

INTEGRATION OF SOCIAL LIFE CYCLE ASSESSMENT PRINCIPLES IN HOLISTIC EVALUATION OF ISLAMIC EDUCATION

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Submitted: 12/01/2025

Revised: 15/03/2025

Accepted: 12/05/2025

Published: 09/07/2025

Abstract

This article aims to analyze the integration of the social life cycle assessment (S-LCA) principle in the holistic evaluation of Islamic education. This study employed a systematic literature review method consisting of four stages: identification, selection, eligibility assessment, and inclusion. A total of 2,084 scientific articles were identified through the Scopus database using keywords such as "S-LCA," "social impact assessment," and "Islamic education evaluation." Most of these articles were published in international journals and conference proceedings from various countries. After applying the inclusion criteria, 32 articles were selected that specifically discussed the application of the Social Life Cycle Assessment (S-LCA) approach in the evaluation of Islamic education. According to the results of a systematic review of thirty-two chosen articles, S-LCA is a method for assessing social factors and social impacts at every stage of a product or service's life cycle, from the extraction of raw materials to the production process, distribution, use, and management. This systematic review identified at least five core ethical principles as the theoretical and practical foundation for the use of S-LCA: social and humanitarian justice, full life cycle analysis, transparency and participatory involvement, social and cultural contextualization, and sustainability and social transformation. Three fundamental approaches can be used to implement the concept of adaptation: the classification of stakeholders in Islamic education, the reformulation of social indicators, and the research of adaptation units. With adjustments to the unit of analysis, indicators, and stakeholders, S-LCA can be a thorough alternative approach for assessing the value and merits of Islamic education.

Keywords

Social Life Cycle Assessment (S-LCA), Islamic Education, Holistic Evaluation.



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INTRODUCTION

Islamic education, as an integral part of the national education system, plays a vital role in shaping the character and spiritual values of students. Amidst complex global and social challenges, the evaluation of Islamic education quality cannot rely solely on cognitive or administrative aspects (Latief & Nashir, 2020; Mahfud, 2019). Instead, it must embrace a more comprehensive approach that reflects the deeper social dimensions. In this regard, holistic evaluation models that consider broader social impacts are urgently needed. One such promising framework is *Social Life Cycle Assessment* (S-LCA), originally developed to assess the social impacts of products and services throughout their life cycle. Exploring the relevance of S-LCA principles within Islamic education offers a critical pathway toward innovative quality assessment that not only highlights outputs but also outcomes and long-term social impacts (Ziegler-Rodriguez et al., 2025).

Islamic education is challenged to evaluate itself more holistically. It's not just a matter of "What is taught?", but also "What is the impact on social life?" (Thamanam et al., 2025). The topic of whether or not pupils feel successful both psychologically and physically must be addressed by Islamic education. Do educators serve as change agents? How much do educational establishments help create a society that is sustainable and just? The field's reality demonstrates that this social dimension has, in fact, evolved into one of the evaluation system's primary components (Sahin, 2018). However, there are still many educational institutions that require the completion of their assignments after students graduate with high grades (Islam, 2019). Thus, it is necessary for a more thorough approach to the assessment of Islamic education. Evaluation now includes determining how well education shapes individuals who are compassionate, resilient, and capable of offering practical answers to societal issues, rather than merely gauging academic achievement (Wiyono et al., 2025).

This research is here to explore these possibilities to explore conceptually and practically how S-LCA can be used in evaluating Islamic education more comprehensively. This study focuses on both theory and practice: how the social indicators of the S-LCA can be incorporated into the Islamic education evaluation system, what obstacles can arise, and how they can be applied at the institutional level. Building an assessment framework that can encompass the general dynamics of Islamic education—academic, spiritual, and social the aim.

Masuwai et al. raised the role of self-assessment by teachers as a means of in-depth self-evaluation to improve professional development and a positive learning environment (Masuwai et al., 2024). A study by Zien et al. (2024) used a data analysis approach to the Islamic education quality management system that is aligned with the Sustainable Development Goals (SDGs). However, research that specifically combines the S-LCA approach with Islamic education is still very rare. Therefore, this study is considered innovative and fills the scientific gap.

Some studies that have discussed S-LCA, those of which is Azwani Masuwai, Hafizhah Zulkifli, and Mohd Isa Hamzah in their article "*Self-assessment for continuous professional development: The perspective of Islamic Education*". They discovered the fact that the Master who was actively doing *self-assessment* demonstrated commitment to personal and professional development, as well as contributed to creating a positive educational environment (Masuwai et al., 2024). Despite the challenges, *self-assessment* empowers teachers to make more informed decisions based on the results of their self-evaluation.

In addition, (Zien et al., 2024) In their article "Unveiling insights: A dataset analysis of Islamic quality management systems in educational institutions toward SDG-aligned education". Given the significance of high-quality education as highlighted by the Sustainable Development Goals (SDGs) of the UN, educational institutions and organizations must place a high priority on quality management, which can be accomplished by putting in place a quality management system (Walid et al., 2024). This study's data, which comes from 35 Islamic private primary schools spread throughout several Malaysian states, is centered on the Islamic Quality Management System (Islamic Quality Management System) in educational institutions in that country.

The Social Life Cycle Assessment (S-LCA) approach can provide a fresh viewpoint in this situation. S-LCA was initially created to evaluate a system's or product's social impact at every stage of its life cycle, from planning to implementation, as well as the long-term impacts on stakeholders (Abuzar et al., 2024; Nathie, 2021). Despite having its origins in the fields of industry and sustainable production, this method is beginning to gain traction in the field of education. Because it can evaluate a system's social impact at every stage of its life cycle, from planning to implementation to long-term effects on stakeholders, Social Life Cycle Assessment (S-LCA) was selected. Because of its capacity to present a thorough and compassionate image of the social impact of a system, including Islamic education, it was first employed in the industrial sector but is now beginning to be examined in the field of education (Hitman & Shemer, 2025; Saada, 2020).

On the other hand, research on S-LCA is also more focused on the industrial sector and has not touched much on the world of education, let alone Islamic education. This is the scientific gap that this research aims to bridge: combining two approaches that have not previously intersected. Thus, this study offers something new both in terms of concept and potential application (Nuryana & Fauzi, 2020).

The objective of this study is to formulate an integrative framework that adapts S-LCA principles for the holistic evaluation of Islamic education and to identify relevant social indicators for application within the Indonesian Islamic education context. The research also aims to explore how S-LCA principles can enhance the effectiveness of educational assessments in capturing social sustainability. Additionally, it seeks to address the literature gap by proposing a novel evaluative approach grounded in social justice and sustainability principles.

Through this study, it is expected that a new understanding will emerge regarding the importance of social dimensions in evaluating Islamic education. Ultimately, the study aims to serve as a foundation for informed policy-making and the development of more equitable, inclusive, and sustainable educational practices. The primary contribution of this study is both theoretical and practical, offering a model that can be utilised by Islamic education stakeholders, including educational institutions, government bodies, and local communities. Thus, this research seeks to respond to contemporary challenges in Islamic education with innovative and contextually relevant solutions.

METHOD

This study adopts the *systematic literature review* to explore and evaluate Islamic education using the Social Life Cycle Assessment (S-LCA) approach. This study uses the Systematic Literature Review (SLR) to examine in depth the potential application of the Social Life Cycle Assessment (S-LCA) in the context of Islamic education evaluation. The SLR method was chosen because it is able to collect, review, and synthesize scientific findings in a systematic, structured, and transparent manner, thus producing a strong theoretical and practical foundation for the topic being studied.

This study aims to analyse the fundamental principles of Social Life Cycle Assessment (S-LCA) that are relevant for evaluating social impacts within educational systems. At the same time, it also seeks to examine how the concepts and principles of S-LCA can be adapted and applied in the context of a holistic and sustainable evaluation of Islamic education.

1. Inclusion and Exclusion Criteria

The literature search strategy is carried out by following the following steps:

- a. Database used: Scopus.
- b. Keywords: "Social Life Cycle Assessment", "S-LCA", "social impact assessment", "education evaluation".

Table 1. Article Criteria

No	Aspects	Kriteria Inklusi	Exclusion Criteria
1	Year of Publication	Issued between 2018–2024 (refers to the early development phase of the S-LCA)	Published before 2018 or does not include the year of publication
2	Language	Indonesian and English	Languages other than Indonesian and English
3	Full-Text Availability	Full-text access is available for thorough analysis	Only abstracts are available, or the full text is not accessible
4	Quality of Publication	Published in the indexed journal Scopus	Non-Scopus
5	Research Methods	Use relevant qualitative, quantitative, or mixed approaches to study S-LCA	Studies that are only technical/experimental in nature, with no relevance to S-LCA
6	Field of Study	Social Science and Education	In addition to Social Science and Education

Table 1 presents the inclusion and exclusion criteria used to guide the selection of articles for the review on the integration of Social Life Cycle Assessment (S-LCA) into education evaluation, particularly within the context of Islamic education. The inclusion criteria ensure the relevance and quality of the selected literature by limiting publications to those issued between 2018 and 2024, representing the period in which the concept of S-LCA began to develop and gain wider academic attention. Only articles written in Indonesian and English are considered to maintain clarity and accessibility for the researchers. Furthermore, the availability of full-text access is essential to allow for a comprehensive analysis of the study content. To ensure academic credibility, only articles published in Scopus-indexed journals are included. The review also focuses on studies employing qualitative, quantitative, or mixed research methods that are directly related to the implementation or exploration of S-LCA in educational or social science contexts.

The exclusion criteria eliminate studies that do not meet the scope or quality standards of the review. Articles published before 2018 or those that do not explicitly mention S-LCA are excluded to maintain temporal and conceptual relevance. Similarly, studies written in languages other than Indonesian or English are not considered due to language limitations. Abstract-only documents or inaccessible full texts are excluded to ensure depth and reliability in the literature synthesis. Non-

Scopus publications are excluded to maintain academic rigour, and purely technical or experimental studies with no educational or social relevance are deemed outside the scope. Additionally, studies from fields unrelated to social science or education are not included, ensuring the review remains focused on its intended interdisciplinary framework that bridges sustainability and educational evaluation.

2. Prism Flow Diagram

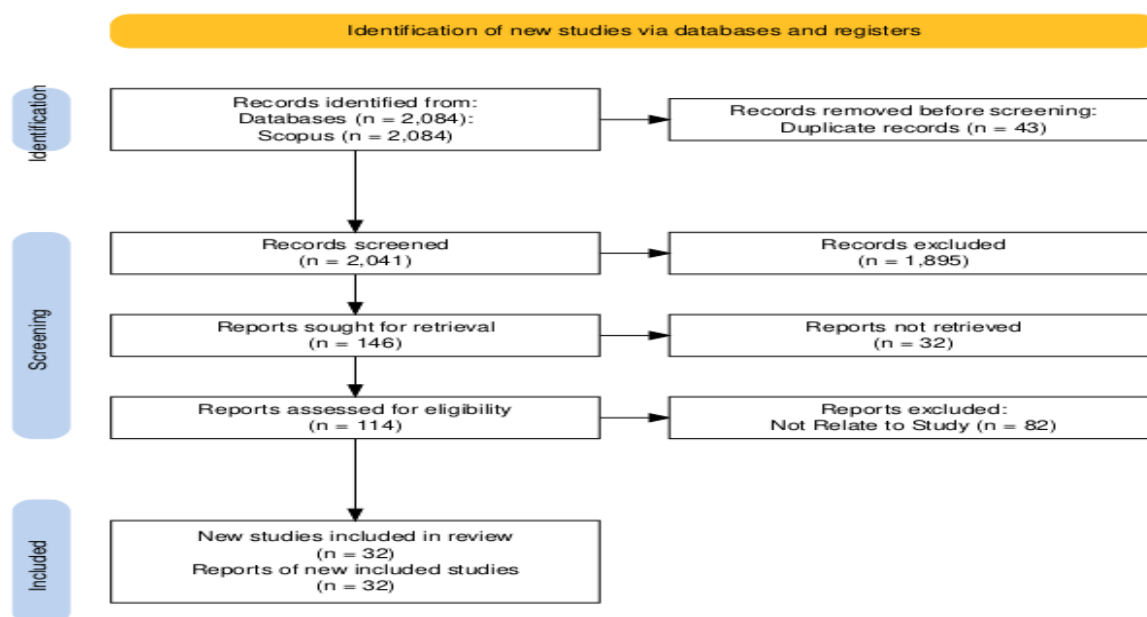


Figure 1. PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*)

A total of 2,084 scientific articles were identified through the Scopus database using keywords such as "S-LCA", "social impact assessment", "Islamic education evaluation", and the like. A total of 43 articles were removed due to duplication, leaving 2,041 articles for the screening stage. At this stage, a review of the titles and abstracts of 2,041 articles was conducted. A total of 1,895 articles were eliminated because they were not relevant to the topic of the study. A total of 146 articles were continued for the full-text report search stage, but 32 reports were not successfully obtained.

A total of 114 reports were successfully obtained and analyzed in full. Of these, 82 articles were excluded because they were not relevant to the study (e.g., due to inappropriate methodological design, outputs unrelated to social-based education evaluation, or language and accessibility constraints). A total of 32 studies were finally declared to meet the criteria and included in the systematic review. These studies are the basis for compiling a conceptual synthesis related to the application of the Social Life Cycle Assessment (S-LCA) approach in the evaluation of Islamic

education.

FINDINGS AND DISCUSSION

Findings

A. Social Life Cycle Assessment (S-LCA) and its Basic Principles

The development of the sustainability paradigm has encouraged the emergence of various multidimensional approaches in assessing the impact of an activity or system on the environment, economy, and society (Islam, 2019; Shaturaev, 2021). One of the evaluative approaches that is getting more attention in sustainability studies is the Social Life Cycle Assessment (S-LCA) (Thamanam et al., 2025). If Life Cycle Assessment (LCA) is more widely recognized as a quantitative, data-driven method of assessing a product or service's environmental impact over the course of its life cycle, then S-LCA is a framework extension that places a strong focus on social factors (Ayhan et al., 2024). This study synthesizes the conceptual definitions and fundamental ideas of the S-LCA using the Systematic Literature Review (SLR) technique. This serves as the foundation for providing a new applicative framework in the context of Islamic education evaluation.

According to (Masuwai et al., 2024) S-LCA is a method to assess social aspects and social impacts throughout the life cycle of a product or service, starting from raw material extraction, production process, distribution, use, to waste management. Generally speaking, the S-LCA highlights that every stage of a system's life cycle will affect different stakeholders, including employees, local communities, customers, and other supply chain participants. The S-LCA seeks to map a system's social contribution and potential social risks and enhance decision-making based on social ideals, according to a study by (Nuryana & Fauzi, 2020).

Methodologically, S-LCA comes from the same roots as LCA but focuses on non-environmental dimensions, such as human rights, social justice, working conditions, community participation, and social welfare. In a study conducted by (Arvisais et al., 2021) The S-LCA is positioned as a flexible yet standards-based tool, as it has international guidance but can also be adapted to the local socio-cultural context (Moslimany et al., 2024). A literature review conducted in the 2018–2024 range shows that the definition of S-LCA continues to develop in line with increasing social complexity in industrial practices, public services, and education.

Based on the results of a systematic review of 32 selected articles, S-LCA generally has a structure that follows four main stages: (1) goal and scope definition, (2) social life cycle inventory, (3) social impact assessment, and (4) interpretation (Hamami & Nuryana, 2022). This stage is similar

to the conventional LCA approach, but modified to address complex and often qualitative social variables.

At the objective and scope stages, the S-LCA determines the boundary system, functional units, and stakeholders to be assessed. For example, in the context of education, a functional unit can be a specific educational unit or program, and stakeholders include students, teachers, parents, the surrounding community, and policymakers (Hermanto et al., 2021; Tsani et al., 2024). The inventory in the S-LCA then includes the collection of social data from a variety of sources: surveys, interviews, policy documents, and social impact reports. This data is grouped by predefined impact category (Ayu et al., 2024; Conway et al., 2025).

Social impact assessment is carried out by mapping the relationship between activities in the life cycle and relevant social indicators (Aghimien et al., 2022; Husni et al., 2022). Based on UNEP guidelines, there are five main categories of stakeholders in the S-LCA, namely: (1) workers, (2) local communities, (3) consumers, (4) small business actors, and (5) the community in general. Each of these categories has sub-indicators, such as occupational health and safety, community involvement, access to education, labor rights, and social inclusion. Finally, the interpretation stage aims to draw conclusions from the data obtained and provide recommendations for continuous improvement.

Based on the systematic review conducted by the researchers, five core principles were identified in the application of Social Life Cycle Assessment (S-LCA) for the evaluation of Islamic education. This review can be presented in a pie chart, with each principle given equal weight, as all are considered to play an important and complementary role within a holistic and contextual evaluation framework, as follows:

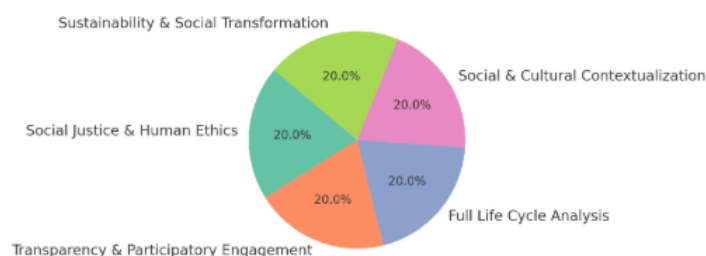


Figure 2. Five Core Principles of Social Life Cycle Assessment (S-LCA) In Islamic Education Evaluation

This systematic review identifies at least five basic principles that are the theoretical and operational basis for the implementation of S-LCA (Azmiy et al., 2024; Ziegler-Rodriguez et al., 2025):

1. Social Justice and Human Ethics

The main principle of the S-LCA is to assess the extent to which a system or activity considers social justice in its production process. Evaluation focuses not only on the results, but also on how to obtain those results (Muhsan & Haris, 2022). In the context of Islamic education, this principle is very much in line with the teachings of justice ('adl) and ihsan in Islam, which prioritize a balance between social rights and responsibilities (Husni et al., 2022; Shalihin, 2023).

2. Transparency and Participatory Engagement

The S-LCA emphasizes the need for the active involvement of stakeholders in the evaluation process. In many cases, S-LCA is implemented through a participatory approach, which allows for more representative and contextual collection of social data. This is especially relevant when applied in Islamic education systems, which are often community-based and social collectives.

3. Full Life Cycle Analysis (*Life Cycle Thinking*)

Just like LCA, the S-LCA approach uses a lifecycle (cradle-to-grave) mindset, which means that the entire process must be taken into account, not just a specific point. This helps avoid problem shifting, which is moving social problems from one point to another (Balaguera et al., 2018). In the world of education, this approach can help assess how the social impact of education policies is not only on students, but also on teachers, society, and the next generation (Santos et al., 2018; Tsani et al., 2024).

4. Social and Cultural Contextualization

One of the uniqueness of the S-LCA is its flexibility to adapt the indicator to the local context. Based on a study by (Hendrowati et al., 2024), the S-LCA cannot fully use universal indicators because social norms and societal structures are very diverse. Therefore, in its implementation, the S-LCA accommodates the principle of locality, which means that indicators must be developed by paying attention to local values, norms, and ethics, including Islamic values in the world of education (Celauro et al., 2017; Setyowati et al., 2024).

5. Sustainability and Social Transformation

The fifth principle is the orientation towards sustainable social change. The S-LCA not only assesses the current situation, but also encourages positive transformation through policy or program interventions (Omid et al., 2020; Trisnawaty et al., 2022). In Islamic education, this principle supports educational reform efforts based on *maqāṣid al-shari'ah*, which emphasizes long-term social welfare and the preservation of moral values (Handayani et al., 2019; Sholeh et al., 2023).

B. The S-LCA Concept is Adapted and Applied in the Context of Islamic Education Evaluation

Social Life Cycle Assessment (S-LCA) is an evaluative approach developed to assess the social impact of a product, process, or system throughout its life cycle. In contrast to environmental and economic evaluation approaches such as Life Cycle Assessment (LCA) and Life Cycle Costing (LCC), S-LCA focuses on social dimensions that are often marginalized in sustainability analysis (Samdani, 2024). Basically, the S-LCA evaluates the social interactions arising from human activities in a system, including the impact on workers, society, consumers, and other stakeholders (Santos et al., 2018). The idea of S-LCA has started to be researched for its possible applications in the field of education, notably in the Islamic educational system, in tandem with the growing demand for a more comprehensive approach to educational evaluation. Because it may offer a thorough and adaptable framework to the social, ethical, and sustainable ideals inherent in Islamic education, this method is regarded as pertinent (Hadi et al., 2024).

The S-LCA was developed in response to the inequality of evaluation focus that overemphasizes environmental and economic aspects without considering social impacts (Hendrowati et al., 2024; Setyowati et al., 2024). According to the Guidelines on Social Life Cycle Assessment of Products issued by UNEP/SETAC (2009), which is cited by (Al Rashid et al., 2024) the S-LCA aims to assess the social and sociocultural impacts that occur during the life cycle of a product or service. In this context, the unit of analysis can be a process, organization, or related social system. The S-LCA covers five categories of key stakeholders: workers, local communities, consumers, the wider community, and business people (Bahrowi, 2022). Each category is analyzed through indicators such as human rights, working conditions, access to services, social contributions, and equity (Hidayat & Aini, 2025).

In the context of education, S-LCA is no longer talking about physical products, but rather about educational services as social entities. Therefore, this concept must be reconstructed to fit the structure and dynamics of educational institutions, including Islamic education. Educational

services have their own life cycle, starting from curriculum planning, learning processes, social interactions in the school environment, to outputs in the form of graduates and their impact on society (Rifai & Kemas Imron Rosadi, 2022; Shaturaev, 2021).

The principles of implementing Social Life Cycle Assessment (S-LCA) can be contextually adapted to evaluate the complex and value-based Islamic education system, as illustrated in the following infographic:

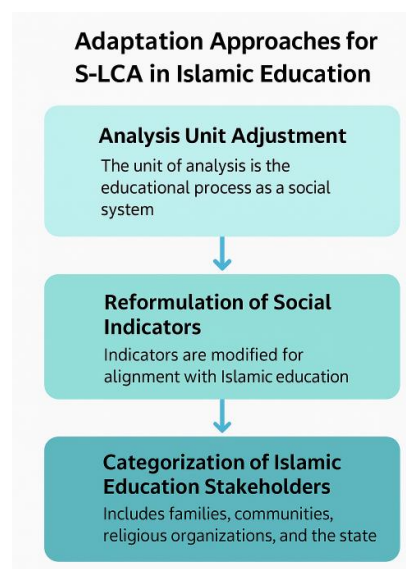


Figure 3. Adaption Approach for Social Life Cycle Assessment (S-LCA) in Islamic Education

To be applicable in the context of Islamic education, the concept of S-LCA needs to be modified by adjusting the indicators, the scope of the cycle, and the categories of its stakeholders. Adaptation can be done through three main approaches:

1. Analysis Unit Adjustment

In the context of education, the unit of analysis is not a product, but an educational process as a social system. This includes: curriculum, learning practices, teacher-student relations, parent participation, school management, and stakeholder interaction. This process can be studied from the input stage (planning), throughout (learning implementation), to the output (educational outcomes and their impact on society).

2. Reformulation of Social Indicators

Indicators in the traditional S-LCA such as wages, working conditions, and discrimination can be modified into indicators that are more in line with Islamic education, such as gender justice in access to education, the quality of spiritual and moral relationships in the teaching-learning

process, and the partiality of students from marginalized groups (H. M. Khan et al., 2021). The dimension of spirituality can also be added as a key indicator within this framework.

3. Categorization of Islamic Education Stakeholders

In Islamic education, stakeholders include not only students and teachers, but also families, communities, religious organizations, and the state. Therefore, the S-LCA approach needs to be adapted to include distinctive actors in Islamic education, as well as to take into account the social relations and collective values that characterize it (I. Khan et al., 2021).

Several studies reviewed in this study show that the application of S-LCA in the context of education, although still limited, has been carried out with contextual approaches. For example, a study by (Istikomah et al., 2023) uses the S-LCA framework to evaluate professional training programs in Italy and demonstrate that social indicators such as equity of access, active participation, and participant satisfaction have a significant impact on the sustainability of the program. Similar studies can be used as a reference in developing evaluation models for madrasas, Islamic boarding schools, or formal Islamic educational institutions.

In Indonesia, there have not been many empirical studies that apply S-LCA in Islamic education (Muhsan & Haris, 2022). However, its principles have been widely applied in Islamic education policies based on value-driven approaches, although they have not used a systematic evaluative framework. By referring to the S-LCA framework, the evaluation of Islamic education can include aspects of the welfare of madrasah teachers, parental participation in children's education, access to students from 3T areas (frontier, outermost, disadvantaged), and fairness in the distribution of educational operational assistance.

Discussion

According to the research review, S-LCA has a number of benefits. First, a social dimension that is frequently missed in traditional assessments can be captured by this method. Second, S-LCA is adaptable and versatile in different local settings (Ziegler-Rodriguez et al., 2025). Third, this method promotes social fairness and active involvement in the formulation of public policy (Sanjani et al., 2023). However, the S-LCA also has a number of difficulties. The challenge of quantifying qualitative social data is one of them. The paucity of data in poor nations and the absence of a legally binding international standard like LCA present further difficulties.

According to research by (Puspaningrum et al., 2023), the development of S-LCA should concentrate on integrating qualitative narratives with quantitative data using case study or mixed

techniques. To be able to comprehend social intricacies and convert them into relevant evaluation indicators, evaluators also require capacity training. The most crucial aspect of drafting a journal paper is the discussion. The thesis and study findings must now be presented methodically, factually, and scientifically by the author. Describe the significance of the research findings. The author must next contrast the findings with earlier research that is pertinent to the subject under discussion.

There are several strategic advantages of using S-LCA in the assessment of Islamic education. First, this method can broaden the scope of evaluation beyond merely analyzing academic performance to include a thorough social assessment (Faisol et al., 2024). Second, S-LCA makes educational institutions more socially responsible to the state and society (Hadi et al., 2024). Third, the development of Islamic education policies that are more inclusive, equitable, and sensitive to community needs can be promoted by S-LCA-based evaluation (Ninghardjanti et al., 2023). Lastly, this strategy aligns with the direction of the Sustainable Development Goals (SDGs), particularly the 16th target (inclusive justice and institutions) and the fourth goal (quality education).

Notwithstanding its potential, S-LCA's integration into Islamic education is not without its difficulties. First, there is currently a dearth of empirical research and literature that creates S-LCA indicators in the field of education. Second, the adoption of S-LCA may be hampered by the difficulty of gathering qualitative and contextual social data. Third, a different issue is the lack of technical capability at the school or madrasah level when it comes to putting the S-LCA-based evaluation model into practice (Ayhan et al., 2024; Nasucha et al., 2023). Additionally, educational evaluators must have specialized training in order to comprehend the principles and methods of S-LCA implementation.

There is a lot of room for adaptation and application of the Social Life Cycle Assessment (S-LCA) concept in the context of evaluating Islamic education. S-LCA can be a comprehensive alternative method for evaluating the sustainability and quality of Islamic education with modifications to the units of analysis, indicators, and stakeholders. Based on the principles of justice, benefit, and sustainability that are central to Islamic teachings, this method enables a more thorough societal study. As a result, creating an Islamic education evaluation model based on S-LCA is a calculated move toward addressing contemporary issues and promoting the transformation of the educational system into one that is more inclusive, equitable, and sustainable. More empirically grounded research is required in the future to develop tools, indicators, and tangible case studies

for adopting S-LCA at different Islamic educational levels and formats.

CONCLUSION

According to the findings of a systematic review of 32 chosen studies. The fundamental principles of Social Life Cycle Assessment (S-LCA) that are relevant for evaluating social impacts in educational systems include stakeholder-centred analysis, impact pathway tracing, and the integration of qualitative and quantitative social indicators across the life cycle of a system. These principles enable a more holistic understanding of how educational practices affect not only direct beneficiaries such as students and teachers but also broader communities, institutions, and policy ecosystems. In the context of education, S-LCA promotes transparency, equity, and long-term sustainability by evaluating not just outcomes but also processes, access, inclusiveness, and the ethical dimensions of educational delivery. In adapting S-LCA to the evaluation of Islamic education, its principles must be contextualised to reflect the spiritual, moral, and communal values embedded within Islamic pedagogical traditions. This study has shown that S-LCA can be applied to assess the social sustainability of Islamic education holistically by identifying key stakeholders, evaluating social performance indicators, and analysing systemic impacts from curriculum design to long-term social outcomes. The implications of this research highlight the need for interdisciplinary models that merge sustainability sciences with educational evaluation. Future research should focus on developing context-specific S-LCA indicators for Islamic education, building robust data collection tools, and testing this model across diverse educational environments to support policy development and institutional improvement grounded in social justice and ethical sustainability.

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