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Out of Uzbekistan: The Barriers of Adopting Circular Business Practices in Rural SMEs

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Abstract

Recently, there have been a lot of discussions regarding the circular economy (CE) among experts from numerous sectors. The circular economy addresses global warming and environmental challenges while generating economic benefits. Conventional business methods emphasizing linear progress in product marketing clash with the circular economy, which advocates for reduced consumption while increasing recycling and reuse of materials. There have been more significant debates over the CE concept worldwide. Still, more research needs to be done on implementing its precepts in the business world. The authors emphasize how important CE is to the business of small and medium-sized enterprises (SMEs) in remote locations and rural industries across the country. This research has policy significance since it demonstrates that the government should encourage environmentally friendly activities among rural SMEs. The available community assistance needs to be more cohesive, and rural SMEs are frequently encouraged to adopt new circular business models only in passing. Furthermore, the local CE promotes inhabitants' social well-being, particularly in rural areas. This paper's analytical approach and study findings can be used to develop Uzbek goals and a supportive environment after 2023.

Keywords

Circular Economy, Business Models, Sustainability

1. Introduction

Increases in the demand for raw materials for production are unavoidable and will significantly impact the amount of waste generated as the economy continues to expand. There is no need for alarm if the economic footprint is insignifi-

cant compared to the ecological footprint. Nonetheless, it is essential to remember that natural ecosystems are the primary source and final destination for human-generated waste. Due to inefficient resource consumption, more options for recycling and product reuse are required, particularly in highly populated emerging economies (Atstaja et al., 2020; Prokopenko, 2011; Druckman et al., 2011; Sehnem et al., 2019). This defines the status quo or the linear economic model utilized globally during the 20th and 21st centuries. Due to the linear economy's emphasis on "resource extraction-production-use-profit-generating-waste management at a lower cost", more and more products with a short lifespan and a low recycling rate are being manufactured for single use.

The circular economy idea arose from and was characterized by waste management and environmental concerns. It is a novel holistic strategy for financial development that piqued policymakers' interest in both emerging and wealthy nations. Western Europe and several East Asian countries have had difficulty obtaining sufficient resources and space, which has been a primary motivation for adopting circularity concepts (Franco-García et al., 2019; Joe, 2018). Yet, the motivations for changing to a CE vary throughout emerging economies, depending on their difficulties. Transitioning from a centrally planned to a market-based growth route while also dealing with the fallout from the Soviet Union's extractive linear economic model makes an example of emerging nations located in Central Asia (CA) particularly noteworthy (Pukhnyuk et al., 2017; Meyer et al., 2019).

Nevertheless, for a company plan to be termed "circular," previously wasted resources must be reintroduced into the manufacturing process as a helpful resource. The Central Asian Leadership Programme on Environment for Sustainable Development (CALP) (2021), for instance, encourages the transition to the CE by highlighting the relevance of products' worth, resources, and services and its potential for future application. Recent research indicates that adopting a new business strategy stresses product versatility (Jorgensen & Remmen, 2018). This study is contemporary and pertinent since such a value proposition challenges standard business procedures, customer habits, and consumer behavior. This study examines the extent to which rural SMEs in seven Uzbek provinces have adopted innovative circular business models. There are three major requirements for reaching the objective:

1) Analyze the notion of the circular economy from a commercial standpoint;

2) Explore the idea and features of the circular business strategy; and

3) Examine the existing barriers, opportunities, and catalysts for rural SMEs in adopting circular business models.

Thus far, research has neglected chiefly CE's practical ramifications, focusing instead on its theoretical foundations (Kirchherr et al., 2017; Bocken et al., 2019; De Jesus & Mendonça, 2018; Winans et al., 2017). This article addresses that void by studying the adoption of circular business structures within the context of micro businesses. Conversely, this study is helpful for academics and multi-stakeholder organizations wishing to start discussions about promoting CE ideas

among SMEs. It also examines the impediments and opportunities for rural SMEs to adopt circular business strategies and provides recommendations for the additional assistance, subsidies, and funding required. This article can assist legislators in establishing the future orientations and objectives of GoU (government of Uzbekistan) financial assistance for SMEs, the expansion of innovative firms, and the mitigation of environmental challenges beyond 2023. Consequently, the paper is organized as follows: The subsequent section summarizes prior researchers' comments on the CE and circular business models. The third section provides the methodology, sampling, and data analyses examined in this paper. The fourth section presents the outcomes and potential theories of achievement disparities. Finally, the fifth section summarizes the analysis's significant results and limits.

2. CE and Circular Business Practices

In keeping with the paper's objectives, it will examine the CE's familiarity with the relevant literature, interpretations, and current and historical paradigms. The CE is a term that is increasingly appearing in numerous aspects of daily life (Schroeder et al., 2019), mainly because an increasing number of people are becoming aware of how the existing technique of resource utilization threatens the growth of both humanity and the environment. Originally, the CE concept was advocated for in light of reduced emissions and sustainable development viewpoints' concerns for the environment, human health, and pollution. There has been a lot of discussion among academics and economists over the past five decades regarding the need for a "new environmental economics" to argue for ecological principles, combat pollution, and improve people's quality of life and health. China's rapid industrialization in the 1990s prompted the country to actively promote CE concepts to lower pollution, mitigate greenhouse-gas consequences, and conserve scarce assets (Wautelet, 2018; Winans et al., 2017).

In its review of the sustainable development goal's (SDG's) progress, the United Nations (2019) pointed out the significance of promoting policy initiatives that increase resource productivity, decrease waste, promote recycling, and implement sustainability initiatives across economic sectors, as well as ensuring that the demand for materials does not necessitate extreme extraction and resource usage. Schroeder et al. (2019) have shown that the CE also benefits several other Sustainable Development Goals, including SDGs 6 (clean water and sanitation), 7 (accessible and sustainable energy), 8 (decent work and economic growth), and 15 (life on land). Taking into account how new the CE idea is, the CALP has committed to implementing the CE by 2030 as a Sustainable Development Action Plan component. The United Nations has acknowledged CE as a crucial part of sustainable development and has adopted the Sustainable Development Goals 2030 (SDG), one of which, SDG 12, seeks to guarantee long-term demand and sustainable production (UN, 2016). The most recent report on SDG progress (UN, 2022) from the United Nations stressed the significance of im-

plementing policy efforts that boost resource productivity, reduce pollution, promote reuse and recycling, and incorporate responsible strategies across all sectors of the economy, as well as ensuring that the demand for components does not necessitate extreme extraction and resource consumption. Although there are assistance and financing programs available, the advancement of greener SMEs is impeded by external as well as internal variables, such as a lack of "green" consumption habits and the absence of sufficient beliefs, traditions, and understanding to acknowledge green business models (Rizos et al., 2016). Researchers also noted that smaller businesses typically lack larger global corporations' internal innovation and research as well as economic ability, making the latter more able to deploy technologies enabling circular business models.

Scholars offer varying interpretations of the CE concept, and the literature review requires a consistent and universally accepted description of the CE. Academics and businesses discover new CE-related subjects, emphasizing the importance of looking at practical instances of circular business models rather than simply describing the CE concept. In light of what we have learned from the available literature, we may say that the CE is an economy searching for methods to isolate value production from using finite resources. The CE represents a renewable process in which material and energy loops are impeded, closed, and significantly decreased with maintenance, repair, reuse, renewal, and recycling to reduce resource consumption, pollution, and energy leakage (Cudecka-Purina et al., 2019; EMF, 2015) (See **Figure 1**).

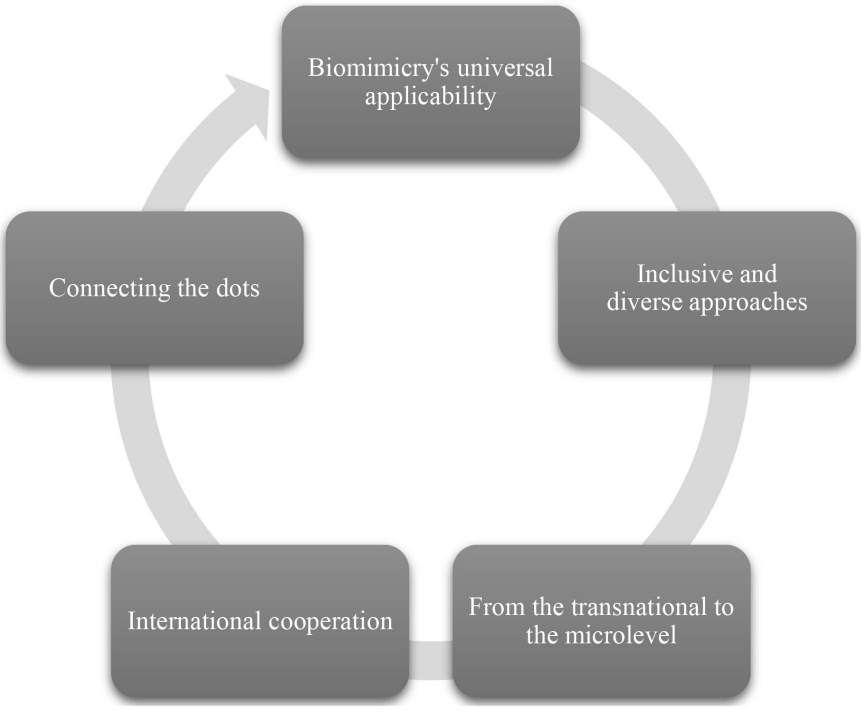


Figure 1. Approaches to close the "circularity gap". Source: Authors' original work.

By linking up businesses, authorities, quasi-organizations, and researchers, we can increase our ability to meet social requirements and provide long-term solutions to pressing issues. Eliminating the leaks makes it possible to track where materials are going and locate potential sites for recycling and symbiotic industrial partnerships (Uvarova et al., 2020; Schmidt et al., 2020; European Commission, 2020; Constantin et al., 2017). Using biomimicry permits evaluating the natural environment, not for human consumption (what can be taken, farmed, or cultivated) but rather as a means of understanding and enhancing production procedures.

The CE minimizes waste and resource utilization and preserves product and material value. The economy reuses products after their useful life (Kirchherr et al., 2017). The CE helps turn things that are no longer useful into materials that can be used to make other things. This reduces the industrial ecosystem's waste (Cudecka-Purina et al., 2019; Ritzen & Sandstrom, 2017; Stahel, 2016). The purpose of the CE is to ensure that manufacturing and production make the best use of resources. This involves extending the economic life of goods, materials, and natural resources, which attempts to cut waste substantially (Uvarova et al., 2019; Kalmykova et al., 2018; Bocken et al., 2019).

The conceptual foundation

The 3R (Reduce, Reuse, and Recycle) Principle is at the heart of the CE concept, which aims to save money on products and reduce waste through reusing and recycling materials rather than throwing them away (Pinchuk et al., 2019; Lazarenko et al., 2019; MacArthur, 2012). But scholars are creative in their search for new "Rs", revealing multifaceted qualities of each that show the necessity for further inquiry and clarification of these concepts. If the entire product is repurposed, it is considered reuse. Refurbishment involves cleaning, improving, or fixing a product to extend its life. The redeployment will utilize only working pieces of the product. Re-manufacturing returns the product to "like-new" or greater functionality and may include a new warranty, but it takes more time and resources (Benton et al., 2014). Many interpretations of the redesign are found in the literature. EMF (2015) states that the design should enable extended use and improved functionality of the item, parts, or materials. Waste is recycled into a resource or commodity. Reusing, repairing, or reusing things that might otherwise be thrown away is possible in recycling operations. Downcycling decreases the quality and efficacy of recycled material or products, while upcycling raises a new product's monetary worth and standard (EMF, 2015). **Figure 2** depicts crucial stages in circular business architectures.

The circular concept employs a variety of paradigms, each of which can be applied within the scope of its intended usage. Establishing a global circular economy paradigm in tandem with the details and approach of shifting from a linear economy underpinned by acceptable profit incentive mechanisms is necessary to meet environmental criteria across all manufacturing stages. According to Pollin et al. (2008), the green recovery initiative assessed the circumstances for a linear-to-circular economy transition.

New business models that mimic the natural environment's growth in efficient

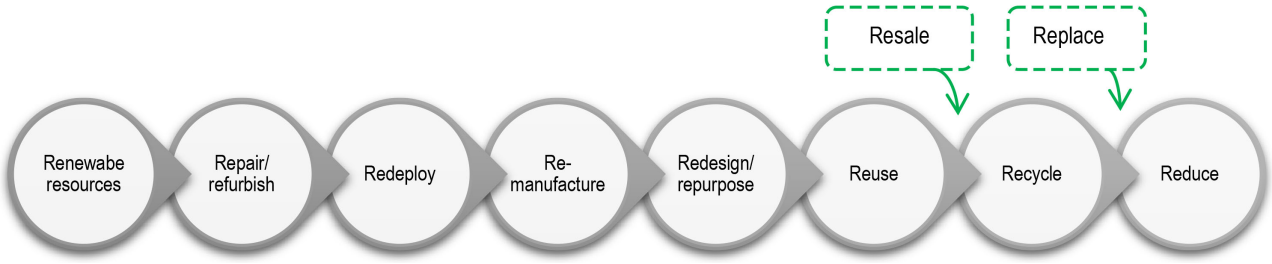


Figure 2. Crucial stages in CE structures. Source: Adapted from extant literature.

resource utilization, material recovery, and product refurbishment have been recognized and evaluated (Constantin et al., 2017; Sehnem et al., 2019; Prokopenko et al., 2020; Druckman et al., 2011). The shift to a circular economy necessitates the endorsement of governments at all levels, which can be realized via national strategies to fund waste minimization and reusing (Salvatori et al., 2019). Economic modernization, the shift to more advanced technological architecture, and strengthened legislative control of the circular economy can all gravitate to improved resource management (Smol, 2019). To lessen the industry's environmental impact, research on the CE has focused chiefly on materials and the circularity characteristics of firms (Guldmann & Huulgaard, 2020; Whalen, 2017; Boons et al., 2013). This method considers the interdependencies across diverse industries and supply networks.

However, as explained by Scarpellini et al. (2020), the assessed competencies not only enhance companies' financial and environmental effects in a circular economy paradigm but also shape the adoption of activities connected to the circular economy by companies. Since this connection has not been extensively analyzed for the circular economy, the scholars' demonstration of the moderating function of stakeholders in establishing the circular economy in firms represents a novel avenue of investigation. It is evident from an examination of the developments in the theoretical framework that studies of the circular economy have mainly concentrated on the manufacturing processes and have given little attention to the demands and attitudes of consumers (Elzinga et al., 2020). According to research, corporate sustainability approaches can improve the environment, community, and bottom line (Evans et al., 2017; Lüdeke-Freund et al., 2019). The purpose of circular business models is to analyze the rationale for constructing circular architecture (Antikainen & Valkokari, 2016). In addition, they prioritize resource efficiency measures to create more eco-friendly modes of manufacturing and usage (Nußholz, 2018).

Uzbekistan's transformation towards a green economy

Uzbekistan has made substantial progress toward incorporating ecologically responsible policies and processes into its strategic economic design, and this transition to a green economy presents both possibilities and risks. In 2016, central planning gave way to free markets. It recognizes that becoming green could speed up its economic transformation. Uzbekistan's government is committed to greening the economy. Specifically, a Presidential Decree (2022) defines the

modifications that must be made in the new digital economy. For instance, it accepted the action plan for moving to a sustainable society and maintaining Green Growth through 2030, addressing financial and ecological concerns to achieve sustainable, robust, and shared prosperity. Uzbekistan's transition to a green economy is examined in depth in a World Bank & Ministry of Economic Development and Poverty Reduction of the Republic of Uzbekistan (2022) report authored jointly by the Ministry of Economic Development and Poverty Reduction and other statutory bodies. It scrutinizes the most pressing environmental and other hazards. It suggests policy adjustments and actions that, in some cases, notably energy-efficiency improvements and environmental rehabilitation initiatives, are beneficial to both nature and the economy.

Establishing an eco-friendly path

Uzbekistan has to get better at managing its resources. Compared to the European Union and high-middle-income nations, the nation's resource efficiency could be better. Uzbekistan's economic and social development is at risk due to environmental degradation. Uzbekistan is among the world's most significant water- and gas-dependent, and climate-vulnerable nations. The nation also ranks among the worst in the world for water and energy waste. According to 2016 estimates, severe environmental degradation and sandstorms cost the economy four percent of its GDP. Additionally, Uzbekistan has one of the most significant carbon intensities worldwide. The level of energy exerted is also comparable. Postponing the switch to renewable energy sources can lock in expensive, outmoded technology and investments and hinder access to lucrative international markets. In addition, Uzbekistan can move towards an environmentally sustainable future while developing new opportunities in emerging industries by focusing on green growth (World Bank, 2022).

Uzbekistan faces several pressing, intermediate, and distant environmental obstacles that must be overcome to realize its green goals. Better air quality and sustainable land and water management will be the top green priorities due to agriculture's importance to the economy and the slow but continuous degradation in air quality in densely populated areas. Restoring landscapes, regulating water use effectively, and cutting down on air pollution are all ways to accomplish these goals. There is a pressing need for more widespread use of sustainable land management practices in Uzbekistan. Climate-smart farming methods can achieve increases in land use sustainability. The country would be better off in the long run if it could facilitate a shift away from agriculture and toward higher-value, higher-paying industries. Some of the agricultural workforce, especially the most marginalized girls and young adults, will need to acquire new skills to achieve this goal. Increasing water use efficiency should be a top priority. This should include setting new priorities limiting water use by implementing water tariffs and irrigated agriculture investment. Uzbekistan needs strong incentives to change low-carbon energy production and energy efficiency, which can be achieved with a well-designed low-carbon strategy.

Advancing a sustainable green trajectory, despite obstacles and building advantages

Uzbekistan has a long way to go before it can achieve global energy benchmarks, especially those related to its excessive energy and carbon use, as the world progresses towards an increasingly sustainable future. Due to these factors, the nation is susceptible to carbon border adjustment fees and other external trade policies. Uzbekistan, however, can transform this difficulty into a chance by participating in the worldwide green transition and bolstering its climate and environmental policies.

As more sovereign governments embrace climate change-fighting low-carbon policies, it is anticipated that the global consumption of carbon-intensive products will decrease in the foreseeable future. As a result, Uzbekistan's carbon-intensive exports could be affected, which would have a detrimental impact on the economy and level of affluence. Uzbekistan's carbon-intensive exports may suffer before 2050 under various policy scenarios, including those that impose border tariffs on carbon-intensive products. Uzbekistan must begin greening its economy as soon as feasible to prevent becoming entangled in systems and technologies that will prove more costly to reject in the future. Efforts to move toward a market economy, of which prioritizing environmental goals is a component, should continue without interruption. Uzbekistan may also reap the short-term benefits of other eco-friendly actions, such as increasing resource efficiency and creating green jobs and financial systems. The social effects of a greener future must also be taken into account by the government. There will be winners and losers due to the shift in investment and employment development toward renewable sectors rather than fossil and resource-intensive ones. The areas that have been hit the most must be given priority receiving aid. These principles are central to the struggle for an equitable transition.

Uzbekistan's pursuit of sustainable and equitable development is a priority for the World Bank (Agostini et al., 2023). A sustainable, robust, and equitable future is possible if the country adopts the appropriate environmental reforms and regulations. Therefore, Uzbekistan must adopt sustainable policies to ensure its future, especially in light of the many possibilities for economic expansion and growth presented by the global green transition.

Delineating responsible and sustainable business practices

Given the immaturity of circular economy conventions and the current status of the identified priority markets, where circularity principles provide guidelines to address the obstacles in Uzbekistan, it is crucial to ensure that material demand is not excessive natural resource removal and use. Therefore, it is essential to foster policy initiatives at all levels that enhance resource productivity, minimize waste, promote recycling, and, i.e., increase the use of recycled materials. In addition to helping achieve SDG 6, 7, and SDG 8, Schroeder et al. (2019) have demonstrated that the CE helps achieve several SDGs. The GoU has stated, on the assumption that the CE is a novel concept that further research and better awareness of the economic, environmental, and social implications, along with

stakeholder and sector cooperation (Presidential Decree, 2022). It is a small wonder that businesses focusing primarily on cutting carbon emissions face a funding deficit (Polzin, 2017; Owen et al., 2018).

In circling back to equitable economic growth through CE business model convergence, it aids in the reduction of waste in the industrial ecosystem by re-purposing commodities at their obsolescence (Cudecka-Purina et al., 2019; Ritzen & Sandstrom, 2017; Stahel, 2016). In particular, the CE aims to maximize the reuse and recycling of products, materials, and natural resources during the manufacturing and production stages, hence decreasing excess waste generated (Uvarova et al., 2019; Bocken et al., 2019; Kalmykova et al., 2018). Sustainable development, environmental stewardship, and societal and economic success for present and subsequent generations are just some areas where research has highlighted CE's long-term benefits. New employment opportunities may arise due to implementing CE in Uzbekistan. However, the benefits of doing so are more likely to be seen at the macro and meco stages in the form of mitigation efforts for climate change and other environmental issues. Kirchherr et al. (2017) state that macro relates to industry, governmental, or international views, whereas meco describes eco-industrial or regional levels. While numerous attempts have been made to define CE on a macro or meco dimension, the micro viewpoint has been less well described in past research. New business models can be developed on a micro-scale to aid in the advancement and encouragement of CE (Uvarova et al., 2019; Schroeder et al., 2019). The need to develop a business model has arisen due to this conversation. A business model can be characterized in various ways, from a collection of inquiries to components detailing the processes by which value is created, and revenue is generated. Hence, subsequent generations' environmental, economic, and social quality of life evolved. **Figure 3** illustrates thematic threads—an impetus for the Uzbek CE transition.

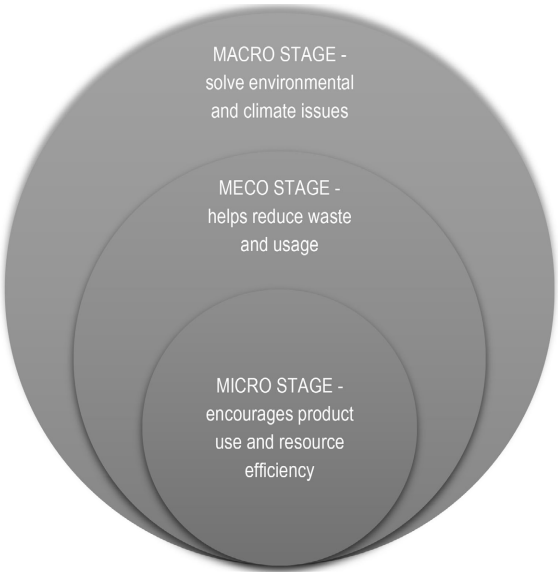


Figure 3. Thematic threads-impetus for Uzbek CE transition. Source: Authors' original work.

When there are novel opportunities or threats in the business environment, it is time to rethink the company's approach to doing business. Innovative business models and their differences from other breakthroughs are still hotly debated by scientific professionals, and business strategy innovations also interplay with further developments; for instance, developing an entirely novel product may necessitate a different customer benefit proposition, and supply chain process innovations may have an impact on the structure of the business's actions and any collaborations that may be in place (Schiavone et al., 2019; Geissdoerfer et al., 2018; Lahti et al., 2018).

3. Methodology

In-depth research was undertaken based on empirical information to estimate the level of development in implementing circular business models among local Uzbek SMEs. To provide a diverse picture of Uzbekistan, the study focused on seven unique regions ranging from the least developed to the most developed. Rural regions were classified using Central Asian urban-rural categorization.

Uzbekistan is 1425 km west-east and 930 km north-south, encompassing 447,000 sq·km (about the size of France) (World Bank, 2019). Uzbekistan, the only major Central Asian state to border all four, borders Turkmenistan to the southwest, Kazakhstan to the north, Tajikistan and Kyrgyzstan to the south and east. Afghanistan borders southern Uzbekistan (see **Figure 4**).

Most regions chosen for study are regarded as predominately rural, with over half of the population residing in rural areas namely, Tashkent, Samarkand, Fergana, Andijan, Jizzakh, Namangan and Karakalpakstan. **Table 1** shows the economic structural matrix of the regions in terms of the proportional share of agribusiness and the proportionate share of manufacturing. Three regions with a rural populace between 20 and 50 percent were chosen for analysis to provide more credible and consistent research outcomes. Although most regions analyzed in the study were rural, their economic model and SMEs represent diverse businesses and sectors. In addition, there are locations with substantial core

Figure 4. Agriculture geography of Uzbekistan. Source: CIA World Factbook 1998.

Table 1. Economic structural matrix of the regions examined in the study.

		Agribusiness's Proportional Share		
		Elevated	Moderate	Negligible
Manufacturing's Proportional Share	Elevated		Samarkand, Ferghana	Republic of Karakalpakstan
	Moderate	Namangan	Andijan	Tashkent
	Negligible		Jizzakh	

agricultural output, high manufacturing production, and areas with the established service industry. Statistical evaluation was used to examine each region's statistical data to categorize the parts.

Five regionally-based collaborator engagement meetings were set up for the study. The sessions with participants aimed to develop an agreement and assure support by a more comprehensive regional audience for fostering new developments and revenue streams in rural SMEs, focusing on CE and regenerative business models. In all, 218 people were represented at the regional consultation meetings with participants. Each engagement meeting with participants consisted of various focus group conversations with an average of five to eight attendees. The focus groups were accessible to all those willing to participate.

Stakeholder mapping was completed for each location before the meetings to explore and consider inviting various stakeholders to work together. First, SMEs from various industries, as defined by statistical classification codes. Second, focus groups were made identically across all regions, with a clear list of duties, questionnaires for participants, and uniform standards for how they were set up and run. Third, focus groups that met these criteria offered statistics, perspectives, and insights from each region that remained consistent and comparable. Participants in the focus groups discussed the topic, identified the challenges, possibilities, and extra enablers required to allow the adoption of new advances and circular business models among rural SMEs, and determined the relative relevance of each element. The qualitative data from focus groups were analyzed using the grounded theory method. The statistical analysis relied on data from a quantitative poll in which participants assessed the novel developments and circular business models that rural SMEs in each region may implement from most probable to least likely. Semi-structured interviews offered geographical information and expert comments on the focus group results. The survey questionnaire includes questions about the hurdles, opportunities, and additional support needed to help rural SMEs implement new advances and circular business models. Respondents rated each factor's relative relevance. Other questions include:

1) Ranking business models or technologies that rural small and medium-sized firms can implement, from most likely to least likely, and the region's distinguishing features.

2) Possible improvements and required help.

3) The applicability of recommended measures.

4) In-depth knowledge of the circular economy and the industry.

In order to better understand the requirements of rural SMEs with regard to the acceptance of novel technologies and business models, this study employed a theory-based analysis procedure (the change theory) to design the potential improvements, required support, and applicability of recommended actions.

4. Findings and Discussion

According to the study, rural SMEs in the seven analyzed Uzbek provinces are unfamiliar with CE and circular business models. Many SMEs in rural areas resist adopting new approaches or business model innovations, despite their familiarity with the bio and ecological economies, which provide a suitable foundation for establishing circular business models. The dearth of innovativeness, knowledge, and expertise; lethargic response to fast-evolving market trends; shortage of skilled workers; seasonal fluctuations (particularly in farming and associated sectors); financial distress and protracted periods of declining profits; insufficient collaboration among rural SMEs as well as other industries are some of the main obstacles and difficulties identified in the analyses. The difficulties highlight the continued importance of assisting rural SMEs in shifting their perspective on the CE and enhancing their capability to incorporate new technologies necessary for specific circular business models.

These results also coincide with those of Rizos et al. (2016), who classified the most significant obstacles to implementing CE concepts in SMEs. According to Rizos et al. (2016), the primary barriers for SMEs to incorporate the CE were a need for more financing, knowledge, advanced technologies, and cooperation within the value chain and an inappropriate internal culture and mindset among managers and staff. This study also highlights the dangers to rural SMEs from adopting new circular business models. Poorly developed SME partnership for the foreign market promotion plan that is essential for adequate cash flow and good financial ratios; no consistency in measures and policies to promote the growth of innovativeness; SMEs priority upon reducing costs rather than enhancing the value; assistance programs are not flexible enough to accommodate the radical shift in innovations and emerging developments of circular economies; rising global competition, increasing earnings and raw material costs; global warming issues, particularly in farming; inadequate investment in the regions' infrastructure; Hugely competent staffing remains or relocates to urban districts, rendering rural businesses without labor. Without experienced people that would comprehend the concepts and ways of doing business of the circular economy.

Theoretically, this can be attributed to the general public's need for familiarity with circular business models and the restricted opportunities available to the business (or farm-land) owners who might otherwise take the necessary risks and allocate large sums of money to develop innovative technologies that sup-

port circularity. And there need to be more studies on the best practices and case studies that may serve as the circularity facilitators for business (or farm-land) owners, financiers, policymakers, and consumers.

The study categorized the barriers, opportunities, and enabling factors across all regions and presented an overview of each. Yet, nuanced distinctions across the regions under study are essential since regional differences exist in economic structure and specialization. For example, the table below synthesized the opinions of the collaborators who participated in the focus groups regarding the unique difficulties encountered, opportunities taken advantage of, and enabling factors present in each region (see **Table 2**).

Moreover, empirical data contradicts the common belief that most rural SMEs are involved in agriculture, with a sizeable proportion of these businesses instead engaging in industrial manufacturing or providing services. Invariably, the general public sees agriculture as less innovative and more traditional, specifically among marginal and small farmers. The findings demonstrate that smart and precision agriculture, agricultural supply chain systems, other agricultural technologies, and circular business models have many possibilities. Therefore, the extraction process must be as transparent as possible regarding the CE's use of renewable and natural resources.

One strategy proposed to encourage SMEs in rural areas to adopt creative approaches and novel circular business strategies is the establishment of "enterprise centers" in those areas. Expertise in places like the CE, environmentally friendly practices, the social responsibility of businesses, the legislative basis, advancement of new solutions by many rural SMEs, financial support in applying for various grant funding, preparatory work of business plans, and market analysis are just some of the ways that these "enterprise centers" can help SMEs. CE events highlighting CE's value and benefits and providing innovations and new circular revenue streams to rural SMEs can enhance such organizations' circularity and open up new prospects. Rural SME owners and managers often resist new technologies, advances, and circular business practices; nonetheless, they should be persuaded to reconsider their positions. The UK's rural center system is a helpful basis for implementing such a policy reform instrument.

Comparable market and supply chain barriers for circular business models have been identified by many other researchers, including a shortage of knowledge exchange among the supply chain's stakeholders, an absence of collaborators, harmful re-use practices, an unwillingness to repurpose resources obtained from third-party companies, and an absence of customer engagement in circular economy enterprises (Teo & Low, 2022; Mishra et al., 2018; Govindan & Hasanagic, 2018; Adams et al., 2017; Vermunt et al., 2019; De Jesus & Mendonça, 2018; Todeschini et al., 2017). The importance of raising consciousness about environmental principles and the role of the CE in strengthening corporate performance cannot be overstated. The education system must begin inspiring future business leaders as early as possible. Atstaja et al. (2017) point out the difficulties educational institutions have when trying to instil an appreciation

Table 2. Barriers, opportunities, and catalyst for rural SMEs implementing circular business models.

Region	Barriers	Opportunities	Catalyst
Ferghana	1) Insufficient ingenuity to develop circular business models 2) Division and inconsistency of technology promotional campaigns, including ecological or circular enterprises 3) Program bureaucracy 4) Regional incoordination.	1) Nutritional food development 2) Biotechnology, organic farming 3) Online marketing and product 4) Rural SME diversification of products and services	1) Advocating for eco-friendly practices like organic farming and biotech 2) Support for rural-urban cooperation in rural SME research and development funding, with a focus on non-agrarian technology solutions and SME pivot for innovations, sustainable consumption, and novel approaches to business
Jizzakh	1) Absence of a culture of innovation 2) Insufficient backing for the launch of novel ideas and business approaches that make use of CE 3) There are no consistent technical cooperation and a brief window of opportunity 4) Insufficient collaboration between non-financial assistance	1) Innovative technology for food processing 2) Organic agriculture, sustainable sources, and green companies 3) Agrotourism and wider range of agricultural logistics 4) Using online marketing and other new solutions to promote a circular business model and offerings	1) Guidance for developments in rural SMEs 2) Assistance for the conception and development of new circular business models in agricultural logistics programs 3) Assistance for the construction of new biodynamic and organic product prototypes 4) Entrepreneurship networks and registration of intellectual property rights dialogues
Karakalpakstan	1) Poor earnings of rural Businesses 2) Economic instability 3) Poor infrastructure and little investment 4) Rural SMEs' social and ecological functions are neglected by society and industry groups	1) Revival of regional brand to promote local products 2) Digital technology adoption advocacy 3) ICT technology expand marketing possibilities	1) Assistance for rural SMEs consultations 2) Content and digital marketing 3) Platform support via shared economy benefits 4) Branding and marketing of rural areas
Andijan	1) Lack of collaboration between SMEs 2) Rural SMEs' environmental and social responsibilities are not understood by society or business organizations 3) Rural SMEs face a lack of learning opportunities 4) Lack of knowledge and abilities required to collaborate with large retailers, foreign clients, and other partnerships	1) Rural SMEs' service and product diversification 2) Ecological farming 3) Acknowledgment of rural SMEs' social and environmental functions 4) Diverse collaborations 5) Learning possibilities for rural entrepreneurs and is easily accessible	1) ICT and business innovation training 2) Collaborative platforms using shared economy benefits 3) Diversifying business models and activities 4) Sales promotion and agent support

Continued

Samarkand	1) Insufficiently skilled workers 2) Public assistance bureaucracy 3) Innovation development requires SMEs, research, and regulatory collaboration 4) Inadequate engagement between institutions supporting innovations and circular business models 5) Minimal globalization and sales promotion to a more extensive clientele	1) Local opportunities for rural tourism based on historical sites 2) Digital marketing and other novel approaches to business 3) International sales agents and brand management 4) Establishing flexible work hours	1) SMEs with the "Seal of Excellence" receive support and assistance 2) Support for various kinds of partnerships 3) Support for several types of partnerships 4) Coordination of measures and initiatives to promote innovation 5) Innovation networks and meetings to talk about how to register intellectual property rights and trademarks 6) Discussion and debate about the establishment of novel company models and how to raise money for them to be used 7) Help with getting into more significant local and global markets
Namangan	1) Inadequate innovation hinders circular business model growth 2) Limited capacity to grow globally 3) Shortage of workers overall, not just of those with advanced degrees 4) Inadequate cooperation among entrepreneurs, academic institutions, and governmental bodies 5) The administrative or bureaucratic complexity of support initiatives	1) Advanced techniques for food processing innovation 2) Sustainable agriculture and alternative energy 3) Supply chain and advertising automation using digital means 4) Support for genuine, locally made goods made from sustainable materials	1) Encouragement of various types of cooperation 2) Assistance with expanding into more regional and global markets 3) Creation of innovative circular enterprise models for rural SMEs, as well as CE education and training 4) Support for innovative and circular businesses with streamlined application processes
Tashkent	1) Burden of paperwork or administration in aid programs 2) Accessibility and ICT infrastructure in rural areas are not as excellent as they might be 3) Not knowing what kinds of help are available for new ideas 4) Weak networks and partnerships for new ideas	1) Biotechnologies and organic farming 2) Use of Non-depletable materials 3) Precision farming/agriculture methods 4) Internal product manufacturing and supply-chain management traceability systems	1) Assistance with infrastructure construction to promote accessibility and mobility 2) Rural SMEs' access to innovation platforms and networks 3) Consultations and education on opportunities for innovation support 4) Reduced application processes in support programs for innovation and circular business

for environmental sustainability and awareness in their learners. In addition, these scholars emphasize that enhancing environmental awareness necessitates the same time and energy as the cultivation of other skillsets but also safeguards competencies like system and critical reasoning, imagination, and strategic flexibility, all these are necessary for businesspeople seeking to develop creative cir-

cular business models (Atstaja et al., 2017).

Other investigations have cited business owners' need for more awareness of recycling technology, circular materials in production, refurbishing product quality requirements, and circular business model legalities as impediments to their comprehension and mastery (Kirchherr et al., 2018; Ranta et al., 2018; Vermunt et al., 2019). Data from the research study revealed the necessity of an informational support system across the greater community and specific social subgroups. This gaining of insight can take many forms, such as publications and activities in the mainstream media, the creation of instructive and instructional webpages (or segments of websites), social media advertising, workshops, and consulting. It is necessary to raise the awareness and expertise of various social actors, notably entrepreneurs. Entrepreneurs' awareness of these difficulties and their mentality can play a vital part in these processes. The profitability of their firm primarily drives the preponderance of entrepreneurs.

Rural businesses still need external financing for unique concepts and innovative circular business practices. Banking firms and financiers are learning about CE and circular business models for the first time. They nevertheless view this development as unrealistic and unprofitable, something more appropriate to low-volume, at-home operations. Increased opportunities with government assistance (regional, government concessions and subsidies) should be made accessible to promote the implementation of novel circular business approaches into rural SMEs, as the CE carries a broader business and economic advancement purpose but also offers ecological and social protection benefits. The lack of familiarity with using angel investors, private equity funds, crowdfunding platforms, and other alternative funding sources is a significant barrier for SMEs in rural areas seeking such capital. Nevertheless, these same funding partners and investors often overlook rural SMEs because they do not see a potential for scalability in the firms there.

Rural SMEs and investors could benefit from a greater understanding of the experiences and successful cases in attracting fresh financing for creating thriving new circular business ideas. Analysis reveals weak credibility and financial resources among rural entrepreneurs. Harter (2019) also provided evidence that businesses outside of metropolitan areas or even other population hubs with a low density of consumers need help maintaining high-profit margins. Other scholars have identified financial resources, initial high prices, and the need to invest extensively in innovative circular business models as barriers to their adoption (Ormazabal et al., 2018; Govindan & Hasanagic, 2018; Vermunt et al., 2019; Mishra et al., 2018; Adams et al., 2017; De Jesus & Mendonça, 2018). Rural SMEs can boost their profitability and operational effectiveness by expanding into new, preferably foreign markets and striving to improve client satisfaction. The findings justify expanded marketing efforts to educate consumers on the benefits of circular enterprises. According to the results, there is now an information gap addressing the tangible benefits acquired by all involved.

Policymakers should diversify funding for rural SMEs, which create jobs and access overseas markets. In addition, small rural businesses in primary (e.g., agriculture, forestry, and livestock production) and tertiary sectors should attract specific GoU assistance. Presently, rural development programs prioritize larger agricultural businesses. Innovative business ideas would help small rural businesses enter new markets and create more jobs. In addition, exports and government subsidies help agricultural enterprises advance technologically (Herceg & Vuksanovic, 2017). These researchers also highlighted the problem of insufficient knowledge and inadequate investments in helping to educate entrepreneurs about exploration, development, and advanced technology, particularly among traditional industries such as farming, which has led to excessive labor, insufficient capital, and low return on investment (ROI). Policymakers can also establish a direct connection with rural SMEs to fully comprehend what they want and adopt more focused policy initiatives. Finally, Atstaja et al. (2017) advocate for an economic strategy that blends sustainable future and green business ideas and conserves natural resources and energy.

Several studies (Vermunt et al., 2019) note the absence of regulatory rewards that motivate enterprises to segregate trash and utilize it as a strategic resource. Sometimes, the government prevents businesses from utilizing trash as a resource. Also, these researchers investigate the existing gaps in the availability of finance, as investors and financial institutions are frequently unwilling to engage in specific CE models (Vermunt et al., 2019). Studies indicate that the adoption of new technologies and circular business models increases the viability of rural SMEs in several ways, including:

1) A fresh approach to work unlocks more funding possibilities;

2) A unique approach to communicating with customers, including social media and digitalization;

3) Rather than launching new merchandise, circular business models recommend building fresh offerings for consumers grounded on the CE fundamentals;

4) Flexibility to enhance supply chain, output, sales, and associated expenses, ensuring minimal waste approach;

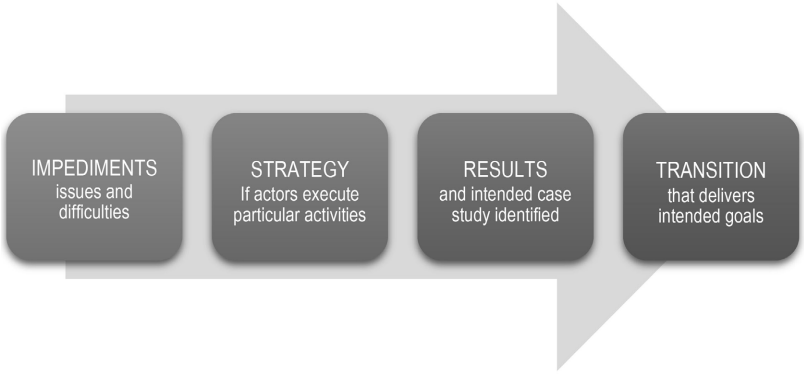
5) Offering a wide variety of goods and services to consumers;

6) Establishing the strategy on CSR (corporate social responsibilities) practices;

7) Boost work productivity and revenue;

8) Collaborating together more.

Increased competitiveness is reflected in higher profitability ratios such as return on investment (ROI), which should improve after adopting a circular business strategy. In order to account for all possible processes and final results, the theory of change is constructed based on available evidence. It shows how adopting novel circular business models can improve the viability of rural SMEs. The theory of change provides a concise overview of the primary obstacles encountered by rural SMEs, opportunities in the form of possible options to be enacted, results, and additional steps that should all contribute to the changes



(a)

IMPEDIMENTS	STRATEGY	RESULTS	TRANSITION
1) Incentives for entrepreneurship • Absence of innovation culture • Low innovative motivation • Absence of collaboration between industry, academia, and regulatory agencies	1) Collaboration and network	• Rural SMEs are involved in the development and growth of company activities	1) Superior efficiency • More productivity, trust and profitability • Goods with a significant added value • Competitiveness
2) Entrepreneurship funding and support promotions • Innovative support programs do not target rural non-agricultural SMEs • Administrative complexity and dispersion of benefit programs • Lack of knowledge on external financing opportunities • Poorly developed ICT infrastructure	2) Data and education	• Rural SMEs implement innovative circular business models	2) Progress trajectory • Economic output gain • Revenue and sales improvement
3) Inadequate information and abilities in rural SMEs • Entrepreneurial support measures do not target rural non-agricultural SMEs • Administrative complexity and dispersion of stimulus programs • Absence of information regarding alternate financing sources • ICT connectivity that is underdeveloped	3) Promotion and marketing in foreign markets	• Rural SMEs have adequate staffing	3) Growth and development • Growth of SMEs • Wider and more streamlined supply chain • Regionalization
4) Limited manpower • Absence of skilled professionals • In isolated rural locations, there is a shortage of and an aging workforce	4) Supply of manpower	• Rural SMEs are enthused in collaborating and connecting for valuable purposes	4) Creative products • Innovative goods or services • Quality of the product • Client satisfaction
5) Poor industry competitiveness • Poor productivity and dearth of products with high-added value • Poor marketing • Inability to collaborate with substantial retail chains and international markets	5) Availability of GoU support and private sector funding	• Rural SMEs are aware of where and how to acquire financing • Rural SMEs have a distinctive image/brand that fosters businesses' circularity • Rural SMEs are accessible on a domestic and global stage	5) Economic and ecological aspects • Work in rural regions • Regeneration of rural regions • Local community resources and products • Conservation of ecological resources and heritage • Ecological sustainability

(b)

Figure 5. (a) Supportive approaches and the underlying theory of change; (b) Enabling strategies and underpinning change theory.

sought. The theory of change is applicable to determine how well a set of suggested actions addresses the needs identified by rural SMEs interested in adopting new CE models. This can serve as the foundation for extending incentive programs beyond 2023. Supportive approaches and the underlying theory of change are depicted in **Figure 5(a)** and **Figure 5(b)**.

According to the findings of other researchers (Vermunt et al., 2019), legislators should develop many policies suitable for a variety of circular business models. Assuming a more nuanced categorization of both within and outside obstacles, these researchers also confirm the need for additional studies to study the differences in barriers and problems between various circular business models. In addition, some internal elements at the micro-business level will need to be drastically altered throughout the shift to new circular business models. Thus, business owners must value the CE concepts and integrate these into their operations. Researchers agree that the CE should be integrated into the organization's long-term strategy, short-term objectives, and key metrics for performance (Kirchherr et al., 2018; Agyemang et al., 2019). Conceptual considerations suggest that the creation of circular enterprises can be achieved through either facilitation or coercion; therefore, coercive and enabling tools are available.

5. Conclusion

The objective of this study was to rethink which resources would be most helpful for fostering the growth and applying circularity of SMEs in rural Uzbekistan. This study contributes to comprehending the CE idea and its relevance to circularity and small business models. Intriguingly, Briguglio et al. (2021) and Lesakova (2019) found that SMEs in Europe's rural areas face similar obstacles and barriers while implementing novel circular business models. CE is vital to the Uzbek economy, local companies, and social framework. The study needs to include more research on the foundations of circular business approaches and implementation evidence in the CE. A greater understanding of circular business models will bolster its popularity among rural SMEs. The "3R" ideas have been elaborated upon in numerous studies. In addition, a shared understanding of the 3R concepts will promote the widespread adoption of circular business models across organizations (reuse, reduction, recycling).

The concept of circular business models is viewed as a potent enabler by SMEs committed to advancing circular practices. To capitalize on a company or product's environmental and economic benefits, business models must adhere to circular economy principles. This generates a fresh set of requirements for business model innovation. For example, suppose resource loops are to be slowed and closed. In that case, business models must be designed to facilitate the preservation and utilization of the value embedded in resources (e.g., through resource recovery, long life, and multiple use cycles). Technology advancements, new vulnerabilities, and the shift in values will force rural SMEs to adopt circular business models in the foreseeable future. Rural SMEs require assistance and legislation to create and implement circular business models. CE-based business

models fail due to knowledge gaps, expertise, and ambidexterity. Investment opportunities for establishing new technologies for creating and adopting circular business models are constrained by poor trust and profitability. SMEs in rural areas have significant difficulties due to a lack of available workers, whether highly or low-qualified. SMEs in rural areas can profit from implementing circular business models, but more study is needed to demonstrate the models' viability and practicality. Lastly, enhancing the CE of small rural businesses and establishing new circular business models should be regarded as crucial drivers for attaining the specific priorities of the GoU and the supportive orientations of government developmental aid beyond 2023.

Conflicts of Interest

The authors declared no potential conflicts of interest for this article's research, authorship, or publication.

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