

RESEARCH ARTICLE



Advancing the Circular Business Models in Developing Countries: Lessons from China

Tran Thi Thanh Tu¹ , Anh Nguyen Thi Phuong^{2,*}  and Thu Hang Nguyen² 

¹Vietnam National University, Vietnam

²University of Economics and Business, Vietnam National University, Vietnam

Abstract: In light of natural resource degradation becoming a dreadful problem for developing countries, adopting the circular business model within firms emerges as an effective means toward alleviation or eradication. Despite ongoing attempts, however, the majority of developing countries' use of the circular business model remains modest. In this perspective, it is essential to reference the experiences of other emerging nations with highly developed circular business models. China, which has led the globe in promoting the circular economy, serves as a perfect model for developing nations to refer to and effectively use lessons acquired in constructing a circular business model. The purpose of this research is to provide clarity in communicating the concept of circular business models for practitioners and offer synthesis lessons for developing countries to implement circular business models successfully. This analysis conducts a literature review on China's implementation strategies and obstacles to circular business models. Based on a review of the study, we contribute to the theoretical development of an effective circular business model and provide long-term circular business model transition experiences for developing nations.

Keywords: circular business model, developing countries, China

1. Introduction

The degradation of natural resources has become a terrible worldwide issue, particularly for developing nations. There are two primary justifications for this assertion. First, developing nations are the most populated areas in the world, which makes the demand for natural resources in these nations significantly high (World Population Review, 2021). Second, the government and citizens of developing nations aspire to reach material prosperity. Exploiting natural resources is the quickest approach to achieving national economic objectives and residents' desire for a higher quality of life. There are evidences that residents of developed nations consume the most resources and leave the largest material footprint per capita globally (United Nations, 2019). Nonetheless, these nations mainly imported resources and goods from underdeveloped nations (United Nations Conference on Trade and Development, 2011). It made natural resource exploitation the most pressing concern for developing nations but not for developed ones.

In that context, the circular economy has been widely introduced in developing countries to improve the efficiency of natural resources (Halog & Anieke, 2021). Several developing countries such as Vietnam (Hai et al., 2020), Bangladesh (Ahmed et al., 2022), South Africa, Kenya (Desmond & Asamba, 2019), and India (Kakwani & Kalbar, 2020) have actively implemented the principles of circular economy, but the outcomes remain humble. The governments of

those nations should rethink the transition strategies to the circular economy, which needs to be business-centric and requires firms to implement the circular business model (Geissdoerfer et al., 2020). In the past, there have been several circular business-based models in developing countries, such as the collecting and recycling scrap metal, paper, and plastic model; the garden-pond-barn model; the garden-forest-pond-shack model; and the cleaner production models in small- and medium-sized enterprises (Barros et al., 2020; Mehmood et al., 2021). However, the effectiveness of these models has yet to be maximized due to outdated recycling technology, weak infrastructure, small production scale, and especially the lack of environmental protection awareness among workers and business owners (Geng et al., 2012).

To improve the situation, it becomes imperative for developing nations to refer to the experiences of countries that have strongly developed circular business models. Existing literature often looks upon the lessons of developed countries such as German, France, and Japan since they have made outstanding achievements in the circular business models (Ghisellini et al., 2016). Nevertheless, developing countries usually have a huge gap in human resources and technological barriers to doing business compared to developed countries. When referring to the experience, developing countries should carefully study the experiences of countries with certain similarities in terms of natural conditions and socioeconomic background. Through the review process, the authors found that China is the only exceptional developing country with equivalent achievements in implementing circular business models compared with those developed countries (Mathews & Tan, 2016).

*Corresponding author: Anh Nguyen Thi Phuong, University of Economics and Business, Vietnam National University, Vietnam. Email: phuonganhnt.vh@gmail.com

Thus, China emerges as an appropriate example to refer to and apply lessons learned regarding the matter (Bao et al., 2019; Mathews & Tan, 2016; Snyder, 2019).

This study examines the practices of circular business models in China by reviewing the academic literature published in the last 5 years to answer the following research questions: (1) Which strategies are effective in developing circular business models in China? (2) What barriers hinder the development of circular business models in China?, and (3) Which agents play a vital role in building and sustaining circular business models in China? By delivering the answers, this review clarifies the concept of circular business models for practitioners and contributes to the theoretical development of an effective circular business model. Moreover, it provides practical proof to draw lessons for the transition to the circular economy in the developing context, ultimately contributing to the theoretical development of an effective circular business model.

The remainder of this paper is organized as follows. Section 2 provides details about the method used for literature finding and the critical characteristics of the studies selected for this review. The adoption of the circular business model in China is then summarized in Section 3. Then, Section 4 discusses a circular business model framework and practical implementation for developing countries, and Section 5 concludes the study.

2. Materials and Methods

2.1. Data collection

The data collection was carried out through the Web of Science (<https://www.webofscience.com/>) and Scopus (<http://www.sciencedirect.com/>), the two most popular scientific databases (Chadegani et al., 2013; Guz & Rushchitsky, 2009). Recent figures from Web of Science and Scopus (Merli et al., 2018) indicate that the number of papers pertaining to the circular business model in China has expanded from a small number in the past. However, not all of the studies included a comprehensive spectrum of regulations and practices related to China's circular business model. To assure the validity of the review process, this research employs the approach of purposive sampling, which is based on the authors' intentional decision to evaluate the quality of the literature (Bernard, 2017).

2.2. Research methods

This study employs a literature review, the most effective method for synthesizing research data, as its research approach. This is an essential method in providing an overview of areas where research is diverse and interdisciplinary. One of the notions presented by Snyder (2019) is the classification of publications by writer, field, category, and significance. This categorization is crucial since it allows readers to examine the current condition of particular themes and concentrate on how to expand them from specific issues. The stages in searching for articles, following the instructions set forth by Snyder (2019) in several aspects, are described as follows.

First, in order to capture the implementation of the circular business model in China across the scientific community, the generic keywords were "China," circular economy," "circular business model," and "circular economy business model."

Second, the evaluation of the work is based on three ranking lists: Scopus, ISI, and the Academic Journal Guide 2021 (ABS list) compiled by the Chartered Association of Business Schools of the United Kingdom. It is vital for academic professionals to verify the

rankings of academic journals prior to evaluating potential articles. Regarding Scopus and ISI rankings, they are the most widely used academic ranking lists to evaluate the quality of publications by different organizations and governments (Anwar, 2021). Articles published in journals belonging to both Scopus and ISI will be selected with quartile 1 priority (Q1). In addition, the journal must be rated as a two-star journal or above on the ABS list as journal quality evaluations (Anwar, 2021; Wu et al., 2015) regard the ABS list to be an important worldwide resource. The choice of published research must meet the three integrated criteria.

Third, if the paper qualifies in the previous step and is gathered for review, the Connected Paper (<https://www.connectedpapers.com/>) mapping tool will be used to identify related studies. The newly formed publications will undergo a similar procedure. Review articles produced in English and written by Chinese writers will be favored among research papers. This is due to the fact that English was the worldwide academic language (Genç & Bada, 2010) and the Chinese writers can guarantee comprehension of Chinese written papers and official documents, hence validating the information's credibility.

3. Circular Business Model Background

3.1. Definition of the circular business model

The concept of the circular business model has been defined by many scholars with one of the earliest definitions as "the rationale of how an organisation creates, delivers and captures value with and within closed material loops" (Mentink, 2014). Recently, a broader definition has been given in which a circular business model is a model that is "cycling, extending, intensifying, and/or dematerialising material and energy loops to reduce the resource inputs into and the waste and emission leakage out of an organisational system" (Geissdoerfer et al., 2020). This comprises "recycling measures (cycling), use phase extensions (extending), a more intense use phase (intensifying), and the substitution of products by service and software solutions (dematerialising)." Figure 1 (Geissdoerfer et al., 2020) provides a snapshot of the circular business models' definition.

Although there are different concepts of a circular business model, the ultimate purpose of this model type is grounded on resource efficiency within a business and collaboration in the entire value chain (Geissdoerfer et al., 2020; McDowall et al., 2017). Resource efficiency means producing the highest economic value from the least virgin resource, and the value chain means the alignment of stakeholders such as producers, intermediaries, and users (Linder & Williander, 2017). If a business adopts a circular business model by making products from recycled materials, but there is no guarantee that the materials can be recycled again, that business has hindered another closed loop of materials. This leads to the application of the circular business model on different levels of circularity, namely fully circular and semicircular (Mentink, 2014).

The circular business model can work at the micro level where individual enterprises act as independent agents or at the meso level where enterprises act as codependent agents in the industrial zone (Kirchherr et al., 2017). It means that a circular business model can close the material loop either by itself or become a part of a loop (Mentink, 2014). Circular business models are often divided into two primary groups regardless of operation level. The first group encourages reuse and prolongs life through repair, remanufacturing, upgrading, and retrofitting while the

Figure 1
The concept of circular business model

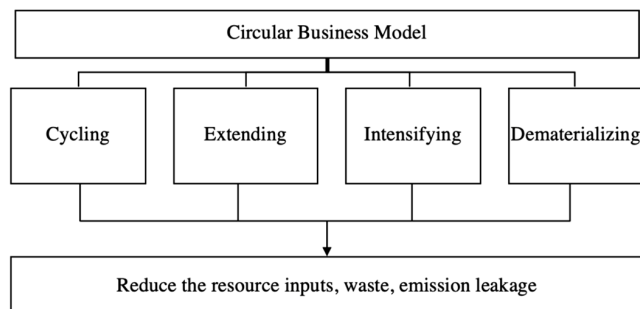
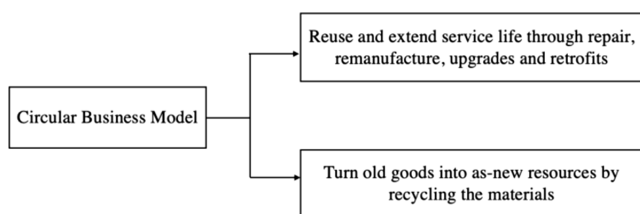


Figure 2
Two groups of circular business models



second group tries to turn old products into new resources by recycling (Stahel, 2016). Figure 2 (Stahel, 2016) illustrates the classification of the circular business models.

3.2. Opportunities and challenges of the circular business model

3.2.1. Opportunities of the circular business model

The application of the circular business model has attracted the attention of many policymakers and large global enterprises such as Google, Unilever, and Renault (Lewandowski, 2016). This is because the circular business model, following the principles of the circular economy, brings massive opportunities for enterprises. Studying the circular business model's opportunities can motivate enterprises to adopt the circular business model and allow them to perceive to what extent they should capitalize on the model.

First of all, the circular business model has the capacity to maintain their input resource independent of market volatility and to provide value for businesses even after production has finished (Veleva et al., 2017; Sehnem et al., 2019). In this instance, value capture is primarily associated with reduced material acquisition costs and increased revenues from end-use products/materials (Geissdoerfer et al., 2020).

In addition, businesses that adopt a circular business model can gain a good reputation in the eyes of consumers and develop their value networks with partners (Shao et al., 2020). As aforementioned, the material loops of the circular business model can work at the meso level where enterprises act as codependent agents in the industrial zone (Kirchherr et al., 2017). In that case, enterprises will actively interact with suppliers and enhance their network to make ensure the circularity (Lewandowski, 2016).

Since technology is a key factor in successfully applying the principles of a circular business model, technology development is

another opportunity this business model offers (Hina et al., 2022). The circular business model has the potential to leverage digital technologies, such as big data, artificial intelligence, blockchain, and the Internet of Things. For example, the adoption of digitization and intelligent robotics is at the heart of waste treatment systems in factories for waste sorting, and treatment is prevalent nowadays (Kirchherr et al., 2018).

Lastly, the circular business model has a major potential to support inclusive innovation. According to international researchers, the concepts of a circular business model need the development of new kinds of vehicles, renewable energy systems, and infrastructure (Antikainen & Valkokari, 2016; de Jesus et al., 2018; Lewandowski, 2016). The application of innovation also reduces the burden of incurred costs and enhances the capability of industrial symbiosis between enterprises, in the process of circulating materials of enterprises, thereby assisting entrepreneurs to interact in a circular network and to control the value chain, supply chain, customer interface, and financial structure.

3.2.2. Challenges of the circular business model

The implementation and adoption of the circular business model present obstacles in addition to its advantages. According to the EMF, organizations using the circular business model need a highly skilled staff with the capacity to innovate, produce, and adapt (Feng & Lam, 2021). However, not all enterprises can achieve this condition, particularly those in developing nations where worker quality is inconsistent.

The circular business model is mostly used by major corporations, with no small businesses present (Lewandowski, 2016). Although governments throughout the globe have aggressively encouraged small- and medium-sized firms to embrace the circular business model, many businesses still face the difficulty of mobilizing cash and incurring excessive conversion expenses. There may be a case for technology import as a means for small- and medium-sized businesses to migrate to a circular business model (Geissdoerfer et al., 2020). On the other hand, this method may provide a long-term problem if it requires foreign professionals to operate and resolve technical faults.

Another problem of the circular business model is firm culture (Kirchherr et al., 2018). Currently, many nations have policies to promote the circular business model, but these efforts are ineffective owing to the "culture of hesitancy" among businesses. This may stem from corporate executives who lack entrepreneurial spirit or understanding of the circular business model. Even though company executives encourage corporate social responsibility by embracing the circular business model, it is difficult to accomplish the aim of balancing social, economic, and environmental advantages (Wagner, 2007) if they lack a clear vision or knowledge of this model.

According to ING's (2015) analysis, the circular business model also raises issues for financial aid. In reality, sustainable investments are often associated with poor credit ratings, and enterprises must justify their solvency in a manner superior to the usual linear model (Aranda-Usón et al., 2019). Businesses may be dissuaded from adopting a circular business model if credit institutions and government agencies lack explicit laws allowing firms to acquire credit capital.

In addition, if a company implements a circular model, they will need to rebuild their whole system, including the value chain (transition to a closed-loop supply chain or reverse logistics) (Zhu et al., 2019). All departmental changes will have an influence on their internal accounting system, particularly

cost accounting. Consequently, the accounting department of the organization must reconsider how they handle their internal costing system.

4. An Overview of the Circular Business Model Developing in China

4.1. The practices of circular business model in China

The concept of the circular economy was introduced in China in the 1990s with the original idea of cleaner production and the development of an industrial eco-zone (Zhou et al., 2020). Unlike in developed countries like Japan and the USA, where the market economy is developed from the bottom up (bottom-up), the circular economy in China is implemented as a national policy from the top down (Feng & Yan, 2007).

At the circular business level, following the top-down strategies, the Chinese government issued the “Cleaner Production Promotion Law” in January 2003, before the official launching of the circular economy (Zhu et al., 2019). To lower their environmental externalities and energy intensity, manufacturers must switch to greener production methods (Su et al., 2013). As for waste management, the government encourages firms to collaborate, using a firm’s output to be the input of another firm to build up an industrial ecosystem (Feng & Yan, 2007; Shi et al., 2010). However, at that time, little evidence of the firm’s afford for cleaner production was found (Yu et al., 2015).

In 2005, the Chinese government decided to pilot a circular business model at the meso level to official government documents “National Pilot Circular Economy Program,” which is in charge of different ministries (Türkeli et al., 2018). In the first pilot phase between 2005 and 2007, a total of 27 provinces and cities were designated to pilot a circular business model at the meso level with various industries (Liu et al., 2009). The government chooses pilot cities from various areas that have various pillar industries, intending to explore the adoption ability of the circular business model throughout the country (Chen et al., 2020). Along with firms will be the research from scholars to have an insight into the implementation of the circular business model at the regional level, thereby making appropriate adjustments at the larger level (Bao et al., 2019; Yuan et al., 2006). With the collaboration of various stakeholders, the circular business model has gradually replaced the traditional linear model in the first pilot phase. The driving forces behind this rapid transformation stem from a shift in the political ideology of the Chinese government (Chen et al., 2020).

Although the first pilot phase of the circular business model has achieved specific achievements, it still encounters many obstacles that need to be further resolved (Park et al., 2010). The Chinese government has conducted an overall review of the implementation of the first pilot phase to supplement and draw lessons for the second pilot (Chen et al., 2020). In the second pilot phase in 2007, the Chinese government piloted the circular business model in 17 different provinces and cities compared to the first phase. The second pilot phase follows the implementation process of the first pilot phase. By 2009, the Chinese government had officially adopted the “Circular Economy Promotion Law” as the core policy to develop a circular economy at all levels (Chen et al., 2020; Türkeli et al., 2018)

China’s most successful example of a city or area opted to pilot the circular business model at the meso level is Dalian

(Chen et al., 2020; Ghisellini et al., 2016). Dalian has been selected to implement a number of circular business projects since it is one of China’s largest industrial hubs with the most flourishing business districts (Su et al., 2013). The municipality of Dalian made the decision to shut down small businesses with high energy consumption rates during the pilot program, promote cutting-edge technologies and equipment for large manufacturers, and control the structure of industries by luring services with low energy intensity but improving economic indicators (Su et al., 2013). The effectiveness of the adoption of circular economy policies may be attributed mostly to government backing. Local authorities aggressively urge businesses to commence their efforts to produce cleaner products, achieve environmental certification, and integrate the 3R production principles (Chen et al., 2020). At the conclusion of the pilot phase in the city, ten metrics were selected to evaluate the effectiveness of the circular economy (Ghisellini et al., 2016). The indicators are separated into the categories of energy and water efficiency, waste discharge, waste treatment, and waste recovery. In conclusion, the coordinated efforts of key stakeholders, including the government, businesses, and residents, have enabled Dalian to achieve resource use efficiency and waste management via the implementation of circular economy regulations.

It can be seen that strategies that help promote the circular business model in China are from five main aspects, with the main contribution from the government’s moderation. First, the government encourages firms to reduce natural resource consumption during production. Second, firms in turns actively design a comprehensive cleaner production framework to reduce waste generation and transit from final treatment to pollution prevention. Third, the government utilizes all available resources (human and material) to recycle trash and renewable resources to the fullest degree possible. Fourth, the government promotes the environmental protection sector, which focuses on creating tools and technology for reducing, reusing, and recycling waste and offers technical support. Finally, relevant laws and regulations are forced to strictly implemented, and a resource conservation management system has been established and completed. The regions and related departments have strengthened monitoring and management of intensive use (energy and water conservation), extensive use and recycling of renewable resources under laws and regulations to guide businesses to establish awareness about the synchronous development of the economy, resources, and environment. Under the direction of environmental protection agencies, policy formulation and environmental protection are merged. Environmental evaluation and the mechanism for granting emission licenses are tightly enforced. The willingness of eligible firms to pursue environmental management system certification is encouraged.

4.2. The challenges of practicing circular business models in China

Despite the remarkable achievements in developing a circular business model, China still faces several challenges.

First, there is still an absence of trustworthy information (Feng & Lam, 2021). Planning and designing particular scenarios for reducing, reusing, and recycling operations need current and comprehensive data. However, internal information and information from stakeholders in the supply chain necessary to construct the circular business model are currently very scarce (Bao et al., 2019). For company managers to make better financial and environmental choices in a market economy, an efficient

information system is essential; nevertheless, such informational systems are uncommon in China. In the majority of instances, reliable information is unavailable to decision makers or is not properly provided. Moreover, as a result of the framework for dispersed management, various kinds of information often belong to separate agencies, thus diminishing the effectiveness of information interchange.

Second, technology is a crucial element in the development of a circular economy (Hina et al., 2022). The business transition of firms needs an advanced technical foundation and contemporary infrastructure. Although the Chinese government has made substantial expenditures, there is still a significant technological gap between China's main cities and provinces, the primary cause of which is inadequate financial assistance. Small- and medium-sized companies, which account for 99.88% of all firms in China, have played a significant role in the development of the circular business model (Shi et al., 2010). However, the majority of these businesses lack or have little incentives to follow this approach, such as waste reduction or cleaner manufacturing. This is due to the fact that upgrading or updating equipment is often expensive and time-consuming, while the potential economic gains are limited (Xing et al., 2021).

Third, there is no circularity indicator at the enterprise level (Bao et al., 2019). China's application of the circular business model comprises three levels; however, only macro and meso level metrics are provided. Not included on the list of authorized indicators is the micro level, especially the enterprise level. However, companies play a vital role in supporting the circular economy, and a distinct set of indicators is required at this level. China is now the world's factory, using large quantities of raw materials, energy, and water. In order to provide managers and business owners with the motivation, indications, and tools needed to execute internal changes, it is vital to construct acceptable performance indicators for evaluating the performance of various firms.

Fourth, the government management structure in China is still complicated and overlapping, and local government accountability is low (Chen et al., 2020). During the pilot phase, about five ministries and many provincial municipalities jointly managed the process. A sustainable approach requires integrated management efforts, including top leadership, the active engagement of important players at all levels of government, and openness in administrative and economic policy instruments (Ma & Ortolano, 2000). Consequently, the failings in China's energy, materials, and environmental management may be primarily ascribed to management flaws.

Lastly, the government does not use financial resources aggressively to encourage businesses that follow the circular business model (Bai et al., 2014). It results in insufficient financial assistance from lending institutions and state tax incentives, which hinders enterprises' efforts to develop environmentally friendly technology. State incentives for industries to save energy, raw materials, and water are deemed insufficient as the costs of these resources continue to rise. If a company employs a classic, linear business strategy, it may simply pass on expenses to customers via price increases. Another prevalent issue in China is the lack of understanding and application of law enforcement. This deficiency is the result of a weak law enforcement culture, insufficient consequences for noncompliance, inadequate compensation for aggrieved parties (e.g., those impacted by the output of businesses), and administrative rather than criminal treatment of certain environmental offenses (Zhu et al., 2019).

5. Lesson for Developing Countries in Promoting the Circular Business Model

It can be seen that the circular business model provides a solution to reduce the tension between economic development and resource scarcity while also helping China's businesses to improve competitiveness. However, to implement the circular business mode effectively, it is necessary to simultaneously deploy this model at the micro and meso levels with the government's moderator from government (Türkeli et al., 2018).

First, China's political features and those of other emerging nations may vary significantly. Nonetheless, the top-down technique looks to be the ideal answer in this instance. Theoretically, top-down tactics are a better match for the national plan or strategies that need to be implemented in the wide sectors and areas (Ghisellini et al., 2016). Thus, the Chinese government at all levels plays the vital role in the development and maintenance of circular business models. It must be made aware that not only the government but also the heads of ministries and provinces will be accountable for the process of implementation. When issues or inefficiencies do develop, the top-down method makes it simple to trace their origin. With properly defined teams with distinct tasks, it is simpler to detect, diagnose, and resolve issues quickly and effectively.

In addition, before promulgating formal laws on the circular business model, the government in developing nations should pilot it in select provinces/cities with a favorable administrative environment, so that enterprises may be assisted in implementing the new model. During the pilot phase, there should be a partnership with academics and professionals who have experience doing research on circular economy and circular business models, so that they can analyze the outcomes and draw lessons from the pilot phase. Several studies (Chen et al., 2020; Ghisellini et al., 2016; Su et al., 2013) reveal that Dalian is a sampling city in China that achieved the goal of implementing a circular business model at the micro and meso levels. In addition to studying the experience of China as a whole, the governments of developing nations may refer to the Dalian City pilot experience and implementation of the circular business model.

In addition, governments in developing nations must create a set of micro-level metrics for measuring circularity. At this level, the circularity indicators should be customized to the features of the sector. The first emphasis of the set of indicators should be on the basics of the circular company, such as applying the 3Rs, and then the effect of the business model on the firm's financial, environmental, and social performance. Prior to synthesis, many approaches, such as principal component analysis, weighted average, hierarchical analysis process, and fuzzy synthetic assessment, should be evaluated to determine which yields the most accurate findings for the weight of each sub-criteria. Due to the diversity of company types, it is possible to rationalize industry-specific indicators so that they can be monitored accurately. For instance, a set of indicators emphasizing energy efficiency would be suitable for the cement business, but a set of indicators emphasizing water efficiency would be suitable for the pulp and paper sector.

In addition, governments in developing nations should support enterprises to create technologies that adhere to the circular business model's principles. This requires the government to accurately identify the key technology sectors and projects that are suitable for this model's current and long-term needs, as well as to strengthen scientific research and information technology transfer

by investing in R&D at both the enterprise and scientific levels. As stated in the preceding section, the rapid growth of technology in China may place significant strain on businesses in terms of initial investment capital and raise the risks associated with the capacity to invest in corporate solvency. Therefore, it is vital for companies, scientists, and specialists to collaborate in order to advise businesses on successful technology investment plans in line with their actual resources, rather than risking excessive leverage. Government and credit institutions will also provide financial and non-financial assistance to promote, regulate, and oversee the application of the circular business model.

In addition to technology, each sort of company should also be encouraged to promote innovation. Theoretically, the innovation of entrepreneurs is crucial for both incumbent and new entrant enterprises (de los Rios & Charnley, 2017). However, incumbent businesses are often unsuitable for innovation because they cannot break their commitments to existing value networks and technology paradigms in order to implement a new one (Lieder & Rashid, 2016; Macher & Richman, 2004). In the meanwhile, new entrant organizations are more adaptable and risk-taking in obtaining accomplishments, so becoming a more acceptable source of innovation for entrepreneurs (Baron & Tang, 2011). It should be mentioned that company maturity is not the most important factor in determining innovation. Entrepreneurs in any kind of business may be harmed by embracing innovation if they implement it in the wrong market (not fit for the industry) or at the wrong moment (enter too late to successfully compete) (Ansari & Krop, 2012). Innovation by entrepreneurs cannot be effective without thorough

consideration of the various environmental circumstances in which it occurs (Bhattacharya & Bloch, 2004). The notion of innovation by entrepreneurs in the circular economy derives in part from that of the linear economy. The most important aspect of innovative businesses is their goal to eliminate negative environmental externalities (Díaz-García et al., 2015). Numerous concepts, such as environmental innovation, green innovation, eco-innovation, clean technologies, sustainable technologies, and sustainability-oriented innovation, have been proposed in the existing research to reflect innovation toward pro-environmental economic models (Demirel & Danisman, 2019). Considered a wider word, eco-innovation is being used in scientific papers that may be more suitable for businesses adopting a circular business model (de Jesus et al., 2018).

Increasing community knowledge and engagement in activities connected to the establishment of a circular business model is also required. Such events may assist firms exchange experiences from which they can learn and apply lessons. In addition, firms may strengthen their mutual understanding and camaraderie via information sharing, which will serve as a strong platform for future collaboration in fostering circular supply chains.

Lastly, the obstacles that impede the effective adoption of the circular business model in China are the issues that other developing nations must foresee and aggressively address from the outset. Governments must take urgent measures to promote the adoption of the circular business model on a larger and more comprehensive scale in their respective nations. Considering the complexity and large disparities within sectors of the economy, if this trend of adopting this model is not continued, stakeholders will quickly revert to the

Table 1
Implications for developing countries from China’s practices of circular business model

	China practices	Implications
Achievements	Implemented as a top-down national policy	Circular business model development plan carried by top-down strategies
	Encouraged manufacturers to adopt cleaner production before official applying circular business model	Encourage manufacturers to adopt activities toward circular business model, e.g., reduce, reuse, recycle before requiring them to adopt circular business model
	Piloted circular business model at the meso level to 27 provinces/cities with various industries	Promote circular business model at both micro and meso level and pilot in provinces/cities favorable to practice circular business model
	Dalian was the most successful city implementing circular business model	Study experience from successful cases such as Dalian city instead of learning the general experiences
	Researched from scholars to have an insight into the implementation	Have the companionship of scientists and stakeholders in the process of piloting and practicing
Challenges	Officially adopted the “Circular Economy Promotion Law” as the core policy	Have an official legal framework so businesses have a premise for circular business development
	China’s top priority and to be promoted in the future	Set the development of circular business model as national long-term strategies
	Lack of reliable information	Promptly provide information and knowledge to businesses about the circular business model
	Insufficient technology condition and financial support	Research the development strategies based on constrained resources; Issue appropriate financial support policies in terms of loans, taxes
	Lack of the circularity indicator in the business level	Develop a set of metrics for gauging the circularity of enterprises.
	Complex government management system and poor local government accountability	Should not create heavy administrative procedures. Only 1–2 government offices control the implementation of the circular development

previous linear business model. Future use of the notion of economy as an economic model will need significant efforts to refine current metrics and develop additional policies to address these obstacles. China's experience demonstrates that economic assistance measures remain one of the most effective ways to encourage businesses to adopt and implement the circular business model. Economic measures include of pricing reform and tax incentives, higher environmental tax rates, environmental damage liability insurance, trade restrictions and systems, and environmental product labeling. Table 1 illustrates the practices, problems, and consequences of China's advancement of the circular business model for developing nations.

6. Conclusion

By maintaining resources in circulation for as long as feasible, a circular business model contributes to the economic growth of firms, society, and the environment (Ranta et al., 2018). It is one of the most important foundations that determine the success of the circular economy. In the setting of China, a prominent emerging nation, the Chinese government has prioritized constructing a cleaner environment after decades of rapid economic expansion. This is due to the government's early awareness and determined commitment. The activities of the circular economy at all levels, including the circular economic model, have produced remarkable results in a variety of industries. When supporting the circular business model, academics from across the world have drawn from valuable experiences. However, the entire implementation of the Chinese circular business model is limited by numerous constraints. In order to offer additional advantages to developing nations and aid stakeholders in making the manufacturing process more sustainable, this article draws lessons from both China's successful techniques and its limits.

Primarily, the limitations of our study stem from the methodology used for our literature evaluation, namely the approach of purposive sampling. This may result in a replication of the selection bias seen in the evaluated literature. However, the study provides crucial contributions as an outline of China's circular business model and recommends synthesizing lessons to encourage circular business models in developing nations. The three research questions provided have also been satisfactorily addressed. It improved the clarity and simplicity of articulating what circular business models are to aid industry professionals in decision-making and the implementation of circular business models.

In China, the circular business model has been successfully implemented at the meso and micro levels. China's primary priority is the circular economy, which will continue to be supported in 2021–2025 (Ellen MacArthur Foundation, 2021). Future research will benefit from more complex, longitudinal, and expert perspectives based on China's experience, according to our recommendation.

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Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

Data Availability Statement

Data sharing not applicable – no new data generated.

References

- Ahmed, Z., Mahmud, S., & Acet, H. (2022). Circular economy model for developing countries: Evidence from Bangladesh. *Heliyon*, 8(5), e09530. <https://doi.org/10.1016/j.heliyon.2022.e09530>
- Ansari, S. S., & Krop, P. (2012). Incumbent performance in the face of a radical innovation: Towards a framework for incumbent challenger dynamics. *Research Policy*, 41(8), 1357–1374. <https://doi.org/10.1016/j.respol.2012.03.024>.
- Antikainen, M., & Valkokari, K. (2016). A framework for sustainable circular business model innovation. *Technology Innovation Management Review*, 6(7), 5–12. <https://doi.org/10.22215/timreview/1000>.
- Anwar, C. (2021). Not-for-profit journal quality/ranking lists or for-profit journal indexing: What is a better choice? *International Journal of Management, Economics and Social Sciences*, 10(1), 1–8. <https://doi.org/10.32327/IJMESS/10.1.2021.1>
- Aranda-Usón, A., Portillo-Tarragona, P., Marín-Vinuesa, L. M., & Scarpellini, S. (2019). Financial resources for the circular economy: A perspective from businesses. *Sustainability*, 11(3), 888. <https://doi.org/10.3390/su11030888>.
- Bai, L., Qiao, Q., Yao, Y., Guo, J., & Xie, M. (2014). Insights on the development progress of National Demonstration eco-industrial parks in China. *Journal of Cleaner Production*, 70, 4–14. <https://doi.org/10.1016/j.jclepro.2014.01.084>.
- Bao, Z., Lu, W., Chi, B., Yuan, H., & Hao, J. (2019). Procurement innovation for a circular economy of construction and demolition waste: Lessons learnt from Suzhou, China. *Waste Management*, 99, 12–21. <https://doi.org/10.1016/j.wasman.2019.08.031>.
- Baron, R. A., & Tang, J. (2011). The role of entrepreneurs in firm-level innovation: Joint effects of positive affect, creativity, and environmental dynamism. *Journal of Business Venturing*, 26(1), 49–60. <https://doi.org/10.1016/j.jbusvent.2009.06.002>.
- Barros, M. V., Salvador, R., De Francisco, A. C., & Piekarski, C. M. (2020). Mapping of research lines on circular economy practices in agriculture: From waste to energy. *Renewable and Sustainable Energy Reviews*, 131, 109958. <https://doi.org/10.1016/j.rser.2020.109958>.
- Bernard, H. R. (2017). *Research methods in anthropology: Qualitative and quantitative approaches*. USA: Rowman & Littlefield.
- Bhattacharya, M., & Bloch, H. (2004). Determinants of innovation. *Small Business Economics*, 22, 155–162. <https://doi.org/10.1023/b:sbej.0000014453.94445.de>.
- Chadegani, A. A., Salehi, H., Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ebrahim, N. A. (2013). A comparison between two main academic literature collections: Web of science and Scopus databases. *Asian Social Science*, 9(5), 18–26. <https://doi.org/10.5539/ass.v9n5p18>.
- Chen, Z., Chen, S., Liu, C., Nguyen, L. T., & Hasan, A. (2020). The effects of circular economy on economic growth: A quasi-natural experiment in China. *Journal of Cleaner Production*, 271, 122558. <https://doi.org/10.1016/j.jclepro.2020.122558>.
- de Jesus, A., Antunes, P., Santos, R., & Mendonça, S. (2018). Eco-innovation in the transition to a circular economy: An analytical literature review. *Journal of Cleaner Production*, 172, 2999–3018. <https://doi.org/10.1016/j.jclepro.2017.11.111>.
- de los Rios, I. C., & Charnley, F. J. S. (2017). Skills and capabilities for a sustainable and circular economy: The changing role of

- design. *Journal of Cleaner Production*, 160, 109–122. <https://doi.org/10.1016/j.jclepro.2016.10.130>.
- Demirel, P., & Danisman, G. O. (2019). Eco-innovation and firm growth in the circular economy: Evidence from European small-and medium-sized enterprises. *Business Strategy and the Environment*, 28(8), 1608–1618. <https://doi.org/10.1002/bse.2336>
- Desmond, P., & Asamba, M. (2019). Accelerating the transition to a circular economy in Africa: Case studies from Kenya and South Africa. In K. Anggraeni, M. Anantharaman, P. Schröder & T. J. Foxon (Eds.), *The circular economy and the global south: Sustainable lifestyles and green industrial development* (pp. 152–172). Taylor & Francis Group. <https://doi.org/10.4324/9780429434006-9>
- Díaz-García, C., González-Moreno, Á., & Sáez-Martínez, F. J. (2015). Eco-innovation: Insights from a literature review. *Innovation*, 17(1), 6–23. <https://doi.org/10.1080/14479338.2015.1011060>.
- Ellen Macarthur Foundation. (2021). *The circular economy opportunity for urban and industrial innovation in China*. Retrieved from: <https://emf.thirdlight.com/link/fucrb1b7wej5-x8o5gz/@/preview/2>
- Feng, K., & Lam, C. Y. (2021). An overview of circular economy in China: How the current challenges shape the plans for the future. *The Chinese Economy*, 54(5), 355–371. <https://doi.org/10.1080/10971475.2021.1875156>.
- Feng, Z., & Yan, N. (2007). Putting a circular economy into practice in China. *Sustainability Science*, 2(1), 95–101. <https://doi.org/10.1007/s11625-006-0018-1>
- Geissdoerfer, M., Pieroni, M. P., Pigosso, D. C., & Soufani, K. (2020). Circular business models: A review. *Journal of Cleaner Production*, 277, 123741. <https://doi.org/10.1016/j.jclepro.2020.123741>.
- Genç, B., & Bada, E. (2010). English as a world language in academic writing. *The Reading Matrix*, 10(2), 142–151.
- Geng, Y., Fu, J., Sarkis, J., & Xue, B. (2012). Towards a national circular economy indicator system in China: An evaluation and critical analysis. *Journal of Cleaner Production*, 23(1), 216–224. <https://doi.org/10.1016/j.jclepro.2011.07.005>.
- Ghisellini, P., Cialani, C., & Ulgiati, S. (2016). A review on circular economy: The expected transition to a balanced interplay of environmental and economic systems. *Journal of Cleaner Production*, 114, 11–32. <https://doi.org/10.1016/j.jclepro.2015.09.007>.
- Guz, A. N., & Rushchitsky, J. J. (2009). Scopus: A system for the evaluation of scientific journals. *International Applied Mechanics*, 45, 351–362. <https://doi.org/10.1007/s10778-009-0189-4>.
- Hai, H. T., Quang, N. D., Thang, N. T., & Nam, N. H. (2020). Circular economy in Vietnam. In S. K. Ghosh (Ed.), *Circular economy: Global perspective* (pp. 423–452). Springer.
- Halog, A., & Anieke, S. (2021). A review of circular economy studies in developed countries and its potential adoption in developing countries. *Circular Economy and Sustainability*, 1, 209–230. <https://doi.org/10.1007/s43615-021-00017-0>.
- Hina, M., Chauhan, C., Kaur, P., Kraus, S., & Dhir, A. (2022). Drivers and barriers of circular economy business models: Where we are now, and where we are heading. *Journal of Cleaner Production*, 333, 130049. <https://doi.org/10.1016/j.jclepro.2021.130049>.
- ING. (2015). *Rethinking finance in a circular economy*. Retrieved from: https://think.ing.com/uploads/reports/Financing_the_Circular_Economy.pdf
- Kakwani, N. S., & Kalbar, P. P. (2020). Review of Circular Economy in urban water sector: Challenges and opportunities in India. *Journal of Environmental Management*, 271, 111010. <https://doi.org/10.1016/j.jenvman.2020.111010>.
- Kirchherr, J., Piscicelli, L., Bour, R., Kostense-Smit, E., Muller, J., Huibrechtse-Truijens, A., & Hekkert, M. (2018). Barriers to the Circular Economy: Evidence from the European Union (EU). *Ecological Economics*, 150, 264–272. <https://doi.org/10.1016/j.ecolecon.2018.04.028>.
- Kirchherr, J., Reike, D., & Hekkert, M. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *Resources, Conservation and Recycling*, 127, 221–232. <https://doi.org/10.1016/j.resconrec.2017.09.005>.
- Lewandowski, M. (2016). Designing the business models for circular economy—Towards the conceptual framework. *Sustainability*, 8(1), 43. <https://doi.org/10.3390/su8010043>.
- Lieder, M., & Rashid, A. (2016). Towards circular economy implementation: A comprehensive review in context of manufacturing industry. *Journal of Cleaner Production*, 115, 36–51. <https://doi.org/10.1016/j.jclepro.2015.12.042>.
- Linder, M., & Williander, M. (2017). Circular business model innovation: Inherent uncertainties. *Business Strategy and the Environment*, 26(2), 182–196. <https://doi.org/10.1002/bse.1906>.
- Liu, Q., Li, H. M., Zuo, X. L., Zhang, F. F., & Wang, L. (2009). A survey and analysis on public awareness and performance for promoting circular economy in China: A case study from Tianjin. *Journal of Cleaner Production*, 17(2), 265–270. <https://doi.org/10.1016/j.jclepro.2008.06.003>.
- Ma, X., & Ortolano, L. (2000). *Environmental regulation in China: Institutions, enforcement, and compliance*. USA: Rowman & Littlefield Publishers.
- Macher, J. T., & Richman, B. D. (2004). Organisational responses to discontinuous innovation: A case study approach. *International Journal of Innovation Management*, 8(1), 87–114. <https://doi.org/10.1142/s1363919604000939>.
- Mathews, J. A., & Tan, H. (2016). Circular economy: Lessons from China. *Nature*, 531, 440–442. <https://doi.org/10.1038/531440a>.
- McDowall, W., Geng, Y., Huang, B., Barteková, E., Bleischwitz, R., Türkeli, S., Kemp, R., & Doménech, T. (2017). Circular economy policies in China and Europe. *Journal of Industrial Ecology*, 21(3), 651–661. <https://doi.org/10.1111/jiec.12597>.
- Mentink, B. A. S. (2014). *Circular business model innovation: A process framework and a tool for business model innovation in a circular economy*. Master's Thesis, Leiden University and Delft University of Technology.
- Mehmood, A., Ahmed, S., Viza, E., Bogush, A., & Ayyub, R. M. (2021). Drivers and barriers towards circular economy in agri-food supply chain: A review. *Business Strategy & Development*, 4(4), 465–481. <https://doi.org/10.1002/bsd2.171>
- Merli, R., Preziosi, M., & Acampora, A. (2018). How do scholars approach the circular economy? A systematic literature review. *Journal of Cleaner Production*, 178, 703–722. <https://doi.org/10.1016/j.jclepro.2017.12.112>.
- Park, J., Sarkis, J., & Wu, Z. (2010). Creating integrated business and environmental value within the context of China's circular economy and ecological modernization. *Journal of Cleaner Production*, 18(15), 1494–1501. <https://doi.org/10.1016/j.jclepro.2010.06.001>.
- Ranta, V., Aarikka-Stenroos, L., & Mäkinen, S. J. (2018). Creating value in the circular economy: A structured multiple-case analysis of business models. *Journal of Cleaner Production*, 201, 988–1000. <https://doi.org/10.1016/j.jclepro.2018.08.072>.

- Sehnm, S., Vazquez-Brust, D., Pereira, S. C. F., & Campos, L. M. (2019). Circular economy: Benefits, impacts and overlapping. *Supply Chain Management: An International Journal*, 24(6), 784–804. <https://doi.org/10.1108/SCM-06-2018-0213>
- Shao, J., Huang, S., Lemus-Aguilar, I., & Ünal, E. (2020). Circular business models generation for automobile remanufacturing industry in China: Barriers and opportunities. *Journal of Manufacturing Technology Management*, 31(3), 542–571. <https://doi.org/10.1108/JMTM-02-2019-0076>
- Shi, H., Chertow, M., & Song, Y. (2010). Developing country experience with eco-industrial parks: A case study of the Tianjin Economic-Technological Development Area in China. *Journal of Cleaner Production*, 18(3), 191–199. <https://doi.org/10.1016/j.jclepro.2009.10.002>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Stahel, W. R. (2016). The circular economy. *Nature*, 531(7595), 435–438. <https://doi.org/10.1038/531435a>
- Su, B., Heshmati, A., Geng, Y., & Yu, X. (2013). A review of the circular economy in China: Moving from rhetoric to implementation. *Journal of Cleaner Production*, 42, 215–227. <https://doi.org/10.1016/j.jclepro.2012.11.020>
- Türkeli, S., Kemp, R., Huang, B., Bleischwitz, R., & McDowall, W. (2018). Circular economy scientific knowledge in the European Union and China: A bibliometric, network and survey analysis (2006–2016). *Journal of Cleaner Production*, 197, 1244–1261. <https://doi.org/10.1016/j.jclepro.2018.06.118>
- United Nations Conference on Trade and Development. (2011). *Integration of developing countries in global supply chains, including through adding value to their exports*. Retrieved from: https://unctad.org/system/files/official-document/cid16_en.pdf
- United Nations. (2019). *Ensure sustainable consumption and production patterns*. Retrieved from: <https://unstats.un.org/sdgs/report/2019/Goal-12/>
- Veleva, V., Bodkin, G., & Todorova, S. (2017). The need for better measurement and employee engagement to advance a circular economy: Lessons from Biogen’s “zero waste” journey. *Journal of Cleaner Production*, 154, 517–529. <https://doi.org/10.1016/j.jclepro.2017.03.177>
- Wagner, M. (2007). On the relationship between environmental management, environmental innovation and patenting: Evidence from German manufacturing firms. *Research Policy*, 36(10), 1587–1602. <https://doi.org/10.1016/j.respol.2007.08.004>
- World Population Review. (2021). *Developing countries 2022*. Retrieved from: <https://worldpopulationreview.com/country-rankings/developing-countries>
- Wu, D., Li, M., Zhu, X., Song, H., & Li, J. (2015). Ranking the research productivity of business and management institutions in Asia–Pacific region: Empirical research in leading ABS journals. *Scientometrics*, 105, 1253–1272. <https://doi.org/10.1007/s11192-015-1752-x>
- Xing, M., Luo, F., & Fang, Y. (2021). Research on the sustainability promotion mechanisms of industries in China’s resource-based cities—From an ecological perspective. *Journal of Cleaner Production*, 315, 128114. <https://doi.org/10.1016/j.jclepro.2021.128114>
- Yu, F., Han, F., & Cui, Z. (2015). Evolution of industrial symbiosis in an eco-industrial park in China. *Journal of Cleaner Production*, 87, 339–347. <https://doi.org/10.1016/j.jclepro.2014.10.058>
- Yuan, Z., Bi, J., & Moriguchi, Y. (2006). The circular economy: A new development strategy in China. *Journal of Industrial Ecology*, 10(1–2), 4–8. <https://doi.org/10.1162/108819806775545321>
- Zhou, X., Song, M., & Cui, L. (2020). Driving force for China’s economic development under Industry 4.0 and circular economy: Technological innovation or structural change? *Journal of Cleaner Production*, 271, 122680. <https://doi.org/10.1016/j.jclepro.2020.122680>
- Zhu, J., Fan, C., Shi, H., & Shi, L. (2019). Efforts for a circular economy in China: A comprehensive review of policies: China’s circular economy policy. *Journal of Industrial Ecology*, 23(1), 110–118. <https://doi.org/10.1111/jiec.12754>

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