JOURNAL OF MANAGEMENT AND BUSINESS SOLUTIONS

A Conceptual Model for Sustainability in Barter Business Models: Goods and Services Barter in the C2C Domain: A Meta-Synthesis Approach

1. Sara. Beikmohammadi: PhD Student in Marketing Management, Department of Management, Faculty of Management, University of Tehran, Kish International Campus, Iran
2. Ayoub. Mohammadian*: Associate Professor, Department of Information Technology Management, Faculty of Management, University of Tehran, Iran
3. Jalil. Heidary Dahooie: Associate Professor, Department of Industrial Management, Faculty of Management, University of Tehran, Iran

*corresponding author's email: mohamadian@ut.ac.ir

ABSTRACT

The present study was conducted with the aim of presenting a conceptual model for sustainability in barter business models, specifically goods and services barter in the consumer-to-consumer (C2C) domain, using a meta-synthesis approach. In terms of purpose, the study is exploratory, and in terms of approach, it is qualitative. The research method employed is meta-synthesis, which is used to integrate, analyze, and interpret the findings of previous studies. The research data were collected through a systematic review of valid scientific articles in the fields of barter and sustainability. Subsequently, using thematic analysis, the sustainability components of barter-based businesses were extracted and categorized. Finally, based on the results, a conceptual model of sustainability for barter-based businesses was developed. The results of data analysis indicate that various elements have been introduced in the scientific literature as sustainability components of barter-based businesses. In the present study, these components were extracted through a systematic review approach by examining scientific studies published between 2010 and 2026. The results show that components such as reducing the need for liquidity, reducing capital pressure, improving non-monetary cash flow, economic resilience under crisis conditions, optimal use of surplus inventory, reducing the risk of inventory accumulation, and reducing operational costs are discussed in the economic domain. In addition, factors such as extending product life, recirculation of goods, reducing waste and losses, reducing the environmental impacts of the supply chain, reducing pollutant emissions, and promoting environmental awareness have been discussed in relation to the environment and environmental issues. The results also indicate that components such as participation and voluntary cooperation, reducing social inequality, equitable access to goods and services, and critical consumer awareness in the institutional domain, as well as components such as the institutional legitimacy of barter-based businesses, social acceptance of barter, an organizational culture supportive of barter, and corporate social responsibility (CSR) in the domain of technology and infrastructure, have been identified in the scientific literature as sustainability components of barter-based businesses.

Keywords: sustainability, barter-based businesses, C2C goods and services, meta-synthesis

Article history:
Received 30 March 2026
Revised 28 June 2026
Accepted 04 July 2026
Initial Publish 24 July 2026
Published online 01 May 2027

How to cite this article:
Beikmohammadi, S., Mohammadian, M., & Heidary Dahooie, J. (2027). A Conceptual Model for Sustainability in Barter Business Models: Goods and Services Barter in the C2C Domain: A Meta-Synthesis Approach. *Journal of Management and Business Solutions, 5*(3), 1-15. https://doi.org/10.61838/jmbs.380

Introduction

Sustainability has become a central concern in contemporary management studies because organizations, markets, and consumers are increasingly expected to create economic value while simultaneously reducing environmental harm and strengthening social well-being. In this context, sustainability is no longer limited to environmental protection; rather, it refers to a multidimensional managerial logic that integrates economic continuity, responsible resource use, social equity, institutional legitimacy, and long-term adaptability. The conceptual boundaries of sustainability and sustainable development have been discussed extensively in the literature, particularly in relation to the overlap between organizational performance, social responsibility, environmental stewardship, and intergenerational responsibility (1). Within management research, this multidimensional view has encouraged scholars to move beyond conventional profit-oriented business models and examine alternative forms of value creation that can respond to scarcity, inequality, consumption pressure, and ecological constraints. Sustainable business model innovation has therefore emerged as an important field of inquiry, emphasizing the redesign of value propositions, value creation mechanisms, and value capture systems in ways that support environmental and social goals while maintaining economic viability (2).

One of the alternative exchange mechanisms that has regained scholarly and practical attention in recent years is barter. Barter refers to the direct or mediated exchange of goods, services, or capacities without relying entirely on monetary payment. Although barter is historically one of the oldest forms of economic exchange, its contemporary forms differ significantly from traditional direct exchange. Modern barter may occur through community networks, business-to-business exchanges, digital platforms, smart contracts, local currencies, circular consumption systems, and consumer-to-consumer marketplaces. In management and sustainability studies, barter is important because it offers a mechanism for utilizing idle resources, reducing dependence on cash, improving access to goods and services, and supporting alternative forms of consumption. Earlier work on barter and community currencies has positioned these exchange systems as potential tools for sustainable consumption, particularly because they can promote localized exchange, reduce material throughput, and strengthen social ties among participants (3). This makes barter especially relevant for sustainability-oriented business models that seek to balance economic resilience with social and environmental value.

The renewed interest in barter is closely related to the limitations of conventional monetary exchange systems. In periods of inflation, recession, capital constraint, supply disruption, or liquidity shortage, businesses and consumers may face difficulties in accessing cash-based markets. Under such conditions, barter may function as an alternative exchange mechanism that allows transactions to continue despite monetary constraints. Studies on barter in transitional and crisis-affected economies have shown that barter may arise as a response to financial instability, weak payment systems, or institutional inefficiencies (4). From an economic perspective, barter can also serve as a mechanism for price discrimination and strategic exchange, allowing actors to negotiate value under conditions where cash prices do not fully capture market realities (5). More recent discussions have extended this logic to business crises and recessionary periods, arguing that barter can represent an innovative financial and trade model when conventional monetary channels become less effective (6). Accordingly, barter should not be understood merely as a primitive or outdated form of exchange, but as a flexible managerial response to economic constraints.

In business settings, barter may contribute to economic sustainability by reducing liquidity pressure, improving non-cash exchange capacity, and allowing firms to convert unused or surplus assets into value. Empirical research on barter trading has identified several operational difficulties, including valuation problems, trust issues, and matching challenges, but it has also shown that barter can help firms access resources and markets when conventional transactions are difficult (7). Case-based evidence from modern barter systems further indicates that barter can support business adaptability, particularly when exchange networks are organized in ways that facilitate trust, coordination, and reciprocal value creation (8). In supply chain contexts, barter has also been studied as a mechanism that interacts with trade credit and capital constraints, suggesting that barter can help reduce financial pressure and support supply chain continuity when firms face limited access to capital (9). These findings highlight the economic dimension of barter sustainability, especially its potential role in supporting resilience, market access, inventory utilization, and business survival.

Another important economic contribution of barter relates to inventory management and pricing decisions. Businesses frequently hold surplus, slow-moving, or unused inventory that may lose value if it remains unsold. Barter creates opportunities to exchange such inventory for other needed goods or services, thereby transforming idle assets into economic value. The newsvendor problem with barter exchange has been examined as a decision-making problem in which firms must determine pricing and exchange strategies under uncertainty (10). Similarly, research on price-setting in barter exchange demonstrates that bartering can influence inventory allocation, market clearing, and operational decision-making in ways that differ from standard cash-based transactions (11). These studies suggest that barter has implications not only for alternative consumption but also for operations management, pricing strategy, risk reduction, and resource optimization. In this respect, barter-based business models can be conceptualized as hybrid systems that combine economic exchange, operational efficiency, and sustainability-oriented resource circulation.

The environmental relevance of barter is particularly evident when it is considered in relation to sustainable consumption and circular economy principles. Consumer-to-consumer barter enables goods that might otherwise remain unused, be discarded, or require new production to re-enter circulation. By extending product life, promoting reuse, and reducing waste, barter can reduce demand for newly manufactured goods and lower environmental pressure associated with production, distribution, and disposal. Sustainable design research has treated barter as a dimension of sustainable design because it changes the relationship between consumers, products, and ownership by encouraging reuse and emotional attachment to goods (12). This is closely aligned with circular economy thinking, in which value retention, product longevity, and resource efficiency are central concerns. When goods circulate among users rather than being discarded, the environmental burden of consumption may be reduced, and users may become more aware of the ecological consequences of consumption choices.

Digital technologies have expanded the potential of barter by reducing some of the traditional barriers associated with direct exchange. Classical barter requires coincidence of wants: one party must have what another party needs and must also want what the other party offers. Digital platforms can reduce this problem by creating searchable networks, matching algorithms, reputation mechanisms, and broader exchange pools. Early technological research on electronic bartering and multi-agent systems explored how semantic web-enabled systems could support automated matching, negotiation, and exchange coordination (13). Similarly, studies on efficient dynamic barter exchange have examined how exchange mechanisms can improve matching and allocation efficiency in systems where participants have heterogeneous needs and resources (14). These contributions indicate that technological

infrastructure is a key dimension of barter sustainability because the long-term viability of barter platforms depends on information transparency, matching efficiency, scalability, user trust, and transaction security.

The development of smart contracts and platform-based exchange systems has further transformed the possibilities of barter. A currencyless economy based on bartering with smart contracts has been proposed as a way to coordinate exchange without relying on conventional currency systems, emphasizing the role of digital trust, automated execution, and decentralized exchange governance (15). More recent studies on e-barter exchange systems have similarly emphasized the potential of smart and sustainable community platforms to facilitate non-monetary exchange among users (16). Web-based digital barter platforms have also been introduced as mechanisms for facilitating sustainable consumption through goods exchange, particularly by improving user access, exchange visibility, and platform-mediated coordination (17). These developments show that contemporary barter models are increasingly embedded in technological ecosystems, making digital infrastructure a core component of sustainability in C2C barter-based business models.

From a social sustainability perspective, barter is significant because it can create forms of exchange that are not fully governed by monetary purchasing power. In C2C environments, barter may improve access to goods and services for individuals who have limited cash but possess useful products, skills, or capacities. Community-based barter systems can strengthen trust, reciprocity, mutual aid, and social capital. Autoethnographic work on barter from the perspective of the citizen-consumer has emphasized the role of barter in shaping critical consumer awareness, alternative consumption identities, and participation in exchange practices that challenge purely market-based consumer logic (18). Recent research on the social impacts of Purepecha barter also shows that barter can support sustainable communities by strengthening local networks, cultural continuity, social cooperation, and equitable access to resources (19). Therefore, barter is not merely an economic transaction; it can also function as a social practice that reinforces community cohesion and participatory sustainability.

Institutional and organizational factors are also essential to the sustainability of barter-based business models. For barter to become a viable and legitimate exchange mechanism, it requires social acceptance, clear rules, organizational support, and institutional compatibility. Research on barter as a sustainability strategy in the pharmaceutical industry demonstrates that barter can be used strategically by organizations seeking to align economic exchange with sustainability objectives, but such use depends on managerial commitment, organizational culture, and institutional legitimacy (20). Broader sustainability management research also shows that organizational change toward sustainability depends on human, operational, and technological factors, suggesting that barter-based models require coordinated managerial capabilities rather than isolated exchange mechanisms (21). Institutional innovation is therefore central to barter sustainability because without supportive rules, organizational readiness, and stakeholder acceptance, barter systems may remain marginal, fragmented, or short-lived.

Barter may also be connected to wider policy and development agendas. For example, institutional innovation through barter modes has been examined in relation to affordable and clean energy in rural China, showing how barter arrangements can support Sustainable Development Goal 7 by enabling access to energy-related resources through alternative exchange structures (22). Although not all barter models are explicitly designed around the Sustainable Development Goals, this line of research demonstrates that barter can contribute to policy-relevant sustainability outcomes when embedded in appropriate institutional arrangements. At the same time, external crises such as geopolitical shocks, food insecurity, and fertilizer price volatility remind scholars that sustainable exchange

systems must be resilient to disruptions in global markets and supply chains (23). In such contexts, barter-based mechanisms may offer complementary pathways for maintaining access, exchange, and community resilience when conventional market systems are strained.

Despite the growing body of research on barter, the literature remains fragmented across several domains, including sustainable consumption, circular economy, digital platforms, supply chain finance, operations management, social innovation, community exchange, and institutional sustainability. Some studies focus on economic outcomes such as liquidity, pricing, and inventory management; others emphasize social capital, community empowerment, environmental benefits, digital infrastructure, or organizational legitimacy. There are also studies that treat barter within broader political or institutional transformations, showing that alternative exchange practices may be shaped by power relations, legitimacy, and changing orders of governance (24). Moreover, research on pricing strategy and barter exchange under promotional effort indicates that barter can also be examined through market strategy, retailing, and consumer service frameworks (25). This diversity of perspectives has enriched the field, but it has also created conceptual dispersion. As a result, there is a need for an integrated framework that synthesizes the scattered findings and identifies the main dimensions and components of sustainability in barter-based business models.

This need is especially important in the C2C domain, where exchange relationships are shaped by user trust, platform design, perceived fairness, social norms, product usability, and environmental awareness. Unlike business-to-business barter, C2C barter involves individuals exchanging goods and services based on personal needs, social interaction, and perceived equivalence of value. Therefore, a sustainability model for C2C barter should not focus only on financial or operational efficiency; it should also incorporate social inclusion, environmental reuse, technological mediation, and institutional legitimacy. A meta-synthesis approach is appropriate for this purpose because it enables the integration and interpretation of findings from diverse qualitative, conceptual, and empirical studies. By systematically extracting, comparing, and clustering themes across previous research, meta-synthesis can provide a conceptual structure that clarifies how economic, environmental, social, institutional, organizational, technological, and infrastructural factors interact in shaping the sustainability of barter-based business models.

Accordingly, the aim of this study is to present a conceptual model for sustainability in barter business models, with emphasis on goods and services barter in the C2C domain, using a meta-synthesis approach.

Methods and Materials

In terms of purpose, this study is exploratory, and in terms of approach, it is qualitative. The research method used is meta-synthesis, which is employed to integrate, analyze, and interpret the findings of previous studies. The research data were collected through a systematic review of valid scientific articles in the fields of barter and sustainability. Then, using open and axial coding, the factors affecting sustainability were extracted and clustered. Finally, based on the results, a conceptual model of sustainability for barter-based businesses was developed.

The research population included all scientific articles published in the fields of sustainability, sharing economy, barter-based businesses, and sustainability assessment frameworks between 2005 and 2026. A systematic search was conducted in international databases, including Scopus, Web of Science, ScienceDirect, and Springer, as well as domestic databases, including SID, Magiran, ISC, and IranDoc. The study period was defined as 2005 to 2026.

Combinations of keywords such as Barter, C2C, Sustainability, Sustainable Business, Evaluation Criteria, and Framework were used in the form of Boolean expressions.

The article selection process was carried out in three stages: (1) initial identification and removal of duplicates, (2) screening based on title and abstract according to the inclusion and exclusion criteria, and (3) full-text review of eligible articles. The inclusion criteria consisted of publication in valid scientific journals, direct relevance to sustainability assessment frameworks or barter-based businesses, and access to the full text of the article. Non-scientific articles, articles lacking thematic relevance, and articles without analytical data were excluded from the process. Finally, the selected articles entered the data extraction stage, and information such as research objective, research method, sustainability dimensions, and assessment criteria was extracted and organized in coding tables. The thematic analysis approach was used to analyze the data and examine the selected articles. In this study, the themes identified in previous studies were coded, and two stages of coding were conducted. In the first stage, initial themes were identified, and in the next stage, themes that were similar in concept and meaning were categorized under broader themes.

The inclusion criteria included:

Publication in valid scientific journals

Direct relevance to business sustainability and the barter economy

Presentation of an index, model, or assessment framework

Non-scientific studies, studies lacking thematic relevance, and studies without full-text access were excluded. Finally, eligible articles entered the analysis stage.

Content validity: The extracted framework was provided to a group of academic experts and specialists in the fields of management and sustainability. The content validity ratio (CVR) and content validity index (CVI) were calculated for each criterion. Criteria whose CVR values were lower than the acceptable threshold in Lawshe's table were removed or revised.

Research reliability: To ensure coding stability, a subset of the articles was independently coded by two researchers, and the level of inter-coder agreement was calculated using Cohen's kappa coefficient. A value above 0.7 indicated acceptable coding reliability.

Findings and Results

In this study, through a systematic review of the components or sustainability factors in the domain of barter-based businesses, 30 articles were selected and examined in detail. The results of the review and search of the selected studies indicate that various factors have been identified and examined in previous research as factors affecting sustainability, as well as components or factors of sustainability in barter-based businesses. The results of data analysis and the review of previous studies on the factors affecting sustainability in barter-based businesses are presented below. Table 1 presents the initial results of theme extraction from the reviewed sources.

Table 1. Initial Results of Theme Extraction

No.	Extracted Code	Frequency	Source: Sample Studies
1	Reducing the need for liquidity	8	Seyfang (2004); Bieniek (2021); Huang et al. (2021)
2	Reducing capital pressure	6	Huang et al. (2021); Mishra et al. (2024)
3	Improving non-monetary cash flow	5	Huang et al. (2021); Battistella and Hynes (2019)

4	Increasing business survival	5	Battistella and Hynes (2019); Oliver and Mpinganjira (2011)
5	Economic resilience under crisis conditions	6	Battistella and Hynes (2019); Guriev and Kvassov (2001)
6	Optimal use of surplus inventory	8	Bieniek (2021); Mishra et al. (2024)
7	Reducing the risk of inventory accumulation	5	Bieniek (2021); Huang et al. (2021)
8	Reducing operational costs	5	Huang et al. (2021); Mishra et al. (2024)
9	Increasing non-cash sales	4	Oliver and Mpinganjira (2011)
10	Access to new markets	3	Battistella and Hynes (2019)
11	Creating value from unused assets	4	Bieniek (2021)
12	Flexibility of the business model	4	Battistella and Hynes (2019)
13	Reducing dependence on the monetary system	6	Molina-Jimenez et al. (2020)
14	Extending product life	7	Lo and Wong (2015)
15	Recirculation of goods	6	Bieniek (2021)
16	Reuse of goods	6	Lo and Wong (2015)
17	Reducing waste generation	7	Lo and Wong (2015); Wang et al. (2023)
18	Reducing consumption of primary resources	5	Bieniek (2021)
19	Reducing the environmental impacts of the supply chain	4	Wang et al. (2023)
20	Reducing pollutant emissions	4	Wang et al. (2023)
21	Promoting environmental awareness	3	Bieniek (2021)
22	Supporting the circular economy	7	Bieniek (2021)
23	Reducing consumerism	3	Seyfang (2004)
24	Strengthening trust among participants	7	Seyfang (2004); Sánchez-Casanova (2022)
25	Social capital	6	Seyfang (2004)
26	Social and local networks	5	Arellanes-Cancino et al. (2025)
27	Community orientation	4	Seyfang (2004)
28	Voluntary participation	3	Sánchez-Casanova (2022)
29	Social justice	4	Seyfang (2004)
30	Reducing social inequality	3	Sánchez-Casanova (2022)
31	Equitable access to goods and services	3	Arellanes-Cancino et al. (2025)
32	Social learning	2	Sánchez-Casanova (2022)
33	Critical consumer awareness	1	Sánchez-Casanova (2022)
34	Human–product emotional attachment	2	Lo and Wong (2015)
35	Social empowerment	2	Arellanes-Cancino et al. (2025)
36	Local food security	2	Arellanes-Cancino et al. (2025)
37	Institutional legitimacy of barter-based businesses	4	Borges et al. (2020)
38	Social acceptance of barter	4	Espinoza (2019)
39	Organizational culture supportive of barter	3	Borges et al. (2020)
40	Corporate social responsibility (CSR)	3	Borges et al. (2020)
41	Reducing bureaucratic barriers	2	Borges et al. (2020)
42	Institutional innovation	2	Wang et al. (2023)
43	Alignment with the SDGs	2	Wang et al. (2023)
44	Policy and institutional sustainability	2	Wang et al. (2023)
45	Digital barter platforms	6	Battistella and Hynes (2019)
46	Information transparency	4	Núñez et al. (2005)
47	Reducing information asymmetry	4	Núñez et al. (2005)
48	Appropriate technological infrastructure	4	Xu (2024)
49	Scalability of the barter system	3	Battistella and Hynes (2019)
50	Facilitating supply–demand matching	3	Xu (2024)
51	Technological trust: systemic trust	2	Xu (2024)
52	Operational efficiency of the barter system	2	Núñez et al. (2005)
53	Risk management in barter exchanges	4	Mishra et al. (2024)
54	Managerial capability	3	Oliver and Mpinganjira (2011)
55	Management of organizational challenges	3	Oliver and Mpinganjira (2011)
56	Continuity of exchange under conditions of monetary market inefficiency	1	Guriev and Kvassov (2001)
57	Long-term sustainability of barter-based businesses	5	Synthesized from all studies

The initial review of the selected studies led to the extraction of 58 themes or sustainability factors in barter-based businesses. In the second stage, these factors were clustered into broader categories in order to identify the main sustainability factors in barter-based businesses. The results are presented in Table 2.

Table 2. Results of Second-Stage Theme Extraction

Main Sustainability Dimensions	Factors Affecting Sustainability
Economic sustainability	Reducing the need for liquidity
Economic sustainability	Reducing capital pressure
Economic sustainability	Improving non-monetary cash flow
Economic sustainability	Increasing business survival
Economic sustainability	Economic resilience under crisis conditions
Economic sustainability	Optimal use of surplus inventory
Economic sustainability	Reducing the risk of inventory accumulation
Economic sustainability	Reducing operational costs
Economic sustainability	Increasing non-cash sales
Economic sustainability	Access to new markets
Economic sustainability	Creating economic value from unused assets
Economic sustainability	Flexibility of the business model
Economic sustainability	Reducing dependence on the monetary system
Economic sustainability	Continuity of exchange under conditions of monetary market inefficiency
Economic sustainability	Long-term sustainability of barter-based businesses
Economic sustainability	Risk management in barter exchanges
Environmental sustainability	Extending product life
Environmental sustainability	Recirculation of goods
Environmental sustainability	Reuse of goods
Environmental sustainability	Reducing waste and losses
Environmental sustainability	Reducing consumption of primary resources
Environmental sustainability	Reducing the environmental impacts of the supply chain
Environmental sustainability	Reducing pollutant emissions
Environmental sustainability	Promoting environmental awareness
Environmental sustainability	Supporting the circular economy
Environmental sustainability	Reducing consumerism
Social sustainability	Strengthening trust among participants
Social sustainability	Social capital
Social sustainability	Social and local networks
Social sustainability	Community orientation
Social sustainability	Participation and voluntary cooperation
Social sustainability	Social justice
Social sustainability	Reducing social inequality
Social sustainability	Equitable access to goods and services
Social sustainability	Social learning
Social sustainability	Critical consumer awareness
Social sustainability	Human–product emotional attachment
Social sustainability	Social empowerment
Social sustainability	Local food security
Institutional and organizational sustainability	Institutional legitimacy of barter-based businesses
Institutional and organizational sustainability	Social acceptance of barter
Institutional and organizational sustainability	Organizational culture supportive of barter
Institutional and organizational sustainability	Corporate social responsibility (CSR)
Institutional and organizational sustainability	Reducing bureaucratic barriers
Institutional and organizational sustainability	Institutional innovation
Institutional and organizational sustainability	Alignment with the Sustainable Development Goals (SDGs)
Institutional and organizational sustainability	Policy and institutional sustainability
Institutional and organizational sustainability	Managerial capability
Institutional and organizational sustainability	Management of organizational challenges
Technological and infrastructural sustainability	Digital barter platforms
Technological and infrastructural sustainability	Information transparency

Technological and infrastructural sustainability	Reducing information asymmetry
Technological and infrastructural sustainability	Appropriate technological infrastructure
Technological and infrastructural sustainability	Scalability of the barter system
Technological and infrastructural sustainability	Facilitating supply–demand matching
Technological and infrastructural sustainability	Technological trust: systemic trust
Technological and infrastructural sustainability	Operational efficiency of the barter system

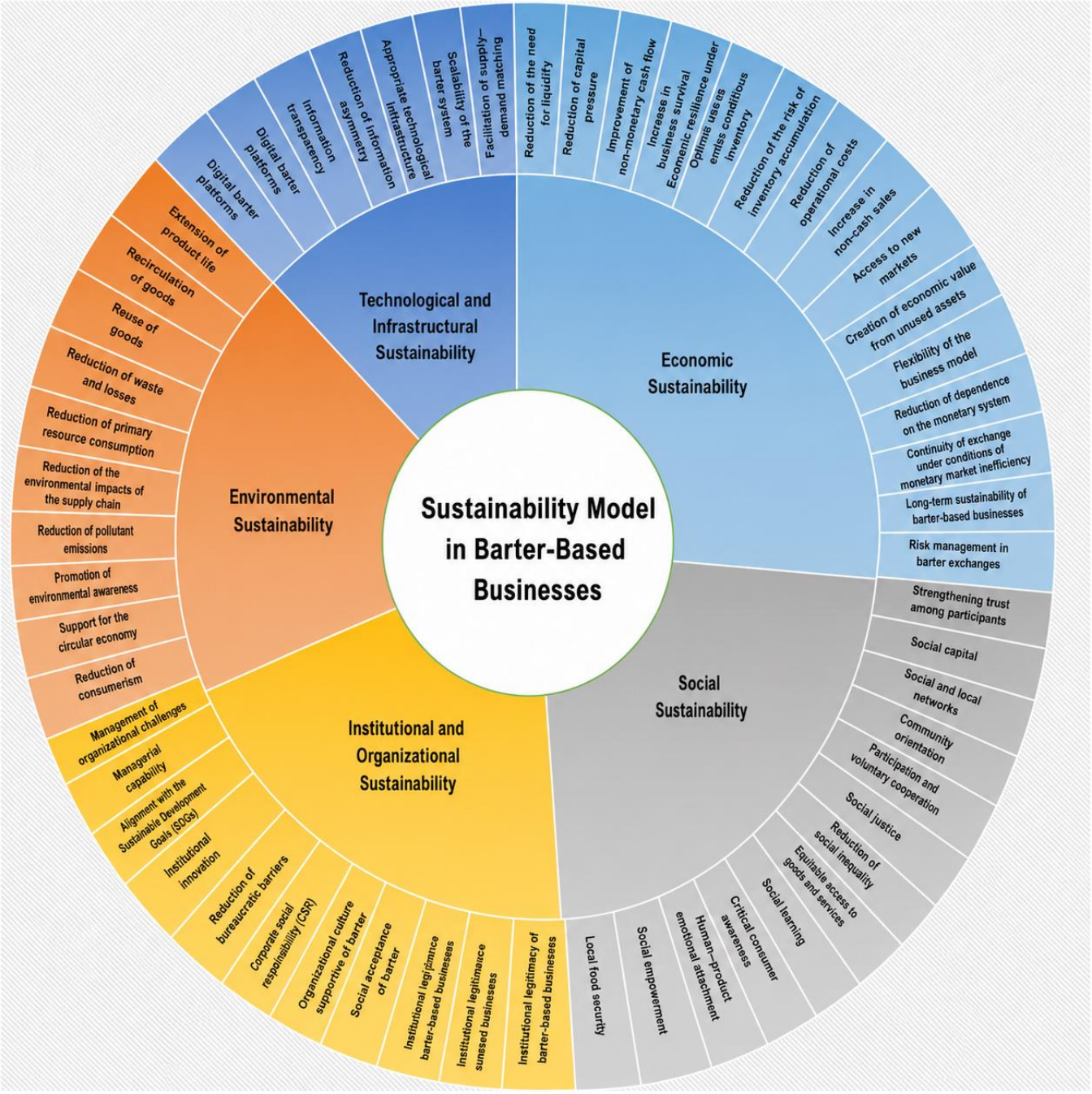

Figure 1. Final Model of the Study

Discussion and Conclusion

The purpose of this study was to develop a conceptual model for sustainability in barter-based business models, with emphasis on goods and services barter in the C2C domain, using a meta-synthesis approach. The findings

showed that sustainability in barter-based businesses is a multidimensional construct composed of five main dimensions: economic sustainability, environmental sustainability, social sustainability, institutional and organizational sustainability, and technological and infrastructural sustainability. This result indicates that the sustainability of barter-based business models cannot be reduced to a single economic or environmental function; rather, it emerges from the interaction of resource optimization, social exchange, institutional legitimacy, platform efficiency, and long-term value creation. This interpretation is consistent with the broader understanding of sustainability as a concept that integrates economic, social, and environmental concerns rather than treating them as separate or competing domains (1). It also aligns with the literature on sustainable business model innovation, which argues that business models become sustainable when they redesign value creation, value delivery, and value capture in ways that simultaneously generate organizational viability and societal benefit (2).

The first major finding concerned economic sustainability. The extracted components in this dimension included reducing the need for liquidity, reducing capital pressure, improving non-monetary cash flow, increasing business survival, enhancing economic resilience under crisis conditions, using surplus inventory optimally, reducing inventory accumulation risk, reducing operational costs, increasing non-cash sales, accessing new markets, creating value from unused assets, reducing dependence on the monetary system, and managing risk in barter exchanges. These findings are strongly supported by earlier studies that conceptualize barter as an adaptive exchange mechanism in conditions of liquidity scarcity and economic constraint. Studies on barter in crisis economies have shown that barter often expands when monetary systems are inefficient, payment systems are weak, or businesses experience financial pressure (4). Similarly, barter has been described as an alternative financial and trade model during recessionary periods because it allows businesses to continue exchange despite reduced access to cash (6). This supports the present finding that barter-based business models can strengthen economic resilience and maintain exchange continuity in unstable environments.

The economic findings are also consistent with studies in operations management and supply chain finance. Research on capital-constrained supply chains has shown that barter, when combined with trade credit, can reduce financial pressure and provide firms with alternative pathways for resource acquisition (9). The finding that barter supports the optimal use of surplus inventory is also aligned with studies of the newsvendor problem with barter exchange, which demonstrate that barter can help firms manage inventory, pricing, and resource allocation under uncertainty (10). Similarly, research on price-setting in barter exchange shows that barter can reduce inventory-related inefficiencies and create value from goods that may otherwise remain unused or lose market value (11). The present model therefore confirms that barter-based sustainability is not merely a social or ethical concept; it also has a strong managerial and operational foundation in inventory optimization, liquidity management, and non-cash value creation.

The second major finding concerned environmental sustainability. The extracted components included extending product life, recirculating goods, reusing goods, reducing waste and losses, reducing consumption of primary resources, reducing environmental impacts in supply chains, reducing pollutant emissions, promoting environmental awareness, supporting the circular economy, and reducing consumerism. These results are compatible with the view that barter can function as a sustainable consumption mechanism by shifting goods from linear disposal pathways into reuse and recirculation cycles. Barter has been discussed as a dimension of sustainable design because it changes how consumers relate to goods, ownership, use value, and product longevity (12). In this sense, C2C barter can reduce unnecessary production and disposal by enabling goods to continue

generating utility across multiple users. This result also corresponds with the circular economy logic reflected in sustainable business model research, where product life extension, reuse, and resource efficiency are considered central mechanisms for reducing environmental burden (2).

The environmental dimension is also supported by recent studies linking barter to sustainability transitions and resource access. Barter-based arrangements have been introduced as institutional innovations capable of supporting affordable and clean energy in rural communities, demonstrating that barter can be connected to broader environmental and development objectives (22). Similarly, web-based digital barter systems have been proposed as platforms for sustainable consumption because they facilitate goods exchange and reduce the need for new purchases (17). The present findings therefore suggest that barter can contribute to environmental sustainability not only through direct reuse of goods but also through behavioral change, consumption awareness, and reduced pressure on supply chains. This is particularly important in the C2C domain, where individual consumers can collectively reduce waste and resource consumption through repeated exchange practices.

The third major finding concerned social sustainability. Components in this dimension included strengthening trust among participants, building social capital, supporting social and local networks, promoting community orientation, encouraging voluntary cooperation, advancing social justice, reducing social inequality, improving equitable access to goods and services, enabling social learning, increasing critical consumer awareness, strengthening emotional attachment between people and products, supporting social empowerment, and improving local food security. These findings are aligned with the argument that barter-based systems are embedded in social relations and cannot be understood only as economic transactions. Community currency and barter studies have emphasized that barter can promote sustainable consumption while also strengthening community networks, reciprocity, and social capital (3). The present findings similarly show that the sustainability of C2C barter depends on interpersonal trust, perceived fairness, participation, and social embeddedness.

The social findings are further supported by recent research on citizen-consumer behavior and community barter practices. Barter has been interpreted as a pathway through which consumers develop critical awareness of dominant consumption patterns and participate in alternative forms of exchange (18). In addition, research on Purepecha barter has shown that barter practices can produce important social impacts, including strengthening local networks, supporting community resilience, and improving equitable access to resources (19). These studies support the present model's inclusion of social empowerment, equitable access, community orientation, and local food security as sustainability components. The findings also indicate that barter-based businesses can contribute to social sustainability by making exchange less dependent on cash purchasing power and more dependent on reciprocal value, mutual need, and community participation.

The fourth major finding concerned institutional and organizational sustainability. The extracted components included institutional legitimacy of barter-based businesses, social acceptance of barter, organizational culture supportive of barter, corporate social responsibility, reduction of bureaucratic barriers, institutional innovation, alignment with the Sustainable Development Goals, policy and institutional sustainability, managerial capability, and management of organizational challenges. These findings indicate that barter-based businesses require more than user participation and technological tools; they also need legitimacy, governance, managerial capacity, and supportive institutional conditions. This finding is consistent with research showing that barter can be used as a sustainability strategy in organizational contexts when it is supported by managerial commitment and integrated into broader sustainability objectives (20). It is also compatible with change management research, which indicates

that sustainability implementation depends on human, operational, and technological factors working together within organizations (21).

Institutional legitimacy is particularly important because barter may be perceived as informal, risky, or difficult to regulate if clear rules and governance mechanisms are absent. Previous research on difficulties associated with barter trading has identified challenges such as valuation problems, trust deficits, negotiation difficulties, and organizational barriers (7). The present findings confirm that such challenges must be addressed through institutional and organizational mechanisms, including clear standards, managerial capability, and social acceptance. Moreover, barter-based institutional innovation has been shown to support specific sustainability goals, such as affordable and clean energy, when embedded in appropriate governance arrangements (22). Even broader institutional studies suggest that exchange systems are shaped by power relations, legitimacy, and evolving institutional orders, which reinforces the importance of examining barter within its institutional context (24). Thus, the present model appropriately treats institutional and organizational sustainability as a separate and essential dimension rather than as a secondary condition.

The fifth major finding concerned technological and infrastructural sustainability. The extracted components included digital barter platforms, information transparency, reduction of information asymmetry, appropriate technological infrastructure, scalability of the barter system, facilitation of supply–demand matching, technological or systemic trust, and operational efficiency of the barter system. These findings are highly consistent with research showing that digital systems can solve many of the classical limitations of barter, especially the difficulty of matching exchange partners. Dynamic barter exchange research has demonstrated that efficient exchange design can improve allocation and matching outcomes in systems where participants have different needs and resources (14). Similarly, semantic web-enabled multi-agent systems have been applied to electronic bartering to improve negotiation, coordination, and exchange automation (13). These studies support the present finding that technological infrastructure is a core determinant of sustainability in contemporary barter models.

The technological findings are also supported by studies of smart contracts and platform-based e-barter systems. A currencyless economy based on smart-contract-enabled barter has been proposed as a model for enabling trust and transaction execution without reliance on conventional monetary systems (15). Similarly, e-barter exchange systems have been framed as tools for developing smart and sustainable communities through technology-mediated exchange (16). Research on pricing strategy and barter exchange under promotional effort also indicates that information transparency and strategic coordination affect the efficiency of barter-based retail systems (25). These findings reinforce the argument that digital platforms are not merely technical tools; they are infrastructural foundations that shape trust, transparency, scalability, matching efficiency, and long-term user participation in C2C barter systems.

Overall, the findings of this study show that sustainability in barter-based business models is produced through the integration of economic resilience, circular consumption, social cooperation, institutional legitimacy, and technological efficiency. This integrated interpretation is important because previous studies have often examined barter from isolated perspectives, such as crisis exchange, pricing, community sustainability, smart contracts, or sustainable consumption. The present meta-synthesis contributes by organizing these dispersed insights into a coherent conceptual model. In addition, the model is especially relevant to the C2C domain because consumer-to-consumer barter depends simultaneously on individual motivation, product availability, trust, platform usability, fairness of exchange, and perceived social and environmental value. External crises, such as disruptions in food

and fertilizer markets, further show that sustainable exchange systems must be resilient to economic and supply shocks (23). Therefore, barter-based business models can be understood as adaptive sustainability systems that convert underused goods, social trust, digital coordination, and non-monetary value into a viable structure for sustainable exchange.

The main limitation of this study is that it was based on a meta-synthesis of previous research rather than primary empirical data from users or active C2C barter platforms. Therefore, although the extracted dimensions and components are grounded in the reviewed literature, the model has not yet been empirically tested in a specific market, platform, or cultural context. Another limitation concerns the heterogeneity of the reviewed studies, as the literature on barter is distributed across management, economics, sustainability, consumer behavior, operations research, information systems, and community development. This diversity enriched the analysis but may also have introduced conceptual variation in how sustainability and barter were defined. In addition, some components may be more relevant to business-to-business or community barter systems than to purely C2C exchange environments, which suggests that contextual adaptation is necessary before applying the model in practice.

Future research is suggested to empirically validate the proposed conceptual model using quantitative and mixed-method designs. Researchers can develop measurement scales for each dimension and test the relationships among economic, environmental, social, institutional, and technological sustainability using structural equation modeling. Comparative studies across different types of barter systems, such as digital C2C platforms, local exchange networks, business-to-business barter, and community-based exchange systems, would also help clarify which components are universal and which are context-dependent. Longitudinal studies are recommended to examine whether participation in barter platforms actually reduces waste, strengthens social capital, improves access to goods and services, and enhances economic resilience over time. Future studies may also investigate user trust, perceived fairness, platform usability, exchange satisfaction, and continuance intention as mediating variables in the sustainability of digital barter systems.

For practice, managers, platform designers, policymakers, and sustainability professionals should treat barter-based business models as multidimensional systems rather than simple exchange tools. Digital barter platforms should be designed with strong mechanisms for user verification, transparent information, reliable matching, dispute resolution, reputation management, and clear valuation support. Managers and entrepreneurs can use the proposed model as a diagnostic framework to assess whether their barter systems generate economic value, reduce environmental pressure, strengthen social participation, maintain institutional legitimacy, and provide adequate technological infrastructure. Policymakers and local development agencies can also support barter initiatives by reducing unnecessary bureaucratic barriers, encouraging community-based exchange, and integrating barter platforms into circular economy and social inclusion programs. In practical terms, the success of C2C barter depends on creating a trustworthy, accessible, and user-friendly exchange environment in which participants clearly perceive economic benefit, environmental value, and social fairness.

Acknowledgments

We would like to express our appreciation and gratitude to all those who helped us carrying out this study.

Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

References

1. Feil AA, Schreiber D. Sustainability and sustainable development: Unveiling the overlaps and scope of their meanings. Cadernos EBAPEBR. 2017;15(3):667-81. doi: 10.1590/1679-395157516.
2. Geissdoerfer M, Vladimirova D, Evans S. Sustainable business model innovation: A review. Journal of Cleaner Production. 2018;198:401-16. doi: 10.1016/j.jclepro.2018.06.240.
3. Seyfang G. Bartering for a better future? Community currencies and sustainable consumption. 2004.
4. Commander S, Dolinskaya I, Mumssen C. Determinants of barter in Russia: An empirical analysis. Journal of Development Economics. 2002;67(2):275-307.
5. Guriev S, Kvassov D. Barter for price discrimination. International Journal of Industrial Organization. 2004;22(3):329-50.
6. Xu N, editor Barter system as an innovative and alternative financial and trade model during the periods of economic crisis and recession and its importance for businesses. Press Academia Proceedings; 2004.
7. Oliver P, Mpinganjira M. An empirical investigation into difficulties associated with barter trading. African Journal of Business Management. 2011;5(4).
8. Battistella C, Hynes N. Something new under the sun? A case study of modern Italian barter systems. Journal of Applied Business and Economics. 2019;21(2):27-45.
9. Huang Y, Pi Z, Fang W. Trade credit with barter in a capital-constrained supply chain. Sustainability. 2021;13(20):11361. doi: 10.3390/su132011361.
10. Hua G, Zhang Y, Cheng TCE, Wang S, Zhang J. The newsvendor problem with barter exchange. Omega. 2020;92:102149.
11. Bieniek M. Bartering: Price-setting newsvendor problem with barter exchange. Sustainability. 2021;13(12):6684. doi: 10.3390/su13126684.
12. Lo CW, Wong JJ, editors. Barter: A dimension of sustainable design. IASDR Conference Proceedings; 2015.
13. Challenger M, Tezel BT, Alaca OF, Tekinerdogan B, Kardas G. Development of semantic web-enabled BDI multi-agent systems using SEA_ML: An electronic bartering case study. Applied Sciences. 2018;8(5):688.
14. Anderson R, Ashlagi I, Gamarnik D, Kanoria Y. Efficient dynamic barter exchange. Operations Research. 2017;65(6):1446-59. doi: 10.1287/opre.2017.1644.
15. Molina-Jimenez C, Nakib HDA, Song L, Sfyrakis I, Crowcroft J. A case for a currencyless economy based on bartering with smart contracts. arXiv. 2020.

16. Shuhaiber A, Ali Alfayadhi HS, AlAwlaqi MM, Awadh Ali MA. E-Barter exchanging system: Toward a smart and sustainable community. In: Nagar AK, Singh Jat D, Mishra DK, Joshi A, editors. Intelligent Sustainable Systems. 578. Singapore: Springer; 2023.

17. Maria RR. Digital barter system: Facilitating sustainable consumption through web-based platform for goods exchange 2024.

18. Sanchez-Casanova WM. Barter in the path of a citizen-consumer: An autoethnographic viewpoint. Revista Politica, Globalidad y Ciudadania. 2022;8(16).

19. Arellanes-Cancino Y, Villafan-Vidales KB, Medina-Nava M, Vargas-Herrejon M. Social impacts of Purepecha barter: Insights for sustainable communities in the global era. Societal Impacts. 2025;6:100136. doi: 10.1016/j.socimp.2025.100136.

20. Borges MH, Bom AC, Mattoso CCLQ. Barter as a way to achieve a sustainability strategy in the pharmaceutical industry. Revista de Gestao Social e Ambiental. 2020;14(3):75-92. doi: 10.24857/rgsa.v14i3.2520.

21. Thakur V, Mangla SK. Change management for sustainability: Evaluating the role of human, operational and technological factors in leading Indian firms in home appliances sector. Journal of Cleaner Production. 2019;213:847-62. doi: 10.1016/j.jclepro.2018.12.201.

22. Wang S, Yin C, Yang X, Richel A. Barter mode: The institutional innovation for affordable and clean energy (SDG7) in rural China. Biomass and Bioenergy. 2023;170:106725. doi: 10.1016/j.biombioe.2023.106725.

23. Mishra AK, Valera HGA, Yamano T, Pede VO. The Russian invasion of Ukraine, fertilizer prices, and food security: Evidence from rice-producing economies in Asia. SSRN. 2024. doi: 10.2139/ssrn.4795295.

24. Espinoza EU. Rising power status and the evolution of international order: Conceptualising Russia's Syria policies. Europe-Asia Studies. 2019;71(3):365-87. doi: 10.1080/09668136.2019.1575955.

25. Nunez R, Bhattacharya S, Sarkar B, Gunasekaran A. Pricing strategy based on a stochastic problem with barter exchange under variable promotional effort for a retail channel. Journal of Retailing and Consumer Services. 2005;81:103954. doi: 10.1016/j.jretconser.2024.103954.