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Evaluating Impact of Ramadan Fasting on Conscious Consumption and Sustainable Practices Among Muslims

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Research Article

Keywords: Religiosity, Environmental behavior, Sustainability, Conscious consumption, Islam and Sustainability

Posted Date: March 16th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-8842307/v1

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Additional Declarations: No competing interests reported.

Abstract

Non-Technical Summary Fasting in holy month of Ramadan allows Muslim's community all over the world to practice spirituality and celebrate the Iftar dinner with lavish food preparations, excessive consumption, sharing resources and showing generosity to others that could leads to food wastage and increased carbon emission. Ramadan fasting helping sustainable consumption behaviors depends on whether the community engage in real spiritual practice and intrinsic religiosity in addition to environmental awareness. This study explores the role of religiosity and Ramadan fasting on pro-environmental behaviors, especially with the influence of environmental awareness. By surveying Pakistani Muslims, the research indicates that religiosity and Ramadan fasting significantly influence environmental behaviors. Study findings provide key insights to policymaker, religious institution and practitioners for promoting sustainable behaviors among Muslims during Ramadan.

Technical Summary

Religion and Spirituality (Ramadan) play a key role in preserving natural resources and protect environment through promoting sustainability behaviors and conscious consumption among people. Increasing environmental awareness in religion and spirituality can reduce food wastage, single use plastic and energy consumption. Ramadan fasting could be effective in changing people attitude and behaviors towards food, water and energy consumption. This study examines the influence of religiosity and fasting on sustainable or pro-environmental behaviors among Muslims communities, with particular emphasis on environmental awareness as moderating variable. The study utilized quantitative methods by collecting 240 online surveys responses from Muslims in Pakistan. Structural Equation Modeling (SEM) was used to test the proposed hypotheses. Study findings show that religiosity and Ramadan fasting significantly affect sustainability behaviors, environmental awareness serving as a moderator in the model, further strengthen the relationships. These findings highlight the importance of positive role of religiosity and spiritual experience in motivating sustainable behaviours. The study findings provide practical guidance for society at large and in particular, religious institutions, policy makers and volunteers for promoting conscious consumption and sustainable behaviors.

Social media: Religiosity and fasting during Ramadan foster sustainable behaviors

1. Introduction

Ramadan, the ninth month of the Islamic lunar calendar, is a spiritually significant period observer by millions of Muslims worldwide. Ramadan is one of the most significant months in the Islamic calendar, observed with reverence and dedication by over 1.9 billion Muslims around the world. It is a time for fasting from dawn to dusk, increased spiritual devotion, charitable acts, and community bonding. Ramadan brings together Muslim communities all over the world to experience harmony, peace, generosity, sharing, patience and self-reflection. Since the sustainability is a global challenge and conscious consumption in Ramadan can promote sustainable practices. However, paradoxically, the holy month meant to encourage moderation often witnesses a surge in consumption patterns that are neither

environmentally sustainable nor aligned with the core values of Ramadan. These include excessive food preparation and wastage, overuse of single use plastics during community iftars, impulsive shopping, and a general drift toward materialism under the guise of celebration. Food wastage is one of big problem in holy month of Ramadan and institutions around the world are advocating for sustainable consumption to prevent the food wastage among Muslims. Islamic teachings emphasize moderation use of resources and avoiding excessive use. For instance, Quran highlights this issue in the verse: "Eat and drink, but be not excessive. Indeed, He likes not those who commit excess" (Quran 7:31). Islam promotes environmental stewardship and careful use of natural resources. At its core, Ramadan promotes values of simplicity, empathy, and self-restraint principles that naturally align with the contemporary ideals of sustainability.

However, in recent years, a growing contradiction has emerged between the spiritual goals of Ramadan and the materialistic behaviors observed during the month. Despite the emphasis on moderation, many Muslim communities around the globe experience a substantial increase in food consumption, food wastage, energy use, and plastic waste during Ramadan. From lavish *Iftar* spreads that often result in uneaten food being discarded, to excessive shopping sprees in preparation for *Eid*, the environmental footprint of Ramadan has become a growing concern. Ironically, while the month is meant to foster gratitude and reflection on the blessings of sustenance, it often leads to indulgence and overconsumption, behaviors that only contradict the teachings of Islam but also place a heavy burden on the environment. United Nation (UNEP_ROWA) has also developed a social media campaign “Sustainable Ramadan” to raise awareness and combat food wastage in West Africa. According to report by State of Food Waste in West Asia, 40 per cent the food prepared in Ramadan is wasted in the United Arab Emirates, followed by 30–50 per cent in Saudi Arabia and 25 per cent in Qatar. UAE’s Ministry of Climate Change and Environment reported that about $3.5 billion worth of food is wasted annually with a significant portion during month of Ramadan. Similarly, single use plastic in Iftar events is major issue among Muslim communities. Initiative like UAE Food Bank in collaboration of 350 hotels and food establishments donated One Million Surplus Meals (approximately 908,145 kg) during Ramadan. Circular initiatives like reduce, reuse and recycling are the future and can promote sustainable practices in Ramadan. Fasting is not just about worships and preparing wide range of food items for *Iftar* (the evening meals to break the fast) and *Suhoor* (pre-dawn meal), rather be patience, discipline, reflection and break away from bad habits. Many Muslims celebrate Ramadan in more materialist way by eating, shopping, exchanging gift and evening festivity like lavish Iftar dinners that leads to wastage of food, energy, water and recycling of single use plastic. Increased festivity like lavish Iftar Buffet and shopping (clothing, shoe, electronic gadgets), unnecessary groceries contribute to materialism and wastage. Observing waste free Ramadan is desirable and this requires mindful consumption by creating a balance between celebration and responsibility. Leftover food and unused ingredients are discarded without reuse and recycling which consequently put burden on farmers to grow more crops and increase the water usage. The concept of green or sustainable Ramadan has gained momentum among institutions and government to encourage Muslims to adopt pro-environmental behavior during the holy month. Reducing food waste and single-use plastics during holy month can have substantial impact on the

environment and increase Islamic values. A study reveals that religiosity significantly influences green purchase intention(GPI) and sustainable purchase behavior of youth in Pakistan (M. Hassan et al., 2024).

This study aims to evaluate the sustainable consumption practices of Muslim communities during Ramadan through a structured survey. The study aims to investigate aspects such as food consumption and wastage, plastic usage, ecofriendly behaviors, shopping habits and the influence of religious teachings on sustainable behaviors. It also assesses awareness and responsiveness to the increasing advocacy by religious scholars and Islamic institutions emphasizing eco-conscious behavior during Ramadan. Previous researchers have examined the impact of Islamic religiosity on innovative behavior (Alfawzan et al., 2024), subjective well-being (Ghannam & Gorey, 2022), preoperative anxiety before liver and renal transplant patients (Khattak et al., 2025), pro-social behavior (Asyari et al., 2024), pro-environmental behavior (Bülbül, 2024), food waste behavior (Filimonau et al., 2022), environmental ethics (Nasir & Yaacob, 2022) and environment friendly behaviors (Nurhaida et al., 2022a).

However, limited attention has paid to examine the impact of Ramadan as religious practice on sustainable consumption behavior. Hosen have explore the impact of Ramadan on consumption behavior and purchasing patterns among Muslims (Hosen, 2024a) but not focusing on sustainability behavior. The study further highlights that purchase increase substantially during Ramadan and on *Eid* festivities. Similarly, Hassan and Low explored phenomena of excessive food purchase and excessive food wastage during Ramadan with moderating antecedents like festive experience, nostalgic food memory, perceived scarcity, and religiosity(S. H. Hassan & Low, 2024). Abu Shihab et al conducted bibliometric mapping analysis of literature and emphasized impact of on Ramadan intermittent fasting and human health which leads to attains sustainable development goals SDG3 (Abu Shihab et al., 2022). By gathering insights into consumer behavior and environmental awareness, the research hopes to identify and bridge gaps, highlight positive trends, and offer actionable recommendations to promote a more spiritually and environmentally harmonious Ramadan.

Furthermore, this study is situated at the intersection of faith, behavior, and environmental ethics. It explores not just whether Muslims are consuming responsibility during Ramadan but also why they choose or (fail) to do so. Is it due to lack of awareness? Social pressure? Cultural norms? Or perhaps a disconnect between religious teachings and their practical application? Understanding these underlying factors in essential for developing effective strategies to encourage living, not just during Ramadan but throughout the year. In conclusion, this research aims to evaluate the level of sustainable consumption among Muslims during Ramadan and to analyze the role that religious teachings and community efforts play in shaping environmentally conscious behaviors. By shedding light on these dynamics, it hopes to offer practical, faith-based recommendations to promote sustainability in one of the most cherished and widely observed Islamic traditions

2. Literature Review

2.1 Ramadan and Sustainable Behavior

Due to increased global challenges of sustainability and environmental protection, Muslims community during Ramadan is under radar in connection to food wastage and unnecessary buying. Islamic religiosity seems to play significant role in sustainable consumption behaviors but exploring the effect of Ramadan fasting on sustainable behavior remains unexplored area of research. Islamic religiosity has positive impact on sustainable behavior (Al Hadi, 2024), environmental behavior (Karimi et al., 2022), eco-friendly behavior (Nurhaida et al., 2022b) and Ramadan fasting is positively associated with good health and well-being (K. H. AbuShihab et al., 2023). Fasting in Ramadan ignite social cohesion, collective conscious, cooperation spirit, generosity and solidarity(Shalihin & Sholihin, 2022). Ramadan is a well-known religious practice and one of the five main pillars of Islam which demands Muslims all over the world to avoid eating, drinking water, smoking and sex from dawn to dusk for a whole month. Muslims observing Ramadan are also mandated to refrains from other fun and entertainment activities to attain piety. Ramadan is the ninth month in Islamic lunar calendar, and considered one of the most religiously active months for Muslims all over the world. It is practiced to achieve spiritual, religious, ethical and medical goals (Visioli et al., 2022). Ramadan not only meant to achieve good health among Muslims but also achieve sustainability behavior by reducing or eliminating wastage of food, water, energy and consumption behavior. In fact, Ramadan is special time when Muslims are dedicated in their acts of worship and show generosity to poor like giving charity and feeding poor.

Food waste during Ramadan is a pressing issue, particularly in Muslim-majority countries. In Gulf cooperation (GCC) nations, approximately 50% of the food prepared during Ramadan is wasted. For instance, Saudi Arabia reports an estimated 45000 tons of food wasted daily during the holy month (*Food Waste, Ramadan and the Middle East | EcoMENA*, 2023). In Dubai food wastage is estimated 3.7 million tons annually and 38% of daily food prepared is wasted and its increases to 60% during Ramadan(*UAE Pledges to Halve Food Waste by 2030 with Ramadan Initiatives*, n.d.).

This trend is not limited to the middle East, In Malaysia, food waste increases by 15% during Ramadan. Such statistics underscore the need for immediate action to align Ramadan practices with environmental sustainability (Hasan, 2023).

Research indicated that cultural and psychological factors contribute to unsustainable consumption during Ramadan. Previous researchers identified elements like festive experiences, nostalgic food memories, and perceived scarcity as drivers of excessive food purchasing, leading to increased waste(S. H. Hassan & Low, 2024). Interestingly, the study also found that higher levels of religiosity could moderate these behaviors, suggesting that deeper religious engagement might promote more sustainable practices. Moreover, cultural practices, such as preparing lavish Iftar meals to showcase generosity, often result in over preparation and subsequent waste. This misdirected generosity, while well intentioned, contradicts the principles of moderation and self-restraint emphasized during Ramadan(Hasan, 2023)

Islamic teachings inherently promote environmental stewardship. The holy *Quran* emphasize the principles of moderation, balance, and the rejection of extravagance. The concept of *Khilafah* positions

humans as stewards of the earth, responsible for its care and preservation (Rakhmat, 2022). Prophetic traditions(*hadith*) also advocate for resource conservation, advising against wasting water even when abundant. Most of environmental problems are created by human's actions and behaviors. Religiosity being social factors have significant impact on pro-environment behavior among Muslims (Karimi et al., 2022).

Considering over consumption, wastage of food and extensive use of plastic during Ramadan environmental campaigns were carried out in Arab, Africa and Europe. For example, "*plastic free Ramadan*" campaign launched in the UK encourages mosques to reduce plastics waste in Ramadan. Participated mosques have reported a 70% reduction in waste, demonstrating the effectiveness of such initiatives(Bailey, 2022). The Consumers' Association of Penang (CAP) based in Malaysia promote environmental awareness and trainings. Zero waste Iftar and greener Iftar movements are growing globally. The Green Ramadan campaign, supported by the Muslim council of Britain, encourages mosques and community centers to reduce plastic waste(*Hilton and Winnow Prove Impact at Scale with 2024 Green Ramadan Campaign*, n.d.). These campaigns demonstrate the potential for community engagement to drive sustainable practices during Ramadan. Beyond community initiatives, corporate and government entities have also taken steps to promote sustainability during Ramadan. Hilton's green Ramadan initiative, for example, achieved a 21% reduction in food waste during a 2024 campaign by implementing upskilling session and a food waste prevention playbook (Hilton Scales Up Green Ramadan Initiative in 2025, n.d.). Fasting teaches virtues of restraint and mindfulness, which can translate into sustainable living practices. By aligning daily habits with Islamic environmental ethics, Muslims can deepen their spiritual experience while contributing to environmental preservation. Based on the literature review, this study hypothesis that

H1. Ramadan fasting positively influence environmental behaviors

2.2 *Environmental Awareness*

Understanding of environmental issues and knowledge is crucial in promoting sustainability goals and human behaviors (Chen et al., 2025). Environmental awareness and cognition have emerged as critical determinants of environmental behavior in recent literature of Environmental psychology. Understanding environmental awareness or cognition is far more complex but researchers have conceptualized it as an individual's knowledge and consciousness about environmental

issues, their causes, impact and potential solution(Gifford & Nilsson Hed, 2014). In short, individual perceive, interpret and take actions to contribute to ecological preservation.

Previous literature has identified awareness as a critical mediator between consumers' attitudes and sustainable food consumption. (Zhang et al., 2025). Environmental cognition promotes low carbon travel intentions (Chang & Hsiao, 2025), psychological well-being((Gallo et al., 2025),

Value-Belief-Norm (VBN) theory suggests that cognition enhances individual sense of responsibility (Frank et al., 2024), that positively influence sustainability behavior. This implies that individual more likely to engage in actions when they believe their actions will result into meaningful difference. Environmental issue seems at psychological distance and when individual feel they are capable of driving climate change, they will more likely engage in sustainability behaviors. Individual possessing sustainability information are in better position to take informed decisions. Environmental awareness and pro-environmental behavior relationship may not be linear or direct (Chekima et al., 2015; Kollmuss & Agyeman, 2002), emotional attachment with environmental issue may be other reason to influence sustainability behavior. Testa et al., (2021) conducted meta-analysis of 156 studies and concluded that direct effects of environmental awareness on sustainability behavior are consistently weak, explaining less than 5% of behavioral variance. Welch & Warde, (2014) also demonstrated that most

environmentally behaviors such as energy use, food consumption and mobility are routine practices which are shaped by social conventions and infrastructural constraints, rather than environmental awareness. Environmental awareness is least productive unless coupled with behavioral change strategies such as incentives, social structure. (Gemmecke et al., 2025). Communication strategies addressing cognitive barriers can produce positive impact. Therefore, considering the non-linear relationship between awareness and sustainability behaviors, this study undertakes environmental awareness as moderating variable between religiosity and sustainability behavior.

H2: Environmental awareness positively moderates the relationship between religiosity-fasting and sustainability behaviors

2.3 *Theoretical Framework of the Study*

The study uses foundational framework of Value-Belief-Norm (VBN) Theory (Stern, 2000), suggesting that religious values shape environmental beliefs, which subsequently lead to pro-environmental behaviors. Islamic theology emphasizes the concept of *Khalifa* (stewardship) *Meezan* (balance) and *Amanah* (trust), *Taqwa* (God-consciousness) and principle of *Qana'ah* (contentment with less), reinforcing conservation of earth's resources and promoting sustainability (Rice, 2006). The study integrates VBN theory to Islamic values (e.g. Taqwa, Meezan, Amanah, Khilafa,) to better understand environmental responsibility. *Taqwa (*God conscious*)* reminds individual the presence of God and held them morally responsible. *Amanah* (trust) principal, human care for Allah's creation and do not exploit the resources. *Khilafa* is stewardship of earth (Qur'an 2:30) and Allah created the universe in perfect balance (*Meezan*) (Qur'an 55:7–9). Hossein Nasr worked on eco-Islam and highlighted spiritual dimension of environmental crises from Islamic and Sufı perspective (Sayem, 2019). He draws the attention towards how capitalism and western world legitimated the dominance and exploitation of nature. Religion plays a significant role in conservation of earth such as *Fiqh al-Bi'ah* (Islamic environmental Law) reinforce faith and environmental program. In Islamic tradition many environmental conservation instruments exited like *Haram* (tombs or holy areas) have sanctity of nature conservations.

Similarly, In Arab and African world, the principal of *Hima* is used to preserve nature by setting aside a natural area permanently for the public good. *Shamlat* land, a concept in the sub-continent (India and Pakistan) created by British in 19th century preserved abundance of land for public good which can never be owned privately or sold legally. *Waqf* also known as endowment instruments used to preserve environment and sustainable development. Islamic environmental ethos has promoted many green movements. Ramadan fasting opportunity to explore the intersection of faith and culture (Obaideen et al., 2025). Religion has positive influence on sustainable consumption(Orellano et al., 2020). Other studies in Islamic context also suggest religion and ecology go hand in hand (Abdelzaher et al., 2016; Bagir, 2015). UN Sustainable development goals (SDGs) can be achieved through Islamic approach to sustainability and fasting in Ramadan can significantly help in conservation of resources. There is need to link religious faith with faith and modern environmental issue and then use the religious mandate to protect the environment.

3. Methodology

3.1 Procedure

A quantitative survey method was employed, using convenience sampling to collect data from 240 respondents via online platforms. Participation was voluntary (self-selection) with no financial incentives across Lahore. Main eligibility criteria to recruit the participants was restricted to adults aged 18–60 years including professionals, students, workers, and household members. They represented a Muslim family who observes Ramadan fasting in an Islamic and traditional manner every year. It was verified through pre-screening questions. To maintain anonymity, no personally identifiable information (e.g., email or phone number) was obtained to protect the privacy of participants. Data collection was carried out in March 2025, marked as holy month of Ramadan in 2025.

3.2 Measures

Environmental behavior scale items were adopted developed by Hamza and his peers(Hamza et al., 2023). The scale items further represent sub-scale or categories like *environmental concern (items 1–5*) *personal sacrifice* (items 6–9), healthy eating (items 10–11) and emission reduction (items 12–16) as shown in the Table 1 below. *Environmental awareness* six items statements were taken from the previous study on urban environmental awareness and scale validation study(Baltodano-Nontol et al., 2024a). Religiosity scale items were adopted from two research studies (M. J. Khan, 2014; Mohd Dali et al., 2019). While items (10–16) capturing Ramadan fasting were taken from the study on Ramadan behavior in context of Pakistan(Z. Khan et al., 2012).

Environmental awareness scale items were adapted from (Baltodano-Nontol et al., 2024b).

4. Results

4.1 Factor Analysis

The output of factor analysis shown in Structural Equation Model (SEM) path diagram indicates relationships among three latent variables:1 Religiosity & Fasting, 2) Environmental Awareness and 3) Environmental Behavior

Factor loadings for first variable *Religiosity and Fasting* (RAF) indicated with items RAF 1 to RAF16 range from 0.760 to 0.919, which are all above the threshold level of 0.7, indicating strong validity. Second variable *Environmental Awareness Cognition* (EAC) indicated with items EAC1 to EAC5, indicated good reliability with values ranging from 0.730 to 0.822, again above threshold of 0.7. Third variable *Environmental Behavior (ENB)* with indicators from ENB1 to ENB16 indicated factors loadings from 0.629 to 0.831. Most of the items are above 0.7, with a few exceptions (e.g., ENB13 at 0.629, ENB14 at 0.523 and ENB16 at 0.596). Though these items could be removed to refine the model, but items were retained because overall the measurement model for Environmental Behavior is acceptable.

Table 1. Items description with factor loadings

Item Statements	Loadings
Environmental Awareness Cognition *(Nontol et al, 2024)*	
1. I have basic knowledge about local, national, and global environmental problems	0.730
2. I am familiar with environmental protection strategies i.e. recycling, using eco-friendly transportation etc.	0.822
3. I know about environmental pollution prevention programs of our government	0.790
4. I am aware of some organization working for environmental protection in Pakistan.	0.817
5. In general, I knows about the use of chemicals in agriculture and additives like preservatives in food, and their harmful effects on health.	0.745
Environmental Behavior (*Hamza, Lhamas and Parakal, 2023*) *Environmental Concern*	
1. I avoid buying products that have too much packaging	0.694
2. I change my shopping habits because of environmental concern	0.836
3. I avoid using products or services that harm the environment	0.801
4. I generally buy products that come in recyclable packaging	0.803
5. I generally buy products that pollute less *Personal Sacrifice*	0.777
6. I try my best to reduce the consumption of natural resources during Ramadan	0.826
7. I make conscious efforts to limit the food wastage and single use plastic during Ramadan	0.718
8.I make personal sacrifices to reduce wastage of food, water, energy and plastic pollution during Ramadan even if immediate results are not significant.	0.718
9. I consider environmental potential of my consumption decisions during Ramadan *Healthy Food*	0.775
10. I try to choose food without additives/chemicals during Ramadan	0.784
11. I try to eat healthy in Ramadan *Emission Reduction*	0.746
12. I often act to conserve water during Ramadan	0.769
13. I often do sort trash into the recycling when in publics and private in Ramadan	0.629
14. I usually use reusable or eco-friendly products instead of disposable items in Ramadan	0.523

15. I avoid buying/using air fresheners, deodorants, or other products in aerosol cans in Ramadan	0.821
16. I often disconnect appliances to save energy	0.596
Religiosity *(Dali et al., 2019; Jabeen Khan, 2014; Khan and Watson, 2010)*	
1. Islam keeps me hopeful when I am feeling down	0.914
2. I believe Quranic teachings are suitable in today life	0.916
3. Often I feel deeply existence of God	0.875
4. All mankind good deeds will be judged and rewarded accordingly after death	0.902
5. I make every effort to attain God's pleasure	0.760
6. I believe that my faith is a source of comfort	0.919
7. I like spending some time in the remembrance of Allah daily	0.861
8. For Allah favor, I abandon my favorites works	0.751
9. For me the religion is important because it explain the purpose of life	0.912
10.I fast to acquire the pleasure of God.	0.853
11. Fasting teaches me endurance and patience	0.877
12.I believe fasting is a test from God	0.771
14: Fasting helps me to develop self-control	0.829
15. I fast to attain piety	0.704
16. During Ramadan I try to make great efforts to follow the commands of God	0.910

Source: Authors' own work

The measurement model shows excellent reliability across all constructs, with values well above the thresholds levels as indicated in the table 2. Cronbach's Alpha and Composite Reliability assess the internal consistency of constructs. Cronbach's α = 0.841 and CR = 0.887 indicate good internal consistency for Environmental Awareness. Environmental Behavior construct shows very high reliability and internal consistency with Cronbach's α = 0.945 and CR = 0.951. Similarly, Religiosity & Fasting indicated excellent reliability with Cronbach's α = 0.973 and CR = 0.976.

Table 2 Reliability and Consistency of Constructs

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Environmental Awarness	0.841	0.847	0.887	0.612
Environmental Behavior	0.945	0.949	0.951	0.553
Religiosity & Fasting	0.973	0.975	0.976	0.728

Source: Author own work

Average Variance Extracted (AVE) is another measure of convergent validity in confirmatory factor analysis (CFA) and measures the average amount of variance that a latent construct captures in its observed indicators (items), as compared to measurement error. All latent constructs AVE values are above the acceptable threshold AVE ≥ 0.50. HTMT (Heterotrait–Monotrait Ratio) is used to measure the degree of similarity between two constructs. If HTMT value is below 0.85, then it means two constructs are truly distinct from each other. HTMT values for all three constructs are below 0.85 as 1) Environmental Awareness and Environmental Behavior (0.775), 2) Religiosity & Fasting and Environmental Awareness (0.588) and 3) Religiosity & Fasting and Environmental Behavior (0.533). Discriminant validity confirms that there is no problem of multicollinearity or conceptual overlap and each construct is distinct from each other. Further, Fornell and Larcker Criterion was also used to assess discriminant validity in shown in table3.

Table 3 Fornell and Larcker Criterion

	Environmental Awarness	Environmental Behavior	Religiosity & Fasting
Environmental Awarness	**0.782**		
Environmental Behavior	0.709	**0.743**	
Religiosity & Fasting	0.524	0.527	**0.853**

Source: Author own work

It is established if the square root of AVE for each construct (the diagonal) is greater than its correlations with other constructs (the off-diagonals in the same row/column). Table 3 show all the diagonal values are higher than off-diagonal values that confirms discriminant validity for this model.

4.2 Hypotheses Testing

Our study results show that all hypothesized relationships are statistically significant which provide strong empirical support for the significance of structural model.

Figure 1 shows PLS-SEM (Partial Least Squares Structural Equation Modeling) path diagram examining how religiosity and fasting practices influence individual's environmental behavior both directly and through moderating role of environmental awareness. The R^2 value (R^2=0.547) indicates that 54.7% of the variance in environmental behavior is explained by religiosity & fasting and environmental awareness. According to Cohen (1988) guidelines for social sciences, 0.547 is substantially large effect. It implies that IVs are highly predictor of environmental behavior.

The path coefficient for Religiosity & Fasting and Environmental Behavior shows moderate positive relationship (β = 0.304, t= 5.183, P< 0.001). This moderate positive effect is independent of environmental awareness. This implies that religious individuals who practice fasting are more likely to engage in pro-environmental behaviors, possibly due to values like stewardship, discipline, or ethical consumption embedded in religious teachings. Environmental awareness is the strongest predictor of environmental behavior in the model (β = 0.602, t= 12.280), p < 0.001). Path Coefficient (β = 0.602) indicates that for one-unit increase in environmental awareness, environmental behavior increases by 0.602 units. It means that individuals who are more aware of environmental issues are more likely to engage in pro-environmental behaviors.

Environmental awareness as a moderator in the model influence the relationship between predictor and environmental behavior. A weak but positive moderation effect take place in between predictor and dependent variable in the model (β = 0.081, t= 3.137, p < 0.01).

Table 4 specific indirect effects

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
EAC→EB	0.602	0.603	0.049	12.280	0.000**
EAC x RAF →EB	0.081	0.086	0.026	3.137	0.002**
RAF →EB	0.304	0.310	0.059	5.183	0.000***
Note: *<0.05;**<0.01;***<0.000, Critical T-value = 1.96 (two-tailed, p < 0.05)					

5. Discussion

The nexus between Islamic religiosity and pro-environmental behavior has gained substantial attention in recent years, but fasting as a spiritual act was missing link in this relationship. The study examine relationship between Islamic religiosity, Ramadan fasting (spiritual practice), and pro-environmental behavior with moderating role of environmental awareness, particularly within the context of Pakistan, one of largest Muslim country in the world. Most of the previous studies were conducted to examine the relationship between religiosity and environmental behaviors. However, there was missing link to incorporate Ramadan fasting as dimension of religiosity and its combined impact on pro-environmental

behaviors. Fasting as an act of spiritual practice during holy month of Ramadan promotes self-control, empathy, generosity and moderation. When observing fasting, Muslims abstains from eating and drinking from dawn to dusk, inherently do the job of resource conservation. The main objective of this study was to explore how Islamic religiosity and fasting overall effect environmental behaviors other than food and drinks. Ramadan is synonymous with abundance of food at Iftar time, mostly fried items and sugary drinks to quench the long day thrust and food craving.

Young Muslims across the continents are adopting to modern lifestyle, commodification and hedonism at par with other millennials in Western world. Perhaps, Ramadan is the time in year to reflect back to religious and cultural values for youth. Apparently, Ramadan has positive and negative sides from price increase and temporary shortage of food items to increase over consumption and food wastage. This study utilizes quantitative approach to examine the combined effects of religiosity and fasting on environmental behaviors through environmental knowledge as a moderator. Achieving coconscious consumption remains elusive with little actualization of religious values, therefore environmental awareness translates religious values into sustainability behaviors. Given the context, demonstrating conscious consumption and sustainability behavior during Ramadan is top agenda of wide range of bodies including policy makers, organizations and religious institutions. Natural resources conservation is inherently embedded into Islamic teachings like *Khilafah* (humans as stewards of the Earth) and *Amanah* (trust from God), providing substantial ground for environmental preservation. Similarly, the concept of *"Israf"* explicitly prohibits wastefulness and supports sustainable consumption.

Previous studies suggest positive link between Islamic religiosity and pro-environmental behavior in context of Pakistan(Karimi et al., 2022; Shahid et al., 2022; Zafran, 2025). Researchers in the past have proved that high religiosity is positively associated with sustainability behaviors i.e. energy saving and concern for the environment (Ghazali et al., 2018; M. Hassan et al., 2024; Karimi et al., 2022). Similarly, positive relationship between intrinsic religiosity and ecological behaviors (Haq and Wong, 2010), religious commitment and green purchase behavior (Ghazali et al., 2018; M. Hassan et al., 2024). In short, religious values influence and shapes consumers' environmental behaviors through attitudes, perceived control, and subjective norms.

Ramadan fasting is less focused area of research in Islamic marketing and environmental behaviors. Majority of studies on Ramadan with its relationship on green purchase were carried out using qualitative approach like semi-structured interviews. A very few studies relied on quantitative approach to examine the effects of Ramadan fasting on environmental behavior. This study undertakes combined effect of religiosity fasting on environmental behavior with sub dimensions like emission reduction, healthy food consumption and personal sacrifice. World leader and organizations are dealing with challenges of climate change, emission reduction, water scarcity, food insecurity and energy saving. Literature reveals that Ramadan fasting can help achieving UN sustainable development goals(SDGs), good health and well-being (K. AbuShihab et al., 2024). Obaideen et al., (2025) also assert that observing Ramadan contributes to poverty alleviation, food security, well-being and sustainable consumption behavior. For instance, saving water and energy leads to responsible consumption, tackling issue of

climate change. For Muslims' community, Ramadan appears to be an epic journey that allows them to reflect their religious value like generosity, prayers, gathering but also feelings towards the environment and global life (Shalihin et al., 2020). Ramadan is a source of spiritual and moral strength for Muslim to take actions regarding environmental protection.

In contrast, Ramadan poses negative affects like increased consumption and commodification culture driven by advertising strategies and state sponsored programs on consumptions during Ramadan (Himam & Syafaq, 2025). Within a capitalism society, Ramadan just not bring simplicity, empathy, and social solidarity but simultaneously reinforce hedonic motives of consumerism. Research shows a disconnect between religiosity and environmental actions (Khalid, 2019). In the same token, there is a significant disconnect between the spiritual objectives of Ramadan and contemporary consumption practices. In fact, Muslims exhibits both facets of life, being morally responsible and disciplined on one hand side and being immoral and undisciplined on the other. Fasting is more like social activity and could potentially effects individuals sleep patterns, moods and behavior. This might result into consumerism and irresponsible behaviors. A Study in context of Bangladesh reflects substantial increase in purchase during Ramadan (Hosen, 2024b) which reflects indulgence and consumerism rather than restraint behavior. Among other negative consequences of Ramadan includes the hike in commodity prices marked with hyperinflation in economies like Pakistan. Increased prices disrupt the consumption patterns and supply chain demand stability during Ramadan. In short Raman not only influence consumptions behavior but also product development strategy (Titin et al., 2024), halal food marketing (Srikasem et al., 2024), dynamic pricing strategies (Anisa, 2025) and income of micro firms (Prayuda et al., 2025).

Holy month of Ramadan emphasizes self-restraint, gratitude, and mindfulness that often lead to reduced plastic waste, emission and food wastage. Without intrinsic religiosity, fasting in Ramadan may not be effective in generating environmental behaviors. Fasting backed by high religiosity have positive effect on environmental behaviors. Our study findings are consistent previous literature indicating fasting leads to reduced food wastage, water, and energy conservation (Malibari et al., 2023). Surprisingly Ramadan is getting attention of non-Muslims as well in western societies. For instances, western societies are extensively studying Ramadan for health benefits, improved subjective well-being and environmental behavior (Alghafli et al., 2019; Possamai et al., 2022).

Further, study tests showed positive moderating role of environmental awareness and this implies that religious values may not materialize unless there is appropriate environmental knowledge in the society. This is inactive of disconnect between religious values and daily practices. Without environmental awareness, fasting practices may not produce desired sustainability behaviors. Literature also support hints that high religiosity in context of Pakistan might not positively associate with sustainable behaviors due to a lack of environmental literacy or prioritizing immediate economic benefits over environmental values (Karimi et al., 2022). Hence, there is need to focus on Islamic environmental ethics in all Islamic teachings and spiritual practices(Kaplan & Iyer, 2021).

(Begum et al., 2021). It is also important to understand that religiosity alone is not effective to translate religious values into environmental actions unless there is clear mandate for environmental awareness.

Promoting green consumption and reducing carbon emission demands attitude change. Therefore, here comes the role of environmental knowledge to change individuals attitudes(Korba et al., 2023). There is positive influence of environmental knowledge on environmental (Eid et al., 2024). Environmental awareness drives sustainable purchase behavior among Egyptian consumer (Ali et al., 2025).

6. Conclusion

This study's findings provide compelling evidence for the positive relationship between religiosity, Ramadan fasting practices, and pro-environmental behaviors, with environmental education serving as a significant moderating influence. This means religiosity and environmental education are necessary conditions to get positive impact of fasting (in Ramadan) on environmental behaviors. The positive impact of religiosity on environmental behaviors found in this study is consistent with previous literature also aligns with the Islamic theoretical framework like Islamic environmental ethics, khalifah(stewards), Amanah(trust), Meezan(balance), Taqwa (spiritual accountability) and Qana'ah (contentment with less). Religious commitment coupled with environmental education drives greater engagement in sustainable practices such as environmental concern, emission reduction, personal sacrifice and eating health food. The role of environmental education is critical when examine the effects of religiosity on environmental behaviors. Informed and religious individuals may possess the desire for environmental actions in the society. Environmental campaigns aligned with Islamic values during holy month of Ramadan may change individual’s attitudes and environmental behaviors.

Declarations

Ethical approval

This study was approved by the Ethics Committee at Beaconhouse National University Lahore-Pakistan and the study was conducted in accordance with the ethical standards of the Declaration of Helsinki.

Consent to participate/Informed Consent

Informed consent was obtained from all subjects involved in the study.

Consent to publish

Written informed consent for publication was obtained

The author provided written informed consent for publication

Data availability

The data file (Excel Sheet) and Smart PLS-4 and SPSS output will be available on request

Conflicts of Interest: The authors declare no conflicts of interest.

Funding: There was no funding involved in this project.

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Figures

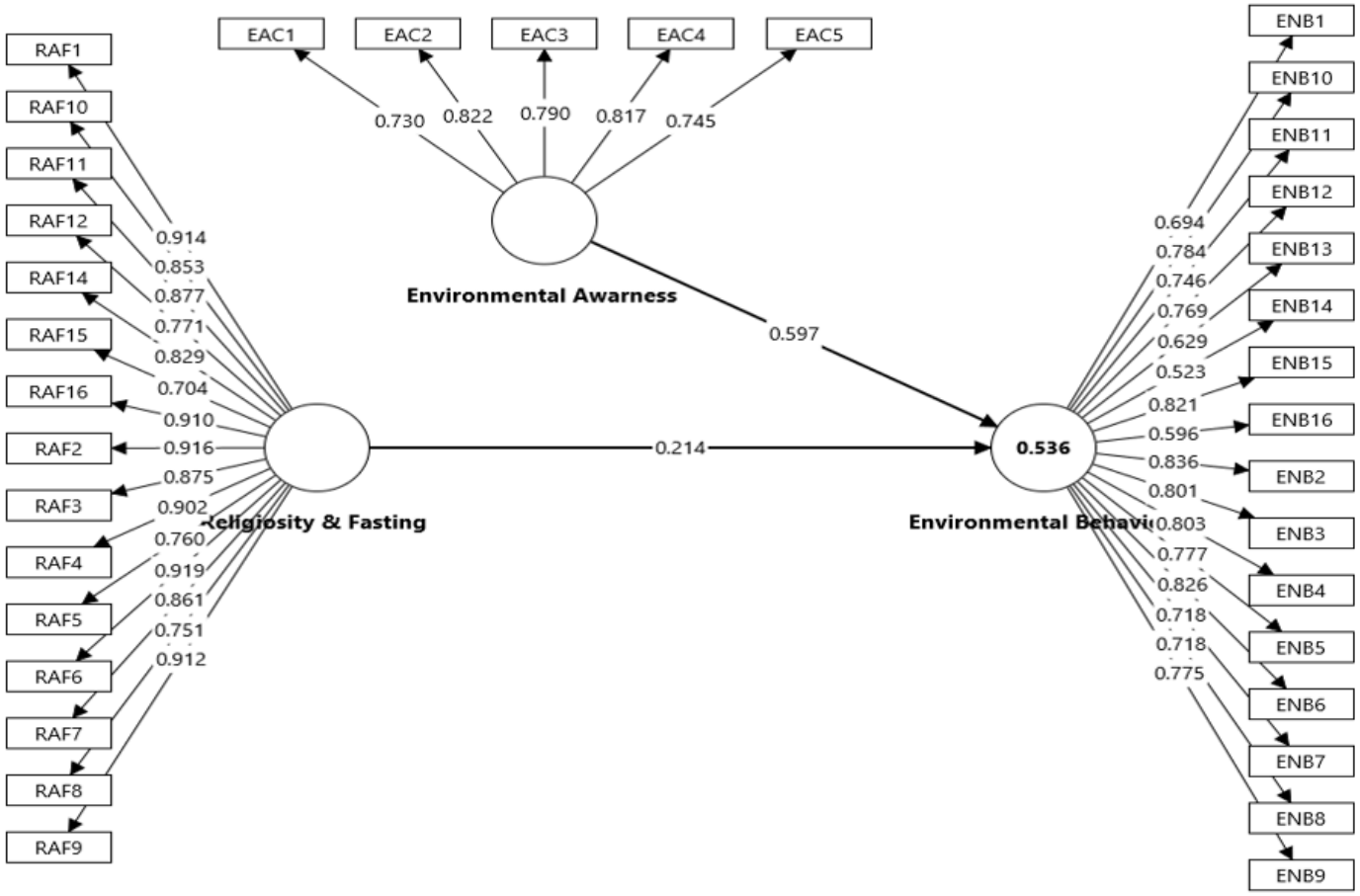


Figure 1

Factor analysis

Source: Author's own illustration

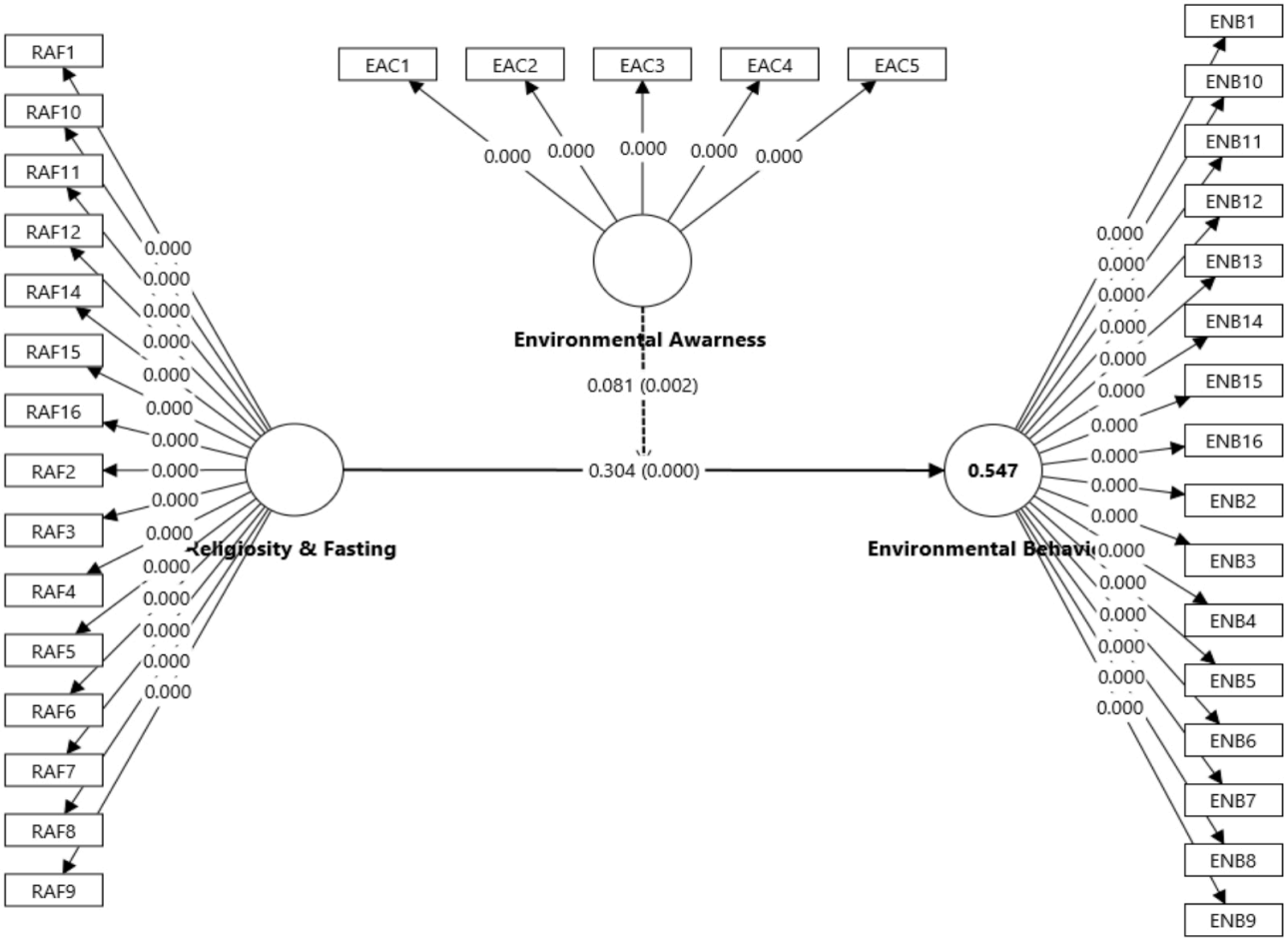


Figure 2

Figure 1 PLS-SEM (Partial Least Squares Structural Equation Modeling) path diagram