International Journal of Innovative Research and Scientific Studies, 8(3) 2025, pages: 2182-2194

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

The impact of waste management practices on youth development in Mombasa, Kenya: A human resource and environmental sustainability perspective

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Abstract

This study set out to explore how waste disposal practices impact youth development in Mombasa, Kenya, with a specific focus on human resource involvement and environmental sustainability. Given that solid waste management is a global challenge with local consequences, the research aimed to understand the extent to which youth participation in waste management contributes to their personal and social development. A survey research design was adopted, utilizing purposive sampling to select respondents. Out of 300 targeted youth waste collectors in urban Mombasa, a sample of 175 was drawn using the Taro Yamane formula, ensuring statistical confidence. Data was gathered through triangulated methods, primarily structured questionnaires. To ensure reliability, a pilot study was conducted in Nakuru City. The data collected was analyzed using SPSS, generating descriptive statistics and inferential analyses such as t-tests, ANOVA, and correlation analysis. Findings were presented through visuals including figures and tables. The analysis revealed a statistically significant positive correlation between youth participation in waste disposal and their development ($r = 0.439$, $p = 0.000$). Regression analysis confirmed that young people play a pivotal role in addressing urban sustainability challenges. The majority of respondents recognized and affirmed the value of youth engagement in waste management programs, linking their involvement to improved life skills, environmental awareness, and community leadership. The study concludes that youth participation in solid waste management has a meaningful and measurable impact on their development. By rejecting the null hypothesis, the research confirms that such involvement is not only beneficial for environmental outcomes but also critical in shaping proactive, empowered, and skilled youth in urban Kenya. These findings underscore the importance of integrating youth into formal waste management strategies. Policymakers, development partners, and local authorities should consider structured programs that empower young people as environmental stewards. Future research should explore longitudinal impacts, adopt qualitative approaches, and consider policy frameworks and innovative technologies to enhance waste management effectiveness. Ultimately, empowering youth in this space supports both environmental goals and sustainable youth development.

Keywords: Environmental sustainability, Urban challenges, Waste disposal, Waste management, Youth development.

DOI: 10.53894/ijirss.v8i3.6968
Funding: This study received no specific financial support.
History: Received: 24 March 2025 / **Revised:** 28 April 2025 / **Accepted:** 30 April 2025 / **Published:** 13 May 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Publisher: Innovative Research Publishing

1. Background to the Study

Solid waste management is still an auxiliary global issue concerning environmental sustainability, public health, and economic development, thereby affecting the United Nations Environment Program 2020. Rapid urbanization, population growth, and changing consumption patterns have made garbage disposal problematic, particularly in emerging countries [1]. Urban settings like Mombasa in Kenya are facing mounting waste management issues, with significant implications for human resource development and long-term environmental sustainability [2].

As Kenya's second city and the nation's economic hub, Mombasa [3] is subjected to extreme population density and industrial activity and, therefore, bears a serious garbage burden. The improper disposal of solid waste has led to environmental degradation, water contamination, and public health challenges, particularly impacting disadvantaged groups, especially children and the needy [4-6]. Despite these challenges, there is a lack of youth involvement in waste management projects, which limits their potential to provide personal growth and sustainable urban development. The global community has recognized the involvement of youth in waste management programs as a sustainable solution for fundamental socioeconomic and environmental issues [7].

Young involvement in solid waste management processes like waste gathering, recycling, and disposal can create an opportunity for developing a sense of environmental responsibility, economic empowerment, and skills [8]. Research establishes that young people actively engaged in sustainable practices gain invaluable entrepreneurial, technical, and leadership skills, which contribute to their overall development and the well-being of communities [9]. Despite this, little is known regarding the impact of disposal methods on young growth in Mombasa, which has some benefits. Existing policies and actions sometimes overlook the important role that young people can play in promoting environmental sustainability, even as they reap the various economic and social benefits associated with empowerment.

The information vacuum demands that we explore the role waste disposal methods play in young development in Mombasa. Research carried out in Colombia, emphasizing greater recycling, environmental awareness, and inventive concepts such as upcycling and waste-to-energy, demonstrates the benefits of youth participation in solid waste management [10]. These initiatives also aid with leadership, teamwork and skill development. Similarly Basu and Punjabi [11] suggest youth engagement could yield similar benefits for trash reduction and participatory circular economy projects in Mombasa, Kenya [11]. Assessing a handful of young-led waste management projects in the United States, Merrigan et al. [12]found that such initiatives contributed to reducing plastic consumption, increasing recycling, and motivating environmental action [13].

The participation of the youth strengthened their communication, advocacy, and organizational skills while empowering one another as community agents of change. Such participation in Mombasa, Banerjee and Sarkhel [14] believe, could help in developing environmental awareness and personal development, thus positioning youth as critical players in environmental sustainability and waste management [14]. Appropriately implemented waste management has been recognized as valuable within both benevolent and civic-oriented environments, fostering youth social well-being and environmental awareness. Examining the relationship between garbage disposal policies and youth development, the study sought to provide insights into effective strategies for involving youth in sustainable solid waste management initiatives. The findings will inform actions and policy recommendations for improving environmental sustainability and human capital development in Mombasa, Kenya.

1.1. Solid Waste Management Projects and Youth Participation

Many academic studies have looked at the advantages of young participation in solid waste management initiatives in many environments. Emphasizing the need for the environment to participate in such activities, Bai et al. [15] demonstrate how effective waste management lowers pollution and greenhouse gas emissions and maintains uncontaminated soil and water Bai et al. [15]. When Bhada-Tata and Hoornweg [16] claim that these waste management strategies—such as composting and recycling—are also quite important in helping to lower the carbon footprint related to trash disposal (2019). By means of waste segregation and recycling initiatives, one depends less on landfills, hence reducing the destruction of valuable land resources and lowering the leaching of harmful chemicals into the environment [17].

Apart from the impact on the surroundings, active involvement in solid waste management helps to improve public health. Poor garbage disposal might attract pests and allow diseases to proliferate [15, 17]. In this framework, United Nations Environment Programme [18] underlines that community involvement—especially incorporating young people—increases neighborhood cleanliness and lowers health hazards resulting from inadequate waste management. Effective waste segregation also helps to prevent the leaching of pollutants into the groundwater, thereby protecting public health [19]. Apart from the advantages for the environment and health, programs involving solid waste management provide a platform for youth empowerment and growth.

Young people engaged in waste management by Marello and Helwege [20] promote environmental awareness, advocacy, and leadership [20]. While Wang et al. [21] underline that practical knowledge in activities including garbage sorting, recycling, and composting is linked with life skills that can support academic performance and improve employment possibilities, participation [21]. According to Owojori et al. [22], this helps youth grow into stronger critical thinkers and

problem solvers [22]. Studies also show that young involvement in garbage management is more generally socioeconomic as well. Local employment prospects abound as a natural outgrowth of community-led trash programs, especially in the recycling and garbage collection sectors [22]. Through young participation with other peers and community members, such projects also promote community ownership and cohesiveness since they enhance social ties [22]. Likewise, by encouraging sustainable waste management techniques, it can promote economic sustainability through trash disposal and resource recovery, therefore helping to save resources [23]. Generally, young participation in solid waste management initiatives offers numerous benefits since it results in better waste management, improved environmental and health conditions, personal growth, and financial empowerment. Participating young people in initiatives is a great way to promote sustainability and community resilience as cities deal with waste management issues.

1.2. Problem Statement

Mombasa's waste management issues are increasingly prevalent, yet young people's participation in garbage disposal techniques remains minimal, thereby limiting their contribution to environmental sustainability and personal growth. Though a sizable portion of the population comprises young people, only a tiny fraction participates in solid waste management initiatives. Active participation in garbage disposal, recycling, and collection has been proven in studies to yield environmental awareness, skill development, and financial gains, as well as to change attitudes towards waste [24]. Still, no study has been conducted to evaluate how particular garbage disposal policies affect young people's development in Mombasa. This study, therefore, aims to investigate the effect of waste disposal practices on youth development, examining the extent to which participation in waste management activities influences economic empowerment, social inclusion, and environmental consciousness. The findings will help develop targeted interventions that integrate youth into waste management strategies for sustainable urban development.

1.3. Objective of the Study

To assess the effect of waste disposal practices on youth development in Mombasa, Kenya.

1.4. Research Hypothesis

H0: Waste collection activities do not significantly affect youth development in Mombasa, Kenya.

1.5. Significance of the Study

This study is vital for multiple stakeholders. First, it benefits the youth of Mombasa by enhancing their leadership, responsibility, and community engagement through solid waste management participation, preparing them for future roles in leadership and entrepreneurship.

Second, policymakers and local authorities can use the findings to design targeted programs that integrate youth into waste management, improving both sustainability and youth development.

Third, environmental and community organizations will gain insights into youth involvement in waste reduction and recycling, helping them develop more effective initiatives. Additionally, if a link between youth participation and economic growth is established, the study could highlight opportunities for entrepreneurship in waste management, fostering local economic development.

2. Theoretical Framework

2.1. Social Cognitive Theory

This study was guided by the social cognitive theory developed by Bandura [25]. Social Cognitive Theory explains how individuals learn through observation, imitation, and modeling, influenced by cognitive processes such as attention, retention, reproduction, and motivation [26]. The approach stresses the dynamic interaction between environmental, personal, and behavioral elements that shape human development. It suggests that internal cognitive processes are just as much a cause of behavior as outside reinforcement, with both internal and external factors affecting them, including self-efficacy—the belief in one's ability to successfully perform a task. Regarding waste management in Mombasa, youth could acquire trash-related behaviors through direct exposure to peers, family, and local members.

Climbers' views on waste disposal methods, social norms, and expectations of making positive contributions greatly affect their involvement. Positive reinforcement — a community-wide award or financial reward — encourages young people to actively participate in trash management projects. According to critics, the theory overtly generalizes learning because it focuses on observable behaviors and external variables, ignoring individual differences, intrinsic motivations, and personality traits [27]. Moreover, some scholars embark on the argument that the theory overemphasizes this element, neglecting other factors that motivate people, such as personal beliefs and emotions, instead prioritizing reinforcement.

Despite these criticisms, social cognitive theory is still very relevant when evaluating youth attitudes and behaviors regarding rubbish management. It provides a beneficial perspective on the impact of social and environmental factors on young people's involvement in sustainable waste management, which subsequently shapes their development and role within urban sustainability.

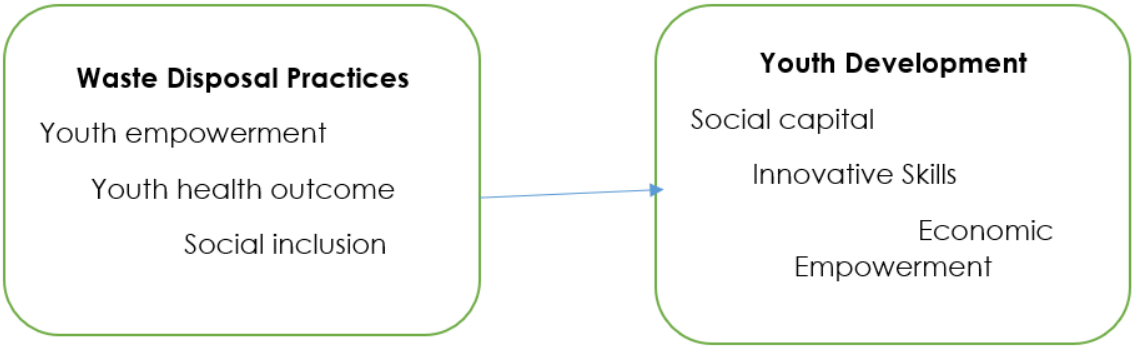

Figure 1.
Conceptual Framework

2.2. The Impact of Waste Disposal Practices on Youth Development

Engaging young people in environmental awareness campaigns, recycling, trash collection, and waste disposal techniques significantly influences their development in various ways. Important elements of this link are youth empowerment, health outcomes, and social inclusion, which help build social capital, creative talents, and economic empowerment.

2.3. Youth Empowerment → Social Capital & Economic Empowerment

Waste management initiatives inspire young people by arming them with responsibility, leadership traits, and active participation in community decision-making. Young people's empowerment grows social capital by building networks, collaborating with peers, and forming partnerships with community members, local politicians, and environmental groups. Access to economic opportunities, such as waste management enterprises and recycling businesses, further enhances young people's financial independence and future job prospects.

2.4. Youth Health Outcomes → Innovative Skills & Economic Empowerment

We can improve young health outcomes by lowering the risk of pollution-related diseases through proper waste disposal methods and thus encouraging general well-being. More productive younger people are, which helps them engage in skill-building activities and offer innovative ideas for waste management, including sustainable product development, upcycling, and environmentally friendly manufacturing. Better health also translates into better educational and employment performance, therefore indirectly enabling young people to pursue consistent work in waste management, green entrepreneurship, or associated sectors.

2.5. Social Inclusion → Social Capital & Innovative Skills

Participating in waste management programs promotes social inclusion because young people from many backgrounds work together on projects run by their communities. This inclusion builds social capital by improving trust among young people and other stakeholders, as well as cooperation and civic involvement. Furthermore, exposure to several points of view in these projects stimulates creative thinking since young people create original ideas for effective environmental preservation, recycling, and waste management. Working together, they share ideas and select the kind of problem-solving techniques needed for entrepreneurship and future jobs.

Young development is greatly enhanced by participation in waste management policies. These projects build social capital, innovation, and economic empowerment by supporting health and social inclusion, thereby preparing young people for significant involvement in economic growth and sustainable development. Encouraging more young people to participate in waste management can be a calculated means of creating strong, ecologically sensitive communities.

2.6. The Influence of Waste Disposal Practices on Youth Development

Studies have shown that garbage disposal policies greatly affect young development by influencing environmental attitudes, behaviors, social involvement, and economic empowerment while supporting more general environmental sustainability goals. In other words, it is necessary for individuals to grow up knowing how to adapt and develop beneficial environmental practices; Towolioe [28] focused on American urban kids and concluded that sustainable waste management (including composting and recycling) techniques in their experience allow them to learn beneficial environmental practices [25]. In contrast, landfill proximity raised health hazard and pollution questions. The report recommended introducing waste management education in early initiatives that can nurture sustainability and environmental responsibility.

Wanjiru, et al. [29] examined waste management strategies in urban slums in Mexico City. They found that faulty trash disposal—open dumping, in particular—was leaving a negative mark on the environment and working to obliterate ecosystems. However, engagement in recycling and clean-up initiatives improved perceptions of youth empowerment and awareness of the environment [28]. The report calls on community-led projects that improve waste management systems and promote sustainable living. Kim and Garcia [30] looked at the waste disposal by young people in peri-urban South Korea [29]. Their findings suggest that recycling and composting among young people lead to better social capital and environmental attitudes, thus promoting trust and cooperation. Moreover, the study linked good waste management with less pollution and an improved resource economy. Therefore, the study recommended encouraging young people to participate

in sustainable waste projects to promote environmental sustainability [30]. In 2021, Nguyen et al. pointed to garbage disposal methods in rural Vietnam [31, 32]. Proper waste management increased young people's environmental awareness and participation in their communities while reducing environmental risks, including soil and water pollution, they found. Thus, disposal to landfill enacts health and environmental problems, highlighting the need for reduction methods.

The study stressed the importance of educational campaigns and more research into longer-term effects to ensure a more sustainable way to deal with waste. Although these studies provide valuable perspectives on the associations between trash disposal practices and youth development, they also have limitations. These previous studies mostly rely on self-reported data, which may carry response bias. Many studies also concentrate on specific areas, limiting their applicability to a wide range of social and economic contexts. Furthermore, they restrict attention to the merits of youth involvement in sustainable waste management, yet they sometimes neglect structural barriers, such as legislative shortages and poor waste management infrastructure that may lead to detrimental utilization. Future research should use longitudinal methods to assess potential long-term outcomes and explore how policy frameworks and socioeconomic contexts shape youth's involvement in waste management initiatives with the goal of bolstering environmental sustainability.

3. Research Methodology

3.1. Research Design

This study examined how young people's involvement in solid waste management initiatives impacted their development in Kisumu City, Kenya, using a descriptive survey design. This approach aggregates quantitative data for statistical analysis along with qualitative data for contextual insight. Per Asenahabi [33], research design is the methodical strategy and instruments applied to arrange a study and manage research topics [33]. The ability of the descriptive design to compile comprehensive data helped identify significant elements and theoretical structures that might be examined further [34].

3.2. Target Population

The target population consists of all people or groups having relevant features for the research [34]. It specifies the particular group—people, companies, or communities—from whom data is gathered. This study concentrated on a target demographic of three hundred urban young waste collectors in Mombasa who actively engage in solid waste management practices.

3.3. Sample Size

According to the Mombasa County Solid Waste Management Policy, 2020, the city has a population of 300 urban youth collectors. Out of the population, a sample size of 175 was appropriate. The sample size was calculated using the Taro Yamane sample size calculator at a 95% confidence level with a 5% margin of error.

Confidence level (C): 95% (expressed as a decimal, C = 0.95)

The margin of error (E): 5% (expressed as a decimal, E = 0.05)

The formula to calculate the sample size (n) is:

n = N / (1 + N (E^2))

Where: n = sample size N = total population

Given that the total Population of urban youth collectors in Mombasa is 300:

n = 300 / (1 + 300 (0.05^2))

n = 300 / (1 + 300 0.0025)

n = 300 / (1 + 0.75)

n = 300 / 1.75

n ≈ 174.43. This is rounded up to 175

Simple random sampling was used to pick the required number by just organizing their names in alphabetical order and then issuing them numbers, picking from number one to one hundred seventy-five.

3.4. Research Instrument

This study utilized primary data. Primary data, collected for the first time, were gathered using a questionnaire with a five-point Likert scale administered to urban youth collectors in Mombasa [35]. A questionnaire serves as a structured tool designed to inform respondents about the study and elicit relevant empirical data [36].

3.5. Pilot Testing

A pilot study was conducted using a small sample of 20 urban youth collectors in Kisumu County, chosen for its similar waste management characteristics to Mombasa County. This pre-test helped identify potential misinterpretations, biases, and errors in the questionnaire [37]. The findings refined the research process, optimized resource use, and enhanced the overall quality of the main study.

3.6. Validity and Reliability of Instruments

3.6.1. Validity

Validity determines how well a research instrument measures what it is intended to Mchopa [36]. This study assessed face and content validity through expert judgment by ensuring the questionnaire's structure and questions were appropriate for gathering relevant data.

3.6.2. Reliability

Reliability measures the consistency of a research instrument across multiple trials. Cronbach's alpha coefficient was used to test reliability, with a threshold of 0.70 [38]. The study achieved an alpha reliability coefficient of 0.943, confirming the questionnaire's reliability [38].

3.7. Data Analysis Procedure

Before analysis, the researcher ensured that all returned questionnaires were complete. The data were coded, sorted, and categorized for clarity. Descriptive, inferential, and test statistics were computed to assess the impact of independent variables on the dependent variable.

A simple linear regression analysis was conducted to develop the research model and determine the significance of the relationships between variables. Similar regression models have been used in previous studies on urban solid waste management in Kenya [39, 40]. The R-value indicated the correlation strength, while R-squared measured the independent variable's effect on the dependent variable.

The F-test (Fisher distribution test) assessed the significance of regression at a 95% confidence level with a 5% significance threshold, using ANOVA. The t-test evaluated the model's ability to predict statistical significance, where a t-value between -2 and +2 indicated an insignificant relationship, leading to null hypothesis acceptance. If the p-value exceeded 0.05, the model was considered weak in explaining variations in the dependent variable. Further analysis was conducted using multiple regression models to verify the strength of relationships between variables.

$Y = \beta 0 + \beta 1X1 + \varepsilon$

Where: Y = solid waste management project

X1 = Waste Disposal Practices

$\beta 0$ = Constant

$\beta 1$ = Coefficients for independent variable

ε = Error term

3.8. Correlation Analysis

Correlation analysis measures the linear relationship between two variables [36]. The study used Pearson's correlation coefficient to test for a linear relationship between independent and dependent variables at a 95% confidence level using the hypotheses:

- H_0: $r = 0$ (No linear relationship)
- H_1: $r \neq 0$ (Linear relationship exists)

The t-distribution test (with n - 2 degrees of freedom) determined significance. A positive correlation indicated a direct relationship, while a negative correlation signified an inverse one. The correlation coefficient ranged from -1 to 1.

3.9. Multiple Linear Regression Model

A linear regression model was applied to test research hypotheses and answer the research question. The F-test evaluated the model's overall adequacy, while the t-test assessed the significance of individual regression parameters.

4. Results and Findings

4.1. Demographic Information

4.1.1. Gender

The respondents were asked to indicate their gender. The findings are shown in the figure below.

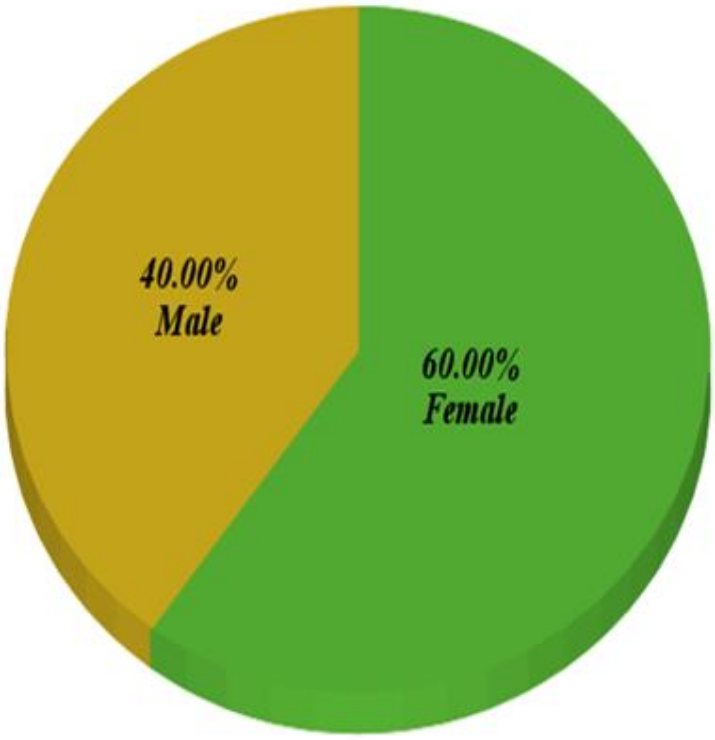

Figure 2.
Gender of Respondents.

Gender analysis provides insight into respondent demographics and ensures a comprehensive evaluation of how solid waste management projects impact youth development in Mombasa County, Kenya. With 40% men and 60% women among the respondents, the study guaranteed diversity and acknowledged any gender-specific impacts. This conclusion is consistent with Johnson and Brown [41], who stated that descriptive research would suffice with a response rate of more than 70% [41]. The analysis utilized 172 questionnaires in total.

4.2. Age

The respondents were requested to indicate their age. The age bracket is shown below.

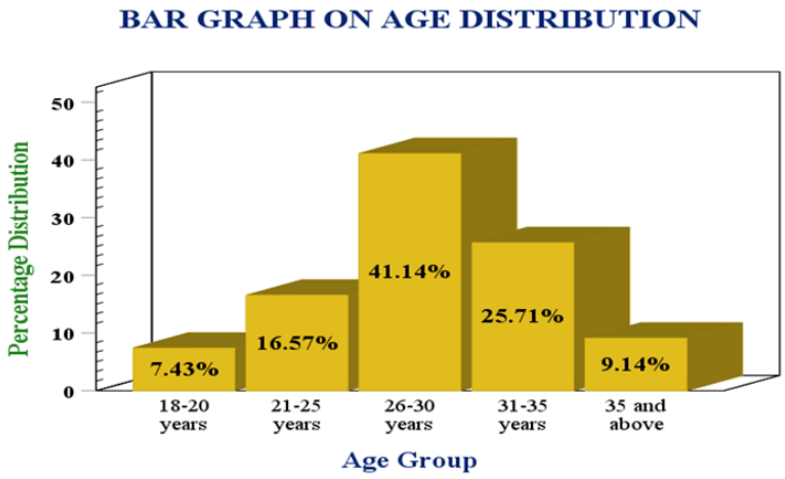

Figure 3.
Age.

Understanding respondent demographics and evaluating how solid waste management projects affect youth development in Mombasa Town, Kenya, depends on age. The study covered a range of age groups—41.4% (26.4%) (26–30 years), 25.71% (31–35 years), 16.57% (21–25 years), 9.14% (35+ years), and 7.34% (18–20 years)—and ensured inclusion. This varied portrayal enhanced the information and offered a balanced view.

4.3. Years of Involvement in Solid Waste Management Projects

The respondents were asked to indicate their years of involvement in solid waste management projects. Their responses are illustrated below.

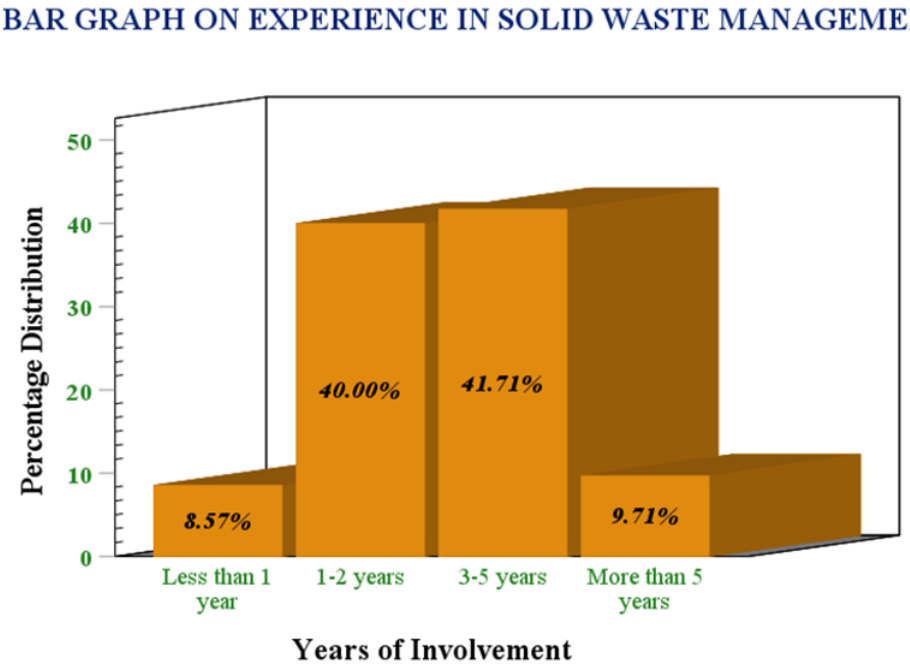

Figure 4.
Years of involvement.

The years of participation of the responders offer vital information on their experiences and knowledge. 41.7% had 3–5 years of experience, 40.0% had 1–2 years, 9.71% had over 5 years, and 8.57% had less than a year. This variety guarantees well-rounded knowledge of solid waste management in Mombasa Town, Kenya.

4.4. The Influence of Waste Disposal Practices on Youth Development in Mombasa Kenya

On a 1-5 Likert scale, the respondents were asked to indicate their degree of agreement with several claims about the impact of garbage disposal procedures on young growth. The results are presented in the table below.

Table 1.
The Influence of Waste Disposal Practices on Youth Development in Mombasa, Kenya.

	Very Low		Low		Moderate		High		Very High	
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
Rate the extent to which waste disposal practices contribute to youth empowerment in Mombasa.	0	0.0%	0	0.0%	0	0.0%	8	4.6%	167	95.4%
Rate the effect of waste disposal practices on the health outcomes of youth in Mombasa.	0	0.0%	0	0.0%	0	0.0%	29	16.6%	146	83.4%
Rate the level of social inclusion promoted by waste disposal practices among youth Mombasa.	0	0.0%	0	0.0%	0	0.0%	24	13.7%	151	86.3%
Rate the effectiveness of waste disposal practices in empowering youth in Mombasa.	0	0.0%	0	0.0%	0	0.0%	23	13.1%	152	86.9%
Rate the importance of waste disposal practices in improving the health outcomes of youth in Mombasa.	0	0.0%	0	0.0%	0	0.0%	20	11.4%	155	88.6%

Respondents assessed how trash disposal policies affect youth development in Kisumu City in five main areas—youth empowerment, health outcomes, social inclusion, efficacy, and importance. Youth Empowerment: 4.6% assessed the impact as High; 95.4% ranked it as Very High. Health outcomes: 16.6% said it was High, and 83.4% said it was Very High. Social Inclusion: 13.7% assessed it as High, and 86.3% rated it as Very High. Effectiveness: 13.1% called it High, and 86.9% rated it as Very High. The importance was 88.6% for Very High and 11.4% for High. These results show a firm agreement on the favorable contribution of trash disposal strategies to youth development. The findings coincide with earlier studies (e.g., [42-44]), thereby supporting trash disposal's role in empowerment, health, and social inclusion in urban environments. Further investigation using Pearson's correlation looked at how youth development and trash disposal participation related. The table here shows the outcomes.

4.5. Pearson's Correlation Analysis Between Waste Disposal Practices and Youth Development

Table 2.
Pearson's Correlation Analysis Between Waste Disposal Practices and Youth Development.

		Youth Development
Waste Disposal Practices	Pearson Correlation	0.439
	Sig. (2-tailed)	0.000
	N	175

The table results show a moderate positive and statistically significant correlation (r= 0.439, p= 0.000) between youth participation in waste collection practices and youth development in Mombasa. This means that youth participation in the

SWMP is necessary for enhancing environmental sustainability in Mombasa County. According to the data presented in the table, a moderate positive correlation exists between youth participation in waste collection practices and youth development in Mombasa.

The data also aimed to determine how youth participation in waste disposal practices influenced youth development in Mombasa. To do this, the study examined the null hypothesis, which was:

H03: There is no significant influence of waste disposal practices on youth development in Mombasa, Kenya.

This analysis was conducted using simple linear regression, and the results are presented in the table below.

Table 3.
Regression Coefficient for Waste Disposal Practices.

R^2	β	F	t	p
0.193	0.954	20.543	3.261	0.000

The regression analysis indicates a satisfactory model fit, with $R^2 = 0.193$, meaning 19.3% of the variance in youth development is explained by youth participation in waste disposal practices. The β coefficient (0.954) shows a strong positive relationship, supported by an F-value of 20.543 and a t-value of 3.261, both statistically significant at a 95% confidence level ($p = 0.000$).

These results verify that young development in Mombasa is greatly influenced by young involvement in trash disposal methods. Denying the null hypothesis highlights the need for young people in waste management to help promote environmental sustainability and address urban trash issues correctly.

4.6. Young Development

The study sought to establish the link between juvenile development in Mombasa and the three factors under discussion in this section.

Table 4.
Youth Development.

	Very Low		Low		Moderate		High		Very High	
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
Rate the extent to which youth participation in solid waste management projects contributes to the development of social capital in Mombasa.	0	0.0%	0	0.0%	0	0.0%	5	2.9%	170	97.1%
Rate the extent to which youth participation in solid waste management projects contributes to developing innovative skills in Mombasa.	0	0.0%	0	0.0%	0	0.0%	33	18.9%	142	81.1%
Rate the extent to which youth participation in solid waste management projects contributes to the economic empowerment of youth in Mombasa.	0	0.0%	0	0.0%	0	0.0%	24	13.7%	151	86.3%

The table reveals how much young participation in solid waste management projects influences several aspects of youth development in Mombasa. In line with Johnson and Smith [42], who stressed the function of such programs in strengthening social cohesiveness, a great majority (97.1%) admitted they made a very high contribution to social capital development. In line with this, 81.1% of respondents claimed the impact on creative skills was very high, therefore underlining their relevance in enhancing creativity and problem-solving [43]. Moreover, as Wang and Nguyen [44] found, 86.3% found a very high contribution to economic emancipation, demonstrating its purpose in providing financial opportunities [44]. Supporting earlier studies on youth development, our results demonstrate that young involvement in waste management programs is essential in promoting social capital, skill development, and economic empowerment.

Table 5.
Model parameters.

	B	Std error	t	Sig
(Constant)	.161	.273	2.343	.10
Waste disposal practices	0.954	0.186	3.261	0.000

From the table above, the model regression equation was established.
Y= 0.161+ 0.954 X1

The regression equation shows that with all independent variables held constant, youth development in Mombasa remains at 0.161 units. A positive and statistically significant relationship exists between disposal practices and youth development. Specifically, a unit increase in waste disposal practices contributes to increases of 0.954 units. These findings highlight the crucial role of waste management in fostering youth development, aligning with studies by Johnson and Smith [42],Kim and Wang [43] and Wang and Nguyen [44] which emphasize its impact on environmental awareness, civic engagement, social inclusion, and health outcomes.

5. Conclusion

This study examined the impact of waste disposal practices on youth development in Mombasa, Kenya, using a Likert scale survey. The findings showed a notable positive effect; respondents mainly judged trash disposal methods as helpful for youth empowerment, health, social inclusion, and general effectiveness. While emphasizing their role in environmental sustainability, Pearson's correlation study verified a modestly favorable link between waste disposal methods and youth development.

Further supporting these results were regression analyses demonstrating that waste disposal methods account for 19.3% of the variance in young development. The significant positive correlation and statistical relevance support the need for young people's involvement in trash management. Ultimately, including young people actively in waste management activities solves urban trash problems and encourages empowerment, health, and social inclusion, thereby strengthening a more inclusive and sustainable society.

5.1. Contributions of the Study to Theory, Practice, and Future Research

5.1.1. Theoretical Contributions

The study broadens notions of environmental sustainability and social development by including youth involvement in trash management as a primary engine of community development. It clarifies social capital theory by showing how programs for trash management inspire youth empowerment, social inclusion, and civic participation. Emphasizing the role young people can play in achieving environmental and socioeconomic sustainability, the results support theories of sustainable development.

5.2. Practical Contributions

a) The study provides insights for policymakers, local governments, and organizations on how to design effective youth engagement programs in waste management.
b) It highlights the importance of equipping youth with skills in waste disposal, recycling, and environmental conservation to enhance their economic opportunities.
c) The study underscores the need for incentives such as financial support, training, and employment to encourage youth participation in sustainable waste management practices.

5.3. Contributions to Future Research

The study provides the groundwork for further investigation on how young involvement in trash management affects their livelihoods and economic empowerment. It promotes comparative research among several areas to evaluate the success of youth-led waste management projects in various socioeconomic contexts. The study advocates for more research on policy interventions and business sector involvement in increasing youth participation in environmental sustainability initiatives.

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