of the scale. Techniques such as cross-validation can be employed to ensure the scale's reliability across different datasets (Goodfellow, Bengio, & Courville, 2016).

3.1.3 Validation
Validation is crucial for ensuring that the scale accurately measures the intended philosophical constructs. AI tools can aid in both construct and criterion validation by comparing the scale's performance against established benchmarks and criteria (Friedman, Hastie, & Tibshirani, 2001).

3.2 Developing a scale can be simplified into a few key steps

3.2.1 Define the Purpose
The purpose is to quantified the practical philosophy content of the tenth Guru by the use of AI tools to study and interpret.

3.2.2 Identify Items
Practical Philosophy described in Dasam Granth is divided into 4 sub domains and further it is divided 9 questions.

3.2.3 Pilot Testing
We test the items with a small sample of people (10) who represent our target population. Pilot Testing contains five steps are described in Figure no. A.3.

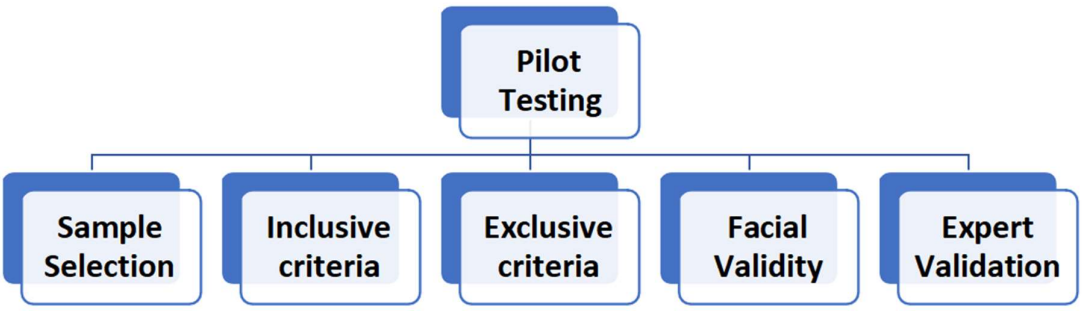


Figure no. A.3 Pilot Testing steps

I. Sample Selection
Considered 150 participants in the age group from 19 to 40 years. Data was collected through Online method.

II. Inclusive criteria
- Yoga practitioner and non-yoga practitioner was included in the study.
- Both males and females were included in the study.

III. Exclusive criteria

- Any acute or chronic condition that would limit the ability of the patient to participate in the study
- Refusal to give informed consent

IV. Facial Validity

facial validation refers to the initial subjective assessment of whether an instrument appears to measure what it intends to measure. This evaluation does not involve statistical analysis but rather focuses on whether the items seem relevant and appropriate for the construct being measured.

V. Expert Validation

Expert validation of a scale involves obtaining feedback and validation from experts in the field related to the construct being measured. This process aims to assess the content validity of the scale, ensuring that it adequately represents the intended construct.

3.2.4 Item Analysis

The responses are analysed from the pilot test. Items that don't perform well are removed. (e.g., low variability, poor correlation with other items).

3.2.5 Scale Construction

Decide on the response format into Likert scale.

3.2.6 Reliability Testing

Assess the internal consistency of the scale using techniques like Cronbach's alpha. This ensures that the items in the scale are measuring the same underlying construct reliably.

3.2.7 Validity Testing

Evaluate the validity of the scale by comparing it by conducting factor analysis to confirm that this scale measures what it intends to.

3.2.8 Final Revision

Based on reliability and validity testing, revise the scale as necessary.
Ensure clarity and coherence of the items.

By following above steps, we developed a scale that effectively measures the Practical philosophy described in The Dasam Granth.

3.3 Methodology for scale development

Scale development is a systematic process that is carried out at different stages of analysis. The present study was accomplished in three stages viz; item generation, theoretical analysis and psychometric analysis.

3.3.1 Item Generation

Content domain was specified through review of literature related to Dasam Granth through the dimension software. The information was analysed and related with the concept of yoga in SGGS to generate pool initial items. As a result, 9 items were developed under the selected content domains.

3.3.2 Theoretical analysis

3.3.2.1 Content validity

In order to assess content validity of the initial items clearly defined thorough the literature review and seeking expert opinion. The expert panel comprised of 4 experts; one Vedic philosophy expert from Texas, USA, another expert from alternative and complementary medicine, All India Institute of Medical Sciences, Rishikesh, statistical expert and a psychology professor Sastra university, yoga expert from University of Patanjali, Haridwar, India. The experts assessed the relevance of items in relation to the content domain applying a tool namely Content Validity Index (CVI) developed by Waltz. The experts rated each item against a four-point scale (1=Note relevant, 2= somewhat relevant, 3=Quite relevant and 4=highly relevant). The items which received score 1 or 2 were rejected from the scale indicates that the theoretically or practically irrelevant questions.

3.3.2.2 Face validity

Visual appearance of the tool was tested by applying the initial level scale with 10 individuals. Feedback from the respondents was incorporated to improve the tool. This process was helpful to assess ambiguity and skewedness i.e. respondents providing very similar answer to all the items.

3.3.2.3 Psychometric analysis

The psychometric analysis involves a number of quantitative techniques to test construct validity and reliability of the scale. The combined use of AI tools like Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) to achieve consistent results of the psychometric indices

4. Results and Discussion

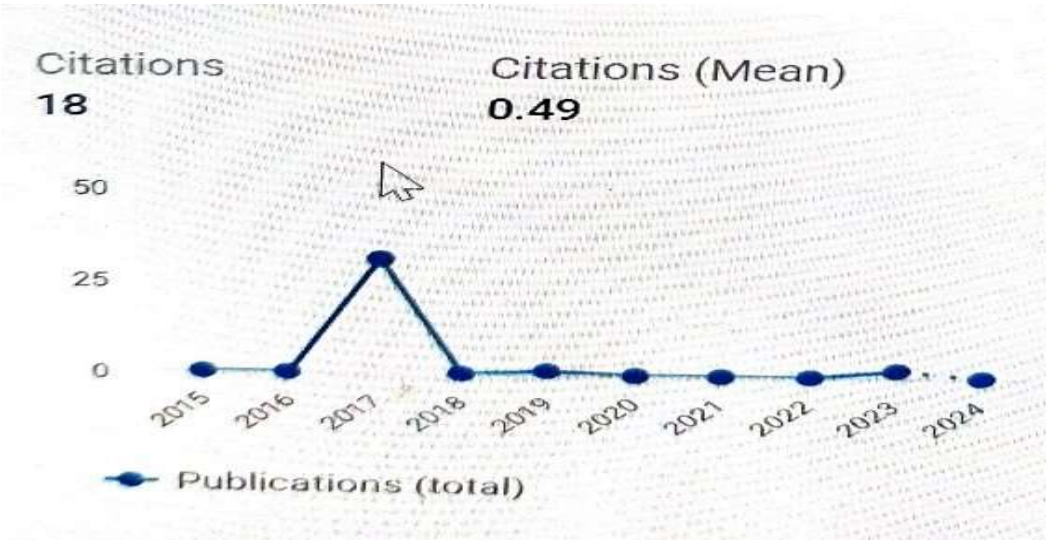
There has not been specific documentation or mention of artificial intelligence tools being used for practical philosophy based on the Dasam Granth or similar religious texts. However, it's conceivable that AI tools could be employed in various ways to aid in the study and interpretation of Dasam Granth. Here is some potential ways AI could be applied:

4.1Artificial intelligence dimension software

To conduct this bibliometric study, the search engine “dimensions.ai (www.dimensions.ai)” was used to identify the research articles published between 2004 and 2024 on the topic of the practical philosophy content of the tenth Guru Gobind Singh. All research articles were searched either in the section of the title or abstract by entering the keywords dasam AND granth AND guru AND Gobind AND singh AND practical AND philosophy AND bachittar AND natak AND kirtan. The data selection criteria have been performed manually,

including only the research articles, considering yoga and yagya on mental illness.

A total of 37 research articles have been published from 2004 to 2024 on the practical philosophy described in Dasam Granth which is described in flow chart A.1. The highest publication in 2017 related to the study field. While 50 philosophy and religious studies, 5004 only religious studies have been done during this period.



Flow chart A.1 The research articles published between 2004 and 2024

While these applications hold promise, it's important to approach the use of AI in religious and philosophical contexts with caution and sensitivity, as the interpretation and understanding of such texts often involve complex cultural, historical, and spiritual considerations. Additionally, the application of AI should be guided by expert input and oversight to ensure accuracy and respect for the traditions and teachings involved.

The initial item pool consisting of 9 items was vetted by four experts to assess the degree to which the items taken together constitute an adequate operational definition of a construct content validity. The experts reviewed the initial item pool using a CVI rating tool. All the items were valid with CVIs ranging from 0.75 (3/4) to 1 (4/4) and were retained which resulted in a 9-item questionnaire. After modifying the scale based on rating by the experts, the scale was individually administered with 10 persons. Each statement was read out to the respondent and in reply, the respondent stated what he/she understood from the item. The 9 items developed after content validity Index.

4.2 Scale Development

The table number A.1 presents the "Reliability Statistics" of a set of items. There the key metric is Cronbach's Alpha, a measure of internal consistency or reliability. A Cronbach's Alpha value of 0.884 indicates a high level of internal consistency among the 11 items in the scale, suggesting that the items are measuring the same underlying concept or construct reliably.

Table number A.1 Reliability Statistics of items

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.88	.89	11

Table No. A.2 presents results from "KMO and Bartlett's Test", which is used to assess the suitability of the data for factor analysis. The KMO value ranges from 0 to 1, with values closer to 1 indicating that the data is likely to be suitable for factor analysis. A KMO value of 0.821 is considered "good", suggesting that the sample is adequate for factor analysis.

Table No. A.2 results from KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.82
Bartlett's Test of Sphericity	Approx. Chi-Square	43.54
	df	36
	Sig.	.000

Bartlett's test checks whether the correlation matrix is an identity matrix, which would indicate that variables are unrelated and unsuitable for structure detection. The Chi-Square value of 432.538 with a significance level of 0.000 indicates that the correlations between variables are statistically significant, meaning that factor analysis is appropriate for the data.

Table no. A.3 the loadings of variables

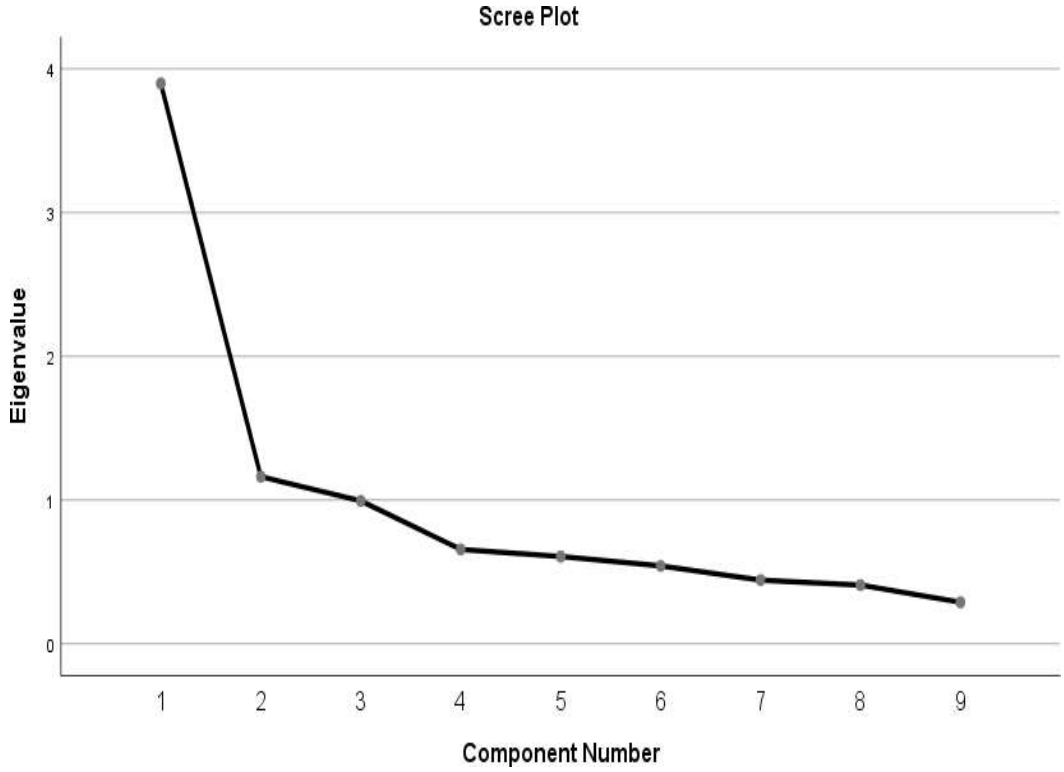
Pattern Matrix[a]		
	Component	
	1	2
Q6	.854	
Q9	.751	
Q7	.750	
Q5	.700	
Q8	.607	
Q4	.521	
Q2		.929
Q3		.611
Q1		.584

Table no. A.3 displays the loadings of variables (questions) onto two extracted components after performing Principal Component Analysis (PCA) with Promax rotation. This table is crucial for understanding the underlying structure of the data and identifying which variables are strongly associated with each component.
Component 1 and Component 2: These represent two factors or dimensions that have been extracted from the data. Each question (Q1 to Q9) loads onto one or both components, indicating its association with that factor.

Loadings

- Q6 to Q4 load primarily onto Component 1, with the highest loading for Q6 (.854) and the lowest for Q4 (.521). This suggests that these questions are most strongly associated with Component 1.
- Q2 to Q1 load onto Component 2, with Q2 having the highest loading (.929). These questions are most strongly related to Component 2.

The table suggests that the data can be represented by two underlying components, with certain questions strongly associated with each component. This is useful for reducing the dimensionality of the data and understanding the core factors that the questions measure.



Flow chart A.2 graphical representation of scree plot

Flow chart A.2 Plot is a graphical representation used in Principal Component Analysis (PCA) to determine the optimal number of components or factors to retain. It displays the eigenvalues on the y-axis and the component number on the x-axis.

- The first component has the highest eigenvalue, just above 4, indicating that it explains the most variance in the data.
- There is a steep drop from the first to the second component, with the second component having an eigenvalue just above.
- The eigenvalues gradually decrease for the subsequent components, with each explaining progressively less variance.
- After the second component, the slope of the line becomes less steep and starts to level off, indicating that additional components contribute relatively little to the explanation of variance.

Elbow Point

- The "elbow" in the plot is typically used to determine the number of components to retain. The elbow is where the plot starts to flatten, indicating that additional components add minimal explanatory power.
- In the plot, the elbow is noticeable after the second component. This suggests that two components may be optimal for explaining the majority of the variance in the data, as adding more components would result in diminishing returns.

The scree plot suggests that the first two components capture most of the variance in the data. The sharp decline after the second component and the subsequent flattening of the plot indicates that retaining two components might be the most effective choice for analysis.

5. Conclusion

A scale is developed through artificial Intelligence tools for Practical Philosophy as described in the Dasam Granth. We used AI methods to develop and validate this scale using SPSS version 25's exploratory and confirmatory factor analyses for 150 general populations from India. The standardized estimated regression value is found to be 0.89 which is greater than the required level of ≥ 0.5 and thus showing a good relation between the sub domains. This scale can facilitate and provide a social health care and wellbeing.

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