

The Analysis of the Impact of Developing Circular Economy on Enterprises Based on the Principle of Circular Economy

Fei Wang

Department of arts and science, University of Toronto, Toronto, Canada

* Corresponding Author Email: arabella.wang@mail.utoronto.ca

Abstract. This article discusses the impact of circular economy on enterprises and the reasons why enterprises develop circular economy based on the three principles of circular economy. As an important element in sustainable development, circular economy has been attached importance by more and more countries and enterprises recently. With the renewal of national policies, innovation and technology, the growth of circular economy is conducive to the sustainable development and competitiveness of enterprises.

Keywords: Circular economy, sustainable development, enterprises.

1. Introduction

In the context of global warming and the construction of ecological civilization, profound changes are taking place in the way of economic growth, social life behavior and the direction of scientific and technological development [1]. Among them, as a new model and new trend of economic progress, circular economy has been highly valued by all countries in the world. Circular economy can be regarded as a new economic development model in the 21st century [2]. Circular economy brings the economic system a big change according to the law of material circulation and the law of energy flow in the natural ecosystem and establishes a material recycling economic model of "resource-products renewable resources" [3]. The progression of circular economy can make the utilization of resources more effective and minimize the waste discharge. The development of this economic model is conducive to fundamentally resolving the long-standing contradiction between economic development and environmental conservation [4]. With the sharpening of environmental and developing issues, governments around the world have generally attached importance to the study of ecological environment and tried to find a good solution to the problems of ecological environment and development. The early cycle economy in developed countries was dominated by solid waste management. The circular economy aims to make the utilization of resources reach its maximum through reduction, reuse and recycling. Literally speaking, the implementation of reduction measures by firms will reduce production costs and generate extra benefits, thus promoting further improvement of technology development [5]. If the enterprise realizes reuse and resource utilization, it is likely to lead to different results. Due to the unreasonable pricing mechanism of resources or scale reasons, the price of using renewable resources will be higher than the price of new resources, which means that the production costs of market entities pursuing the goal of profit maximization will increase, which may lead to a situation of lower profits for enterprises. At the same time, enterprises may consume more energy in order to achieve a higher degree of circular economy, which aggravates environmental pollution and is not conducive to the development of circular economy [6]. How to achieve circular economy and waste minimization while maintaining economic growth and sustainable progression has become a problem that governments and many enterprises need to solve. Environmental resources have gradually become a scarce element and become the focus of research on recycling economy and low carbon economy. Environmental resources not only have the typical characteristics of public goods, but also are difficult to measure and evaluate, which requires government intervention [7]. Government must build more on technological innovation, managerial innovation and institutional arrangements to create market demand and promote and guide progress. More importantly, enterprises need to adjust their business and conduct cost control according to the recycling economy, so as to achieve sustainable development and lasting competitive advantage.

This paper believes that only a moderate and environmental capacity permitting cycle model is economic and sustainable. The pursuit of zero carbon emissions will lead to an increase in the burden of enterprises and a decline in social productivity, thus reducing the overall welfare of society, and ultimately cannot achieve a circular economy. Enterprises can achieve circular economy and sustainable development by changing their business models. Therefore, the research questions of this paper are:

Why should enterprises develop circular economy and how does circular economy affect enterprises?

2. Literature Review

2.1. Principles of circular economy

The most well-known and fundamental operating principle of circular economy is the "3R" principle, that is, reduce, reuse and resource. Reduce means to minimize the consumption of non-renewable resources, control the generation of waste and reduce the negative impact on the environment by optimizing the industrial structure, carrying out cleaner production, advocating green consumption and other measures in the procedure of production, circulation and consumption, mainly from the source of production, namely the input end, to reduce the amount of substances in the production process, So as to save resources and reduce waste emissions as much as possible in economic activities [8]. Reuse indicates the direct use of waste as much as possible or the reuse of waste as a product or part of the product after repair and remanufacturing. Resource means that waste is directly used as raw material to enter the production process again, so that it can be recycled and utilized. It emphasizes the maximum utilization efficiency of resources. The main difference between reuse and resource is that reuse is a process control. The aim is to upgrade the utilization efficiency of products and services [9]. The resource is to control the output end and require the product to become reusable and useful resources as much as possible after realizing its direct use value, not just harmful garbage, so as to maximize the waste into resources. The priority of the 3R principle of circular economy is completely consistent with the three processes of understanding and practice that people have experienced on the issue of environment and development [10]. First, with the intensification of resource crisis and environmental pollution, people abandoned the idea of pursuing economic growth at the cost of massive consumption of resources and environmental damage and required the use of end-of-pipe treatment to purify waste. Subsequently, since environmental pollution and resource waste are essentially consistent, the goal of waste purification will rise to waste recycling [11]. Finally, because the use of waste will increase the production cost of products, and the ultimate aim of environment and development coordination should be to achieve end-to-end monitoring. Different modes of thinking adopted by people in human economic activities will lead to different ways of resource utilization [12]. The first is the traditional use of linear economy and terminal governance. The second is a resource recovery method that can make full use of resources only through simple means of resource utilization. The third is the source control method that follows all the 3R principles and emphasizes the goal of achieving low or even zero emissions [13]. It is obvious that only the last resource utilization mode is the real cyclic economy mode. The development of the circular economy is aimed not only at reducing waste, but also at substantially reducing the consumption of natural resources and the environmental damage caused by economic development [14]. The above research provides the basic theoretical basis and principles of circular economy for this paper, which can allow this paper to discuss the business changes made by enterprises in the context of recycling economy and the different ways of resource utilization based on these principles. However, these studies have not been demonstrated in combination with real enterprises.

2.2. Practice of circular economy in different countries

Japan is the country that implements circular economy in the first place and one of the countries with the most remarkable results. Japan is a big resource consumer, but its domestic natural resources

are not rich. Most of the resources and energy needed for economic development depend on foreign imports, and its economic security is vulnerable to the impact of foreign energy and raw material prices [10]. A large amount of waste generated by mass consumption has become a major environmental issue faced by Japan in the 1980s. In the past, in waste disposal, Japan has been using incineration and landfill methods, which not only caused environmental pollution, occupied already very scarce land resources, but also caused serious waste of resources. Therefore, Japan began to explore the transformation of its economic model in the late 1980s. Japan has put into place a strategic circular economy system with the government, enterprises and individuals as the main body [15]. Among them, the government is in the core position in the strategic system of circular economy, and undertakes the functions of formulating strategic planning, establishing industrial policies, establishing legal framework, and building a technological innovation system. At the same time, it undertakes social responsibility for enterprises, and guides and supervises the formation of citizens' environmental awareness. The development of circular economy in Germany started from waste management [16]. The core of the advancement of cyclic economy in Germany is also the treatment and reuse of waste. There are companies providing garbage recycling services all over Germany. About 1 million people are directly or indirectly engaged in environmental protection. The total output value of environmental protection industry exceeds 50 billion euros, accounting for more than 18% of its international trade. In addition, Germany has a perfect legal system. Germany has promulgated a series of laws on promoting circular economy, such as the Renewable Energy Amendment Law, the EU Regulation on Waste Disposal, and so on [17]. It popularizes the idea of closed cycle of resources in recycling economy to all production departments, emphasizes that producers should be in charge of the whole life cycle of products, and stipulates the priority of waste treatment, namely, avoiding generation, recycling, and final disposal.

3. Research Design

This paper will use the secondary data method and case study method of qualitative methods. Most of the previous documents discussed the theoretical knowledge of circular economy and the policies implemented by countries to achieve circular economy. There is less discussion on the development mode of circular economy adopted by enterprises and the reasons and effects of developing circular economy. Based on this, this paper integrates the impact of circular economy on enterprises through official websites, government websites and other sources of information. In addition, because few documents discuss the application of circular economy in different enterprises, this paper will introduce specific enterprises as cases while using secondary data analysis to better understand the impact of recycle economy on different enterprises.

The researchers are collecting data to achieve the specific research goals, in contrast to other researchers who gather secondary data and may have diverse research goals [18]. In some cases, researchers or research institutes publish their data and share it with other researchers in order to optimize their use. In addition, many U.S. and international government agencies will collect the data they provide for further analysis. In many conditions, the data can be used by the public, but in some conditions, it is only applicable to approved users. Secondary quantitative data are often available from formal government sources and trustworthy agencies of research. These data are valueable sources of personal information in society, which can provide vivid background and details for research and analysis. Second-hand data has certain disadvantages [19]. In some cases, it may be outdated, biased or incorrect. But a well-trained sociologist should be able to identify and correct these problems.

Case studies are objective arguments and case studies of real management situations based on the business context and business administration aspects [20]. The cases in the case study are supposed to be typical and exemplary cases. In case analysis, researchers need to clarify the research object and understand its value. Not only does the case needs to be descriptive and authentic, but also the case information requires truthfulness and credibility. Case study papers should have first-hand

information collected, as well as interview content and statistics to capture more holistic information [20].

4. Result

4.1. Reasons for enterprises to develop circular economy

Enterprises are the main body of the market. Almost all raw materials are supplied to the market through the finished products produced by enterprises. Therefore, enterprises are the main force for the expansion of the circular economy. For a single enterprise, according to the concept of ecological efficiency, through product ecological design, cleaner production, and other measures, follow the principle of "reduce, reuse, and resource", and strive to build the internal circulation chain of the enterprise. This principle can promote the recycling of raw materials and energy, maximize the efficiency of resource utilization, and realize the dual benefits of enterprise profits and environmental protection. To realize the circular economy model of enterprises, enterprises need to improve product quality through technological innovation, reduce the material usage and energy in products and services, make full use of the original abandoned resources, and realize reduce and resource [21]. On the other hand, enterprises should also realize management innovation and system innovation, and establish a management model and incentive system to support enterprises to implement circular economy. The main motivation for enterprises to develop recycle economy can be divided into profit-seeking, mandatory and incentive. Profit-seeking means that the pursuit of economic profits is the fundamental driving force for firms to develop circular economy [22]. If an enterprise can achieve better economic profits by recycling its by-products or extracting useful substances from waste and recycling resources, it will actively develop these types of circular economy. Compulsory is more representative of the implementation of national environmental protection policies. This is the external driving force for firms to develop recycling economy. With the increasingly prominent environmental problems and increasingly stringent environmental protection policies such as pollution charges, many enterprises, especially industries, consider reducing waste emissions to reduce the cost of pollution emissions and reduce cost pressure. The last reason is motivation. The government gives certain financial subsidies or tax preferential policies to enterprises that implement circular economy, which can make up for the rising costs of some firms due to the implementation of circular economy, which has a direct role in implementing the comprehensive development of circular economy [10]. In fact, whether it is the profit-seeking nature of the enterprise itself, or the mandatory nature of external policies and the incentive of government subsidies, it can be summed up in one point: the advancement of recycle economy by enterprises are more likely to be consistent with the maximization of their own interests, otherwise enterprises will not have the motivation to develop circular economy.

4.2. Impact of enterprises' development of circular economy

Developing circular economy can improve the technological mechanisms of enterprises. In most cases, the way the cyclic economy is developed emphasizes cleaner production, conservation of resources, waste reduction, reuse and recycling of resources. The advanced technology state of the circular economy mirrors the orientation of technological progress and the productivity of the next generation. The circular economy has a strong penetrability, which has a great promotion effect on the improvement of the technological level of enterprises [23]. For example, Nestle has adopted farming methods in renewable agriculture, improved soil health and soil fertility, and protected water resources and biodiversity, which helps to absorb and capture the increased carbon levels in soil and plant biomass, better resist the impact of climate change, restore the water cycle, and increase food production. By 2025, Nestle will invest 1.2 billion Swiss francs to promote renewable agriculture in the company's supply chain [23]. Nestle realized that the food system is closely related to the earth's resources and took action to help protect and restore the earth's resources. By 2025, the absolute emissions will be 20% lower than that of 2018. By 2023, the absolute emissions will be reduced by

50% on the basis of 2018. Since 2018, the total emission reduction and removal of 1 million tons of carbon dioxide has been achieved [24].

What's more, the evolution of circular economy can strengthen the creativity capabilities of enterprises. The evolution of companies in the circular economy model requires the maximum combination of high technology and processes [25]. This requires that managers' administration concepts, management methods, human capital, technology, knowledge, equipment and technology level and other decisive production elements should be kept innovative and integrated into the new production system. The continuous updating of these factors will bring more possibilities for enterprises to innovate. Apple is continuing to strive to create a 100% closed-loop supply chain, stimulating other companies to work hard, and strive to consolidate its environmental awareness. In 2016, Apple participated a global program called RE100, where they tried to completely shift to environmentally friendly energy [26]. In 2018, Apple said its data centers, retail stores and Apple Park headquarters in Cupertino all use 100% green energy. In 2012, Apple's landfill generated more than 4.8 million pounds of waste. In 2015, that number already reached 13 million pounds. In 2018, Apple landfilled 36.5 million pounds of waste. Apple launched its Closed-Circuit Supply Chain Implementation Plan in 2017. In this case, It means that all Apple products will eventually be made of 100% of recycled materials. Apple is expected to produce 100% recyclable aluminum shells for electronics [26].

Recycled materials typically require less machining than raw ones, which means they cause much less harm to society. Nor does recycling raw materials require mining, which can cause erosion, water pollution, soil, and a multitude of other problems. In 2019, Apple encouraged consumers to adopt the trade-in plan when purchasing new iPhones. Apple's CEO remarked that over a third or more of the people entering the Apple Store to buy new phones adopted this plan. For clients, this is an interesting selection to get new appliances [26]. It supplies Apple with a stable of removable old iPhones and looks forward to recycling new internal products.

Finally, enterprises accepting circular economy and changing their business model can promote the transformation of enterprise production organization and bring greater benefits. The circular economy mode is one of retroactive production of "resource - production - consumption - resources (regeneration)". It illustrates the importance of recycling and the re-use of resources. Therefore, enterprises need to change the original independent production organization mode to organize production according to the recycling economy mode.

5. Conclusion

This paper uses secondary data method and case analysis method to discuss the impact of developing circular economy on enterprises. This paper also discusses the reasons for enterprises to develop cyclic economy under the theoretical framework of three principles of circular economy. For modern enterprises, recycle economy can bring them innovation, technological progress and changes in production mode. Encouraged by policies, more and more enterprises are more willing to develop circular economy. For enterprises, circular economy can make enterprises reduce costs and achieve sustainable development during production. Enterprises may treat waste by recycling, to save production costs and improve production efficiency. More importantly, under the social trend, circular economy will become the economic model advocated by governments and society. Conforming to this model will bring more benign development and benefits to enterprises and enable enterprises to innovate. Consumers will buy more goods, investors will increase investment, and the best talents will be attracted by organizations that turn to circular economy.

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