



Gender and Environmental Management: Exploring Spousal Roles Decision-Making Patterns in Owner-Occupied Homes in Mahuta and Mando Communities, Kaduna State, Nigeria

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ABSTRACT: The objective of this paper is to examine how spousal roles influence environmental decision-making patterns within owner-occupied housing in Mahuta and Mando communities, Kaduna State, Nigeria using appropriate standard techniques with a survey of 600 residents. Findings reveal generally, collaborative decision-making dynamics between spouses, with statistically significant variations in specific areas like house design and fixture selection. This collaborative approach offers the potential to promote sustainable choices, particularly in material selection, maintenance, and modifications. The research emphasizes the importance of integrating spousal roles into environmental management strategies. Educational programs and capacity-building initiatives can empower husbands and wives to make informed choices for a more sustainable lifestyle. Additionally, stakeholders in the construction industry can play a crucial role by promoting sustainable practices and offering eco-friendly materials. Future research with a larger, geographically diverse sample incorporating observational data can provide a more comprehensive understanding of spousal decision-making in environmental management within owner-occupied housing.

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Environmental management in owner-occupied houses is crucial for sustainable living, particularly when considering the decision-making patterns of different spouses in their own homes. Eco-friendly practices among residents are essential for preserving the environment and promoting a high quality of life (Asteria *et al.*, 2018). There is already a crisis in the environment we live in which can be minimized by taking steps towards elimination of causal factors of the impending destruction of the environment. Not attending to this is a risk to life and health of

inhabitants. The effect of this crisis is already felt all over the world (Bora, 2018). We have such factors as coal burning power and others to contend with. To minimize the impact of occupants on their surroundings, it is vital to understand how spousal roles influence environmental decision-making during construction and daily household management. The rapidly increasing population of Mahuta is a threat to safety if something is not done speedily. The effect of over consumption of natural resources, deforestation in the region, use of fossil fuels like coal and garbage

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created by humans play a key role in discouraging a sustainable environment. Enlightening owner-occupiers on the dangers of these effects and also on ways to achieve a safer environment may encourage adoption of sustainable practices in families. If energy is conserved, the amount needed and consumed will be far less, (Bora, 2018). Some suggestions are the replacement of gadgets with energy efficient appliances, turning off and unplugging electrical appliances, lights and fans when not in use. Choice of which appliances to use depend largely on the owner-occupiers who would put more effort into ensuring a safe environment seeing that they are there to live in for longer periods compared with those renting their houses. The dumping of refuse in landfills and even by the roadside is not only an eyesore, but is another major threat to human well-being. To a large extent, husbands and wives can play major roles towards directing their families towards sustainable practices in homes.

Environmental management encompasses the interaction and impact of human societies, particularly how spousal roles influence decision-making on the environment (Pahl-Wost, 2007; Sam and Zibima, 2023). This process identifies degradation factors and implements strategies to mitigate them, minimizing future impacts. Studies have shown that spousal roles can influence environmental decision-making within households. For instance, Zhao *et al.*, (2021), found that women tend to be more environmentally conscious than men when it comes to household purchases and consumption behaviors. Schokkaert *et al.*, (2019), conversely, identified that men may be more involved in decisions regarding house improvement projects, which can have a significant environmental impact depending on the materials and practices employed. House development and its management can contribute to global environmental issues and affect human health (Milanovic *et al.*, 2018; Chiu, 2006). While the environmental friendliness of residential properties is largely determined at the planning and design stages, daily use patterns further influenced by spousal roles and family within the household also play a significant role (Chiu, 2006). Mahuta and Mando, located in Kaduna Metropolis southern and northern regions, faces environmental challenges such as flooding in Mahuta and poor waste disposal techniques in both regions. These necessitate a nuanced understanding of how spousal roles influence environmental management in owner-occupied houses.

The emphasis on balancing development goals with environmental quality, while considering spouse decision-making patterns, is pivotal for fostering

equitable and sustainable development (Eya *et al.*, 2022). Stakeholders and users can be guided on employing cost-cutting and smart choices that can create awareness towards achieving eco-friendly living practices that consider the decision-making patterns within the household (Aagaard and Madsen, 2022). This research aims to identify the effects, challenges, and threats posed by neglecting proper environmental management procedures, particularly when considering spousal decision-making patterns. Most owner-occupiers were involved in the development of their houses, yet may be unaware of how spousal roles influence eco-friendly practices. The objective of this paper is to examine how spousal roles influence environmental decision-making patterns within owner-occupied housing in Mahuta and Mando communities, Kaduna State, Nigeria.

MATERIALS AND METHODS

Sample and Data Collection: A systematic probability sampling technique was employed to select a representative sample of owner-occupied houses in Mahuta. Following an initial house count using Google Maps, a field survey documented and identified occupied residences. A systematic sampling approach was used, selecting every *n*th house. Replacements were made to ensure the final sample size. This resulted in data from 600 residents, with an equal number of male and female spouses.

Data collection involved a mixed-methods approach, utilizing both quantitative and qualitative techniques. Quantitative data was gathered through a structured interview schedule administered to residents. This questionnaire employed a 5-point Likert scale to measure occupant practices related to waste management, energy consumption, water conservation, and indoor air quality.

Qualitative data was collected through focus group discussions conducted with separate groups of male and female spouses from owner-occupied households in Mahuta and Mando. Discussions centered on the aforementioned environmental management aspects, with a focus on challenges faced and potential solutions. The discussions were recorded, and detailed notes were taken to capture key themes and insights.

Data Analysis: Quantitative data collected through the interview schedule was analyzed using descriptive statistics (means, frequencies, percentages) to understand occupant behaviors and practices related to environmental management. Inferential statistics (one-way ANOVA, Duncan's multiple range test) were employed to assess potential variations in practices based on factors such as household size or dwelling type. Qualitative data from focus group

discussions was analyzed thematically. Recordings and notes were reviewed to identify recurring themes and patterns related to environmental management challenges and potential solutions. These themes were then categorized and analyzed to provide a deeper understanding of occupant perspectives and experiences.

RESULTS AND DISCUSSIONS

Table 1 gives the result on spouse distribution; spouses share the same sample size of 300 which is 50 percent each across the geographical location considered in this research.

Table 1: Frequency and Percentage Distribution of Sex

Spouse	Frequency	Percent	Valid Percent	Cumulative Percent
Male	300	50.0	50.0	50.0
Female	300	50.0	50.0	100.0
Total	600	100.0	100.0	

Source: Researcher survey 2021

Spouse Participation in Choosing a Location: Table 2 explores how spouses participated in selecting a location for their home. Males show a slightly higher

tendency for "None" or "Minimal" participation (1.8%) compared to females (1.5%). Conversely, females have a higher prevalence of "Complete" participation (10.8%) compared to males (21.7%). This might indicate potential variations in how attentively each spouse considers aspects of the location, with females potentially taking a more detailed approach in some cases. The provided p-value (-0.317) is negative, likely due to rounding during analysis. However, it suggests a statistically significant difference in spousal participation at the 0.05 level, meaning the observed spousal discrepancies are unlikely to be random. Collaborative decision-making with a focus on environmental factors could lead to consideration of potential risks associated with choosing a location. Higher spousal participation (medium, high, complete) might be more likely to research floodplains, elevation levels, or proximity to bodies of water, potentially reducing the risk of choosing a location prone to flooding. Lower participation levels (none or minimal) by either spouse could lead to overlooking potential flood risks, thereby missing crucial details about the location's flood history or susceptibility.

Table 2: Association between Spouse Level of Participation on Choice of Location

Spouse	Choice of location					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High participation N (%)	Complete participation N (%)		
Male	3(0.5)	8(1.3)	43(7.2)	116(19.3)	130(21.7)	300(50.0)	-0.317
Female	9(1.5)	42(7.0)	87(14.5)	97(16.2)	65(10.8)	300(50.0)	(0.000)
Total	12(2.0)	50(8.3)	130(21.7)	213(35.5)	195(32.5)	600(100.0)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H₀ if p-value > 0.05)

Table 3: Association between Spouse Level of Participation in Choice of House Design

Spouse	Choice of house design					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High participation N (%)	Complete participation N (%)		
Male	2(0.3)	15(2.5)	58(9.7)	124(20.7)	101(16.9)	300(50.0)	-0.275 (0.000)
Female	11(1.8)	54(9.0)	91(15.2)	84(14.0)	60(10.0)	300(50.0)	
Total	13(2.2)	69(11.5)	149(24.9)	208(34.7)	161(26.9)	600(100.0)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H₀ if p-value > 0.05)

Spouse Participation in Choosing House Design and Waste Management Procedures: Table 3 explores how spouse participation in selecting a house design might influence decisions related to waste management during the occupation stage.

greater emphasis on specific aspects. The provided p-value (-0.275) is negative, likely due to rounding during analysis. However, it suggests a statistically significant difference in spouse participation at the 0.05 level, meaning the observed spouse discrepancies are unlikely to be random. Collaborative decision-making (medium, high, complete participation) could lead to a more efficient design for waste management.

Males show a slightly higher tendency for "None" or "Minimal" participation (2.8%) compared to females (1.8%). Conversely, females have a higher prevalence of "Complete" participation (10.0%) compared to males (16.9%). This might indicate potential variations in how attentively each spouse considers design details, with females potentially placing a

Higher participation levels might influence the inclusion of dedicated recycling facilities, and easy access to these facilities in the design. This could involve incorporating designated spaces for sorting

recyclables or considering built-in features like under-counter recycling bins, which contribute to a cleaner and more hygienic living environment.

Spouse Level of Participation in Environmental Management Decisions with Sustainability Implications: A statistically significant trend (p-value < 0.05) emerged across all tables below, indicating a generally collaborative approach to environmental decision-making. The most frequent response for both spouses fell within the "medium" participation range (13.2% to 34.3%), suggesting a balanced dynamic where both partners contribute.

This collaborative approach has the potential to promote the selection of more sustainable materials. With both spouses involved, a wider range of perspectives can be considered, potentially leading to choices that prioritize durability, energy efficiency, or recycled content, ultimately reducing the environmental footprint of the home during occupation. Tables 4 and 8, focusing on material selection and ongoing maintenance, displayed the most balanced participation distribution. This

collaborative decision-making in these areas is particularly significant because material selection has a direct impact on the environmental sustainability of the home. With the participation of both spouses, there is a greater likelihood to consider factors like durability (reducing replacement needs), low-maintenance requirements (minimizing resource use for cleaning or upkeep), and environmentally friendly materials (lower embodied energy or recycled content). Similarly, shared decision-making around ongoing maintenance can ensure a proactive approach to upkeep (e.g., timely repairs to prevent water damage), potentially extending the lifespan of materials and reducing the need for replacements.

While collaboration is the norm, some spouse-based variations were observed (Tables 5, 6, and 7). A slightly higher tendency for males to have "high" and "complete" participation in selecting doors/windows, sanitary equipment, and fixtures could influence the choice of materials. While potentially reflecting traditional spousal roles, this may also lead to considerations of durability and functionality often associated with male perspectives.

Table 4: Association between Spouse Level of Participation on Choice of Material

Spouse	Choice of material					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High N (%)	Complete participation N (%)		
Male	4(0.7)	23(3.8)	75(12.5)	114(19.0)	84(14.0)	300(50.0)	-0.239
Female	16(2.7)	56(9.3)	94(15.7)	86(14.30)	48(8.0)	300(50.0)	
Total	20(3.3)	79(13.2)	169(28.2)	200(33.3)	132(22.0)	600(100)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H_0 if p-value > 0.05)

Table 5: Association between Spouse Level of Participation in Selection of Doors/Window Type

Spouse	Selection of doors/window type					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High N (%)	Complete participation N (%)		
Male	5(0.8)	16(2.7)	78(13.0)	120(20.0)	81(13.5)	300(50.0)	-.270
Female	11(1.8)	61(10.2)	103(17.2)	79(13.2)	46(7.7)	300(50.0)	(0.000)
Total	16(2.7)	77(12.8)	181(30.2)	199(33.2)	127(21.2)	600(100)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H_0 if p-value > 0.05)

Table 6: Association between Spouse Level of Participation in Selection of Ceiling/Plumbing Fixtures

Spouse	Selection of ceiling/plumbing fixtures					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High participation N (%)	Complete participation N (%)		
Male	5(0.8)	20(3.3)	82(13.7)	112(18.7)	81(13.5%)	300(50.0)	-.248
Female	13(2.2)	59(9.8)	95(15.8)	94(15.7)	39(6.5)	300(50.0)	(0.000)
Total	18(3.0%)	79(13.2)	177(29.5)	206(34.3)	120(20.0)	600(100)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H_0 if p-value > 0.05)

Table 7: Association between Spouse Level of Participation in Selection of Sanitary Equipment

Spouse	Selection of sanitary equipment					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High N (%)	Complete participation N (%)		
Male	6(1.0%)	10(1.7%)	96(16.0)	108(18.0)	80(13.3)	300(50.0)	-.246
Female	13(2.2)	58(9.7)	97(16.2)	90(15.0)	42(7.0)	300(50.0)	(0.000)
Total	19(3.2%)	68(11.3)	193(32.2)	198(33.0)	122(20.3)	600(100)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H_0 if p-value > 0.05)

Table 8: Association between Spouse Level of Participation in Ongoing maintenance of wall paint, furniture, etc.

Spouse	On-going maintenance of wall paint, furniture, etc.					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High participation N (%)	Complete participation N (%)		
Male	2(0.3)	24(4.0)	63(10.5)	139(23.2)	72(12.0)	300(50.0)	-.254
Female	9(1.5)	59(9.8)	98(16.3)	90(15.0)	44(7.3)	300(50.0)	(0.000)
Total	11(1.8)	83(13.8)	161(26.8)	229(38.2)	116(19.3)	600(100.0)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H_0 if p -value > 0.05)

Spouse, Level of Participation on Need for Modification/Redesign: Similar to the findings on material selection and maintenance, a statistically significant trend (p -value < 0.05) emerges in Table 9. There's no dominance by either spouse, with the most frequent response falling under "medium" participation (29.2% for both spouses combined). This reinforces a collaborative approach to decision-

making, potentially leading to more environmentally conscious outcomes. When both spouses participate in modifications and redesigns, they can explore solutions that optimize space utilization, improve energy efficiency, or incorporate sustainable materials, potentially reducing the need for future modifications and their associated environmental impact.

Table 9: Association between Spouse Level of Participation on Need for Modification/Redesign

Spouse	Need for modification /redesign					Total	(p-value)
	None N (%)	Minimal N (%)	Medium N (%)	High participation N (%)	Complete participation N (%)		
Male	4(0.7)	25(4.2)	78(13.0)	127(21.2)	66(11.0)	300(50.0)	-.204
Female	9(1.5)	59(9.8)	97(16.2)	91(15.2)	44(7.3)	300(50.0)	(0.000)
Total	13(2.2)	84(14.0)	175(29.2)	218(36.3)	110(18.3)	600(100.0)	

Source: Researcher survey 2021. * Denote statistical significance at 0.05 level (i.e., Reject H_0 if p -value > 0.05)

While collaboration is the norm, some spouse-based variations are present (Table 9). Males exhibit a slightly higher propensity for "high" and "complete" participation in decisions regarding modifications/redesign compared to females (21.2% versus 15.2%). This could stem from differing priorities or risk tolerances. Men might be more inclined towards large-scale changes that alter the structure or layout of the home, which can have significant environmental implications depending on the materials used and construction practices employed. Extensive modification often necessitates the use of new materials, potentially increasing embodied energy and construction waste. A collaborative approach that prioritizes sustainable materials and resource-efficient design solutions during modifications can minimize environmental impact.

Conclusion: In this research investigation, a mixed-methods approach employing a survey and focus group discussions revealed a generally collaborative decision-making dynamic between spouses regarding environmental management practices. While statistically significant differences in participation levels emerged for some aspects, a balanced approach was most prevalent. This collaboration has the potential to promote sustainable choices, particularly when considering material selection, ongoing maintenance, and the need for modifications. When

both spouses have a say, the use of recycled content can be prioritized, minimizing the environmental footprint of the home. By engaging in spousal collaborative and environmentally conscious approach to household management, we can move towards a more sustainable future for our communities and the planet.

Declaration of Conflict of Interest: The authors declare no conflict of interest.

Data Availability Statement: Data are available upon request from the corresponding author.

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