Reconstructing the Synergy Thesis: A Critical Review of Islamic Finance, Circular Economy, and Digital Transformation for Sustainable Halal Startups

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Abstract

Halal startups are increasingly framed as the convergence point of three sustainability agendas — Islamic finance, the circular economy, and digital transformation — yet estimates of the halal market's own size diverge by more than a trillion US dollars across recent Scopus-indexed sources, an inconsistency rarely acknowledged before the "synergy" argument is built on top of it. This paper offers a critical narrative review of 71 Scopus-indexed publications (2015–2026) to test how well the empirical record actually supports the synergy thesis specifically for startups, rather than for incumbent Islamic banks, established SMEs, or halal supply chains in general. Four gaps are identified. First, an evidentiary asymmetry: quantitative validation exists for adjacent constructs (fintech adoption, entrepreneurial performance, tourism barriers), but the one framework that integrates Islamic principles with digital technology for halal supply chains is itself a systematic review whose authors state that empirical validation is still required. Second, domain-boundary blurring, where several sources cited elsewhere as evidence of halal-specific digital transformation are generic Industry 4.0 or blockchain-logistics studies with no Islamic or halal content. Third, regulatory and consumer-side barriers — incomplete ASEAN harmonization, waqf administration bottlenecks, and documented non-Muslim reluctance toward halal food — persist wherever empirical evidence actually exists. Fourth, Islamic financing innovations for the circular halal economy (cash waqf-linked sukuk, green sukuk, crowdfunding) remain small-scale, jurisdiction-specific pilots never tested on startups as a distinct unit of analysis. The review concludes that the synergy thesis is conceptually coherent but empirically premature.

Keywords: Islamic finance, circular economy, halal startups, digital transformation, critical literature review.

1. Introduction

Halal startups sit at the intersection of three agendas that dominate current Islamic economics scholarship: Islamic finance, the circular economy, and digital transformation. Conference themes and policy documents increasingly treat the combination of these three fields as a coherent growth strategy for the global halal industry, and the Scopus-indexed literature used for this review reflects that optimism. Yet the literature is not even settled on how large the market it is describing actually is. Akram (2020) estimated a global halal market of USD 2.1 trillion growing toward USD 3 trillion by 2023; Hussin et al. (2026) cite USD 3.2 trillion for 2024; Masood et al. (2025) project USD 3.6 trillion by 2026; and Mayor-Vitoria (2026) instead anchors the market at

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USD 2.71 trillion in 2024, nearly doubling by 2033. None of the four sources reconciles its figures against the others, and each is cited elsewhere in the corpus as though the numbers were interchangeable. This is not a trivial statistical footnote: it is the foundation on which claims about the scale of opportunity for halal startups are built.

Within this landscape, halal startups — early-stage ventures explicitly built around Shariah-compliant products, processes, or business models — are positioned as the vehicle through which Islamic finance, circular-economy practices, and digital tools are supposed to combine into a distinctive competitive advantage. Sari et al. (2026) formalize this expectation, distilling a systematic review of 133 studies into a conceptual Values-Based Technology Adoption / Islamic Sustainability Synergy (V-TAF/ISS) framework that integrates Islamic principles with digital technologies for halal supply chain management. Masood et al. (2025) similarly argue that Fourth Industrial Revolution technologies "drive sustainability and inclusivity" in Islamic monetary economics. The claim, in short, is one of synergy: that combining these three domains produces outcomes greater than the sum of their parts.

Taken separately, each of the three component literatures is reasonably mature. Islamic financing instruments for social and productive purposes — mushārakah and muḍārabah partnerships, sukuk and green sukuk, waqf and cash waqf-linked sukuk (CWLS), and Shariah-compliant crowdfunding — are documented across multiple jurisdictions (Oseni et al., 2025; Ali et al., 2025; Kunhibava et al., 2023; Aufa et al., 2023; Sa'ad et al., 2024). The circular economy's compatibility with Maqasid al-Shariah (the higher objectives of Islamic law) has likewise been argued conceptually (Islam et al., 2024; Haneef & Jamaludin, 2021) and tested in specific halal food-supply-chain contexts (Febriandika et al., 2025). Digital transformation — blockchain, AI, and IoT applied to supply chains, zakat administration, and traceability — is an active and fast-growing research area, both within Islamic finance specifically (Nazeri et al., 2023; Supriyadi et al., 2024) and in the broader, non-Islamic supply-chain literature (Reddy et al., 2025; Badhera et al., 2026).

What is far less established is whether the three domains function as a genuine synergy once combined and applied specifically to startups. Three gaps recur across the corpus reviewed for this paper. First, most quantitative validation targets adjacent but distinct populations — Islamic fintech adoption among Muslim entrepreneurs (Mahmoud et al., 2025), entrepreneurial performance among Islamic-financial-institution-supported MSMEs (Yusfiarto et al., 2025), or halal tourism barriers (Fang et al., 2026) — rather than halal startups engaging simultaneously with financing, circularity, and digital tools. Second, a subset of sources cited in the wider halal-digitalization conversation are not halal-specific at all: they are generic Industry 4.0, blockchain, or IoT supply-chain studies (Reddy et al., 2025; Hubaishy et al., 2026; Kalinaki et al., 2024; Badhera et al., 2026; Maheshwari et al., 2026) that contain no Islamic or halal content, yet are drawn upon as if they demonstrated something halal-specific. Third, where empirical or documentary evidence does exist, it more often documents friction than synergy — incomplete regulatory harmonization (Johan & Plana-Casado, 2023), waqf administration bottlenecks (Kunhibava et al., 2023), halal-warehouse compliance burdens (Ismail et al., 2023), and persistent non-Muslim consumer reluctance toward halal food (Ramli et al., 2023).

This paper's contribution is a critical re-reading of the same Scopus-indexed evidence base that underlies the conference's own synergy narrative, rather than an additional case for or against it. The objective is threefold: (a) to map where the halal-startup synergy claim rests on genuine empirical support versus conceptual assertion; (b) to identify sources that are cited as halal-specific evidence but are in fact domain-general; and (c) to consolidate the regulatory and consumer-side barrier evidence that the optimistic synergy narrative tends to understate.

2. Literature Review

2.1. Islamic Finance as Ethical Capital for Halal Startups.

Islamic finance offers halal startups financing instruments that are simultaneously capital-raising and values-aligned. Profit-and-loss-sharing contracts such as mushārakah and muḍārabah, sukuk (including green sukuk earmarked for environmentally sustainable projects), waqf-based instruments, and Shariah-compliant crowdfunding are each documented as viable, if geographically uneven, financing channels (Oseni et al., 2025; Ali et al., 2025; Sa'ad et al., 2024; Yusuf et al., 2024). Cash waqf-linked sukuk (CWLS) is presented as a particularly promising hybrid instrument for productive, sustainability-oriented ventures, since it combines the perpetual, non-extractive character of waqf with the tradability of sukuk (Aufa et al., 2023; Kunhibava et al., 2023). Abdeldayem and Aldulaimi (2023) similarly model Islamic crowdfunding as a mechanism for financing SMEs in the Middle East. What these sources share, however, is a focus on financing the transaction, not evaluating the transacting startup: none report outcome data — survival, growth, or job creation — for the halal startups that actually used these instruments; the evidence concerns instrument design and legal viability, not instrument performance.

2.2. Circular Economy and the Halal Industry.

A second body of literature argues that circular-economy principles — reduce, reuse, recycle, and closed-loop value chains — are conceptually compatible with Maqasid al-Shariah's emphasis on preserving resources and avoiding waste (isrāf) (Islam et al., 2024). Haneef and Jamaludin (2021), however, take a more cautious position, arguing that the circular economy's own conceptual limitations and the reservations documented about Islamic banking and finance's social impact mean the compatibility argument should not be treated as settled. Applied studies are scarcer and more localized: Febriandika et al. (2025) use an Analytic Network Process to model circular-economy transformation in Indonesia's halal food supply chain; Musari (2023) documents Indonesian waste-bank programs as a local-wisdom precedent for Islamic circular economics; and Insawan et al. (2026) propose a Sharia-based "waste circularomics" model, again for Indonesia specifically. Masudin et al. (2025), frequently cited alongside these sources, is in fact a generic study of green logistics and IoT in SME sustainability performance with no halal or Islamic dimension at all — a first instance of the domain-boundary blurring examined more fully in Section 4.2. Collectively, the circular-economy literature is normatively persuasive but geographically narrow (concentrated in Indonesia and Malaysia) and thin on startup-level implementation data.

2.3. Digital Transformation and Shariah-Compliance Claims.

The third strand concerns digital technologies — blockchain, AI, and IoT — applied to Islamic finance and halal supply chains. Nazeri et al. (2023) explore blockchain-based zakat management in Malaysia, but the study is explicitly exploratory, drawing on only two informant interviews; its findings describe stakeholder attitudes rather than a validated system. Supriyadi et al. (2024) contribute a bibliometric analysis of blockchain in Islamic finance, which maps the field's growth but, by design, produces no primary evidence about the effectiveness of any implementation. The most directly relevant source, Sari et al. (2026), conducts a PRISMA-guided systematic review of 133 peer-reviewed studies and distills from them an integrative conceptual framework — Values-Based Technology Adoption (V-TAF) and Islamic Sustainability Synergy (ISS) — for combining Islamic principles with digital technologies in halal supply chain management. The review reports that conventional adoption models explain only 23% of blockchain-adoption variance in Islamic contexts, motivating V-TAF as a corrective, and estimates that the ISS construct could generate a 19% greater reduction in environmental impact than conventional Triple Bottom Line approaches. Both figures are derived from the authors' synthesis of the reviewed literature rather than from a new empirical test of V-TAF or ISS themselves; the authors state explicitly that, as a conceptual framework, empirical validation across diverse Indonesian contexts is required before its propositions can be considered established. Several other sources frequently invoked in halal digital-transformation discussions — Reddy et al. (2025)

on blockchain-AI integration for intelligent supply chains, Hubaishy et al. (2026) on AI and blockchain for sustainable material sourcing, Kalinaki et al. (2024) on IoT-based logistics, Badhera et al. (2026) on disruptive technologies in supply chain management, and Maheshwari et al. (2026) on blockchain for food traceability — contain no Islamic, halal, or Shariah content whatsoever. They are general-purpose digital-supply-chain studies that happen to be topically adjacent, not evidence about halal-specific digital transformation.

3. Methods

This study is a critical narrative literature review, not an empirical investigation: no primary data were collected, and no human or institutional subjects were involved. The approach follows established practice for conceptual and critical reviews in Islamic economics and finance, where the object of analysis is the coherence and evidentiary strength of an existing published literature rather than a new dataset.

The corpus comprises 71 Scopus-indexed records retrieved for the search domain "sustainable growth of halal startups: the synergy of Islamic finance, circular economy, and global market opportunities," spanning publication years 2015–2026 and concentrated in 2020–2026. The disciplinary spread includes Islamic finance, entrepreneurship, sustainability science, circular-economy studies, digital transformation/computer science, supply chain management, and regulatory studies. Of the 71 records, 32 are cited directly in this review; the remainder were screened and excluded either as duplicative of an already-cited finding or as insufficiently relevant to the startup-specific synergy question that motivates this paper.

Rather than a database-agnostic systematic review protocol (e.g., PRISMA), this paper applies a critical narrative synthesis organized around three analytical questions, chosen to directly test the synergy claim rather than merely summarize it: (1) What is the empirical — as opposed to conceptual — evidentiary base for treating Islamic finance, the circular economy, and digital transformation as mutually reinforcing for halal startups specifically? (2) Which sources cited as evidence of halal-specific digital transformation are, on inspection of their actual content, domain-general studies unrelated to Islamic finance or halal certification? (3) What does the regulatory- and consumer-facing evidence say about the barriers that a purely conceptual synergy argument tends to omit? Each cited source's own stated method, sample, and findings were checked against the claim it is used to support elsewhere in the corpus, rather than accepted at the level of its abstract alone.

This review has clear limitations that should qualify its conclusions. It draws on a single bibliographic database (Scopus), which under-represents non-English and non-indexed regional publications, particularly Indonesian- and Malaysian-language sources that may contain more granular evidence on domestic halal-startup ecosystems. The heterogeneity of methods across the 71 records (conceptual frameworks, bibliometric analyses, PLS-SEM surveys, systematic reviews, and case studies) precludes meta-analytic pooling of effect sizes; the synthesis is therefore narrative and interpretive rather than statistical. Finally, as a critical review, the paper deliberately foregrounds gaps and inconsistencies in the literature; this should not be read as a claim that no synergy exists, but as a claim that the currently published evidence does not yet establish one specifically for halal startups.

4. Results and Discussion

4.1 Evidentiary Asymmetry: Conceptual Consensus, Empirical Scarcity.

Quantitative, sample-based research exists in this corpus — but it validates adjacent constructs, not the startup-level synergy claim itself. Yusfiarto et al. (2025) surveyed 265 Muslim MSME owners using PLS-SEM to show that support from Islamic financial institutions shapes entrepreneurial performance; Mahmoud et al. (2025) surveyed 340 Nigerian Muslim entrepreneurs, also with PLS-SEM, to identify factors influencing Islamic fintech acceptance,

moderated by Islamic financial literacy; and Fang et al. (2026) convened a 30-member expert panel using fuzzy Delphi and fuzzy DEMATEL methods to build a hierarchical framework of barriers to halal tourism in Taiwan. Each is methodologically credible within its own scope. None, however, tests the combination of Islamic financing, circular-economy practice, and digital technology within a halal-startup population. The one source that most directly integrates the three domains, Sari et al. (2026), is itself a systematic review: it synthesizes 133 studies into two new theoretical constructs (V-TAF and ISS) and reports that conventional models explain only 23% of blockchain-adoption variance in Islamic contexts, while its proposed ISS construct is projected to generate 19% greater environmental-impact reduction than Triple Bottom Line approaches. These are synthesis-derived estimates, not results from an implemented or tested system, and the authors state plainly that empirical validation is still required. The literature, in other words, has methodological rigor and it has integrative ambition, but not yet in the same study.

4.2 Domain-Boundary Blurring in the Digital-Transformation Evidence.

A recurring pattern in the corpus is the citation of generic digital-supply-chain research as if it supported halal-specific claims. Reddy et al. (2025) study blockchain-AI integration for "intelligent supply chains" in general; Hubaishy et al. (2026) address AI and blockchain for "sustainable material sourcing" without reference to any religious or certification framework; Kalinaki et al. (2024) survey IoT-based logistics broadly; Badhera et al. (2026) review disruptive technologies — AI, IoT, blockchain — reshaping supply chain management as a field; and Maheshwari et al. (2026) discuss blockchain for food traceability and transparency without any halal- or Shariah-specific content. None of these five sources mentions Islamic finance, halal certification, or Shariah compliance. Their inclusion in halal-digitalization discussions rests on topical adjacency — supply chains, food, technology — rather than substantive overlap. This matters because it inflates the apparent size of the halal-specific digital-transformation evidence base: readers encountering these citations in aggregate may reasonably conclude that halal-specific digital transformation is more thoroughly researched than the corpus, examined source by source, actually shows.

4.3 Regulatory and Consumer-Side Barriers Complicate the Optimistic Reading.

Where the corpus does contain empirical or documentary evidence, it more often describes friction than synergy. Johan and Plana-Casado (2023) show that halal food guidelines remain incompletely harmonized across ASEAN under the bloc's consensus-based "ASEAN way," with issues such as mutual recognition and labelling still unresolved. Ismail et al. (2023) document specific compliance burdens facing halal warehouses in Malaysia, including contamination risk, certification cost, and limited government support. Kunhibava et al. (2023), even while arguing for the viability of CWLS, find that Malaysia's decentralized waqf administration framework may impede the instrument's efficacy and recommend regulatory reform. Ramli et al. (2023), in a systematic review, document persistent non-Muslim consumer reluctance toward halal food, driven by weak purchase intention and low food-safety awareness — a finding with direct relevance to any startup pursuing the "global market opportunities" framing this conference theme invokes, since global growth implies non-Muslim-majority markets. Mayor-Vitoria (2026) extends this caution to Europe specifically, describing fragmented regulation and limited supply-chain transparency as barriers to halal-technology adoption there. Martín et al. (2020), studying European respondents with a fuzzy multi-criteria method, similarly find that the Islamic finance–halal tourism connection "has hardly been researched" empirically, and that agreement over Islamic finance's potential role in halal tourism varies significantly by respondents' cultural background — evidence that even demand-side appetite for this synergy is culturally uneven rather than a settled global given. None of these barrier findings appear in the sources that assert the synergy thesis most confidently; the optimistic and the cautionary literatures largely talk past each other.

4.4 Financing Innovation Is Real but Narrowly Piloted.

The Islamic-finance component of the synergy thesis is the best-evidenced of the three, but even here the evidence is narrower than the synergy narrative implies. CWLS, green sukuk, and Shariah-compliant crowdfunding are each documented as functioning instruments (Aufa et al., 2023; Ali et al., 2025; Abdeldayem & Aldulaimi, 2023), but the studies describing them are set in established institutional contexts — sovereign or quasi-sovereign sukuk issuances, existing waqf boards, national crowdfunding platforms — rather than in early-stage startup financing rounds. No source in the corpus reports financing-instrument data disaggregated for startups as distinct from established SMEs or Islamic banks. The financing innovation is therefore real and increasingly well-documented, but its application to the startup segment that the synergy thesis foregrounds remains, on the current evidence, asserted rather than demonstrated.

5. Conclusions

This review set out to test, rather than assume, the widely asserted synergy between Islamic finance, the circular economy, and digital transformation for sustainable halal startups. Read across 71 Scopus-indexed sources, the synergy thesis is conceptually coherent and normatively well-grounded in Maqasid al-Shariah, and each of its three component literatures — Islamic financing instruments, circular-economy compatibility, and digital transformation — is independently active and growing. What the evidence does not yet show is that the three combine into a demonstrated advantage specifically for startups, as opposed to established banks, SMEs, or supply chains in general.

Four gaps support this conclusion. Quantitative validation in the corpus targets adjacent populations rather than the startup-level integration the synergy thesis claims, and the one integrative framework in the corpus (Sari et al., 2026) explicitly awaits empirical validation by its own authors' admission. A cluster of frequently cited digital-transformation sources contains no Islamic or halal content at all, inflating the apparent evidence base through topical rather than substantive overlap. Regulatory and consumer-side barriers — incomplete ASEAN harmonization, waqf administration bottlenecks, halal-warehouse compliance burdens, and documented non-Muslim reluctance toward halal food — are well-evidenced wherever empirical work exists, yet rarely appear alongside the optimistic synergy narrative. And Islamic financing innovations for the circular halal economy, while genuinely functional, remain piloted in established institutional settings rather than tested on startups as a distinct unit of analysis.

This paper's contribution is the critical re-reading itself: a demonstration that the same evidence base used to assert the synergy thesis, examined source by source rather than accepted in aggregate, supports a more conditional conclusion. The review is limited by its reliance on a single database (Scopus), by English-language bias that likely under-represents Indonesian- and Malaysian-language evidence on domestic halal-startup ecosystems, and by its narrative rather than meta-analytic method, which was necessitated by the heterogeneity of methods across the reviewed studies.

Future research should prioritize empirical studies that treat halal startups as a distinct population — disaggregating their financing, circularity, and digital-adoption outcomes from those of established Islamic banks and SMEs — and should disentangle halal-specific digital-transformation evidence from the generic Industry 4.0 literature currently cited alongside it. Given the "global market opportunities" ambition that motivates much of this literature, future work should also examine non-Muslim and diaspora consumer segments directly, rather than inferring global scalability from domestic, Muslim-majority-market studies alone.

6. CRediT Authorship Contribution Statement

Moch Mahsun: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology, Resources, Validation, Writing – original draft, and Writing – review & editing.

7. Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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10. Ethical Approval

This study is a literature-based conceptual review. It did not involve human participants, animal subjects, or identifiable personal data, and therefore did not require ethical approval.

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