Factors Affecting Plastic Waste Recycling: A Study of Economic, Environmental, and Behavioral Dimensions

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Abstract

Plastic waste has been one of the environmental impacts we have to espouse in 21St century. Even though people are more conscious of it and technology keeps advancing, global recycling rates are still persistent low. In this study, we look into the dominant factors that plastic waste recycling is affected by through the lens of an all-round approach that includes economic, environmental, and behavioral aspects. The previous literature emphasizes that the recycling systems require a mix of various drivers and are not dependent on only one factor. The objective of this survey is to point out and assess these elements and the way they influence good plastic waste management, especially in the case of developing countries that have to deal with the obstacles of proper execution. The paper signifies the integration of multiple dimensions, making use of which can contribute to increasing recycling efficiency and sustainability.

1. Introduction

The increasing production of plastics and their consumption has greatly contributed to the industrially-produced plastic waste found in various places all over the world. Plastics are commonly used because of the factors like durability, low cost, and flexibility; on the contrary, the removal of plastics is associated with a number of environmental and health problems. A significant amount of the plastic waste finds its way to either the landfills or the territories of eco-friendly organisms, therefore, creating a dual effect of the rise in pollution and climate changetackle a lot of problems. The problems are not only related to technology but also to economic sustainability, environmental issues, and social attitudes.

In the less developed countries, these problems are more pronounced because of the absence of infrastructure, limited financial resources, and lack of public In the management of plastic waste, recycling is one of the most promising methods. However, even with its possible advantages, recycling systems have toknowledge. In this regard, it is essential to look into the different elements influencing plastic waste recycling collaboratively. This research analyses the economic, environmental, and behavioral aspects with the intention of providing a complete overview of the plastic waste recycling management.

2. Literature Review

Research on the recycling of plastic waste has been extensive and has covered a wide range of disciplines. The findings of the studies conclude that recycling is affected by the interplay of various factors, rather than a single one.

In addition to the technical aspects, the economic factors also play an important role in deciding if a recycling system is feasible or not. These factors include the expenses related to waste collection, processing, and recycling equipment, in addition to the market demand for recycled products. Empirical evidence reveals that high expenses and the absence of financial benefits are the main reasons for recycling to be infeasible.

Environmental concerns are given equal attention as mismanagement of waste can cause widespread pollution, release harmful greenhouse gas, and destroy ecosystems. Recycling done in an eco-friendly way not only helps to reduce the harmful effects on the environment but also promotes the conservation of resources.

Recycling outcomes are majorly influenced by the behavioral factors, such as the awareness level of the public, attitude, and other aspects of participation. As a result of insufficient human intervention, the recycling systems will still face issues even if there is enough infrastructure available.

New research provides evidence that waste management entails an economic, environmental, and social integration model. However, the absence of good and all-inclusive frameworks that consider these factors is still a problem.

3. Research Gap

Despite undergoing a wide number of studies on the subject of plastic waste recycling, the majority of them have centered only on the isolated aspects like economic feasibility, technological solutions, or environmental impacts. There is only scant research that combines economic, environmental, and behavioral factors in a unified way.

Furthermore, the current literature often fails to address the real-life scenarios that are specific to the developing countries, where the recycling networks are inadequate and public participation is scant. Accordingly, attention has to be given to the elaborate study which will assess the interaction of various factors on plastic waste recycling.

4. Research Purpose

The study is driven by the desire to attain the following main objectives.

- To analyze the economic factors affecting plastic waste recycling.

- To examine the environmental factors influencing recycling practices.

- To evaluate the role of behavioral factors in recycling participation.

- To develop an integrated framework for effective plastic waste recycling management.

After rereading or rewriting everything these seem to be the objectives of the study. The researcher is mainly focused on achieving the following objectives. The first objective is to analyze the economic factors affecting plastic waste recycling. The second is to examine the environmental factors influencing recycling practices. The third objective is to evaluate the role of behavioral factors in recycling participation. The last goal of the research is to create a comprehensive scheme for the efficient management of plastic waste recycling.

5. Research Hypothesis

Following the aims, there are some hypotheses that are suggested.

- ✓ H1: The recycling of plastic waste is greatly affected by the economy.
- ✓ H2: Environmental impacts are the main reason plastic waste is not recycled.
- ✓ H3: People don't recycle plastics because of behavioral factors.
- ✓ H4: Factors including economic, environmental, and behavioral affect the recycling of the plastic waste effectively.

6. Research Methodology:

The current investigation uses quantitative research strategies to explore the factors that affect plastic waste recycling. The data will be collected from primary sources using a structured questionnaire shared with respondents such as households, students, and working professionals.

The convenience sampling method will serve to collect data from 30-40 respondents who are mainly individuals from different professional and social backgrounds. The questionnaire will include sections related to economic factors, environmental awareness, and behavioral aspects.

The gathered information will be analyzed with the help of statistical tools like regression analysis so that we made a conclusion about independent variables (economic, environmental, behavioral factors) and the dependent variable (plastic waste recycling behavior).

7. Research Model (Explanation)

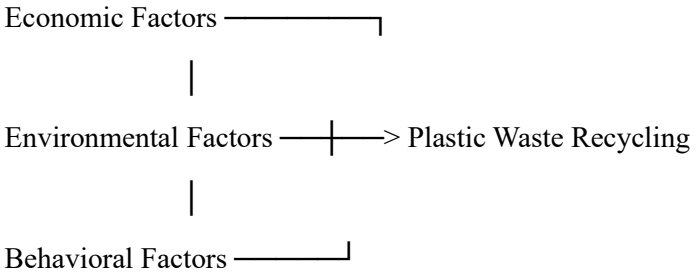
Independent Variables:

- ❖ Economic Factors
- ❖ Environmental Factors
- ❖ Behavioral Factors

Dependent Variable:

- ❖ Plastic Waste Recycling

This model shows that all three dimensions jointly influence recycling effectiveness.



8. Data Analysis (Expected Discussion)

The project work is projected to unearth the fact that all the three elements greatly affect recycling of plastic waste. Issues that are related to money like cost and incentives are likely to have a direct and strong influence on the rates of participation.

motivation for environmental consciousness is presumably going to be the driving force of people to be involved in recycling. Social issues, like belief systems, customs, and social pressure, are said to be the main factors in deciding the level of participation.

The joint impact of these issues is assumed to deliver a more potent explanation to recycling conduct than the specific factors.

9. Results and Discussion

Plastic waste recycling shall be revealed as a multifaceted problem involving not only the influences of economic and environmental factors but also behavioral ones. Recycling activities can be adversely affected by the constrained economy which includes disincentives as well as exorbitant costs.

Pollution and resource depletion which are environmental culprits, point to the necessity of recycling for sustainability. Behavioral factors such as knowledge and concern for the environment have a large impact on the level of participation.

The results indicate that the only way to effectively manage plastic waste recycling is through an integrated approach.

10. Conclusion

Plastic waste recycling presents a multifaceted problem that necessitates the amalgamation of various components. This research points out that the recycling efficiency is influenced by the collective action of the economic, environmental, and behavioral factors.

The exclusive focus on one factor is a traditional way that fails to provide solutions to the plastic waste management problems. For this reason, policymakers and other relevant parties should employ an overall strategy that looks at all the relatedfactors.

11. Recommendations/Implications

- Financing recycling projects should be embraced by the governments
- Awareness campaigns need to be carried out to encourage recycling actions
- Waste collection and recycling infrastructure should be enhanced
- Policies must back up the practices of waste management that are sustainable.

12. Limitation of the study:

Limited number of participants

- Concentration on particular regional location
- Authority over self-disclosure information

13. Future Scope:

Research in the future can:

- ✓ Count more and different demographic groups
- ✓ Perform comparative studies in different areas
- ✓ Research on technological improvements in recycling
- ✓ Research on the effect of policy on the recycling system.

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