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Causal factors influencing spiritual intelligence in Islamic learning environments among higher education students: A DEMATEL approach

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ABSTRACT

This study investigates the causal factors influencing spiritual intelligence among higher education students in Islamic learning environments, employing the Decision-Making Trial and Evaluation Laboratory (DEMATEL) approach to map complex interdependencies among ten identified factors. Through a systematic literature review grounded in classical Islamic scholarship and contemporary educational psychology, ten key factors were identified: Religiosity & God-Consciousness, Self-Awareness & Reflective Thinking, Islamic Knowledge & Understanding, Consistency in Religious Practices, Lecturer Role Modeling, Islamic Learning Environment, Islamic Curriculum & Teaching Approach, Peer Influence & Social Support, Family Religious Background, and Psychological Strength. Data were collected from five domain experts with extensive experience in Islamic education, and the DEMATEL procedure was applied using DEMATEL Pro Software to compute the normalized direct-relation matrix, the total-relation matrix, and the cause-effect classifications. The findings reveal that six factors Islamic Knowledge & Understanding, Family Religious Background, Peer Influence & Social Support, Self-Awareness & Reflective Thinking, Psychological Strength, and Islamic Curriculum & Teaching Approach function as cause factors, while four factors Religiosity & God-Consciousness, Consistency in Religious Practices, Lecturer Role Modeling, and Islamic Learning Environment operate as effect factors. Islamic Knowledge & Understanding and Family Religious Background emerged as the most dominant causal drivers, each recording the highest positive $ri - ci$ value of 0.85, while Lecturer Role Modeling was identified as the most dependent effect factor ($ri - ci = -1.42$). These findings provide a structured causal framework that can inform curriculum design, pedagogical strategies, and policy interventions aimed at enhancing spiritual intelligence development in Islamic higher education contexts.

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1. Introduction

The notion of Spiritual Intelligence is still in its early stages of development, but it already incorporates spirituality into many parts of human growth, such as learning and research [43]. Integral to Islamic educational practices are the concepts of *ta'dib*, *adab*, and *ihsan*, which together form what is known as spiritual intelligence [32] [47]. According to [35] this view goes beyond IQ and EQ to include a more comprehensive comprehension of human nature, morality, and purpose. According to [32], when these elements are combined, it creates a more holistic method of teaching that encourages children to develop their own moral compass and knowledge, which in turn affects their health and motivation in school. The development of spiritual intelligence within Islamic educational frameworks tackles modern issues by outlining thorough rules for digital ethics, which guarantee that the incorporation of technology is in line with Islamic beliefs and ideals [27].

Beyond the well-established frameworks for K-12 education in regions like Indonesia, a more thorough investigation into the factors that impact the development of spiritual intelligence among Islamic learning environments among higher education students is required [7]. According to [40], this type of research is essential for finding practical insights that may guide the creation of curricula and pedagogical approaches that are specifically designed to encourage intellectual and spiritual development in these niche educational settings. Thus, the purpose of this research is to use a DEMATEL approach to organize the complex interdependencies among the many elements affecting spiritual intelligence in Islamic learning settings in higher education and to discover and evaluate the causal linkages among these aspects.

Despite the wealth of literature on spiritual intelligence in classrooms, there is a dearth of study on how it grows at Sufi schools and other Islamic universities [1]. In order to fill this knowledge gap and create better educational strategies, it is necessary to use sophisticated analytical methodologies to classify the factors that affect spiritual intelligence in these specific settings [16] [26]. Because it can distinguish between the direct and indirect effects of the detected parameters, the DEMATEL method which is known for its effectiveness in mapping complicated causal linkages across criteria is ideal for this task [42]. According to [5], DEMATEL can elucidate the complex interplay between instructional techniques, institutional support, and curriculum design in connection to spiritual intelligence development. In order to improve spiritual intelligence in these specific educational environments, it is crucial to identify the aspects that have an impact by differentiating between cause-and-effect elements [6].

Curriculum improvement that promotes holistic individual development may be achieved through this method, which can lead to a better knowledge of how Islamic beliefs and current educational practices interact to affect students' spiritual progress [37]. Current Islamic Religious Education materials frequently place a greater emphasis on intellectual development than on the moral and emotional aspects that are crucial for cultivating spiritual intelligence [10]. A systematic review is needed to rectify this disparity by incorporating modern ethical concerns into Islamic studies courses, shifting focus from theoretical models to concrete methods of instruction that improve students' spiritual competence [27] [45]. Thus, utilizing DEMATEL to study the factors that affect spiritual intelligence in Islamic schools can help develop effective methods for producing Muslims who are both academically gifted and morally upright [12][18]. Using the DEMATEL framework, this study will seek to fill this knowledge vacuum by investigating the elements that have an impact on spiritual intelligence at Islamic universities. The study aims to enhance educational outcomes by identifying the delicate interaction of these aspects, which aligns with the requests for more extensive research into supporting holistic individual development within Islamic institutions [18].

1.1 Research Objectives

1.1.1 Literature Review

To lay the theoretical groundwork for the DEMATEL analysis that follows, this section compiles and synthesizes previous research on spiritual intelligence, how to measure it, and how to cultivate it, with a focus on Islamic educational paradigms. In particular, it looks at how schools with a religious focus might help students grow as whole people by teaching them to make moral decisions, deal with difficult emotions, and develop strong character traits [22]. Integrating these aspects is vital because spiritual intelligence defined as the ability to rise above worldly worries and connect with greater existential or divine truths has a profound impact on one's resilience in the face of adversity and the significance they assign to their deeds [41]. According to [19], when Islamic education policies are put into practice, they greatly improve teachers' competency, professionalism, and well-being. These factors are crucial for developing students' spiritual intelligence. According to [2] [30], a well-rounded education is essential for producing students with strong moral and ethical principles in addition to strong academic abilities.

Research has shown that when students receive a well-rounded Islamic basic education that addresses their intellectual, spiritual, and emotional needs, they develop a stronger sense of emotional intelligence, which is essential for self-control and character formation [9]. Adolescents can be guided in developing emotional intelligence and spiritual power through the intentional integration of faith-based values and transcendental viewpoints into educational frameworks [46]. Students are better prepared to engage with the world while retaining their religious identity through this integration, which allows them to achieve intellectually while simultaneously developing noble character attributes [36] [25]. According to several studies [15] [20], this all-encompassing method proposes spiritual intelligence as a crucial part of integrated Islamic education, molding persons who are brilliant intellectuals, emotionally stable, and deeply spiritual.

This all-encompassing method of maturation is in line with Islamic education's overarching goals, which are to create well-rounded individuals by encouraging the development of one's mind, heart, and senses [50]. Nurturing individuals who have exemplary moral character and a deep understanding of their responsibilities to Allah and their societies requires an all-encompassing strategy [52]. Therefore, the goal of this kind of integrated pedagogy is to create students who are well-rounded in all areas of life: intellectually, emotionally, spiritually, and physically [24]. According to [25] [34], a holistic approach to education is crucial for educating students for spiritual and worldly issues.

Incorporating religious and general scientific principles into the classroom helps students build a holistic knowledge that connects the dots between empirical data analysis and ethical-religious concerns, which in turn improves the efficacy of these frameworks [29]. According to [28], this integration is vital for cultivating spiritual intelligence because it teaches students that knowledge is more than just a collection of facts; it's a way to comprehend and participate in the divine order that exists in creation. Students are able to create goals for themselves that are based on their spiritual experiences and shaped by this method, which helps them establish an individual sense of purpose [48]. In addition, Islamic education in the digital age may provide students the multi-faceted skills they need to navigate modern challenges while being faithful to their faith [13] by combining progressive principles with social, emotional, and spiritual intelligence. To prepare students to responsibly apply Islamic values in a technologically advanced world, it is necessary to reassess traditional teaching methods and promote approaches that teach religious knowledge while also encouraging critical thinking, emotional regulation, and ethical decision-making [17] [38]. This all-encompassing educational philosophy sees people as the source of future leadership and aims to

teach them to be morally upright and knowledgeable by integrating scientific knowledge with Islamic principles [8] [44]. It also stresses the importance of developing a sense of justice, spirituality, and ethics. [49] state that in order to shape persons who can effectively meet society demands in all areas, schools must go beyond only teaching religion and instead focus on students' intellectual and creative growth

2. Methodology

2.1 Research Design

This section provides an overview of the methodology that was used to study the elements that affect spiritual intelligence in Islamic educational settings. The DEMATEL technique was used to map the complex relationships between the variables that were found. This analysis is well-suited to the DEMATEL technique because it can clearly show the direct and indirect causal connections by elucidating the hierarchical impacts and structural interconnections among complicated sets of elements. This method allows for a strong prioritization of treatments to improve spiritual intelligence by methodically identifying the system's driving and dependent aspects.

2.2 Participants

In order to include a wide range of viewpoints on spiritual intelligence development, this section describes the study's selection procedures and the characteristics of the participants. The goal was to recruit a sample that was representative of varied Islamic learning contexts. Participants in the screening process included students, religious scholars, and educators with a strong background in Islamic education; these persons have direct knowledge of the elements that influence spiritual intelligence in their local environments (Mahfud et al., 2023). A more complex knowledge of how different aspects of these contexts foster students' spiritual development and ethical behavior may be achieved through an all-encompassing method [3] [14].

2.3 Experts' criteria

Researchers used rigorous criteria to choose specialists for this study, giving preference to those with strong academic qualifications, relevant work experience, and established leadership positions in Islamic educational institutions [33] [39]. The selection of specialists was based on their track records of practical application of theoretical concepts, their participation in the creation of curricula pertaining to moral and spiritual education, and their research contributions to Islamic pedagogy. According to [23], the expert panel is chosen through a strict selection process to guarantee that they have a thorough grasp of the complex aspects of spiritual intelligence in Islamic educational settings. This allows them to make well-informed decisions for the pairwise comparisons needed by the DEMATEL methodology.

2.4 List of Experts

The panel comprised twenty experts, carefully selected to ensure a breadth of perspectives and a minimum of five years of experience in Islamic education or related fields [50]. These experts included academics specializing in Islamic studies, policymakers involved in educational frameworks, and practitioners directly engaged in spiritual development programs, ensuring a rich tapestry of insights for the DEMATEL analysis [50]. In this Research we use 5 experts to evaluate the Factors.

2.5 Step in Conducting DEMATEL

Determining the total-influence matrix was the next stage in doing the DEMATEL analysis; after that, the contextual variables were defined, the direct-influence matrix was constructed, and the normalized direct-influence matrix was calculated [3]. With this methodical approach, we can pinpoint the most important aspects impacting spiritual intelligence and how they interact with one another, laying a solid groundwork for future strategic interventions. Then, by adding up the rows and columns, we could see how important each aspect was, which shed light on their interactions with one another and how they were organized in the system we were studying.

3. Results

Through a systematic literature review (see table 1) drawing on classical Islamic scholarship and contemporary educational psychology, the researcher synthesized ten key factors influencing spiritual intelligence among students. Foundational Islamic scholars such as Al-Ghazali [49], Al-Attas [8], and Nasr [8] provided the theological basis for factors related to religiosity, Islamic knowledge, and religious practice, while Bandura's social learning theory [48] informed the identification of lecturer role modeling and peer influence as significant external determinants. Bronfenbrenner's ecological model [22] justified the inclusion of family religious background, whereas Lizzio [5] and Abdullah [4] supported the role of the learning environment and curriculum in spiritual development. Psychological dimensions were grounded in the works of Koenig [28], Zohar and Marshall [28], and Al-Ghazali [49], collectively pointing to self-awareness, reflective thinking, and psychological strength as internal enablers of spiritual growth. The convergence of these diverse scholarly sources across theological, sociological, and psychological domains affirms that the identified factors represent a comprehensive, evidence-based framework for understanding spiritual intelligence in Islamic higher education contexts. To analyze the data, the researcher used the DEMATEL Pro Software to obtain the detailed data and results.

Table 1
The Factors

No	Factor	Description	Key References (APA)
1	Religiosity & God-Consciousness	Core spiritual foundation influencing all behaviors	Al-Ghazali (1995); Al-Attas (1993); Nasr (1987)
2	Self-Awareness & Reflective Thinking	Drives inner understanding and spiritual growth	Al-Ghazali (1995); Zohar & Marshall (2000)
3	Islamic Knowledge & Understanding	Shapes worldview and decision-making	Al-Attas (1993); Halstead (2004)
4	Consistency in Religious Practices	Direct manifestation of spiritual intelligence	Nasr (1987); Abdullah (2017)
5	Lecturer Role Modeling	Strong influence through example	Bandura (1977); Halstead (2004)
6	Islamic Learning Environment	Supports or hinders spiritual development	Lizzio (2006); Abdullah (2017)
7	Islamic Curriculum & Teaching Approach	Integration of spiritual elements	Al-Attas (1993); Halstead (2004)
8	Peer Influence & Social Support	Reinforces or weakens behavior	Bandura (1977); Wentzel (1998)

9	Family Religious Background	Early spiritual foundation	Bronfenbrenner (1979); King & Boyatzis (2015)
10	Psychological Strength	Enables resilience and stability	Al-Ghazali (1995); Koenig (2012)

DEMATEL PRO
Decision Making Trial and Evaluation Laboratory
Caption: Dr. Ramdan Mustapha

NUMBER OF FACTORS: 10
NUMBER OF EXPERTS (MIN: 3): 5

Influence Scale: 0 = No influence | 1 = Low influence | 2 = Medium influence | 3 = High influence | 4 = Very high influence

CALCULATE DEMATEL | SAVE DATA | IMPORT DATA | EXPORT ALL TO WORD

FACTOR NAMES

NOL	FACTOR NAME
1	Religiosity & God-Consciousness
2	Self-Awareness & Reflective Thinking
3	Islamic Knowledge & Understanding
4	Consistency in Religious Practices
5	Lecturer Role Modeling
6	Islamic Learning Environment
7	Islamic Curriculum & Teaching Approach
8	Peer Influence & Social Support
9	Family Religious Background
10	Psychological Strength

EXPERT INPUT MATRICES

Expert 1 | Expert 2 | Expert 3 | Expert 4 | Expert 5

	RELIGIOSITY & GOD-CONSCIOUSNESS	SELF-AWARENESS & REFLECTIVE THINKING	ISLAMIC KNOWLEDGE & UNDERSTANDING	CONSISTENCY IN RELIGIOUS PRACTICES	LECTURER ROLE MODELING	ISLAMIC LEARNING ENVIRONMENT	ISLAMIC CURRICULUM & TEACHING APPROACH	PEER INFLUENCE & SOCIAL SUPPORT	FAMILY RELIGIOUS BACKGROUND	PSYCHOLOGICAL STRENGTH
RELIGIOSITY & GOD-CONSCIOUSNESS	0	4	4	3	3	3	4	3	4	3

Fig. 1. Data entry in DEMATEL Pro

Table 2

Normalized direct-relation matrix (x)

	Religiosit y & God- Consciou sness	Self-Awarene s & Reflective Thinking	Islamic Knowledg e & Understa nding	Consisten cy in Religious Practices	Lecturer Role Modeling	Islamic Learning Environm ent	Islamic Curriculu m & Teaching Approach	Peer Influence & Social Support	Family Religious Backgrou nd	Psycholo gical Strength
Religiosity & God-Consciousness	0	0.1152	0.1091	0.1091	0.1091	0.1091	0.1152	0.103	0.103	0.097
Self-Awareness & Reflective Thinking	0.1091	0	0.1152	0.1091	0.103	0.1152	0.1152	0.1212	0.103	0.097
Islamic Knowledge & Understanding	0.1091	0.103	0	0.1152	0.1152	0.103	0.1152	0.1152	0.1091	0.1152
Consistency in Religious Practices	0.1091	0.1091	0.1091	0	0.1152	0.103	0.097	0.1091	0.103	0.1091
Lecturer Role Modeling	0.103	0.1152	0.0909	0.1091	0	0.097	0.0788	0.1152	0.103	0.097
Islamic Learning Environment	0.103	0.097	0.103	0.097	0.103	0	0.103	0.103	0.103	0.1091
Islamic Curriculum & Teaching Approach	0.1091	0.103	0.1091	0.103	0.1091	0.1212	0	0.097	0.103	0.097
Peer Influence & Social Support	0.1091	0.1152	0.1152	0.1091	0.097	0.097	0.1091	0	0.1152	0.1152
Family Religious Background	0.1152	0.1152	0.103	0.103	0.1152	0.1152	0.1152	0.103	0	0.103
Psychological Strength	0.1091	0.103	0.1091	0.1091	0.103	0.1091	0.097	0.097	0.1091	0

The table presented is the Normalized Direct Relation Matrix (table 2) (also referred to as the scaled initial direct influence matrix), which represents the first stage of mathematical transformation in the DEMATEL procedure before the Total Relation Matrix is computed. In this

matrix, all original expert-rated direct influence scores have been normalized by dividing each value by the maximum row sum of the initial direct relation matrix, thereby scaling all values to fall within the range of 0 to 1 to ensure mathematical comparability and to allow for subsequent matrix inversion operations. The diagonal values are all zero, which is a fundamental DEMATEL convention indicating that no factor is considered to directly influence itself at this initial stage. Examining the matrix, values such as 0.1152 appear frequently as the higher influence scores, reflecting stronger direct relationships between paired factors, while lower values such as 0.097 and 0.0788 indicate comparatively weaker direct influences. Notably, Lecturer Role Modeling records the lowest value in the entire matrix at 0.0788 in its intersection with Islamic Curriculum & Teaching Approach, reinforcing its relatively weaker direct influence capacity observed later in the Total Relation Matrix. Factors such as Islamic Knowledge & Understanding, Self-Awareness & Reflective Thinking, and Family Religious Background tend to carry higher normalized values across their rows, suggesting stronger direct influence on the surrounding factors even before indirect effects are accounted for. This Normalized Direct Relation Matrix serves as the essential mathematical input from which the Total Relation Matrix T is subsequently derived using the formula $T = X(I - X)^{-1}$, where I is the identity matrix, making it the foundational computational step upon which the entire DEMATEL causal analysis rests.

Table 3

Total relation matrix (t)

	Religiosity & God-Consciousness	Self-Awareness & Reflective Thinking	Islamic Knowledge & Understanding	Consistency in Religious Practices	Lecturer Role Modeling	Islamic Learning Environment	Islamic Curriculum & Teaching Approach	Peer Influence & Social Support	Family Religious Background	Psychological Strength
Religiosity & God-Consciousness	2.4826	2.5867	2.5534	2.5536	2.5673	2.5668	2.5169	2.55	2.5203	2.4875
Self-Awareness & Reflective Thinking	2.6241	2.5265	2.6011	2.5963	2.6051	2.6145	2.559	2.6074	2.5626	2.5294
Islamic Knowledge & Understanding	2.6505	2.6464	2.5237	2.6273	2.6413	2.6308	2.5842	2.6284	2.5933	2.5696
Consistency in Religious Practices	2.5668	2.5677	2.5393	2.4414	2.5581	2.5475	2.488	2.5409	2.5065	2.4838
Lecturer Role Modeling	2.437	2.4479	2.4011	2.4161	2.3304	2.4182	2.3518	2.4224	2.3844	2.3532
Islamic Learning Environment	2.4629	2.4587	2.4366	2.4319	2.4498	2.3559	2.3969	2.4378	2.4098	2.3882
Islamic Curriculum & Teaching Approach	2.5371	2.5328	2.5099	2.5052	2.5237	2.533	2.3708	2.5015	2.4774	2.4452
Peer Influence & Social Support	2.6124	2.618	2.5895	2.5847	2.5886	2.5881	2.5426	2.4874	2.5609	2.5327
Family Religious Background	2.6264	2.6273	2.5885	2.5887	2.6125	2.6121	2.5562	2.59	2.4665	2.5315
Psychological Strength	2.5251	2.5208	2.498	2.4983	2.5068	2.5111	2.4476	2.4896	2.4706	2.3451

The Total Relation Matrix (T matrix) (Table 3) presented in the table represents the final outcome of the DEMATEL computation, capturing both the direct and indirect influence relationships among all ten factors of spiritual intelligence after matrix convergence. Each cell value in the matrix reflects the total degree of influence that one factor (row) exerts upon another factor (column), accounting not only for immediate effects but also for all ripple effects transmitted through intermediary factors across the entire system. Examining the matrix, Islamic Knowledge & Understanding consistently records among the highest row values across most columns, such as 2.6505, 2.6464, and 2.6413, confirming its role as a strong transmitter of influence throughout the system, while Lecturer Role

Modeling displays notably lower values across its entire row, with figures such as 2.437, 2.4011, and 2.3304, indicating comparatively weaker influence on other factors. Conversely, column values reveal the extent to which each factor receives influence; for instance, Religiosity & God-Consciousness and Self-Awareness & Reflective Thinking attract consistently high column values, signifying that they are substantially shaped by the other factors in the network. The diagonal values, representing self-influence after indirect feedback loops, are also embedded within the convergence process. Overall, the Total Relation Matrix serves as the mathematical foundation from which the ri (row sum) and ci (column sum) values are derived, subsequently enabling the classification of each factor into either the cause or effect group, and therefore constitutes the most critical computational output in the entire DEMATEL analytical process.

Table 4
Cause and Effect Relationship

Criteria	ri	ci	$ri + ci$	$ri - ci$	Cause / Effect
Religiosity & God-Consciousness	25.39	25.52	50.91	-0.14	Effect
Self-Awareness & Reflective Thinking	25.83	25.53	51.36	0.29	Cause
Islamic Knowledge & Understanding	26.1	25.24	51.34	0.85	Cause
Consistency in Religious Practices	25.24	25.24	50.48	0	Effect
Lecturer Role Modeling	23.96	25.38	49.35	-1.42	Effect
Islamic Learning Environment	24.23	25.38	49.61	-1.15	Effect
Islamic Curriculum & Teaching Approach	24.94	24.81	49.75	0.12	Cause
Peer Influence & Social Support	25.7	25.26	50.96	0.45	Cause
Family Religious Background	25.8	24.95	50.75	0.85	Cause
Psychological Strength	24.81	24.67	49.48	0.15	Cause

The DEMATEL analysis (see table 4) revealed that among the ten factors influencing spiritual intelligence, six were classified as cause factors and four as effect factors based on their $ri - ci$ values. Islamic Knowledge & Understanding and Family Religious Background emerged as the most influential cause factors, both recording the highest positive $ri - ci$ value of 0.85, indicating their strong capacity to drive changes in other factors, followed by Peer Influence & Social Support (0.45), Self-Awareness & Reflective Thinking (0.29), Psychological Strength (0.15), and Islamic Curriculum & Teaching Approach (0.12). In contrast, Lecturer Role Modeling recorded the most negative $ri - ci$ value of -1.42, identifying it as the most dependent effect factor, meaning it is heavily influenced by the causal factors rather than driving them, followed by Islamic Learning Environment (-1.15), Religiosity & God-Consciousness (-0.14), and Consistency in Religious Practices (0.00), the latter sitting at the boundary between cause and effect. In terms of prominence, Self-Awareness & Reflective Thinking achieved the highest $ri + ci$ value of 51.36, indicating it holds the greatest overall significance and interaction within the system, while Lecturer Role Modeling recorded the lowest prominence score of 49.35, suggesting comparatively lower systemic engagement. These findings collectively indicate that knowledge, family background, and peer dynamics serve as the primary drivers of spiritual intelligence development, while institutional and role-modeling elements tend to be more responsive and outcome-dependent within the causal structure.

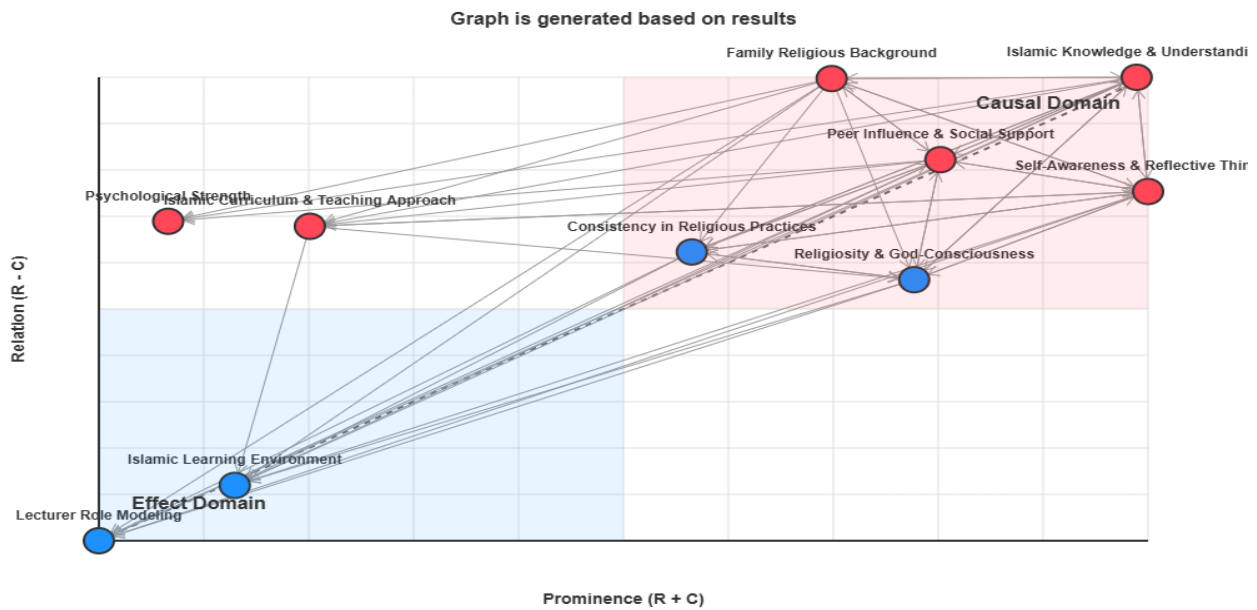


Fig. 2. Causal and effect

The DEMATEL causal diagram visually maps all ten spiritual intelligence factors onto a two-dimensional coordinate system where the horizontal axis represents Prominence ($r_i + c_i$), reflecting the overall importance and degree of interaction of each factor within the system, and the vertical axis represents the Relation value ($r_i - c_i$), distinguishing cause factors (positive values, plotted above the threshold) from effect factors (negative values, plotted below). The diagram is divided into two clearly shaded domains: the Causal Domain (pink/red shading, upper right) and the Effect Domain (blue shading, lower left), with red-colored nodes denoting cause factors and blue-colored nodes representing effect factors. Positioned in the Causal Domain with the highest prominence and positive relation values, Islamic Knowledge & Understanding and Family Religious Background occupy the uppermost right region, confirming their status as the most influential and systemically significant drivers, closely accompanied by Peer Influence & Social Support and Self-Awareness & Reflective Thinking, which also register strong causal positions. Psychological Strength and Islamic Curriculum & Teaching Approach appear as cause factors but with comparatively lower prominence scores, placing them further left on the horizontal axis. Within the Effect Domain, Lecturer Role Modelling is positioned at the extreme lower left corner, recording both the lowest prominence and the most negative relation value, identifying it as the most dependent and least systemically prominent factor in the entire network, while Islamic Learning Environment sits adjacent to it in a similarly subordinate position. Consistency in Religious Practices and Religiosity & God-Consciousness appear near the boundary between the two domains, indicating their transitional nature with near-zero or marginally negative relation values. The directional arrows connecting the nodes illustrate the influence pathways between factors, with the convergence of multiple arrows toward the effect factors visually reinforcing how cause factors collectively drive and shape the behavior of the effect group, thereby providing a comprehensive and intuitive representation of the causal architecture underlying spiritual intelligence development in the studied context.

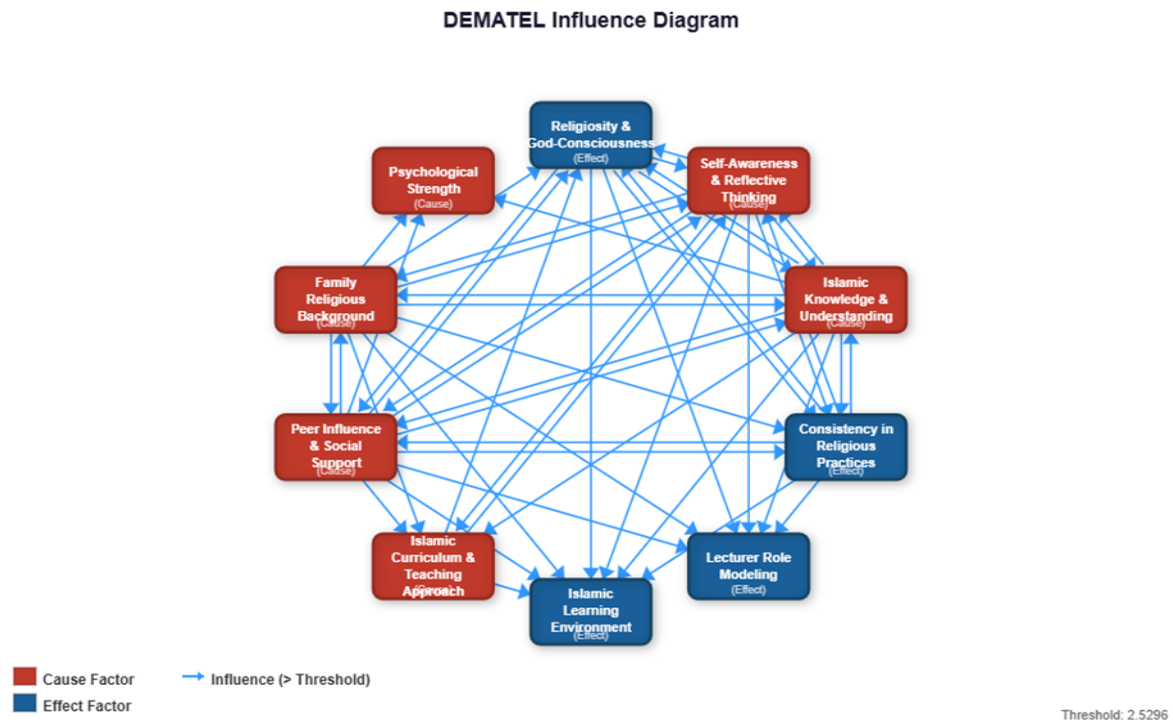


Fig. 3. Influence diagram

The DEMATEL Influence Diagram provides a network visualization of the significant influence relationships among all ten spiritual intelligence factors, filtered by a threshold value of 2.5296, meaning that only influence connections from the Total Relation Matrix that exceed this threshold are displayed as directional arrows, thereby eliminating weak or negligible relationships and retaining only the most meaningful causal linkages within the system. Factors are color-coded according to their classification, with red nodes representing the six cause factors Self-Awareness & Reflective Thinking, Islamic Knowledge & Understanding, Islamic Curriculum & Teaching Approach, Peer Influence & Social Support, Family Religious Background, and Psychological Strength and blue nodes representing the four effect factors Religiosity & God-Consciousness, Consistency in Religious Practices, Lecturer Role Modeling, and Islamic Learning Environment. The directional blue arrows illustrate the flow of influence between factor pairs, and the density of connections involving cause factors such as Islamic Knowledge & Understanding, Family Religious Background, and Peer Influence & Social Support is visibly higher, confirming their central and dominant role in transmitting influence across the entire network. Effect factors, particularly Lecturer Role Modeling and Islamic Learning Environment, receive numerous incoming arrows but generate comparatively fewer outgoing ones, visually reinforcing their dependent and reactive nature within the causal structure. The circular arrangement of nodes allows for a clear and symmetrical reading of the interconnections, revealing that the system is highly integrated with most factors maintaining multiple significant influence pathways to one another above the threshold. Overall, this influence diagram serves as a practical decision-making tool for researchers and educational policymakers, clearly identifying which factors must be prioritized as intervention points particularly the cause factors to produce cascading improvements across the broader spiritual intelligence development ecosystem among students in Islamic higher education settings.

4. Discussion & Conclusions

The results of this study paint a detailed and organized picture of the causal framework supporting the growth of spiritual intelligence among college students enrolled in Islamic educational programs. With the help of expert judgments and a rigorous series of matrix computations, the DEMATEL analysis was able to separate the factors that drive spiritual intelligence from those that are mainly influenced by other elements in the system. This analysis has theoretical and practical implications for Islamic pedagogy and educational policy, and it has succeeded in doing so. The most important factors that contribute to authentic spiritual formation, According to Al-Attas [8] and Bronfenbrenner [22], are Islamic knowledge and understanding and family religious background. These two factors have the highest positive $r_i - c_i$ value of 0.85, which supports the foundational arguments put forth by these scholars. This discovery lends credence to the established academic agreement that a student's intellectual and family roots are not ancillary, but fundamental, to the development of a profound spiritual life. Through the Islamization of knowledge framework, Islamic knowledge provides students with a perspective on the universe that goes beyond materialist epistemology. This allows them to incorporate divine consciousness into their academic and personal life. Similarly, according to Bronfenbrenner's ecological systems theory, which states that the microsystem is the most important factor in determining a person's developmental trajectory, a person's family religious background is the first and most lasting socialization context. It embeds religious values, habituated practices, and spiritual dispositions long before formal educational encounters occur.

According to Bandura's (1977) social learning theory, which states that individuals' behavior and attitudes are greatly influenced by vicarious reinforcement and social modeling within their peer networks, Peer Influence & Social Support ranked third among the most significant cause factors ($r_i - c_i = 0.45$). Peers have a significant impact on students' spiritual practices, both positively and negatively, in an Islamic college environment where communal practice, religious debate, and collective worship are typical aspects of campus life. By consistently engaging in reflective religious discussion, resisting secularizing social pressures, and maintaining consistent ritual observance, students embedded in socially cohesive religious peer groups continuously reinforce their spiritual intelligence from multiple relational dimensions. In line with previous research on Islamic boarding school settings, this supports the idea that sustained peer immersion in communal spiritual environments, especially those with a foundation in Sufi traditions, can lead to deep and long-lasting spiritual transformation [1] among students.

The most prominent component of the whole network, Self-Awareness & Reflective Thinking, which also happens to be the most systemically interacting component ($r_i + c_i = 51.36$), serves as a causative factor. This makes theoretical sense in light of Al-Ghazali's traditional teachings on self-accountability and self-watchfulness [49], which state that the ability to reflect on one's own actions and make sense of them inside is the key to achieving enlightenment. Given its centrality, this component likely mediates the conversion of extrinsic causative factors like familial background, social support, and Islamic knowledge into internalized and experientially meaningful spiritual dispositions. Furthermore, this discovery is in line with the model of spiritual intelligence put forward by Zohar and Marshall [28], which states that one's ability to engage in reflective self-awareness goes beyond the realm of traditional emotional and cognitive processing.

The study's most practically relevant findings include the categorization of Lecturer Role Modeling as the most dependent impact factor ($r_i - c_i = -1.42$). In Islamic educational traditions, the role of the teacher as a moral exemplar is deeply rooted in the concept of *uswah hasanah*, which means "beautiful example" and is derived from Prophetic practice. However, according to DEMATEL,

a lecturer's ability to model spiritual behavior depends on factors like their family background, level of Islamic knowledge, and the dynamics within their peer group. That is to say, the reasons that produce systemic circumstances mediate and permit the lecturer's success as a spiritual role model; it is not fundamental to the role model. The influence of a lecturer as a role model is likely to be substantially stronger in an educational setting that allows for strong information transfer, strong familial religious socialization, and supportive peer culture than in an environment where these factors are not present. To make the most of academic staff's potential as role models, this study demands a rethinking of current methods for assessing and supporting lecturer effectiveness in Islamic education. It stresses the need of institutional support systems, professional development opportunities based on Islamic pedagogy, and a campus environment that is spiritually enriching.

The Islamic Learning Environment's role as an effect factor ($r_i - c_i = -1.15$) shows that the educational environment's spiritual character and quality are not inherent but rather result from the systemic action of causative factors. Both [1] results on the mediating function of institutional contexts in religious education and [19] research on the quality of learning settings are in agreement with this. It is more accurate to view a spiritually enriching learning environment one that is marked by apparent Islamic principles, devotional practices, ethical standards, and intellectual Islamic discourse as a by product of intentional, causal investments in the curriculum, involvement of families, and peer culture than as a primary driver of spiritual development. Given that an improved learning environment is a natural by product of changes in the aforementioned domains, it would be wise for policymakers and institutional leaders to direct their intervention efforts primarily toward addressing these causes.

At the boundary between the cause-and-effect domains, there is a conceptually intriguing subtlety with Religiosity & God-Consciousness ($r_i - c_i = -0.14$) and Consistency in Religious Practices ($r_i - c_i = 0.00$) as their transitional positions. Core religious dimensions like *taqwa* and consistent ibadah are not the main drivers of spiritual intelligence, as one might expect. Instead, according to the DEMATEL findings, these dimensions are both affected by and contribute to the system, acting as a dynamic intermediary. Classical Islamic thinkers have long held the view that *taqwa* does not emerge naturally but rather is nurtured by education, familial guidance, and community support; once nurtured, it serves to heighten one's spiritual awareness. These parameters' proximity to one another may be a reflection of the feedback loops that are intrinsic to spiritual development, in which the relationship between cause and effect is frequently circular rather than linear.

Collectively, the results go beyond simple causal attributions to paint a picture of spiritual intelligence growth at the systems level. Knowledge creation, parental spirituality, social reinforcement, and self-reflective ability simultaneously build the underlying architecture of spiritual intelligence, according to the DEMATEL results, which do not pinpoint a single dominant element but rather a multi-layered causal ecosystem. Rather than being seen as autonomous causes, institutional and curricular factors are best viewed as indications of the outcomes of these more fundamental causal processes. The construction of comprehensive Islamic educational frameworks that really foster spiritual intelligence as an integrated developmental goal, rather than a supplemental curricular objective, is greatly affected by this systems viewpoint.

5. Conclusion

examine the causal linkages among elements impacting spiritual intelligence in Islamic higher education contexts. By combining 10 theoretically sound criteria from a comprehensive literature review and putting them through rigorous expert-based pairwise evaluation and DEMATEL

calculation, the study was able to accomplish its goals. This context's hierarchical structure of spiritual intelligence growth may be better understood with the help of the resultant causal map.

This study concludes that intellectual, family, and social elements are the primary drivers of spiritual intelligence in Islamic higher education, with institutional and environmental dimensions playing a secondary and outcome-dependent role. Educational interventions that aim to deepen students' engagement with Islamic epistemology and strengthen the religious influence of family environments will yield the most substantial systemic improvements in spiritual intelligence across the student population. This is because Islamic Knowledge & Understanding and Family Religious Background are the most critical causal levers in the system. Strategic priorities should equally prioritize the cultivation of spiritually supportive campus communities and the explicit integration of reflective self-development practices into the curriculum, as both peer influence and social support and self-awareness and reflective thinking occupy critical causal positions.

Rather than diminishing their significance, the discovery that Lecturer Role Modeling and the Islamic Learning Environment are effects rather than causes repositions them as indicators of systemic health, the quality of which is determined by the efficacy of the causal factors' development. Policymakers and administrators in the field of education would do well to take a roundabout route to bettering these aspects, as doing so is an inevitable byproduct of long-term investments in knowledge, family partnerships, peer culture, and reflective practicing.

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