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COMMUNITY RESPONSIVENESS TO CIRCULAR ECONOMY MODELS: A MULTIDISCIPLINARY EMPIRICAL STUDY TOWARD BUILDING A RESILIENT AND SUSTAINABLE FUTURE

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ABSTRACT
In recent times, there has been a remarkable increase in the volume and nature of waste being generated due to rapid industrialisation, population growth and irresponsible consumption patterns. As an amicable solution to the concerned issue, Circular Economy Models (CEMs) such as re-use, repair, recycle, remanufacturing and waste to best have emerged and are on the rise too. However, sustainability of such models largely depends on the community engagement and commitment. This study aims to explore the awareness and attitude of people in society and understand the opportunity and challenges of CEMs from the social entrepreneurs. The primary data was collected through a questionnaire and key informant interviews of the enterprises. The data collected from 231 respondents and 5 enterprises which was descriptively analysed using percentage and frequencies. The hypotheses were tested using nonparametric tests such as Wilcoxon Signed Rank Test, Chi Square Test etc. The inferences suggest that there is general awareness and concern about waste management, attitude towards CEMs is generally positive and the community engagement and commitment is essential for long term sustainable solutions. There are several challenges for enterprises working for the cause and if they are addressed in appropriate manner, it shall be helpful in leading a pathway for achieving Sustainable Development Goals (SDGs)

Keywords*: Waste Management, Community Engagement, Circular Economy Models, Sustainability and SDGs*

INTRODUCTION
In recent times, rising volume and variations in urban waste has been severe threat to environment, ecology and for other stakeholders of society in general. The rapid pace of urbanisation, increasing use of modern technology and logistics and growth in population has contributed to urban waste and due to limitation of infrastructure and resources its management has become crucial problem. In order to minimise this phenomenon, it is important to control the volume and impact of waste through their alternative use.

The newly evolved concept of Circular Economy (CE) revolves around the reuse, repair, remanufacture some of the waste elements resulting into reduction in quantum of waste that requires processing and management. The circular economy includes recycling and upcycling. In order to achieve the goal of effective management of waste, a number of enterprises have come up with innovative Circular Economy Models (CEMs). These CEMs not only contribute to environmental sustainability but also contribute towards generating employment of the society.

The success of CEMs largely depend on the contribution and support from various stakeholders such as local bodies, households and distributors etc. The households being large in number and has highest share in generating waste and consuming products manufactured as part of circular economy. The awareness, willingness and attitude of households is substantially significant in smooth functioning and development of circular economy.

RESEARCH OBJECTIVES
1. To understand the level of community awareness and willingness to get involved in circular economy practices.
2. To identify factors and measuring their influence on community engagement in circular waste reduction programs.
3. To explore the challenges and opportunities for circular economy enterprises
4. To suggest policy and managerial strategies for strengthening circular economy ecosystems in urban areas.

RESEARCH METHODOLOGY

Research Design
A mixed-method research design will be used:

- **Quantitative:** Structured surveys of urban households.
- **Qualitative:** Interviews with owners of circular economy enterprises

Study Area
The population for the study is households forming the part of the society and the samples shall be collected from Western suburbs of Mumbai

Sampling

- **Households:** 231 respondents using stratified random sampling.
- **Circular Economy Enterprises:** 5 enterprises selected purposively.

Data Collection Tools
- Structured questionnaire measuring awareness, willingness, factors influencing adaption of engagement etc
- Interviews with open ended questions for
- Checklist for observing CE practices including availability of bins, segregation practices, repair attitude etc

LITERATURE REVIEW

Circular Economy Concepts
(Kirchherr et al. 2017) define CE as a mechanism to regenerate the available resources for re use or alternative use to reduce the waste disposals at large. Various studies conducted in this area underline CE's potential to change the waste management system particularly in urban areas (Geissdoerfer et al., 2018).

Circular Business Models
Lacy & Rutqvist (2015) classify CE models into various categories such as re cycling, re use, re manufacturing, repair etc. It also considers upcycling as a part of circular economy. Research shows that innovative CE enterprises cannot only reduce the waste management cycle but also create opportunities for local communities in terms of employment. (Bocken et al., 2016).

Community Participation in Waste Management
Community involvement is crucial for waste segregation, recycling, and composting that facilitates waste management effectively. (Ajzen, 1991; Bandura, 2001). The past studies suggest that the level of awareness and willingness of engaging in CE practices is greatly influenced by convenience, peer pressure and benefits derived through reduction in waste.

Urban Waste Challenges
World Bank (2018) reports suggests that there has been rise in urban waste generation due to multiple reasons and the volume of waste generated has serious health implications too on the households apart from its adverse impact on environment and society in general.

Linking CE Models and Community Engagement
Recent studies (Mies & Gold, 2021) emphasize that the success and more innovative practices in CE heavily depend on community participation and enthusiasm. The government initiatives backed by local bodies such as waste segregation, effective collection system and availability of waste disposal facilities motivate households to engage more in CE activities.

RESEARCH GAP
The study is based on following gaps

- There are limited empirical studies on community-level determinants of attitude for engaging in CEMs
- The research covering circular business models with behavioural insights from households and enterprises is limited and largely remains undiscovered

- Framework linking CE operations with urban waste reduction is vaguely defined in the current research

ANALYSIS AND INTERPRETATION

A) Hypothesis 1

- **H0: Community awareness of circular economy practices is not significantly different amongst the respondents.**

Researcher has applied Wilcoxon signed rank test to check whether the median of the data is significantly different than assumed median. It was found that the test value for each of the variables is positive suggesting strong positive opinions of the respondents about their awareness level. The p values less than 0.05 indicates significant difference in population median and corresponding sample median and p value greater than 0.05 suggests otherwise.

Particulars	Test value	p value
Familiarity with concept	2.083	0.0374
Environmental impact	2.779	0.0055
Awareness on facilities	2.458	0.0289

A) Hypothesis 2

H0: Perceived trust of participating in CE activities is not significantly correlated household waste sorting behaviour.

Researcher has applied correlation test to check whether procedural convenience motivates households to implement waste segregation. The positive test value indicated by coefficient of correlation suggests that more convenience shall lead to greater tendency to participate and negative suggests otherwise. P value less than 0.05 suggests the correlation is significant and value greater than 0.05 indicates that its otherwise.

Variable	Coefficient of Correlation	p value	N
Trust in Local bodies	0.1360	0.0004	231
Trust in Enterprises	0.1788	0.0000	231
Trust in NGOs	0.1544	0.0003	231

B) Hypothesis 3

H0: Adoption of circular economy business models does not lead to measurable reduction in household-level waste generation.

Researcher has applied Man Whitney test to measure whether median indicating opinions of two categorical variables are significantly different. Here negative test value shows that the median distribution of group 1 is lower than group 2. The p value less than 0.05 suggests significant difference too.

A) Based on gender (Male as Group 1 and Female as Group 2)

Variable	Test Value	p value
Tendency of donating plastic for recycling	-2.627	0.0214
Avoidance of multi- layer packaging	-2.750	0.0059
Reusing bags, containers etc	-4.054	0.0000

B) Based on working profile (Working as Gruup 1 and Non-Working Working as Group 2)

Variable	Test Value	p value
Tendency of donating plastic for recycling	-3.5847	0.0003
Avoidance of multi- layer packaging	-2.036	0.0014
Reusing bags, containers etc	-2.458	0.0354

CONCLUSION AND SUGGESTIONS

A) Conclusion

This study has identified various aspects of consumer behaviour towards circular economy, and it can be concluded that the general awareness needs to be translated in terms of willingness to actively contribute and minimise the potential threat of urban waste management. The households understand the perceived benefits but still lack a motivation to commit themselves for the cause. The enterprises involved in circular economy face several logistical challenges to navigate through the path of sustainability.

B) Suggestions

- Tax rebates or incentives should be given to the enterprises involved in businesses under circular economy.
- Local bodies should lay down strict norms for waste segregation for ease in waste management.
- Societies involved in effective CEMs, or self-waste management mechanisms should be given rebate in local body taxes.
- The larger business entities through CSR or otherwise support the enterprises involved in circular economy activities.

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