PDUAMT Business Review, Volume V, 2023, pp. 68-80

Sustainable Entrepreneurship Through Effective Waste Management Strategies: A Study in Kokrajhar, Assam, India

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Abstract

Inappropriate waste dumping is widely recognized as a significant contributor to contamination and is closely linked to health-related concerns. The responsible management and disposal of household waste pose a pressing challenge in India's major cities. This article explores the role of entrepreneurs in the municipal solid waste market, particularly from an Indian perspective. It is estimated that global waste production will exceed four billion tons by the year 2050, more than double the amount recorded in 2016. This rapid increase can be attributed to the growing urban population and evolving consumption patterns in recent years, although this growth is expected to slow down in the coming years. Across the world, municipalities are adapting to smart waste management technologies and seeking solutions to reduce the burden of waste collection services. Entrepreneurial ventures are actively engaged in generating profits while simultaneously contributing to the preservation and efficient utilization of valuable resources. They also play a significant role in maintaining public cleanliness and, in many cases, introducing innovative environmental safeguards. The efficient and proper collection and disposal of solid waste have long been recognized as critical factors for societal cleanliness and public health. This paper aims to shed light on the strategies employed by entrepreneurs and households, as well as their perspectives on waste management in our country.

Keywords: *Inappropriate Dumping, Entrepreneurship, Health issue, Household waste, Waste management*

JEL Classification: C81, C83, C88

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Introduction

Compared to more developed countries, waste management faces numerous challenges in emerging nations. Additionally, solid waste generation rates are higher in emerging nations due to the rapid growth of urban populations and businesses (Boadi, 2005). Inappropriate solid waste management can be attributed to various factors, including inadequate financial management and transportation, deficient municipal infrastructure, unbalanced planning strategies, a lack of regard for basic aesthetics, industrial and commercial expansion, as well as attitudes and socio-cultural customs (Ishak and Dadson). To mitigate these negative impacts, it is essential to integrate the informal sector into proper solid waste management. This can be achieved by assisting in the organization of informal sector workers and adding value to recovered resources before trading them. Individuals with limited skills or education often view the absence of government services as an opportunity to earn a living. Moreover, the informal recycling industry can offer economic benefits to emerging nations by reducing capital expenditures and increasing labour productivity (Wilson, 2006).

Smart waste management encompasses various approaches that leverage expertise to enhance the efficiency, profitability, and environmental friendliness of waste collection. Many of these systems incorporate the Internet of Things (IoT), a monitoring technology that gathers and analyzes real-time data to facilitate garbage collection and

inspire future innovations. As noted by Ogawa (2005), several challenges affect waste management in developing nations, including a shortage of human resources, especially technical expertise, at both the national and local levels. Additionally, there is a lack of research and development efforts in the field of waste management. Due to the inconsistent economic and industrial development in developing nations, there often isn't sufficient funding available to establish a sustainable solid waste management system. The concept of "zero waste" represents a significant breakthrough in the pursuit of full sustainability in waste management systems in the twenty-first century (Zaman & Lehmann, 2011).

The Environmental Protection Agency (EPA) reports that roughly 75% of waste is recyclable, but regrettably, only around 30% of decomposable materials are recycled. Given that households collectively generate slightly more than 2 billion tonnes of waste each year, this amounts to a significant volume of unnecessary waste ending up in landfills and rivers. Furthermore, there remains a notable lack of demographic and socioeconomic diversity within sustainable and circular business initiatives. The majority of efforts have predominantly focused on high-tech, high-growth businesses founded by men, inadvertently excluding female, minority, and low-income entrepreneurs from participating in these sustainability initiatives (Neumeyer and Santos, 2018).

Waste Management in India

The increase in population and improved living standards contribute to a surge in solid waste generation, impacting both urban and rural areas across the country. In India, as in many other nations, there is a noticeable contrast between urban and rural solid waste management. However, with rapid urbanization, the widespread adoption of the "use and dispose" mentality, and increased communication between urban and rural regions, the gap between the two is narrowing.

Solid waste in rural areas tends to be more biodegradable, while urban waste contains a higher proportion of non-biodegradable components like plastics and packaging materials. Nonetheless, both urban and rural areas often exhibit a problematic attitude towards solid waste and its disposal, with the prevailing practice being to "keep rubbish out of sight."

In India, urban local authorities, often referred to as municipal corporations or councils, are responsible for public health-related activities, including solid waste management. However, with growing public and political awareness, as well as new opportunities arising from economic growth, solid waste management is now receiving the attention it deserves. Over the past few decades, the number of initiatives undertaken by the government, NGOs, commercial enterprises, and the general public has significantly increased.

Despite these efforts, landfilling remains the predominant method of solid waste disposal in many countries worldwide, including India. The principles of waste management often revolve around the 3Rs:

Reducing: This involves minimizing our overall consumption, respecting our natural resources, consuming only what is necessary, and rejecting unnecessary excess.

Reuse: Reuse is essential for prolonging the lifespan of the items we use. It includes repairing or upcycling our belongings to give them new life, reducing the need for disposal.

Recycling: Recycling the waste, we generate is crucial for closing the loop in a continuous economic model, where materials are reused and repurposed rather than discarded.

These 3R principles serve as a guide to more sustainable and responsible waste management practices.

The existing studies voids The global waste issue is a persistent challenge that shows no signs of disappearing anytime soon. Existing waste management systems are often ill-equipped to handle the growing volume of waste generated due to increasing populations. To bridge this gap, communities need to implement smart waste management solutions that can enhance efficiency, reduce collection costs, and divert more waste away from landfills.

The manufacturing process has evolved into a complex system that relies heavily on composite and hazardous materials. Consequently, the waste generated today comes from a variety of sources, poses environmental risks, and presents significant sustainability challenges. The diversity of waste sources often forces decision-makers to resort to inefficient and environmentally damaging waste management options, such as landfills. In urban areas, the scarcity of disposal sites further complicates waste management, necessitating alternative strategies (Wen et al., 2009).
There is limited prior research on waste management, and this study aims to fill that gap by examining the individual impact of waste management and entrepreneurship.

Objectives and Hypotheses of the Study
To investigate the factors associated with the waste management system.
To assess the knowledge sharing of health and safety measures through proper waste management by households.
To examine the challenges faced by entrepreneurs in implementing waste management.
To evaluate the reliability and validity of the items in the waste management instrument.
H_0: There is no significant relationship among the dimensions of factors associated with the waste management system.
H_0: There is no significant difference between mean ranks regarding factors associated with the waste management system.

Database and Methodology

The study employed a quantitative method of data collection through the distribution of questionnaires among various respondents. The research was conducted among households in Kokrajhar, Assam, India. A questionnaire-based survey was used to gather responses from households regarding their views on waste management. The factors considered in the study were identified from previous research in the field. Respondents were randomly selected, and data were collected through the questionnaire. Only primary data from filled questionnaires were used. A Likert scale was employed to assess households' evaluations of factors associated with the waste management system. Out of 600 questionnaires distributed, 526 (87.6%) were completed and returned, 43 (8.17%) were incomplete, and 31 (5.89%) were not returned. The reliability of the filled questionnaires was evaluated.

From Table 1, it is evident that the Cronbach Alpha values for all variables range between 0.916 and 0.880. These values meet the requirement of being above 0.70, indicating a high level of internal consistency among the questionnaire items. As a result, no items needed to be deleted, and all indicators were retained for data collection.

The internal consistency assessment reveals that all variables, including "Local government need to effectively implement waste management methods," "Law and policies are made mandatory," "Waste generation and disposal are made aware," "Public education campaigns on waste management are conducted," "Government needs to find sources of fund for waste management," "Private sectors are encouraged for paid services," "Jobs creation is encouraged," "Requirements on long-term operating and maintenance costs," "Availability of equipment and facilities," "Requirement of skilled labour," "Safeguard natural resources," and "Ensure human health risks minimization," demonstrated a high level of reliability, with an overall internal consistency score of 0.916. Notably, the variable with the highest reliability was "Ensure human health risks minimization."

Table 1: Reliability Test Variables of Factors associated with waste management system

Sl. No.	Variables	Items	Cronbach's Alpha	Remarks
1	Local governments need to effectively implement waste management methods	**IF1**	0.890	Excellent
2	Law and policies are made mandatory	**IF2**	0.893	Excellent
3	Waste generation and disposal are made aware	**SF1**	0.900	Excellent
4	Public education campaigns on waste management are conducted	**SF2**	0.901	Excellent
5	Government needs to find sources of funds for waste management	**FF1**	0.895	Excellent
6	Private sectors are encouraged for paid services	**FF2**	0.897	Excellent
7	Job creation is encouraged	**EF1**	0.888	Excellent
8	Requirements on long-term operating and maintenance costs	**EF2**	0.880	Excellent
9	Availability of equipment and facilities	**TF1**	0.889	Excellent
10	Requirement of Skilled labourers	**TF2**	0.911	Excellent
11	Safeguard natural resources	**ENF1**	0.912	Excellent
12	Ensure human health risks minimisation	**ENF2**	0.916	Excellent

Source: Author's Compilation

As a result, all the indicators were deemed suitable for data collection, and no modifications or exclusions were required based on the internal consistency analysis.

Table 2: Reliability Test Variables of Challenges faced by Entrepreneurs in imposing waste management

Sl. No.	Variables	Items	Cronbach's Alpha	Remarks
1	Lack of financial resources	C1	0.890	Excellent
2	Lack of access to technical knowledge of equipment	C2	0.891	Excellent
3	Lack of local government support	C3	0.894	Excellent
4	Lack of sufficient staff for handling waste management	C4	0.890	Excellent
5	Lack of communication with households regarding waste disposal	C5	0.889	Excellent
6	Lack of public awareness	C6	0.896	Excellent

Source: Author's Compilation

In Table 2, it is apparent that the Cronbach Alpha values for all variables range between 0.896 and 0.890. These values meet the requirement of being above 0.70, indicating a strong level of internal consistency among the questionnaire items. Therefore, no items required deletion, and all indicators were retained for data collection.

The internal consistency analysis reveals that all variables, including "Lack of financial resources," "Lack of access to technical knowledge of equipment," "Lack of local

government support," "Lack of sufficient staff for handling waste management," "Lack of communication with households regarding waste disposal," and "Lack of public awareness," demonstrated a robust level of reliability, with an overall internal consistency score of 0.896. Notably, the variable with the highest reliability was "Lack of public awareness."
As a result, all the indicators were deemed suitable for data collection, and there was no need for modifications or exclusions based on the internal consistency analysis.

Results and Discussion

The demographic profile of respondents regarding waste management reveals the sample results. Out of the total respondents, 357 (67.9 per cent) are female, while 169 (32.1 per cent) are males.
Among the respondents, 143 (27.2 per cent) are unmarried, and 383 (72.8 per cent) are married.
H_0: There is no significant relationship among the dimensions of factors associated with the waste management system.

Table 3. Inter Correlation Matrix on Dimensions of Factors associated with waste management system

Dimensions	Institutional Factors	Social Factors	Financial Factors	Economic Factors	Technical Factors	Environmental Factors
Institutional Factors (IF)	1	0.889**	0.916**	0.983**	0.915**	0.816**
Social Factors (SF)	-	1	0.852**	0.926**	0.879**	0.801**
Financial Factors (FF)	-	-	1	0.942**	0.888**	0.815**
Economic Factors (EF)	-	-	-	1	0.908**	0.763**
Technical Factors (TF)	-	-	-	-	1	0.877**
Environmental Factors (ENF)	-	-	-	-	-	1

Note: ** Correlation is significant at the 0.01 level (2-tailed).

Source: Author's Compilation

Table 3 presents the correlation coefficients between various factors related to waste management.
The results are given below:

- The correlation coefficient between Institutional Factors and Social Factors is 0.889, indicating a high positive relationship of 89 per cent between Institutional Factors and Social Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Institutional Factors and Financial Factors is 0.916, suggesting a high positive relationship of 92 per cent between Institutional Factors and Financial Factors. This relationship is also statistically significant at the 1% level.
- The correlation coefficient between Institutional Factors and Economic Factors is 0.883, signifying a high positive relationship of 88 per cent between Institutional Factors and Economic Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Institutional Factors and Technical Factors is 0.915, indicating a high positive relationship of 92 per cent between Institutional Factors and Technical Factors. This relationship is statistically significant at the 1% level.

- The correlation coefficient between Institutional Factors and Environmental Factors is 0.816, denoting a high positive relationship of 82 per cent between Institutional Factors and Environmental Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Social Factors and Financial Factors is 0.852, showing a high positive relationship of 85 per cent between Social Factors and Financial Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Social Factors and Economic Factors is 0.926, indicating a high positive relationship of 93 per cent between Social Factors and Economic Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Social Factors and Technical Factors is 0.879, suggesting a high positive relationship of 88 per cent between Social Factors and Technical Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Social Factors and Environmental Factors is 0.801, signifying a high positive relationship of 80 per cent between Social Factors and Environmental Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Financial Factors and Economic Factors is 0.942, demonstrating a high positive relationship of 94 per cent between Financial Factors and Economic Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Financial Factors and Technical Factors is 0.888, denoting a high positive relationship of 89 per cent between Financial Factors and Technical Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Financial Factors and Environmental Factors is 0.815, indicating a high positive relationship of 82 per cent between Financial Factors and Environmental Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Economic Factors and Technical Factors is 0.908, showing a high positive relationship of 91 per cent between Economic Factors and Technical Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Economic Factors and Environmental Factors is 0.763, suggesting a high positive relationship of 76 per cent between Economic Factors and Environmental Factors. This relationship is statistically significant at the 1% level.
- The correlation coefficient between Technical Factors and Environmental Factors is 0.877, denoting a high positive relationship of 88 per cent between Technical Factors and Environmental Factors. This relationship is statistically significant at the 1% level.

These correlation coefficients provide valuable insights into the relationships between various factors related to waste management and indicate their strength and significance levels.

H_0: There is no significant difference between mean ranks towards factors associated with waste management system

Table 4: Friedman test for significant difference between Mean Ranks towards Factors associated with waste management system

Sl. No.	Particulars	Items	Mean Rank	Chi-Square Value	P Value
1	Local governments need to effectively implement waste management methods	**IF1**	1.39	58.537	0.000**
2	Law and policies are made mandatory	**IF2**	1.61		

3	Waste generation and disposal are made aware	**SF1**	1.38	39.103	0.000**
4	Public education campaigns on waste management are conducted	**SF2**	1.62		
5	Government needs to find sources of funds for waste management	**FF1**	1.48	1.685	0.000**
6	Private sectors are encouraged for paid services	**FF2**	1.52		
7	Job creation is encouraged	**EF1**	1.68	186.000	0.000**
8	Requirements on long-term operating and maintenance costs	**EF2**	1.32		
9	Availability of equipment and facilities	**TF1**	1.38	44.574	0.000**
10	Requirement of Skilled labourers	**TF2**	1.62		
11	Safeguard natural resources	**ENF1**	1.43	15.114	0.000**
12	Ensure human health risks minimisation	**ENF2**	1.57		

Source: Statistically analyzed data
Note: ** Denotes significance at 1 % level

Based on the analysis of mean ranks and the significance of p-values, it can be concluded that there is a significant difference between the mean ranks of various factors associated with the waste management system. The key findings for each factor category are:

Financial Factors:

- The best factor is 'Public education campaigns on waste management are conducted' (mean rank: 1.62).
- Followed by 'Waste generation and disposal are made aware' (mean rank: 1.38).
- The p-value is less than 0.01, leading to the rejection of the null hypothesis. Therefore, there is a significant difference between the mean ranks of factors related to financial aspects of waste management.

Economic Factors:

- The best factor is 'Jobs creation is encouraged' (mean rank: 1.68).
- Followed by 'Requirements on long-term operating and maintenance costs' (mean rank: 1.32).
- The p-value is less than 0.01, resulting in the rejection of the null hypothesis. This implies a significant difference in mean ranks concerning economic factors.

Technical Factors:

- The best factor is the 'Requirement of Skilled Labourers' (mean rank: 1.62).
- Followed by 'Availability of equipment and facilities' (mean rank: 1.38).
- The p-value is less than 0.01, leading to the rejection of the null hypothesis. Thus, there is a significant difference in mean ranks related to technical factors.

Environmental Factors:

- The best factor is 'Ensure human health risks minimization' (mean rank: 1.57).
- Followed by 'Safeguard natural resources' (mean rank: 1.43).
- The p-value is less than 0.01, resulting in the rejection of the null hypothesis. Therefore, there is a significant difference in mean ranks concerning environmental factors.

These findings suggest that there are notable distinctions in how various factors associated with waste management are perceived and ranked by the respondents. These differences are statistically significant, as indicated by the low p-values, reinforcing the conclusion

that there is a significant difference in mean ranks across different aspects of waste management.

Table 5: KMO and Bartlett's Test for Challenges faced by Entrepreneurs in imposing waste management

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.808
Bartlett's Test of Sphericity	Approx. Chi-Square	1699.458
	df	15
	Sig.	0.000**

Source: Author's Compilation

The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is a statistic used to assess whether factor analysis is appropriate for a given dataset. A high KMO value indicates that the dataset is suitable for factor analysis because it suggests that there is a substantial amount of common variance among the variables, making it likely that underlying factors exist.

In our case, we have a KMO value of 0.808, which is relatively high. This suggests that factor analysis is a good fit for the variables related to 'Challenges faced by Entrepreneurs in imposing waste management,' as there is a significant amount of shared variance among these variables.

Additionally, Bartlett's test of sphericity is another statistical test used to determine if the variables in a dataset are unrelated. A low p-value (typically less than 0.05 or 0.01) in Bartlett's test indicates that the variables are not unrelated and that factor analysis is appropriate.

In our analysis, we have mentioned that the p-value from Bartlett's test is less than 0.01, indicating that the test is significant at the 1% significance level. This result further supports the suitability of factor analysis for your dataset, as it suggests that the variables are not unrelated and that there are underlying factors that can be extracted through factor analysis.

In summary, both the high KMO value and the significance of Bartlett's test indicate that factor analysis is a suitable and meaningful approach for understanding the relationships among the variables related to 'Challenges faced by Entrepreneurs in imposing waste management.'

Measurement Model of Challenges Faced by Entrepreneurs in Imposing Waste Management (CWM)

Table 6 presents the results of the Confirmatory Factor Analysis (CFA) measurement model for assessing the validity of the "Challenges faced by Entrepreneurs in imposing waste management." The analysis was conducted using AMOS software to examine the relationships between the six items that make up this construct. The measurement model, which includes the CFA loadings for each item, is depicted in the figure.

Notably, all six-item factor loadings exceeded the commonly accepted range of 0.50. This implies that each item in the measurement model demonstrates a strong and significant relationship with its respective construct. These results confirm the validity of the measurement model for assessing the challenges faced by entrepreneurs in waste management.

As a result, the finalized measurement model serves as the baseline model for subsequent cross-validation and research, providing a solid foundation for investigating the challenges encountered by entrepreneurs in waste management.

Table 6: Reliability and Validity results of Challenges faced by Entrepreneurs in imposing waste management

Sl. No.	Item(s) of Challenges Faced by Entrepreneurs in Imposing Waste Management	Factor Item	CFA loading
1	Lack of financial resources	**C1**	1.000
2	Lack of access to technical knowledge of equipment	**C2**	0.838
3	Lack of local government support	**C3**	0.900
4	Lack of sufficient staff for handling waste management	**C4**	0.880
5	Lack of communication with households regarding waste disposal	**C5**	0.840
6	Lack of public awareness	**C6**	0.790

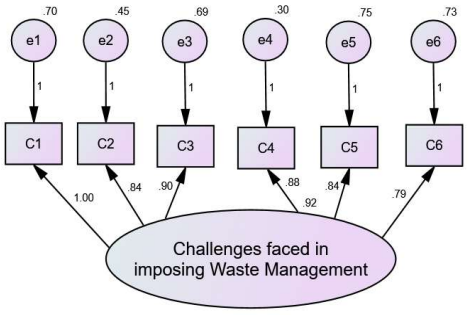
Source: Author's Compilation

Table 6 provides the validity assessment values for each item in the "Challenges faced by Entrepreneurs in imposing waste management" questionnaire. These validity values indicate the strength of the relationship between each item and the construct it represents. Here are the validity values for each item:

- Lack of financial resources: Validity value of 1.000.
- Lack of access to technical knowledge of equipment: Validity value of 0.838.
- Lack of local government support: Validity value of 0.900.
- Lack of sufficient staff for handling waste management: Validity value of 0.880.
- Lack of communications with households regarding waste disposal: Validity value of 0.840.
- Lack of public awareness: Validity value of 0.790.

These validity values help confirm the extent to which each questionnaire item accurately measures the specific challenges faced by entrepreneurs in waste management. A validity value of 1.000 indicates a perfect fit between the item and the construct, while values below 1.000 still suggest a strong and acceptable relationship. These results contribute to the overall validity and reliability of the questionnaire and the measurement model for assessing these challenges.

Figure 1. Revised Hypothesized Model for Challenges faced in imposing waste management



Measurement Model of Factors Associated with Waste Management System (FWM)

Table 7 provides the results of the Confirmatory Factor Analysis (CFA) measurement model for assessing the validity of the "Factors associated with the waste management system." The analysis was conducted using AMOS software to examine the relationships

between the six items that make up this construct. The measurement model, which includes the CFA loadings for each item, is depicted in the figure.

It is noteworthy that all six-item factor loadings exceeded the commonly accepted range of 0.50. This implies that each item in the measurement model demonstrates a strong and significant relationship with its respective construct. These results confirm the validity of the measurement model for assessing the factors associated with waste management systems.

As a result, the finalized measurement model serves as the baseline model for subsequent cross-validation and research, providing a solid foundation for investigating the factors related to waste management systems.

Table 7: Reliability and Validity results of Factors associated with the waste management system

Sl. No.	Item(s) of Factors associated with waste management system	Factor Item	CFA loading
1	Local governments need to effectively implement waste management methods	**IF1**	0.761
2	Law and policies are made mandatory	**IF2**	1.000
3	Waste generation and disposal are made aware	**SF1**	0.990
4	Public education campaigns on waste management are conducted	**SF2**	1.000
5	Government needs to find sources of funds for waste management	**FF1**	1.000
6	Private sectors are encouraged for paid services	**FF2**	0.930
7	Job creation is encouraged	**EF1**	0.810
8	Requirements on long-term operating and maintenance costs	**EF2**	1.000
9	Availability of equipment and facilities	**TF1**	0.760
10	Requirement of Skilled labourers	**TF2**	1.000
11	Safeguard natural resources	**ENF1**	0.980
12	Ensure human health risks minimisation	**ENF2**	1.000

Source: Author's Compilation

Table 7 presents the validity assessment values for each item in the "Factors associated with waste management system" questionnaire. These validity values indicate the strength of the relationship between each item and the construct it represents. Here are the validity values for each item:

- Local government needs to effectively implement waste management methods: Validity value of 0.761.
- Law and policies are made mandatory: Validity value of 1.000.
- Waste generation and disposal are made aware: Validity value of 0.990.
- Public education campaigns on waste management are conducted with a validity value of 1.000.
- The government needs to find sources of funds for waste management with a validity value of 1.000.
- Private sectors are encouraged for paid services with a validity value of 0.930.
- Jobs creation is encouraged: Validity value of 0.810.
- Requirements on long-term operating and maintenance costs: Validity value of 1.000.
- Availability of equipment and facilities: Validity value of 0.760.
- Requirement of skilled labourers: Validity value of 1.000.

- ❖ Safeguard natural resources: Validity value of 0.980.
- ❖ Ensure human health risks minimization: Validity value of 1.000.

These validity values help confirm the extent to which each questionnaire item accurately measures the specific factors associated with waste management systems. A validity value of 1.000 indicates a perfect fit between the item and the construct, while values below 1.000 still suggest a strong and acceptable relationship. These results contribute to the overall validity and reliability of the questionnaire and the measurement model for assessing these factors.

Figure 2: Revised Hypothesized Model for Factors associated with waste management system

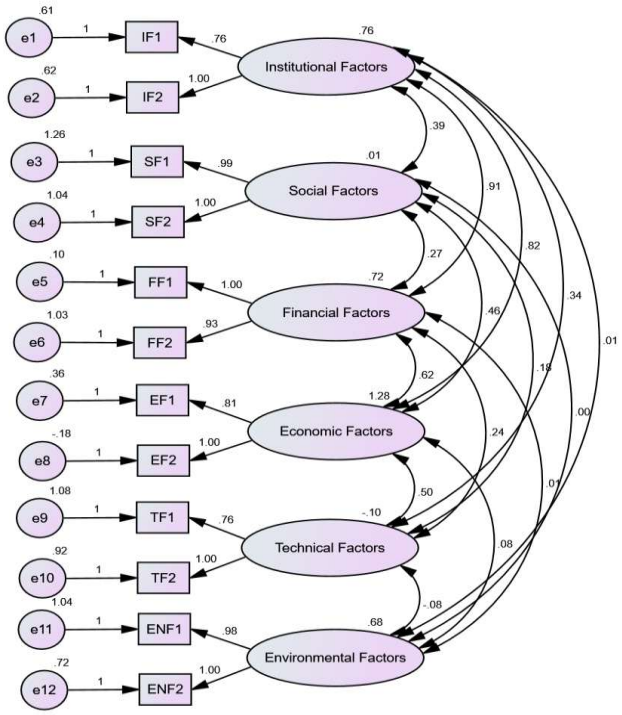


Table 8: Mean and SD of Knowledge Sharing on Waste Management

Sl. No.	Knowledge sharing on waste management	Mean	SD
1	Poor waste disposal is very harmful	2.88	1.027
2	Groundwater is polluted due to improper waste management	3.34	1.177
3	Deficiency of proper waste management leads to health issues among children	3.08	1.125

Source: Author's Compilation

Table 8 presents the descriptive statistics for three statements related to waste management perceptions. The key findings are given below:

- The mean score for the statement "Poor waste disposal is very harmful" is 2.88, with a standard deviation of 1.027. This suggests that, on average, respondents view poor waste disposal as moderately harmful.
- The mean score for the statement "Groundwater is polluted due to improper waste management" is 3.34, with a standard deviation of 1.177. This indicates that respondents perceive groundwater pollution due to improper waste management as relatively high.
- The mean score for the statement "Deficiency of proper waste management leads to health issues" is 3.08, with a standard deviation of 1.125. This implies that respondents generally believe that a lack of proper waste management is associated with health issues.

It's noteworthy that the statement "Groundwater is polluted due to improper waste management" has the highest mean score, indicating that respondents consider groundwater pollution to be a significant issue resulting from improper waste management. This perception aligns with the understanding that improper waste disposal can contaminate soil and, subsequently, groundwater, which can indeed lead to various health concerns for households in the affected region.

Overall, these findings highlight the importance of effective waste management practices to prevent environmental contamination and protect public health.

Table 9: Mean and SD of Safety Measures by Households

Sl.No.	Safety Measures by Households	Mean	SD
1	Proper washing of hands after disposal of waste	3.72	0.907
2	Regularly drink boiled water	3.63	1.022
3	Dispose of garbage daily	3.74	1.288
4	The garbage container is cleaned	3.86	1.097

Source: Author's Compilation

Table 9 provides descriptive statistics for four statements related to waste management and hygiene practices. Here are the key findings:

- The mean score for the statement "Proper washing hands after disposal of waste" is 3.72, with a standard deviation of 0.907. This suggests that, on average, respondents perceive proper handwashing after waste disposal as a common practice.
- The mean score for the statement "Regularly drink boiled water" is 3.63, with a standard deviation of 1.022. This indicates that respondents generally believe that regularly drinking boiled water is a common practice for maintaining hygiene.
- The mean score for the statement "Dispose of garbage daily" is 3.74, with a standard deviation of 1.288. This implies that disposing of garbage daily is considered a relatively common practice among respondents.
- The mean score for the statement "Garbage container is cleaned daily with soap" is 3.86, with a standard deviation of 1.097. This suggests that cleaning garbage containers daily with soap is viewed as a fairly common practice among respondents.

Interestingly, the statement "Garbage container is cleaned daily with soap" has the highest mean score, indicating that respondents consider this practice to be a more prevalent and important aspect of waste management and hygiene.

The study suggests that there is an increasing awareness and understanding of waste management practices and hygiene among society members. It highlights the importance of environmental education and public awareness campaigns, as well as the implementation of municipal initiatives to promote health and safety. Additionally, the study emphasizes the need for responsible waste disposal practices both at the household and community levels. Promoting such practices can contribute to a cleaner and safer environment, ultimately improving the overall quality of life for households.

References

Boadi, O. K., & Kuitunen, M. (2005). Environmental and Health Impacts of Household Solid Waste Handling and Disposal Practices in Third World Cities: The Case of the Accra Metropolitan Area, Ghana. *Journal of Environmental Health*, 32. ProQuest.

Connett, P. (2013). Zero waste 2020: sustainability in our hands. In *Motivating Change: Sustainable Design and Behavior in the Built Environment* (p. 202). Earthscan Publication.

Ishak, S., & Dadson, A. V. (2014). Households' awareness and perception of sanitation bylaws in Ghana: evidence from Kumasi metropolis. *Research Journal of Environmental and Earth Sciences*, 6(8), 402-407.

Neumeyer, X., & Santos, S. C. (2018). Sustainable business models, venture typologies, and entrepreneurial ecosystems: a financial network perspective. *Journal of Cleaner Production*, 172, 4565-4579.

Ogawa, H. (2005). Sustainable Solid Waste Management in Developing Countries.

Wen, L. C., Lin, H., & Lee, S. C. (2009). Review of recycling performance indicators: a study on collection rate in Taiwan. *Waste Management*, 29(8), 2248-2256.

Wilson, D. C., Velis, C., & Cheeseman, C. (2006). Role of Informal Sector Recycling in Waste Management in Developing Countries. *Habitat International*, 30, 797-808.

Zaman, A. U., & Lehmann, S. (2013). The zero-waste index: a performance measurement tool for waste management systems in a "zero waste city." *Journal of Cleaner Production*, 50, 123-132.

Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: Categories and interactions. *Business Strategy and the Environment*, 20(4), 222-237.

Dean, T. J., & McMullen, J. S. (2007). Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action. *Journal of Business Venturing*, 22(1), 50-76.

Hockerts, K., & Wüstenhagen, R. (2010). Greening Goliaths versus emerging Davids – Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship. *Journal of Business Venturing*, 25(5), 481-492.

Short, J. C., & Moss, T. W. (2016). Do small businesses with environmental certifications have better environmental performance? The case of the Green Small Business program. *Journal of Small Business Management*, 54(3), 875-894.

Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics*, 95(3), 471-486.

Wittmayer, J. M., & Schäpke, N. (2014). Action, research, and participation: Roles of researchers in sustainability transitions. *Sustainability Science*, 9(4), 483-496.

Kautonen, T., Tornikoski, E. T., & Kibler, E. (2011). Entrepreneurial intentions in the third age: The impact of perceived age norms. *Small Business Economics*, 37(2), 219-234.

Jones, G. G., & Spadafora, A. (2014). Waste, Recycling and Entrepreneurship in Central and Northern Europe, 1870-1940. *Harvard Business School General Management Unit Working Paper No. 14-084.*

Agarwal, R., Rastogi, S., & Mehrotra, A. (2009). Customers' perspectives regarding e-banking in an emerging economy. *Journal of Retailing and Consumer Services*, 16, 340-351.

Lim, Y. J., Osman, A., Salahuddin, S. N., Romle, A. R., & Abdullah, S. (2015). Factors Influencing Online Shopping Behavior: The Mediating Role of Purchase Intention. *Procedia Economics and Finance*, 35, 401-410.

Kripesh, A. S., Mahesh Prabhu, H., & Sriram, K. V. (2020). An empirical study on the effect of product information and perceived usefulness on purchase intention during online shopping in India. *International Journal of Business Innovation and Research*, 21(4), 509-522.