

Business & Society

Circular Economy Effects on Emerging Business Models in India

Journal:	<i>Business & Society</i>
Manuscript ID	BAS-25-0744
Manuscript Type:	Original Manuscript - Full Length
Keywords:	Circular economy, Business, Consumer
Abstract:	<p>The circular economy of India has long involved repairing, reusing, and recycling things. A frequent replacement of assets has resulted from rising consumption and affordability, which has slowed the acceptance of the circular economy and increased waste. Implementing the 5Rs is necessary at every level of the value chain. Consumer knowledge, perspective, and preparedness to engage in the circular economy are key factors in its acceptance and success. This study focuses on and addresses circular economy effects on emerging business models in India. As the victory of the circular economy model hang on the attitudes and behaviours of the burgeoning business community, this research is crucial in examining people's desire to engage in it. The current study adopted quantitative research approach. This approach identifies the statistics and prove the association among the research variables. On the base of the consequence of the research variable, interpretations would be directed in the present study. With the assistance of SPSS software tool, the result of the present study would be well-organized for authenticating the research variables. The consequence will be conducted through ANOVA and regression for assessing the organized hypothesis of the present study. The quantitative method utilizes questionnaire and survey the method for gathering primary data from 100 respondents who are stakeholders of various sectors. The conclusions of the present study figured out the effects of the circular economy on emerging business models in India.</p>

SCHOLARONE™
Manuscripts

Circular Economy Effects on Emerging Business Models in India

Abstract

The circular economy of India has long involved repairing, reusing, and recycling things. A frequent replacement of assets has resulted from rising consumption and affordability, which has slowed the acceptance of the circular economy and increased waste. Implementing the 5Rs is necessary at every level of the value chain. Consumer knowledge, perspective, and preparedness to engage in the circular economy are key factors in its acceptance and success. This study focuses on and addresses circular economy effects on emerging business models in India. As the victory of the circular economy model hang on the attitudes and behaviours of the burgeoning business community, this research is crucial in examining people's desire to engage in it. The current study adopted quantitative research approach. This approach identifies the statistics and prove the association among the research variables. On the base of the consequence of the research variable, interpretations would be directed in the present study. With the assistance of SPSS software tool, the result of the present study would be well-organized for authenticating the research variables. The consequence will be conducted through ANOVA and regression for assessing the organized hypothesis of the present study. The quantitative method utilizes questionnaire and survey the method for gathering primary data from 100 respondents who are stakeholders of various sectors. The conclusions of the present study figured out the effects of the circular economy on emerging business models in India.

Keywords: Circular economy, Business, Consumer, Ecosystem, Stakeholders

1. Introduction

Even though the circular model has been important for a long time, few studies have been conducted in this area. This is mainly because the linear growth models are more popular. By 2005, when a large gap had been found among future needs and supply in a situation with limited wealth, the focus had shifted from linear to circular. When searched on google for circular economy, it's clear how vital a circular economy framework is for businesses and policymakers' plans and strategies for sustainability.

The circular economic model develops a closed-loop ecosystem for efficient resource use and consumption.



Figure 1. Linear Economy (Esposito et al., 2017)

The circular model creates a resilient, waste-free environment that follows reducing, reusing, and recycling principles (Esposito et al., 2017). There is much effort into defining the circular economy as an industrial system that can be renewed or rebuilt with the proper purpose and planning. In its definition, the "Ellen MacArthur Foundation" focuses on three essential pillars that make up the framework for building a closed system. Materials would be used securely to get the most out of them and do the least environmental damage. It also includes caring for natural capital and making the whole system more efficient (MacArthur, 2017).

The circular economy idea is the key to combining different ways of managing waste resources (Blomsma & Brennan, 2017). It does this by drawing attention to the potential to use resources longer. Murray et al. (2017) say that the circular economy is more of a framework that tries to bring together different ways to be more environmentally friendly. Because the circular economy model tries to be thorough and include everyone, it can be linked to sustainable development. "It has also linked an economy that tries to work in harmony with the social, economic, and environmental systems in which it is embedded" (Kirchherr et al., 2017). This is done to make the future more sustainable.

Scholars have connected a few characteristics between the "circular economy model" and sustainability". Both ideas are global in scope, emphasize the creation of new products, and encourage collaboration between diverse stakeholders from various industries. The circular economy movement's proponents assert that it represents a paradigm shift for the sector since it aims to increase the "ecological, social, and economic" worth of the environment and seeks to address the problem at hand from a global

perspective (Kopnina & Blewitt, 2014) While the fundamentals of the circular economy have been available since the 1970s, there was no need for them since "there was a sufficient supply of natural resources (Stahel et al., 2013). The following factors contribute to the requirement for a circular:

- The lack of available natural resources
- The development of information technology, which has made it possible to trace items within the loop
- There has been a change in consumer behaviour patterns that have prepared us more for access than ownership.

The globe is about to decide something crucial for the future. Choosing the incorrect course may have disastrous effects on the world's ecosystems. In the current situation, there are a variety of crises affecting several global sectors. One must attempt to see the bigger picture to deal with these challenges successfully. A comprehensive viewpoint would help analyse the situation and create a solution.

Economics and the environment are closely related. Despite the tight relationship between the two, the environment receives relatively little coverage in most economics textbooks. The circular economy strategy sheds light on how environmental factors influence economic decision-making. Also, "the 3R principles—reducing, recycling, and reusing—clearly show a link between the environment and the study of economics." A circular economy was developed to address economic and environmental gaps. One of the first to present this subject was Pearce and Turner (1990).

It has been suggested that it is not feasible to deplete the number of resources used in the manufacturing process since the entire amount gets gathered as trash and thrown into the ecosystem. Kenneth Boulding explained the cyclical relationship between the earth and its environment in 1966 by describing the earth as a closed economic system. The primary driver behind the creation of codes of behaviour, rules, and policies to lessen the unfavourable effects on the environment brought on by the expansion of the economy is the rate at which environmental degradation is occurring. A paradigm shift in creating and consuming goods is necessary to progress toward a circular economy.

Most of the companies still have a tendency to function based on the standard of - Take, Make and Dispose model that will transform the raw material into a completed product and finally trade in the market place to the final customer. The consumer will throw away the product when its lifecycle ranges the expiration which results in surplus. In linear economical approach, businesses or companies never considers with what occurs to the produce when it is expired. The supposition in the linear approach is that there are immeasurable materials accessible to make the produce and there are no worries about the exhaustion of products and materials. The idea of excellence is related with novelty and long term applied is reviled upon.

Since the business revolution over the previous era, most of the business models turned around product-use- incinerate. This has remained the viewpoint of the effective industries and financial prudence around the globe and the model named "cradle-to-grave" is followed devotedly. The sequences in environment (For instance, nutrient cycles and water cycles) occur to aid the left-over of one turn into the source of another. Sustainable growth of an economy requires to imitate nature's efficacy in resource consumption and creation. Efficiency has continuously been misjudged as price-cutting and not over value formation in the commercial atmosphere. There is a growing attention through trades discovering better means and process efficacy at diverse stages of consumption and creation to endorse the moralities of circular economy (Patwa et al., 2021).

1.1 Background of the study

The circular economy of India has long included repairing, reusing, and recycling things. A frequent replacement of assets has resulted from rising consumption and affordability, which has slowed the adoption of the circular economy and increased waste. Implementing the 5Rs is necessary at every level of the value chain. Consumer knowledge, perspective, and preparedness to engage in the circular economy are key factors in its acceptance and success. The linear economic model, which goes against the fact that the world's resources are limited, was mainly used to predict India's traditional development model. Also, this strategy produced much waste at every point in the product's life cycle. So that the manufacturing sector can grow, we must not only use the limited resources wisely but also manage the secondary resources well so that it can be replaced the primary resources.

The circular economy may help reach this goal by working in a closed loop to reduce resource loss or waste as much as possible through "sharing, leasing, repair, refurbishment, and recycling." The notion of "circularity" is not merely recycling; it is an industrial process that considers trash as a resource and is restorative. After a product's life cycle is complete, efforts should be made to use it by adding value to it (MacArthur, 2017). In order to make the switch from traditional to circular, firms must modify the operations and their supply chains which are structured. Product designers must adopt a sustainable attitude (Thelen, 2018).

A "circular economy" is a way for businesses to do things that do not use up resources or make much waste. The World Economic Forum, governments, and business leaders have supported the circular economy movement. There is still doubt whether the necessary adjustments to corporate strategies and consumer habits can be made. Cross-sector collaboration and coordination are necessary for the transition to a circular economy. Governments and regulations, businesses and supply-chain operations in particular, society norms and influences, and consumer acceptance and behavior are included (Liu, 2009).

1.2 Significance of the study

The goal of the circular economy is to produce most of the resource materials accessible to us. Accordingly, the life span of product resources is prolonged. The ideology rises from mimicking nature, wherever the whole thing has a value and all the things are used. Through this process, excess turn into a new means. Transforming to a circular economy generates various job openings across several sectors, involving forestry, waste management, agriculture, bio-based industries, and research. It improves the economies of rural regions and subsidizes to social growth. Circular economy subsidizes to better resource efficacy and a more maintainable economic growth through using its main ideologies to achieve strategic benefits. This is the instance where corporations seek to lesser the ecological burdens and expand the financial characteristics of their actions. Our atmosphere can be protected through reusing and reprocessing products. This will slow down the usage of natural wealth, decrease landscape and disruption of habitats. It also aids to decrease the loss of biodiversity. Reducing the dependence of raw materials, creating jobs and saving customers money are the main goals of circular economy. Circular flow of earnings assist in learning the disputes of imbalance and refurbishment of balance. It creates an association among the customer and the producer. It aids in the research of inflows and leaks. The circular economy (CE) boosts local production, endorsing the development of small and medium-sized enterprises (SMEs), which creates circular job opportunities. India could decrease its dependence on bring in raw materials, producing prospects for local production and creates job development.

1.3 Problem statement

There is an essential alteration in the ecological and socioeconomic landscape, global awareness, population growth and technology evolution concerning the limited nature and fast depletion of wealth. Although at a gentle proportion, there is a universal consciousness that the Globe is delicate with its prudently balanced ecological unit and natural wealth. Usually, the consumption includes exploiting limited resources to produce fresh products and finally marshalling the used products into landfill locations that lacks maintainability for the future. The upcoming threats related with the growing demand–supply break because of the increasing population, growing demand for wealth and finite nature of wealth. This linear approach practices the central knowledge of the model in circular economy. Scientifically, 62 million tons of solid surplus is being produced in India in day to day life. This is corresponding to 3 million truckloads every day (Goyal et al., 2018). This dimension is anticipated to stretch 436 million heaps daily by the year 2050. From 62 million heaps of solid surplus, only 20 percentage gets preserved and the remainder is being discarded in landfill locations. This replicates the first problem relating to infrastructure level blockades and contests. There are so many disputes like an ineffective recycling procedure, lack of harmonious infrastructure, and beneath engrossed industry-level abilities, thereby confining growth, adoption, and awareness of the model in circular economy.

1.4 Research objectives

- To overview the role of circular economy on developing business models
- To analyse the influence of sustainable business models on firm competitiveness
- To identify the impact on life cycle of products through the adoption of circular economy

2. Literature Review

In the circular economy, the incorporation of maintainability is a developing paradigm which could offer a long-term idea to accomplish ecological and social maintainability aims in line of work with Maintainable Development Goal line of the United Nation. Rising scalable and maintainable influences in circular economy business models has numerous contests. While several advanced technology trading firms started as minor enterprises, oddly little is recognized about how businesses reuse material in socio-technical systems changeover in the direction of models in circular business. Study into CEBMs incorporating sustainability and ecological conservation is in its early phases even now. Increased interest has been there in maintainability and circular economy examination, but the existing study (Awan & Sroufe, 2022) is fragmented. The novelty neighboring CEBMs evades certain organizations with moderately limited proof of the provisional perspective needed to assimilate aspects of maintainability. This deficiency of proof is especially appropriate to the background of circular economy performs in SMEs in the USA concerning elements, capabilities, obstacles, and operations of victory in planning models for circular business. The existing research progresses a conceptual model for the critical achievement factors and difficulties which are portion of employing circular economy performs. Organizations should first cope tactical enablers and observe strategic enablers to attain maintainability aims. The preceding study identifies the fundamental enablers of how these abilities disturb the changeover to a CEBM that incorporates maintainability. The framework evolving from the findings highpoint the interaction of CEBM, novelty success features, and difficulties at a micro level. The analysis of a solid reuse business assists as the basis for emerging an outline for how directors could change a company and review the corporate model to evolution in the direction of a more inventive circular economy.

The aim of the existing study (Upadhyay et al., 2019) is to examine the part of the diverse circular business models in the industrial and service divisions. The preceding study is intended to exemplify the effect of CBMs in the industrial and service divisions over a combination of real-life instances. It also follows a systematic literature review method where the appropriate CBMs are discovered in the setting of the industrial and service divisions. The papers which are most cited in the background of CBMs and their insinuation in the industrial and service divisions were selected for the existing research. There is no stable timeframe smeared to finish the study. Totally, 54 articles were chosen that are cited: conversation in the background of the idea of CBMs; diverse kinds of CBM; explanation of the industrial sector; explanation of the sectors related to service; use of diverse CBMs in these mentioned two sectors; and also involved an association of the use of CBMs. Totally, 40 out of 54 papers were qualified for best significance and applied in the existing research. It was restricted to 40 articles and the information enclosed within them. The paper search was restricted to the key-words of the CBM; the insinuation of CBM; the CBM in manufacturing; the CBM in service; comparison and implementation of the circular business models.

Repair, reuse, and recycling of items have all been circularity practices in Indian civilization for a long time. A frequent replacement of assets has resulted from rising consumption and affordability, which has slowed the adoption of the circular economy and increased waste. Implementing the 5Rs is necessary at every level of the value chain. Consumer knowledge, perspective, and preparedness to engage in the circular economy are key factors in its acceptance and success. The linear economic model, which goes against the fact that the world's resources are limited, was mainly used to predict India's traditional development model. Also, this strategy produced much waste at every point in the product's life cycle. So that the manufacturing sector can grow, we must not only use the limited resources wisely but also manage the secondary resources well so that it can replace the main resources. The circular economy may help reach this goal by working in a closed loop to reduce resource loss or waste as much as possible through "sharing, leasing, repair, refurbishment, and recycling". "Circularity" is not just recycling; it's an industrial process that looks at trash as a resource and works to fix things. After a product's life cycle is complete, efforts should be made to use it by adding value to it (MacArthur, 2017). In order to make the switch from traditional to circular, firms must modify how it is operated and how their supply chains are structured. Product designers must adopt a sustainable attitude.

Justification for adopting circularity: a multi-stakeholder business perspective

The topic of circular economy is rapidly developing and offers the potential for a lucrative business. Circular economy was one of the G20's agenda items, and G20 nations are developing and implementing plans to accomplish the SDGs by incorporating circular economy processes. It is now one of the primary topics of debate in politics. The Indian government has started several initiatives to carry out the "Paris Agreement and the Sustainable Development Goals", which align with the stated components of the circular economy. Because of their fragmentation and lack of a systematic approach, these methods make it difficult for businesses to embrace circular models or practices (Blomberg et al., 2023). The policies under discussion continue to concentrate on particular regions, and the method used needs to be more organized and methodical. Businesses that seek to implement circular economy concepts have a problem as a result. There is a need for more financial resources to engage in business incorporating circularity initiatives, such as replacing limited and dangerous materials and resources with restorative, cleaner, and more regenerative ones.

Processes in the circular economy

Reduce	Reuse	Recycle	Re-manufacture	Repair / refurbish
Efficient utilization of primary resources. Use of renewable energy Sources	Reuse the useful parts / components of a product, To promote greater use of product-as-a service through Sharing Platforms.	Creation of a closed loop system to utilize waste/discarded material as a source of secondary resource, through extensive Recycling	Creating new products by utilizing waste multi-sector industry co-operation and Coordination	Extension and preservation of product's life by innovative designs for the future.(ensuring it at the time of designing) Which in usage maximize lifetime through repair, refurbish and upgrade and may extend a second life through take Back strategy

Circular economy effects

"The consumption and production models of the economy may be altered via introducing disruptive business models and new processes". The significant change to a circular economy will cause big changes in how people buy and make things, hurting the economy, society, and the environment. Many studies have been undertaken to examine and evaluate the effects of the circular economy on the Indian economy (Abad-Segura et al., 2020).

The impacts may be roughly categorized into three groups:

- "Economic Impact: Influence on GDP growth, employment, investment, etc.
- Environmental Impact: Affects resource use or pollutant levels, emission reductions, etc.
- Social Impact: Effects on Gender, Social Opportunity, and Inequality."

Economic impact

If India adopts circularity, the yearly value will increase from "Rs. 14 lakh crore (US\$ 218 billion) in 2030 to Rs. 40 lakh crore (US\$ 624 billion) in 2050," EMF (2021). This conclusion has been reached based on prices at three different emphasis points. Comparison to linear development, and circular

development has substantially lower costs to deliver the same utility levels. By 2030, the savings will amount to around 11% of the current GDP; by 2050, the will amount be nearly 30%. By using circularity, firms may reduce their overall material costs, boosting their profitability. Cheaper goods and services and less traffic and pollution are possible outcomes of a circular economy (Sehnem et al., 2019).

- Circular models will lower service provision costs.
- A portion of the money will be given to the company; the remainder will raise the discretionary income.
- India's programs like the "Pradhan Mantri Awas Yojana" and the National Food Security Mission" can be accomplished because of the lower expenses.

By 2050, the number of kilometres driven on roads will have decreased by 38%, as will the amount of time spent in traffic and congestion. The circular scenario will also feature zero-emission cars and aid in lowering costs while lowering pollution and its detrimental impacts on health. The health of farmers will improve with a 76 per cent reduction in pesticide usage. India can benefit from the link between digitization and the circular economy because of its developed IT industry, which creates the foundation for value. India is in an excellent position to take advantage of these prospects because of its easy connectivity (Bonsu, 2020).

Sharing resources and best practices among small farmers via a digital supply chain in the food system may have a significant positive impact. The use of digital devices allows for continuous transportation planning, the blending of various modes of transportation, and immediate access to mobility when it is most required. Shared solutions for floor space use are already used in cities through digitalization. The Internet of Things and the circular economy's guiding principles create enormous value-creation possibilities that established and growing businesses may seize. Government measures, such as Digital India, are encouraging these prospects (Liu et al., 2021).

With proactive reinforcement and effective use of the possibilities presented by the circular economy, India is immediately transitioning to an efficient system. The Indian system has avoided the linear approach by using efficient systems. India has discovered the substantial value that can be generated via the road to a circular economy rather than following the linear path since the system that supplies basics like food, a place to live, and transportation demands a developmental strategy (Priyadarshini & Abhilash, 2020). Although only a tiny portion of the Indian population owns a vehicle, the need for mobility has increased. A well-built and well-designed mobility system is needed in order to provide the mobility solution that is most desired and offers safe, pleasant, and convenient transit. This technology guarantees affordable transportation without the need for a vehicle and with few externalities. Notwithstanding the need for the construction of very efficient infrastructure and buildings, this kind of transportation has the potential to minimize resource and energy use over many years.

Due to its rapidly expanding market, India has a more significant comparative advantage over the other established economies. The mission would be headed in the right direction and succeed if the circularity concept had been applied to new activities from the beginning. Due to the current closed, linear structure, more extensive system reform is needed to achieve the same degree of circularity in more established and mature economies. This is India's leading edge over other established economies and high-growth markets. Compared to just 25% in the UK, around 70% of the structures anticipated to be completed by 2030 still need to be constructed. India will have a deeply ingrained circular economy if both nations implement its concepts. India has great potential to learn cutting-edge circular building techniques that it may market to other countries. As a result, switching from linear to circular will be substantially cheaper overall in India than elsewhere.

Effect on the Environment

Negative environmental externalities may be considerably reduced with a circular development route. By 2030 and 2050, greenhouse gas emissions might be 23% and 44% lower than it would be on the present growth trajectory (Joensuu et al., 2020).

- The usage of virgin materials will decrease by 24% by 2030 and 38% by 2050.
- Water use in buildings will drop by 24% and 19% by 2030 and 2050.
- The usage of synthetic fertilizer will decrease by 71% by 2050 and by 45% by 2030.

Social Effects

A few jobs will be produced, according to analysis in the literature (Bastein et al., 2013; Wijkman & Skånberg, 2015) ; however, other societal impacts have not been examined by the researchers. The currently available information is insufficient to accurately estimate the effect concerning socioeconomic factors, including gender, poverty, welfare, and vocations. The existing paper (Bicket et al., 2014; Ghisellini et al., 2016) outlines the notion of circular economy"—its definition, methods, and anticipated impact—through a literature review. The research emphasizes the circular economy approach, which can draw in companies and may have a big influence on several aspects, including the economic, social, and environmental ones. There are conflicting meanings derived from various conversations. Academics, decision-makers, and the business community may be interested in the idea but the concept's main drawback is how widely it can be used.

While research (Murray et al., 2017) on the circular economy has predicted several advantages—economic, social, and environmental—which are not able to be objectively proven. The notion of a circular economy does not consider social factors like race, gender, or socioeconomic opportunity equality. The idea that the circular economy would increase chances for innovation and enhance environmental quality is susceptible to several limitations or issues. For example, the energy required to break down, recycle, or reuse a product may be greater than the object's life.

Policies Promoting the Circular Economy

Due to population growth, changing lifestyles, and people's ambitions for better lives, India has a demand for resources in India has a tremendous problem meeting this need while also protecting the environment and society. The main problem for policymakers is providing society with balanced developmental avenues while minimizing externalities caused by resource utilization. With creative methods and policies, the framework to achieve resource use efficiency may be properly developed. The growth of the recycling economy requires forming a social force in government promotion, business entities, and public engagement, together with an explanation of the roles and responsibilities of the three parties. Using recyclable and reusable materials while using less energy during production to create high-quality products that cause the least environmental harm before being delivered to the final consumer is known as sustainable manufacturing. Resources can be produced just as quickly as it can be saved (Khatri et al., 2019). NEP, adopted in 2006, was India's significant policy for promoting sustainability. According to the National Environment Policy, only 2006 development considering the need for social justice and ecological limitations should be considered sustainable. With economic mechanisms for regulation, the Indian economy has transitioned over the past several years from command to managed regulation. In order to attain circularity, India has devised a policy combining financial assistance and advice for R&D, creating standards like ECOMARKS, public procurements, certification, and self-regulation.

2.1 Research gaps

- The existing study (Agrawal et al., 2022) has not developed a conceptual outline to develop the knowledge on circular economy and big data. No frameworks has been provided to overcome the barriers of circular economy in digital technology solutions for sustainable growth in the performance of business.
- The preceding study (Brendzel-Skowera, 2021) has not considered the effects of employing circular business models. The study has only taken small and medium-sized enterprises. Comparisons with large enterprises has not been taken into account. The contests of circular economy has not been discussed because of the fact that there is administrative and economic resources.

3. Methodology

3.1 Research Design

The current study is reliant on experiential as well as descriptive research. The current study holds quantitative study method and it practices the primary data. Gathering of these data has been achieved by review with help of surveys and then the collected data is analyzed utilizing the SPSS tool. The statistics will be collected from the stakeholders of North India. The primary data collected is nearly 100 from the stakeholders working from various sectors.

The primary stage of research design identifies the variables that contributed to the effects on business models. The factors influencing business models was explained. The research by design is quantitative and exploratory, seeking to uncover the underlying impacts of circular economy on emerging business models in India. All the positive and negative factors were considered in the study.

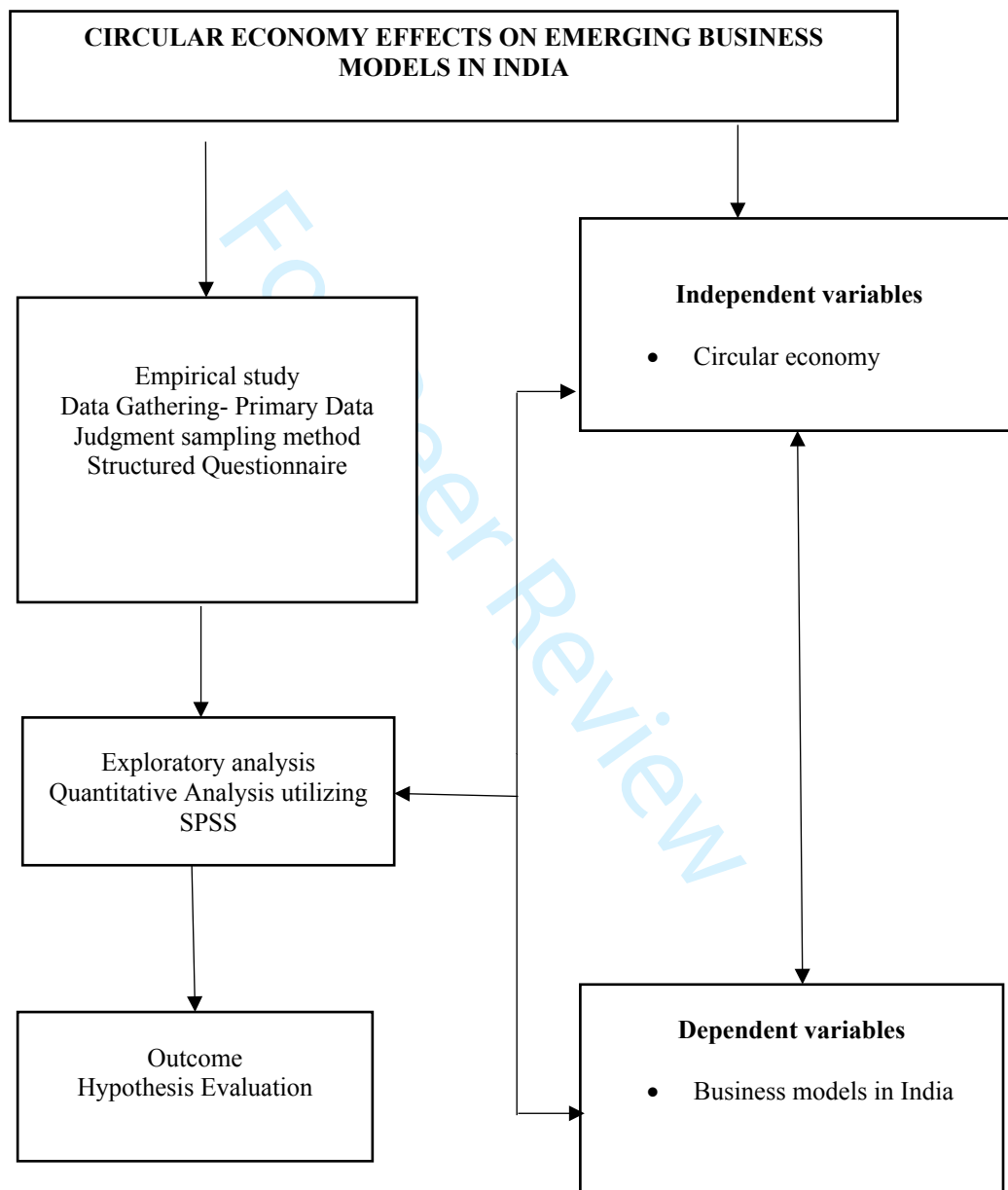


Figure 2. Research Strategy

3.2 Research hypothesis

The research hypothesis of the current study is given below,

- H1: Sustainable business models influence firm competitiveness
- H1₀: Sustainable business models does not influence firm competitiveness
- H2: Circular economy impacts the life cycle of products
- H2₀: Circular economy does not impact the life cycle of products

3.3 Research Questions

1. What is the role of circular economy on developing business models?
2. How sustainable business models influence firm competitiveness?
3. How the life cycle of products gets extended through the adoption of circular economy in emerging economies?

3.4 Data collection

Procedures of gathering data from various sources with regard to the purpose of framing the conclusions to the study variables is regarded as the data collection. The data collection procedures incorporate identification of data type, data sources along with the techniques which required to be employed. The data collection plays a significant part in the arena of research. The procedures for gathering data involves online survey, an interview, social media survey, online tracking, and transactional tracking in the business analytics. The data gathering procedures involve two approaches like primary data gathering and secondary data gathering. The data gathering is the crucial part for every researcher. In the field of academic, the researcher incorporates data collection techniques with a view of attaining the outcome relevant to the research objective.

3.5 Sample Size and Sampling method

A sampling strategy is significant because it is not easy for congregating data from each and every unit of populace (Stratton, 2021). Therefore, it is essential to choose the appropriate process for selecting sample size to incorporate in statistical sample. Furthermore, the sample size is significant for any empirical study and its major objective is to make an implication regarding the populace from the sample (Lakens, 2022). The sample size is designated as the study units' number and participants which need to be included for encountering the structured questionnaire of the research. The study has to choose appropriate number of sample for the study because large number of sample would waste of cost, time and resource. Meanwhile, small number of sample is not adequate to the prove the research hypothesis (Fowler & Lapp, 2019). Therefore, it is significant for evaluating appropriate sample size for creating significant outcome with aid of statistical procedure (Adhikari, 2021). Hence, the current study incorporates convenience sample method to gather data from 100 respondents for attaining the research objective. The targeted respondents encompasses the Stakeholders of North India.

3.6 Research Instrument

The current study will accumulate data with the aid of structured questionnaire from the stakeholders in North India. The questionnaire is the simplest technique to amass data from the respondents compared to other technique such as interview, indirect interview and in-depth interview. Hence, the current study will gather data through adopting questionnaire from the selected respondents.

3.7 Data analysis

Quantitative analysis is designated as a systematic phenomenon through congregating data and executing computational, mathematical and statistical approaches (Jung, 2019). The quantitative approach congregated data from prospective and conventional management employees with aid of sampling tools and providing online survey and polls etc. The outcome of the quantitative method is determined numerically. The numerical values are interpreted and also predict the upcoming research along with appropriate changes.

The quantitative data analysis method is used for analyzed data which has been gathered using structured questionnaire from sample respondents. The data are recorded utilizing Excel sheet for revealing study variables. The software tool known as SPSS is utilized for analyzing the study variable in Excel sheet. The outcome of the study is estimated using SPSS software.

The given techniques will be applied to identify the data and verify association between the study variable of the current research. On the basis of the outcome of the study variable, interpretations will be conducted and also essential development will be recommended in the current study. With the help of SPSS software, the outcome of the current study will be efficient for documenting the study variables. The outcome will be conducted through SPSS in order to assess the structured hypothesis of the current study.

3.8 Ethical Considerations

A common description lying for the ethical concern is the principles obtained which are morally right and are not harmful to any beings and are devoid of violating the rules and terms along with the law. In a research aspect, the ethical consideration is known to be the collection of principles which helps to carry out the entire study and research with appropriate design section and practices. These can be either an informed consent or a voluntary participation and results communication. Some of the ethical considerations include environmental responsibility, discrimination, disclosure of a corporate, espionage and any forms of harassment. A research work might face some of ethical concerns such as confidentiality and anonymity. This respective research is much devoted and are more applicable to practical ethical concern and practices.

4. Results

4.1 Demographic data of Respondents

Table 1 Demographic data of Respondents

Demographic Factor	Parameter	No. of Respondents	Percentage (%)
Age	Up to 25 years	22	22%
	26 to 40 years	33	33%
	41 to 60 years	22	22%
	Above 60 years	23	23%
	Total	100	100%
Marital status	Married	45	45%
	Single	55	55%
	Total	100	100%
Gender	Male	56	56%
	Female	44	44%
	Total	100	100%
Education	Undergraduate	34	34%
	Postgraduate	44	44%
	Doctorate	22	22%
	Total	100	100%
Work Experience	1-5years	34	34%
	6-10 years	33	33%
	11-15years	22	22%
	More than 15 years	11	11%
	Total	100	100%

Employment Status	Trainee	11	11%
	Temporary	12	12%
	Contract basis	11	11%
	Permanent	66	66%
	Total	100	100

The table 1 represent the demographic data of the respondents who have participated in the survey. Among the respondents, the majority of the respondents are around the age of 26 to 40 years. Besides, the age group above 60 years is found to be prevalent among the respondents. The age group up to 25 years and 41 to 60 years are found to be limited compared to other age groups. Based on the marital status, most of the respondents are single compared to married. On the basis of employment status, most of the respondents comes under the category of permanent whereas minimum number of respondents comes under the category of trainee and contract basis. On the basis of educational qualification, majority of the respondents have completed post-graduation. Furthermore, only minimum number of respondents are doctorate. According to the survey, most of the respondents have job to earn certain amount as earning. On the basis of work experience, most of the respondents are 1 to 5 years experienced and the least is more than 15 years experienced. The outcome of the demographic data proves that the current study has congregated data from stakeholders of various sectors.

4.2 Regression analysis

Regression analysis is utilized to test the above hypothesis. Regression analysis method is utilized for analyzing the association between the independent and dependent variable of the study (Astivia & Zumbo, 2019). This technique aids in evaluating the value of dependent variable from independent variable. Circular economy is considered as independent variable and business model is considered as dependent variable.

- **H1: Sustainable business models influence firm competitiveness**
- **H1₀: Sustainable business models does not influence firm competitiveness**

Table 2 Model Summary

Model	R	R S	Adjusted R S	SE of Estimate
1	.670 ^a	.449	.444	1.0455

a. Predictors: (Constant), Designing and producing a business model is critical for an effective firm’s function in today’s market place

Table 3 ANOVA^a

Model		SOS	df	MS	F	Sig.
1	Regression	87.462	1	87.462	80.009	.000 ^b
	Residual	107.128	98	1.093		
	Total	194.590	99			

a. Dependent Variable: Business model is a commonly used instrument for describing and exemplifying all phases of a firm.

b. Predictors: (Constant), Designing and producing a business model is critical for an effective firm’s function in today’s market place

Table 4 Coefficients^a

Model		UC		SC	t	Sig.
		B	SE	Beta		
1	C	3.659	.193		18.979	.000

15. Designing and producing a business model is critical for an effective firm's function in today's market place	.570	.064	.670	8.945	.000
---	------	------	------	-------	------

a. Dependent Variable: Business model is a commonly used instrument for describing and exemplifying all phases of a firm.

As demonstrated in table 4, unstandardized regression co-efficient along with regression model's constant term shows significant variation between dependent and independent variable. The outcome of the analysis illustrate that the challenges faced affects the growth of lean methodology. The p-value is 0.000 demonstrate that the sustainable business models influence firm competitiveness. Hence, the outcome of the current study rejects the null hypothesis.

4.3 One- way ANOVA

One-way ANOVA is utilized for determining the impact of independent factor and research objective on dependent variable and also to investigate the variation (Liang et al., 2019). The current study adopted one-way ANOVA for evaluating the impact between optimization and lean methodology.

- **H2: Circular economy impacts the life cycle of products**
- **H2₀: Circular economy does not impact the life cycle of products**

Table 5 Descriptives

Circular economy aims to generate a system where materials and resources are kept in use through strategies like reuse, repair and recycling.

	N	M	SD	SE	95% Confidence Interval for Mean		Min	Max
					LB	UB		
To greater extent	45	1.244	.4346	.0648	1.114	1.375	1.0	2.0
To some extent	33	3.667	1.9149	.3333	2.988	4.346	1.0	5.0
Rare	11	3.000	.0000	.0000	3.000	3.000	3.0	3.0
Frequently	11	4.000	.0000	.0000	4.000	4.000	4.0	4.0
Total	100	2.540	1.6479	.1648	2.213	2.867	1.0	5.0

Table 6 ANOVA

Circular economy aims to generate a system where materials and resources are kept in use through strategies like reuse, repair and recycling.

	SOS	df	MS	F	Sig.
Between Groups	143.196	3	47.732	36.470	.000
Within Groups	125.644	96	1.309		
Total	268.840	99			

The table 6 illustrates the impact between circular economy and life cycle of products. The outcome of the one-way ANOVA proves that most of the growth factors in life cycle of a product gets impacted by circular economy. The table 4 demonstrate the outcome of the ANOVA test. The outcome illustrate that p-value is .000 which proves that there is significant impact between circular economy and life cycle of products. Therefore, the outcome of one-way ANOVA rejects the null hypothesis. Therefore, life cycle of a product gets impacted by circular economy.

5. Discussions

The existing study (de Sousa Jabbour et al., 2019) aims to discuss the ways in which OMC knowledge could support the shift towards the circular economy from a ‘take, make and dispose’ perspective to a ‘dynamic capabilities’ perspective. The results of the preceding research would enable operation managers to anticipate the emerging need for capacity building within the circular economy, and scholars would be able to build on the results to develop new research topics. Likewise the current study analysed the impact of circular economy business models (CE) on the areas such as product design, product planning and control. The study also analysed the influence of sustainable business models on firm competitiveness.

For several years, many scholars and practitioners have been advocating for a ‘circular economy’ perspective. It is strongly argued that humans must live in harmony with the Earth’s natural environment. Many modern business models claim to be ‘inspired’ through this new perspective. The existing study (Whalen & Whalen, 2020) aims to reveal about ‘ecological sustainability’ and contribute little measures to achieve it. The results of the preceding study concluded the importance of public policies which allow society to achieve what institutionalists refer to as “higher efficiency”. Similarly, the influence of sustainable business models on firm competitiveness is analysed in the present study.

The adoption of circular practices in environmental management is becoming increasingly popular due to the rapid depletion of resources and the negative impacts of climate change. The existing study (Priyadarshini & Abhilash, 2020), sought to understand the association among circular economy and sustainable growth. The preceding study examined the role of the renewable energy and waste management sectors in circular economy. The results revealed that research on energy recovery from waste found to be lacking in relation to sustainable development. Similarly, the present study examined the policy setup and frameworks which promote circularity principles in India. It also identified the influence on lifecycle of products through the adoption of circular economies in emerging economies.

The existing paper (Salvador et al., 2021) aims to identify the circular economy strategies which have the most influence on the management of each business model block in circular businesses. It also identifies business model building blocks which are most affected through the circular economy strategies. The results of the analysis helped companies understand where the focus is must on their efforts to manage their businesses when handling different circular economy strategies. Similarly, the present study collected stakeholder’s perspective on circular economy and also analysed the role played by circular economy on emerging business models in India.

5.1 Limitations

Every study has its own limitation, so does the present study. The main limitation of the study is that the participants of the research are from the stakeholders of North India. Hence, the results might lack in generalizability. However, the implication provided by the research can be useful to identify the effects of circular economy on emerging business models in India.

6. Conclusion and future recommendation

The research emphasizes the circular economy approach, which can draw in businesses and may influence several aspects, including economic, social, and environmental ones. The government must be one of many entities promoting the circular economy. Developing a strategy that involves customers, retailers, and investors working together is necessary. A concept known as the "circular economy" links resource management, waste disposal, and environmental sustainability. If the circular economy idea is appropriately used, it will promote innovation and direct financial resources. India's hope for smart and sustainable development is the circular economy. The study also concludes that given the supportive environment the government has created, businesses and consumers may jointly drive the transition from linear to circular. One consumption habit is highly responsible. Customers want to use and keep items, but there is also a want to purchase and return them. It would encourage sustainable consumption if businesses could provide customers with goods that would not have to worry about owning and maintaining. Establishing a sustainable economy from the millions of tons of electronic trash disposed of each year has created a great demand and potential, thanks to technological advancements and inventions like the cloud. In order to prepare for the future, it is anticipated that businesses will need to take more responsibility for the garbage produced. E-waste management organizations will play an

increasingly more significant role in managing this waste. The circular economy is only anticipated to gain from the shift in consumption.

7. Declaration

- **Conflict of Interest:** The author reports that there is no conflict of Interest
- **Funding:** None
- **Acknowledgement:** None
- **Ethical Statement:** This research study does not include human or animal research participants. Ethical approval not applicable.

References

- Abad-Segura, E., Fuente, A. B. d. l., González-Zamar, M.-D., & Belmonte-Ureña, L. J. J. S. (2020). Effects of circular economy policies on the environment and sustainable growth: Worldwide research. *12*(14), 5792.
- Adhikari, G. P. (2021). Calculating the Sample Size in Quantitative Studies. *Scholars' Journal*, 14-29.
- Agrawal, R., Wankhede, V. A., Kumar, A., Upadhyay, A., Garza-Reyes, J. A. J. I. J. o. P., & Management, P. (2022). Nexus of circular economy and sustainable business performance in the era of digitalization. *71*(3), 748-774.
- Astivia, O. L. O., & Zumbo, B. D. (2019). Heteroskedasticity in Multiple Regression Analysis: What it is, How to Detect it and How to Solve it with Applications in R and SPSS. *Practical Assessment, Research, and Evaluation*, *24*(1), 1.
- Awan, U., & Sroufe, R. J. A. S. (2022). Sustainability in the circular economy: insights and dynamics of designing circular business models. *12*(3), 1521.
- Bastein, A., Roelofs, E., Rietveld, E., & Hoogendoorn, A. (2013). *Opportunities for a Circular Economy in the Netherlands*. Delft: TNO.
- Bicket, M., Guilcher, S., Hestin, M., Hudson, C., Razzini, P., Tan, A., . . . Watkins, E. (2014). Scoping study to identify potential circular economy actions, priority sectors, material flows and value chains.
- Blomberg, A., Kujala, J., & Heikkinen, A. (2023). Multi-Stakeholder Networks in a Circular Economy Transition: A Typology of Stakeholder Relationships. In *Stakeholder Engagement in a Sustainable Circular Economy: Theoretical and Practical Perspectives* (pp. 133-164). Springer.
- Blomsma, F., & Brennan, G. J. J. o. i. e. (2017). The emergence of circular economy: a new framing around prolonging resource productivity. *21*(3), 603-614.
- Bonsu, N. O. J. J. o. C. P. (2020). Towards a circular and low-carbon economy: Insights from the transitioning to electric vehicles and net zero economy. *256*, 120659.
- Brendzel-Skowera, K. J. S. (2021). Circular economy business models in the SME sector. *13*(13), 7059.
- de Sousa Jabbour, A. B. L., Luiz, J. V. R., Luiz, O. R., Jabbour, C. J. C., Ndubisi, N. O., de Oliveira, J. H. C., & Junior, F. H. J. J. o. c. p. (2019). Circular economy business models and operations management. *235*, 1525-1539.
- Esposito, M., Tse, T., & Soufani, K. J. T. I. B. R. (2017). Is the circular economy a new fast-expanding market? , *59*(1), 9-14.
- Fowler, S. B., & Lapp, V. (2019). Sample size in quantitative research: Sample size will affect the significance of your research. *American Nurse Today*, *14*(5), 61-63.
- Ghisellini, P., Cialani, C., & Ulgiati, S. J. J. o. C. p. (2016). A review on circular economy: the expected transition to a balanced interplay of environmental and economic systems. *114*, 11-32.
- Goyal, S., Esposito, M., & Kapoor, A. J. T. I. B. R. (2018). Circular economy business models in developing economies: lessons from India on reduce, recycle, and reuse paradigms. *60*(5), 729-740.
- Joensuu, T., Edelman, H., & Saari, A. J. J. o. c. p. (2020). Circular economy practices in the built environment. *276*, 124215.
- Jung, Y. M. (2019). Data analysis in quantitative research.
- Khatri, A., Garg, D., Dangayach, G. J. I. J. o. S. E., & Development, S. (2019). Critical success factors of sustainable manufacturing and procurement: an empirical study. *10*(3), 17-27.
- Kirchherr, J., Reike, D., Hekkert, M. J. R., conservation, & recycling. (2017). Conceptualizing the circular economy: An analysis of 114 definitions. *127*, 221-232.
- Kopnina, H., & Blewitt, J. (2014). *Sustainable business: Key issues*. Routledge.
- Lakens, D. (2022). Sample size justification. *Collabra: Psychology*, *8*(1), 33267.

Liang, G., Fu, W., & Wang, K. (2019). Analysis of t-test misuses and SPSS operations in medical research papers. *Burns & trauma*, 7.

Liu, A., Zhu, Q., Xu, L., Lu, Q., & Fan, Y. (2021). Sustainable supply chain management for perishable products in emerging markets: An integrated location-inventory-routing model. *Transportation Research Part E: Logistics and Transportation Review*, 150, 102319.

Liu, Y. J. J. o. C. P. (2009). Investigating external environmental pressure on firms and their behavior in Yangtze River Delta of China. *17*(16), 1480-1486.

MacArthur, E. (2017). Its time for a Circular Economy
<https://www.ellenmacarthurfoundation.org/assets/downloads/higher-education/EMF>

Murray, A., Skene, K., & Haynes, K. J. J. o. b. e. (2017). The circular economy: an interdisciplinary exploration of the concept and application in a global context. *140*, 369-380.

Patwa, N., Sivarajah, U., Seetharaman, A., Sarkar, S., Maiti, K., & Hingorani, K. J. J. o. b. r. (2021). Towards a circular economy: An emerging economies context. *122*, 725-735.

Priyadarshini, P., & Abhilash, P. C. J. B. T. (2020). Circular economy practices within energy and waste management sectors of India: A meta-analysis. *304*, 123018.

Salvador, R., Barros, M. V., Freire, F., Halog, A., Piekarski, C. M., & Antonio, C. J. J. o. C. P. (2021). Circular economy strategies on business modelling: Identifying the greatest influences. *299*, 126918.

Sehnm, S., Vazquez-Brust, D., Pereira, S. C. F., & Campos, L. M. J. S. C. M. A. I. J. (2019). Circular economy: benefits, impacts and overlapping. *24*(6), 784-804.

Stahel, W., Braungart, M., Lovins, A., & Tuppen, C. J. E., Geneva. (2013). A New Dynamic-Effective Business in a Circular Economy.

Stratton, S. J. (2021). Population research: convenience sampling strategies. *Prehospital and disaster Medicine*, 36(4), 373-374.

Thelen, K. J. P. o. P. (2018). Regulating Uber: The politics of the platform economy in Europe and the United States. *16*(4), 938-953.

Upadhyay, A., Akter, S., Adams, L., Kumar, V., & Varma, N. J. J. o. M. T. M. (2019). Investigating “circular business models” in the manufacturing and service sectors. *30*(3), 590-606.

Whalen, C. J., & Whalen, K. A. J. J. o. E. I. (2020). Circular economy business models: A critical examination. *54*(3), 628-643.

Wijkman, A., & Skånberg, K. J. C. o. R. (2015). The circular economy and benefits for society.