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Influence of Cultural Legitimacy, Developmental Pressure, on Environmental Conservation: The Mediating Role of Ethical Orientation and the Moderating Influence of Religious Sacredness

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Abstract

The present study explores the association between Cultural Legitimacy of Religion (CLR), Developmental Pressure (DP), and Environmental Conservation Outcomes (ECO), with Environmental Ethical Orientation (EEO) as the mediator and Religious Sacredness of Natural Sites (RSNS) as a moderator, respectively. A positivist and quantitative cross-sectional methodological approach were used, where data were collected using a sample of 474 undergraduate students undertaking their degrees at the University of Cape Coast, Ghana, and analysed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The sample consist of students whose curricula include religious studies, environmental ethics, and human-environment relations, that is why the study is viewed through the prism of this particular educational environment instead of projecting on the rest of the sub-Saharan African communities. Results revealed that there is no statistically significant direct effect of CLR on EEO or ECO, but works as a conditional interactional construct. DP indicates that it has negative relation with EEO, but EEO has positive relation with ECO, thus supporting its role as the key ethical channel that generates the conservation behavior by transferring upstream cultural and developmental forces to it. RSNS moderated a series of pathways and indicates normative resilience to developmental erosion, as well as substitutional dynamic in the circumstances demonstrating the high CLR. These results further elaborate the Value-Belief-Norm and Institutional Theory models to a sub-Saharan African educational context and provide evidence-compatible information on environmental policymaking based on the cultural perspective. The study, in particular, indicates that conservation interventions in Ghanaian fast urbanising settings can be enhanced with the consideration of the association of religious sacredness perception with official moral education to carry pro-conservation moral commitments.

Keywords: Cultural Legitimacy, Developmental Pressure, Environmental Conservation, Ethical orientation, Religious Sacredness, students

INTRODUCTION

Environmental degradation is one of the awkward challenges of the twenty first century. The rapid pace of urbanisation, industrialisation, and implementation of non-sustainable development patterns are still compromising the ecological systems that human societies rely on as their core (Pirri *et al.*, 2023). The growing acceptance of the understanding that lasting conservation of the environment cannot be obtained by using technologies but requires a more profound restructuring of the cultural values, belief systems, and structures that define how societies interact with the natural environment (Amanze, 2023; Jenkins *et al.*, 2018). In this framework, the cultural based institutions, especially those which are based on religious traditions have become theoretically important yet empirically under-investigated ways in which normative structures which underpin conservation behaviour are created and maintained.

Cultural legitimacy of religion (CLR) is used to describe the degree of social-cultural acceptance of religiously-based institutions, community activities, and norms of natural environments in a particular socio-cultural setting (Johnson *et al.*, 2006; Vergne, 2011). Religious institutions have long formed the major normative systems through which environmental governance is implemented, intergenerationally transmitted, and entrenched in community identity in most African cultures (Amanze, 2023; Lecointre, 2024). These buildings impose moral duties of custodianship, restraint, and respect on community members and derive their power out of their conformability to common cultural and religious beliefs. However, the growing pressures of modernisation and economic growth are increasingly placing significant pressure on these culturally proved systems, which puts substantive doubts on the circumstances in which CLR will continue to be able to uphold conservation-enhancing norms (Reckien *et al.*, 2017).

One of the key contextual variables, which can potentially moderate the culture-affirming effect of CLR, is developmental pressure (DP), which is defined as a combination of forces related to an urbanisation, economic growth, and expansion of infrastructure restructuring norms and patterns of resource utilisation (Arora, 2018). With developments that are increasingly putting strains on the community, the normative leadership of culturally based religious institutions may be challenged or undermined, to be less relevant to environmental governance. It is particularly high in developing economies that are quickly urbanising, like Ghana, where traditional values of culturally approved environmental custodianship co-exist with the high levels of development pressures which undermine the viability of the current conservation frameworks (BTI, 2024; Environmental Management, 1997).

The magnitude to which people internalize moral principles and duty-based norms that guide their engagement with the natural environment has been proposed as an important mediating process by which the upstream cultural and developmental forces are converted into downstream conservation behaviour (environmental ethical orientation (EEO) (Karimi *et al.*, 2022; Singh *et al.*, 2024). Based on the theory of planned behaviour, EEO triggers the personal moral responsibility, which mediates between distal cultural determinants and proximal behavioural consequences grounded on the value-belief-norm (VBN) theory (Stern *et al.*, 1999, as cited in Karimi *et al.*, 2022). Moreover, religion sacredness of natural sites (RSNS) is theorised as a moderating boundary condition which influences the interaction of CLR and DP with EEO to elicit environmental conservation outcomes (ECO).

Although this intersection is theoretically rich, current literature does not include integrated empirical models, which can simultaneously analyze the direct impact of CLR and DP on ECO, the mediating the effect of EEO, and the moderating the impact of RSNS, especially in the sub-Saharan African community setting (Hair *et al.*, 2022; Nitzl *et al.*, 2016). This study fills these gaps by formulating and testing a moderated mediation model based on a partial least squares structural equation modelling (PLS-SEM) in a sample of Ghanaian undergraduate students. This study is an addition to the theoretical knowledge on the religion culture development conservation nexus, it provides the empirical specificity to the application of legitimacy theory and the VBN theory in the developing-country contexts and provides the policy implications issue, on how to

design culturally sensitive environmental governance strategies.

Statement of the Problem

The increasing rate of environmental degradation in the sub-Saharan region of Africa has increased the need to establish culturally based approaches in which the community can be effectively involved in sustainable conservation behaviour. The environmental issues facing the region, such as deforestation, biodiversity loss, depletion of water resources, etc., are not only caused by the failure of institutions and the lack of technologies, but also by the erosion of the cultural, religious, and ethical system of values, which historically governed the relationship between communities and the natural world (Omoyajowo *et al.*, 2024; Lecointre, 2024). Although the issue of CLR and DP in creating environmental outcomes is increasingly being recognized in scholarly literature, there is no empirical studies that has resulted in integrated models to examine mutually effective effects of CLR and DP upon ECO, with EEO as a mediator and RSNS as a moderating boundary condition, especially in West African community and educational settings.

At the global scale, an accumulating and significant amount of scholarship supports the applicability of religious and cultural institutions in the creation of pro-environmental attitudes and behaviours. Muralidharan *et al.* (2024) found that spiritual attachment to nature was a strong predictor of ECO behaviour even after adjusting for the influence of generalised religiosity. Karimi *et al.* (2022) determined that the pro-environmental behavioural intentions mediated by subjective norms and moral attitudes are affected by religiosity. The positive contribution of religious organisations to the development of pro-environment values in schools and society has been reported by Koehrsen *et al.* (2025). Studley (2019) also showed that perceptions of the sacredness of natural sites with religious basis have long been used to conserve biodiversity in a manner that has not been able to be reproduced by formal regulatory frameworks. Yet, the contributions mostly analyze the role of the religious and cultural factors on their own, without providing sufficient explanations about the interactive and conditional impacts of CLR, DP, RSNS and EEO in a structural framework.

The conceptualisation of the theoretical interrelationships among CLR, RSNS and conservation in the African scenario has been theoretically conceived but scarcely examined in a strictly quantitative manner. Based on the paradigm of sacred ecology, Amanze (2023) defined that the African indigenous religion imprints sacred meaning into particular natural locations in the form of taboos, culturally controlled governance and community steward regulations, which is an indigenous conservation resource that is fundamentally different as opposed to western secular environmental ethics. Borde *et al.* (2022) provided an example of how the mangrove ecosystems that face significant threats in Benin have been successfully conserved by faith-based conservation mechanisms through the religiously determined control of sacred coastal areas by communities. Mutanga *et al.* (2017) have discovered that perceptions of culturally sacred landscapes were positively linked with conservation attitudes, but the relationships were mediated by the perceived legitimacy of cultural and religious institutions to serve as environmental governance bodies. These works, nevertheless, are mostly qualitative or contextually descriptive and the contingent of how CLR and DP interact with RSNS to influence EEO and, eventually, ECO have not been examined systematically in terms of quantitative analysis.

The intersection between cultural legitimacy, developmental pressure, and conservation governance in Ghana in particular, is both an interesting and under-researched research setting. The ancient cultural practices within Ghana have been organized based on close associations with the natural environment, which is intermediated by culturally approved taboos that guard sacred natural places, collective forms of governing the surrounding environment, and religiously based land custodianship responsibilities (Environmental Management, 1997). At the same time, the high rate of urbanisation and economic growth in Ghana set the conditions of increasing developmental pressures that undermine the normative authority of these traditional conservation systems, which lead to a situation where the conservation-enhancing power of CLR can be considerably weakened or diverted (BTI, 2024). Although there is a growing tertiary education sector and growing research power, no published article has explicitly studied

the comparative impact of CLR and DP to predict ECO, the mediating effect of EEO, or the moderating role of RSNS in one Ghanaian sample. The literature has a number of gaps that relate to one another. To begin with, CLR, DP, and RSNS have been studied as individual antecedents of environmental behaviour, rather than the combined and interactive impacts of these three constructs have been integrated into a single structural model (Muralidharan *et al.*, 2024; Koehrsen *et al.*, 2025). Also, the mediating role of EEO in the given relationship has not been empirically investigated in the African context, despite the fact that the agency theoretically occupies the most direct position between cultural and developmental antecedents and conservation behaviour (Karimi *et al.*, 2022; Nitzl *et al.*, 2016). Moreover, RSNS as a moderating role on the connection between CLR and EEO as well as DP and EEO has been theoretically conceptualised but not empirically tested in a moderated mediation model (Hair *et al.*, 2022; Singh *et al.*, 2024). Furthermore, existing knowledge of cultural legitimacy and conservation governance is not only overwhelmingly Western and Asian but also leaves a knowledge gap about how the dynamics of cultural legitimacy and conservation governance are observed in West African settings dominated by religious pluralism, hyper urbanisation, and environmental governance embedded in culture (Amanze, 2023; Borde *et al.*, 2022).

The study fills this gap by formulating and empirically validating a moderated mediation model, where EEO mediates the relationship between CLR and DP on ECO, whereas RSNS is the moderator of the conditional relationships within this structural equation. The results will offer evidence-based information to environmental policy-makers, conservation organizations, religious institutions and local governance institutions in Ghana and similar developing country settings, to help design and implement culturally sensitive and faith-based environmental governance policies and strategies, as well as effective conservation outcomes.

Research Hypotheses

H1: There is statistically significant effect of CLR on EEO

H2: There is statistically significant effect of CLR on ECO

H3: There is statistically significant negative effect of DP on EEO

H4: There is statistically significant effect of EEO on ECO

H5: EEO mediates the relationship between CLR and ECO

H6: EEO mediates the relationship between DP and ECO

H7: RSNS moderates the relationship between CLR and EEO

H8: RSNS moderates the relationship between DP and EEO

H9: RSNS moderates the relationship between EEO and ECO

H10: RSNS moderates the indirect effect of CLR on ECO through EEO

H11: RSNS significantly moderates the indirect effect of DP on ECO through EEO

Theoretical Evaluation

This work incorporates both Value-Belief-Norm (VBN) Theory (Stern *et al.*, 1999, as cited in Karimi *et al.*, 2022) and the Institutional Theory (DiMaggio and Powell, 1983; Scott, 2014) in developing a conceptual definition of how CLR and DP combine to influence the result of ECO, whereby EEO acts as the proximal moral variable and RSNS as the contextual moderator. Table A below provides a summary mapping of each of the theoretical frameworks on the constructs of this model. The Institutional Theory is macro-contextual and breaks down CLR, DP and RSNS as a normative institutional pressure, countervailing institutional force that erodes cultural norms respectively and a boundary condition that enhances or diminishes such institutional channels. VBN Theory is an individual level theory, which interprets the mediation of EEO the moral obligation construct, between contextual forces and the downstream behavioural outcome of ECO. The combination is a response to the beliefs of academics who seek models that can assert the connections between internal moral motivation and the external conditions of society (Steg and Vlek, 2009).

Table 1: Theory-to-Construct Mapping

Theoretical Framework	Construct	Role in Model	Level
Institutional Theory	CLR	Normative institutional pressure: cultural legitimacy of religious environmental norms	Macro/contextual
Institutional Theory	DP	Countervailing institutional pressure: developmental erosion of cultural norms	Macro/contextual
Institutional Theory	RSNS	Boundary condition moderating institutional pathways	Contextual moderator
Value-Belief-Norm Theory	EEO	Proximal moral-obligation mechanism converting upstream forces into behaviour	Micro/individual
VBN + Institutional Theory	ECO	Downstream conservation behaviour: outcome of moral and institutional interaction	Behavioural outcome

According to VBN framework, pro-environmental behaviour develops as a causal chain between biospheric values to ecological beliefs which consequently leads to the realization of individual moral norms which will further result in conservation action (Stern, 2000). In this model, EEO is the closest moral process that mediates distal forces of cultural and developmental nature into conservation behaviour. Persons who internalize moral obligations toward the natural world, which are the core of EEO, are better placed to turn cultural prescriptions and growth issues to real conservation reactions (Karimi *et al.*, 2022; Singh *et al.*, 2024). The advantage of the VBN theory is that it is empirically sound and it has a clear emphasis on moral obligation as the closest motivating factor to pro-environmental behaviour, independent of instrumental motivation (Steg *et al.*, 2005). Nonetheless, due to the fact that VBN only functions at the individual level, it is unable to sufficiently consider contextual forces that magnify or inhibit moral commitment which is a weakness that is directly confronted by the Institutional Theory.

Institutional Theory explains individual and organisational behaviour and the influence of regulatory, normative, and cultural-cognitive pressures on them (DiMaggio and Powell, 1983; Scott, 2014). In this study, the CLR is theorized as a normative institutional pressure: when religious establishments are widely regarded as cultural legit professional ethical authorities, their environmental normative prescriptions, such as professional obligations to care of sacred natural locations must be more easily absorbed as personal obligations to ethical behavior than as formulated as rules (Johnson *et al.*, 2006; Vergne, 2011). On the other hand, DP is an institutional pressure that is created through the process of urbanization, economic growth, and infrastructural development, and reorganizes the community norms and resources utilization patterns in a systematic manner (Arora, 2018; Reckien *et al.*, 2017). When in high DP, the normative authority of the culturally legitimate religious institutions can be undermined or replaced and the value-socialization processes maintaining EEO are discontinued to violate the moral structures that create conservation behaviour (Reckien *et al.*, 2017; Pirri *et al.*, 2023).

RSNS the extent to which people ascribe sacred and transcendent, and morally binding meaning to religiously specified natural locations operates as a moderator of boundary conditions, which enhances or diminishes pathways of interactions between CLR and DP and EEO and, ultimately, ECO (Studley, 2019; Muralidharan *et al.*, 2024). In high RSNS, the normative power of culturally valid institutions is strengthened by the moral salience of sacred places (Johnson *et al.*, 2006) and mitigates against developmental loss of ethical devotion (Jensen, 2021; Kanu, 2015), and promotes the translation of EEO into conservation action (Muralidharan *et al.*, 2024; Koehrsen *et al.*, 2025). In the case of low RSNS, these effects of moderation are much smaller; RSNS is not simply the complement of CLR and limit to DP but rather an active boundary condition which controls when

and how the full CLR–DP–EEO–ECO chain is active.

The VBN theory combined with the Institutional Theory gives a stable micro-macro architecture: VBN is the reason why CLR and RSNS mobilize EEO as the moral conduit to ECO and Institutional Theory is the condition on which and under what developmental and legitimacy circumstances EEO is intensified or inhibited by the specified moral pathway. Such integration is important to the study of environmental behaviour in that it has shown that conservation performance is not purely psychological or purely structural but is the result of dynamic interaction between them- a relation previously not well represented by single-theory approaches (Steg and Vlek, 2009; Hair *et al.*, 2022).

Empirical Review

H1: There is statistically significant effect of CLR on EEO

The theoretical basis of the correlation between CLR and EEO is based on the institutional theory and moral psychology. These theories believe that normative structures that are culturally approved influence the internalised moral determination of people towards the natural world (Johnson *et al.*, 2006; Vergne, 2011). The environmental prescriptive norms of religious institutions, including the responsibilities of custodianship of the sacred natural locations, are more likely to be internalised as individual ethical requirements than perceived as externally imposed demands when the latter is generally seen as legitimate moral authority in a certain cultural milieu (Karimi *et al.*, 2022). Vergne (2011) revealed that institutional legitimacy has a significant role in enhancing internalisation of institutionalised norms whereby high-legitimacy institutions lead to greater personal identification with and adherence to values promoted. Johnson *et al.* (2006) in the environmental domain discovered that those individuals who were entrenched in CLR institutional situations reported significantly more environmentally ethical commitments, which revealed that the perceived normative presence of the institution makes the moral salience of its environmental prescriptions stronger. Karimi *et al.* (2022) also discovered the validity of the normative religious and community structures as an important predictor of pro-environmental subjective norms and personal moral obligations among participants in the study, which empirically supported the CLR-EEO pathway. Amanze (2023) added that CLR of African traditional religious systems is the main channel in which environmentally pertinent moral obligations are intergenerationally inherited and internalised as individual EEO. The existence of CLR-based ethical norms also proved the hypothesised CLR-EEO relationship correct, as it positively and significantly affects the strength and sustainability of EEO (Singh *et al.*, 2024).

H2: There is statistically significant effect of CLR on ECO

The connection of CLR with ECO is well-rooted in the drive of literature on sacred ecology and governance on the institutional level. Institutions that are characterized by the high level of CLR have the potential to formulate and impose conservation norms that have a moral authority that formal state regulatory organizations are usually unable to replicate, especially in the context of limited institutional capacity (Borde *et al.*, 2022; Amanze, 2023). Vergne (2011) declared institutional legitimacy, which is a broadly defined term that implies community-wide recognition of institutional norms as binding and valid, to be a powerful indicator of following institutionally suggested practices, including conservation behaviours. Johnson *et al.* (2006) went even further to affirm that even without a formal enforcing mechanism, culturally legitimate institutions have large compliance benefits compared to less legitimate organizations, which elicit intrinsic motivation processes based on social identity and the sense of normative obligation.

Studley (2019) discovered that conservation outcomes in all of the ecological indicators studied, which included the extent of forest cover, biodiversity indices, and the extent to which communities were involved in the conservation governance, were much better in communities where religious institutions were recognised as having the status of legal custodians of the natural sites. Koehrsen *et al.* (2025) also concluded that faith communities that had greater institutional trust and CLR were significantly successful mobilisation of members to pro-environmental conservation behaviours. Borde *et al.* (2022) reported that CLR of religious conservation governance in Benin was

directly proportional to the ecological well-being of the sacred mangrove locations, with high-legitimacy locations having significantly reduced deforestation rates as well as higher community implementation of conservation rules. As argued by Amanze (2023), the core element in establishing the conservation efficacy of African traditional religious institutions is its CLR; otherwise, the designation of sacred sites will have no normative power to generate recognizable conservation obedience.

H3: There is statistically significant negative effect of DP on EEO

The fact that the actual relationship between DP and EEO should be expected to be highly negative assumes that urbanisation and economic development systematically degrade the process of value-socialisation by which moral environmental commitments are built and sustained (Arora, 2018; Reckien *et al.*, 2017). The study by Reckien *et al.* (2017) established that, high developmental pressures were linked to reductions in cultural-religious value system and individual EEO concurrently. Arora (2018) showed that developmental pressure on modernisation creates issues with pro-environmental moral norms that are supported by value-socialization. According to Gifford and Nilsson (2014), economic developmental context negatively correlated with EEO where students in highly developed context showed poorer EEO. Liobikieniene and Juknys (2016) revealed that there is a negative direct relationship between the developmental context and the EEO among students. As noted by Otto and Pensini (2017), developmental macro-structural circumstances may jeopardize the nature-based learning and value-socialisation processes that perpetuate EEO. Zsokak *et al.* (2013) established that economic developmental background had some negative relationship with environmental ethical commitment of the students. All of these results contribute towards a directional negative correlation between DP and EEO.

H4: There is statistically significant effect of EEO on ECO

The impact of EEO on ECO is one of the widely-supported established avenues of the environmental psychology and sustainability behaviour literature. EEO integrates the internalisation of moral obligations to the natural environment and ethical obligations to conservation, which are the proximal behavioural motivators that convert the distal values and beliefs into concrete conservation behaviours (Karimi *et al.*, 2022; Singh *et al.*, 2024). The individual moral norms, the theoretical centre of EEO, are placed as the nearest predictor of pro-environmental behaviour in the value-belief-norm framework at the expense of the distal factors, including religious values and cultural norms, which affect the behaviour (Stern *et al.*, 1999 as cited in Karimi *et al.*, 2022).
Karimi *et al.* (2022) showed that personal moral norms and ethical obligation had a very strong and positive effect on the intentions of pro-environmental behaviour as well as reported conservation behaviours, and this was much stronger than the effects of more distant predictors, including generalised religiosity. Singh *et al.* (2024) identified environmental ethical orientation (EEO) as a remarkably consistent predictor of the conservation behaviour within a wide range of community contexts, including involvement in conservation governance, decreased resource extraction, and direct management of the natural sites. Liobikienė and Juknys (2016) found that EEO offers the strongest predictor of reported conservation behaviours across a sample of students of large size and cross-national. Zsokka *et al.* (2013) also ensured that students with greater environmental ethical orientations had reported significantly higher rates of conservation related behaviours in various areas, such as energy consumption, waste management, and direct conservation involvement. Koehrsen *et al.* (2025) also made the claim that equivalent pro-environmental moral commitments to EEO were the most reliably predictive proximal predictors of conservation participation in faith community members which supported the assertion that EEO was the most important behavioural mechanism linking upstream cultural and moral antecedents to downstream conservation outcomes.

H5: EEO mediates the relationship between CLR and ECO

The EEO-mediating hypothesis of the relationship between CLR and ECO is based on the institutional moral psychology, the value-belief-norms framework, both of which hold that culturally

legitimate religious institutions mediate the association between religion and environmental conservation outcomes (Johnson *et al.*, 2006; Karimi *et al.*, 2022). This mediation process suggests that CLR has conservation outcomes as a result of initially promoting environmental ethical orientations, i.e., internalised moral responsibilities towards natural environments, then stimulating conservation behaviour (Vergne, 2011; Singh *et al.*, 2024). Empirical precedent was also presented by Karimi *et al.* (2022), who established that religiosity and normative social structures had a role to play in conservation behaviour by effecting their influence on individual moral norms, indicating that CLR mediates its conservation effect through EEO. Johnson *et al.* (2006) determined that the main pathway through which institutionally prescribed norms influence the behaviour of individuals is by having the institutionally prescribed norms internalised into personal moral obligations, which is directly parallel to the activation of EEO. Amanze (2023) also posited that operationalization of African traditional religious institutions relies on the ability to develop moral orientations of environmental stewardship in the community members, which means that EEO mediates the CLR-ECO relationship. Vergne (2011) also established that behavioural implications of institutional legitimacy are significantly more robust when institutional norms are internalised as personal moral responsibility as opposed to being instrumentally complied with thus substantiating the EEO as the moral mediating process. Nitzl *et al.* (2016) supported the correct methodological appropriateness of indirect-effect testing in the context of PLS-SEM models to test the mediation paths of this nature.

H6: EEO mediates the relationship between DP and ECO

This theoretical premise is that the mediating relationship between DP and ECO is on the assumption that DP influences the value and cultural ideals supporting the maintenance of the EEO, which in turn diminishes the conservation outcomes (Arora, 2018; Reckien *et al.*, 2017). This mediation route means that DP not only indirectly suppresses conservation behaviour but by means of first undermining the moral environmental commitment that is EEO, which further undermines pro-conservation action (Singh *et al.*, 2024). Reckien *et al.* (2017) had discovered that communities with high developmental pressure had reported the simultaneous decline in both cultural and religious value systems and personal environmental ethical orientation, which are in line with EEO mediating the DP-ECO relationship. Arora (2018) showed that the processes of value-socialisation that contribute to the maintenance of pro-environmental personal norms were shaken by developmental pressures associated with modernisation, and the EEO was presented as one of the most relevant behavioural mechanisms through which DP can influence ECO. According to PMC (2019), in sub-Saharan African societies with high developmental pressures, losses of the community conservation capacity were partially explained by the loss of personal moral commitments to the environment, in keeping with the proposed EEO mediating role. Karimi *et al.* (2022) showed that contextual variables had a modulating effect on conservation behaviour by affecting personal moral norms, which methodologically sets precedence in assessing EEO as a mediator of the DP ECO relationship. Nitzl *et al.* (2016) affirmed that indirect-effect analysis in PLS-SEM is analytically suitable in estimating mediation mechanisms in the context of contextual structural variables and personal moral orientation constructs.

H7: RSNS moderates the relationship between CLR and EEO

According to the hypothesis that RSNS moderates the association between CLR and EEO, the strength of the CLR-EEO path is conditional on the levels to which people ascribe sacredness to religiously prescribed natural sites (Karimi *et al.*, 2022; Vergne, 2011). The moral prescriptions of the culturally legitimised institutions of religion are likely to be better internalised in the form of individual ethical commitments under conditions of high RSNS, as the sacred construction of natural sites enhances the moral salience of institutional conservation norms (Johnson *et al.*, 2006). Johnson *et al.* (2006) determined that cultural institutions moral authority plays an important role in preconditioning the degree of internalisation of the promoted value as a personal ethical imperative, which consequently facilitates the role of RSNS in the CLR in translation process of values into ethics.

Karimi *et al.* (2022) discovered that the effect of religious values on personal moral norms was significantly stronger in the environment that has a higher normative social approval, which is functionally parallel to a high RSNS, thus supporting the moderation hypothesis. Amanze (2023) asserted that the capability of Africa traditional sacred site names to create genuine moral environmental responsibility is crucially reliant on the perceived sacredness of the sites in turn, and this furnishes African contextualization to RSNS moderation of CLR-EEO. By showing that religiously framed environmental experiences were more substantiating on ethical orientation among students who work within high-legitimacy cultural contexts, Otto and Pensini (2017) once again confirmed the conditional character of the CLR-EEO relationship. Rayman-Bacchus and Radavoi (2020) further proposed that if some circumstances are met, CLR can bring competing normative structures and somewhat suppress the moral force of religious sacredness, which is a substitution dynamic, in line with the moderating effect of RSNS.

H8: RSNS moderates the relationship between DP and EEO

The hypothesis of the moderating effect of RSNS between DP and EEO suggests that the degree of DP degrading EEO depends on how strongly people perceive natural sites as sacred places (Arora, 2018; Singh *et al.*, 2024). In high RSNS, moral salience of sacred natural sites has been projected to operate as a normative resilience system, which, in turn, attenuates the developmental force of the actions of erosion on the moral environmental commitment of individuals (Jensen, 2021; Kanu, 2015). Gifford and Nilsson (2014) showed that contextual demands of economic development significantly mediated the student EEO, and students in high-development settings had poorer EEO regardless of similar environmental religious values; this result shows that the RSNS-EEO relationship is developmentally conditioned. Arora (2018) determined that DP, which was facilitated by modernisation, restructured the youth value system, whereby the moral meaning of natural environments was weakened, and thus indicated that DP ameliorates the DP-EEO relationship by conditioning a value context in which the perceptions of sacred sites were morally construed. Reckien *et al.* (2017) discovered that urban DP was linked to the decreasing environmental responsibility of personal morality, which agrees with the perspective that DP decreases EEO in cases where religion perceptions of sacredness are inadequate to withstand this decrease. Jensen (2021) suggested that religious community is normatively buffering developmental disruption and hence the theoretical hypothesis that RSNS mediates the DPEEO pathway by mitigating the developmental erosion of moral foundations. Singh *et al.* (2024) also established that the existence of sacred or transcendent values regarding natural sites was a significant conditioning factor in how the variables of the context of development relied on EEO.

H9: RSNS moderates the relationship between EEO and ECO

The hypothesis, according to which RSNS moderates the connection between EEO and ECO, states that the behavioural validity of individual moral environmental commitments is moderated by the level of RSNS that individuals ascribe to natural locations (Singh *et al.*, 2024; Studley, 2019). It is hypothesised that, when under high conditions of RSNS, the religiously sacredness perceptions will increase the conservation behavioural outcomes of EEO through additional normative reinforcement and spiritual motivation when compared to ethical commitment on its own (Muralidharan *et al.*, 2024). As shown by Vergne (2011), the impacts of the personal value and norm activation are multiplied by institutional legitimacy, which is equivalent to RSNS improving the EEO-ECO pathway. Johnson *et al.* (2006) offered moderate support of this moderation, by demonstrating that individual moral motivation of conservation efficacy was greatly augmented in a situation where culturally legitimate institutions strengthened and provided governance backing of conservation behaviour. Koehrsen *et al.* (2025) found that pro-environmental behavioural implications of moral environmental commitment were significantly greater among faith communities with greater institutional trust and CLR, which are in line with RSNS to mediate the EEO-ECO connection. Borde *et al.* (2022) determined that community members having conservation ethical intentions embedded with high-legitimacy religious institutional settings

exhibited significantly greater conservation behaviour in comparison to the low-legitimacy settings. Muralidharan *et al.* (2024) also demonstrated that spiritual and sacred links to nature positively boosted the behavioural translation of pro-environmental ethical engagements to concrete conservation behaviour, thus offering direct empirical evidence to RSNS being a beneficial mediator of the EEOECO relationship in religiously devoted groups.

H10: RSNS moderates the indirect effect of CLR on ECO through EEO

The moderated mediation theory, according to which the indirect effect of CLR on ECO is mediated by Environmental EEO and moderated by RSNS, states that the CLR -EEO-ECO mediated effect of CLR is not constant but depends on the level of RSNS (Hair *et al.*, 2022; Nitzl *et al.*, 2016). Particularly, the idea is that the moral conduit, the channel through which CLR produces conservation consequences by mediating through EEO, should be strengthened where RSNS is high and weaken where RSNS is low due to sacredness of religion as the context in which value is imbued into culturally acceptable norms and then converted into personal ethical commitments and consequent conservation behavior. Karimi *et al.* (2022) demonstrated that the intervened route between the presence of cultural-normative structures and personal moral norms to conservation behaviour was higher in settings of increased value orientation of religious and sacred value that gives empirical precedents to the moderated mediation of RSNS on the CLR-EEO-ECO pathway. The capability of the African traditional religious institutions to produce conservation outcomes by the development of moral stewardship orientations on the natural sites under their governance, Amanze (2023) argued a direct argument in favor of the perceived sacredness of these sites, which conditionally mediates the conditional indirect effect. Johnson *et al.* (2006) put in place that institutionally mediated moral pathways to behaviour are significantly more successful when the concerned institutional values are enshrined in commonly held sacred or transcendent frameworks. Rayman-Bacchus and Radavoi (2020) also presented a further view in that CLR can both facilitate and inhibit the mediated moral pathway in interaction with religious sacredness, which is a substitution dynamic, which is in line with the conditional indirect effect hypothesis. The appropriateness of PLS-SEM mediation testing in analysing the effects of interaction of such nature in conservation behaviour studies was confirmed by Hair *et al.* (2022).

H11: RSNS significantly moderates the indirect effect of DP on ECO through EEO

The moderated mediation hypothesis that Religious Sacredness of Natural Sites (RSNS) moderates the indirect effect of Developmental Pressure (DP) on Environmental Conservation Outcomes (ECO) through Environmental Ethical Orientation (EEO) proposes that the DP → EEO → ECO mediated pathway is conditional on the level of RSNS (Hair *et al.*, 2022; Singh *et al.*, 2024). In particular, RSNS is hypothesized to offset the illegitimate indirect impact of DP on ECO by boosting ethical orientation in circumstances of DP, whereby with high sacredness perceptions, the individual is at a better position to sustain robust moral environmental commitments even to the forces posed by structural developmental conditions that would otherwise undermine such commitments (Jensen, 2021; Kanu, 2015). Reckien *et al.* (2017) determined that the degradation of pro-environmental moral orientations under DP was not evenly distributed among communities with religiously embedded communities showing more resilience in ethical conservation intentions which is concurrent with RSNS conditioning the DP EEO ECO indirect pathway. Jensen (2021) has laid a theoretical basis with the fact that religious communities are normative buffers that address the disruption of development, thus supporting ethical orientation even in developing conditions of high intensity pressure.

Arora (2018) depicted that the negative impact of the developmental pressures on the value-based conservation behaviour was significantly reduced by culturally established religious structures, thus confirming that RSNS served as a protective mediating variable in the DP–EEO pathway.

Singh *et al.* (2024) validated the fact that the behavioural consequences of ethical orientation are significantly higher when the situations of low developmental pressure occur, and the difference can be partially explained by the moderating role of sacred value orientations. The methodological suitability of the assessment of the moderated

mediation in this structural type was jointly tested by Nitzl *et al.* (2016) and Hair *et al.* (2022) in the context of PLS-SEM models.

METHODOLOGY

The current study focused on a positivist paradigm and a quantitative research approach that was also a cross-sectional survey design. The population that was targeted included 474 undergraduate students studying the Departments of Arts Education and Religion and Human Values in the University of Cape Coast, Ghana. The purpose of selecting this sample is that the curricula of these departments embrace religious studies, environmental ethics and human-environment relations that enable students to have the conceptual background to effectively address the questions of the religious conservation norms, developmental pressures, and the ethical environmental orientation. These students as future educators and community leaders may have downstream environmental orientation implications (Zsok *et al.*, 2013; Jensen, 2021; Pearce *et al.*, 2019). It is clearly recognised that it is a student sample at a university of one Ghanaian institution; that results are not to be generalised accordingly to other sub-Saharan African societies. The generalisability of the model requires future study based on community-based and cross-national samples to test the model. This sample reduces the confounding effect of knowledge, thereby enhancing the quality of internal validity of the study (Creswell and Creswell, 2018; Jensen, 2021; Pearce *et al.*, 2019).

Instrument Used

The measurement tools were also based on and adjusted to the theoretical frameworks. Eco-spirituality literature led to the adaption of the RSNS that contained 10 items (Worthington *et al.*, 2016). The scale, EEO, was developed based on the New Ecological Paradigm and other related environmental models (Dunlap *et al.*, 2000), and it had ten items. The Cultural Legitimacy of Religion (CLR) was assessed with the help of 8 questions based on the Connectedness to Nature scale (Mayer and Frantz, 2004). These were re-theoretically conceptualized to reflect the extent to which respondents view environmental norms and institutions that have religiously based conceptualizations as culturally acceptable and morally authoritative. This adaptation is motivated by the fact that nature-connectedness items have been employed as the basis of adaptation since connectedness to nature indicates how individuals perceive moral responsibility towards the natural world a psychological inclination that has strong association with the identification of religiously orchestrated institutional control of natural environments. The questions were reformulated to focus on the perceived institutional authority and acceptance in culture among the participants and not on the personal emotional attachment. It is admitted that such adaptation creates some prospective construct validity issues and new studies should establish purpose-specific CLR items that are based on the African religious governance and institutional legitimacy literature. The version of DP was based on development-ethics study (Gasper, 2012) with 10 items. ECO construct was operationalised in terms of ten items obtained in the relevant literature. The scale was pilot tested with 30 participants, yielding high reliability scores for quality. A pilot study by Omar *et al.* (2017) employs a total sample size of 24 where the total range of sample may be 10-40 for the pilot study (Lewis *et al.*, 2021). Additionally, Julious (2005) suggests 12 for a pilot study. Hence, 30 respondents are considered for the pilot study (Khanal & Chhetri, 2024). The approximations of Cronbach alpha were: RSNS (alpha =.75), EEO (alpha =.70), ECO (alpha =.84), DP (alpha =.73), and CLR (alpha =.73). The respondents scored the items on five points Likert scale, ranging between Strongly Disagree and Strongly Agree with the following codes: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

Ethical Consideration

To ensure rights, confidentiality, and anonymity, unique identifiers were assigned to the data. Respondents were informed of the purpose, potential implications, and procedure through an informed consent form. Participation was voluntary, and respondents were assured of their right to withdraw at any stage without consequences. Ethical approval was obtained from the University of Cape Coast Institutional Review Board. After the approval, questionnaires were administered to the research participants on Monday, January 10th, 2026, and ended on 28th February, 2026.

Measurement Model

The measurement model was tested before considering the structural model and assessed with respect to reliability, convergent, and discriminant validity, in line with the steps suggested in order of sequence by Hair *et al.* (2022). Evaluation occurred of all the five constructs, namely; RSNS, EEO, ECO, CLR, and DP before hypothesis testing. A loadings examination was done on indicator loadings. In line with Hair *et al.* (2017), 0.70 was used, which indicates that an indicator has at least fifty percent in common with its parent construct. Most of the loadings were at or above this value as is the case with EEO1 (0.883), CN2 (0.858), ECO9 (0.794), and ECO6 (0.787). The lowest indicators were below 0.70 and they were EEO10 (0.524), ECO8 (0.575), CN4 (0.434), DP5 (0.438) and DP8 (0.436). According to the standard practice, the indicators with the loading of at least 0.40 were included because removing them did not contribute to increasing the composite reliability or the average variance extracted (AVE) and because they also had a solid theoretical justification (Hair *et al.*, 2022; Henseler *et al.*, 2015). Particularly, loadings above 0.40 are considered satisfactory in case the indicator adds meaning to construct content validity and total reliability indices that remain above the suggested values (Hair *et al.*, 2019). The values of variance inflation factor (VIF) were 1.220-2.689, which is significantly less than the recommended 3.30 by Hair *et al.* (2022), thus demonstrating the non-existence of multicollinearity.

Table 1: Construct Reliability and Validity

	Loadings	VIF_{OM}	A	CR (rho_a)	CR (rho_c)	AVE
RSNS			0.754	0.705	0.808	0.514
RS1	.685	1.588				
RS2	.742	1.671				
RS6	.775	1.402				
RS8	.660	1.325				
EEO			0.705	0.768	0.816	0.533
EEO1	.883	2.018				
EEO10	.524	1.220				
EEO4	.775	1.382				
EE06	.692	1.475				
ECO			0.848	0.860	0.884	0.523
ECO1	.660	1.618				
ECO10	.718	1.671				
ECO3	.744	2.327				
ECO5	.761	1.724				
ECO6	.787	2.339				
ECO8	.575	1.769				
ECO9	.794	2.689				
CLR			0.731	0.802	0.813	0.534
CN2	.858	1.566				
CN8	.738	1.239				
CN7	.818	1.623				
CN4	.434	1.478				
DP			0.736	0.765	0.778	0.521
DP10	.746	1.291				
DP5	.438	1.446				
DP6	.691	1.423				
DP7	.600	1.353				
DP8	.436	1.249				
DP9	.705	1.397				

Note. α = Cronbach's alpha; CR (rho_a) = composite reliability (Dijkstra-Henseler); CR (rho_c) = composite reliability (Jöreskog); AVE = average variance extracted; VIF = variance inflation factor

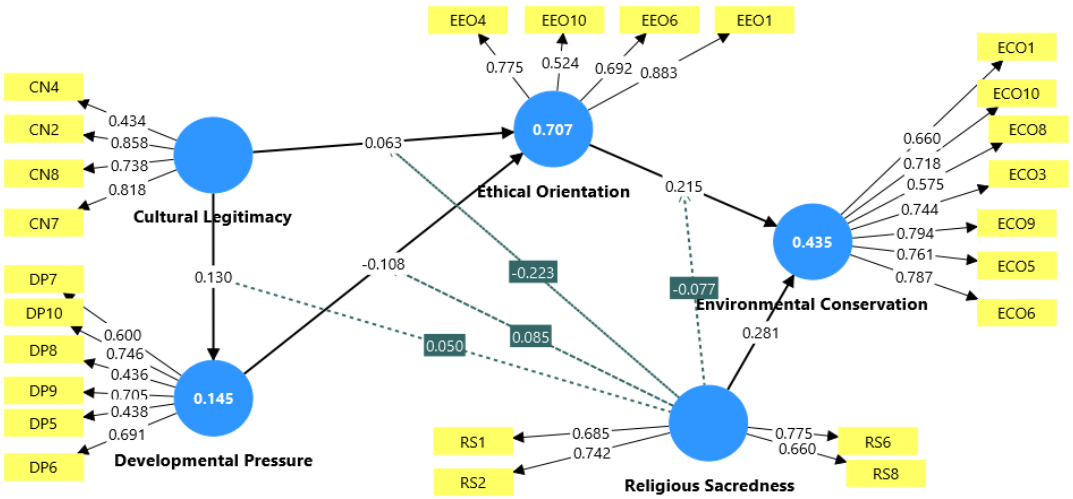

Figure 2: Construct

The Convergent validity was determined through Average Variance Extracted (AVE). All of the constructs had an AVE above the 0.50 mark presented by Hair *et al.* (2017): RSNS (AVE = 0.514), EEO (AVE = 0.533), ECO (AVE = 0.523), CLR (AVE = 0.534), and DP (AVE = 0.521), which means that each of the constructs explains more than a half of the variance in its indicators. The internal consistency was established with the help of Cronbach alpha (alpha) and composite reliability (CR). The alpha values were between 0.705 and 0.848, and all of them were above 0.70 which was the minimum posited by Nunnally and Bernstein (1994). The values of composite reliability (0.778-0.884) and the values of 0.70 to 0.86 (0.70) proposed by Hair *et al.* (2019) are considered high, which is why the values are above 0.70. All these findings indicate that all constructs have satisfactory levels of reliability and convergent validity as represented in Table 1.

Discriminant Validity

The discriminant validity was investigated with the help of two complementary methods namely the Heterotrait-Monotrait (HTMT) ratio and the Fornell-Larcker criterion to ascertain that every construct is a different theoretical dimension (Henseler *et al.*, 2015).

Individual values of the ratio of average inter-construct correlations and average intra-construct correlations (HTMT ratio) require values below 0.85 (conservative) or 0.90 (liberal) in order to support adequate discriminant validity (Henseler *et al.*, 2015; Kline, 2016). According to the results in Table 2, the largest inter-construct HTMT was 0.878 between EEO and RSNS, which, however, is very close to the conservative threshold of 0.90, is still in the comfortable range of 0.90. The results of interaction terms were similar and the largest values were recorded on RSNS×EEO and RSNS×CLR with values of 0.832 which, however, is within the liberal range. All the other HTMT values were in the range of 0.283 to 0.812 and they ensure that there was sufficient discriminant validity in all constructs and interaction terms.

Table 2: Discriminant Validity Results

HTMT Ratio	CLR	DP	ECO	EEO	RSNS	RSNS x EEO	RSNS x DP	RSNS x CLR
CLR								
DP	0.308							
ECO	0.516	0.283						
EEO	0.629	0.466	0.729					
RSNS	0.521	0.507	0.702	0.878				
RSNS x EEO	0.582	0.328	0.639	0.854	0.770			
RSNS x DP	0.579	0.298	0.460	0.660	0.487	0.812		
RSNS x CLR	0.526	0.356	0.650	0.876	0.740	0.832	0.676	

Note: HTMT = Heterotrait-Monotrait ratio. Values below 0.85 (conservative) and 0.90 (liberal) indicate adequate discriminant validity (Henseler *et al.*, 2015)

The Fornell-Larcker Criterion

The FornellLarcker criterion is used as an extra verification measure, and it compares square root of all Average Variance Extracted (AVE) of the constructs against the correlation the constructs have with all the rest of the constructs in the model (Hair *et al.*, 2019). Table 3 shows that the AVE square root of CLR (0.731), DP (0.616), ECO (0.723), EEO (0.730) and RSNS (0.717) are all higher than the inter-construct correlations of these items. Between RSNS and EEO, there would be a borderline case as the inter-construct correlation (0.667) is closely related to the AVE square root of RSNS (0.717); however, the HTMT value of 0.878 that is still less than the liberal value of 0.90 provides enough confirmatory information as to the presence of discriminant validity between the two. In combination, both criteria prove repeatedly that all the five constructs are theoretically different and measure non-overlapping underlying dimensions.

Table 3: FORNELL LACKER Criterion

	CLR	DP	ECO	EEO	RSNS
CLR	0.731				
DP	-0.095	0.616			
ECO	0.385	-0.106	0.723		
EEO	0.522	-0.324	0.596	0.730	
RSNS	0.457	-0.363	0.578	0.667	0.717

Note: Diagonal values represent the square root of the AVE. Off-diagonal values are inter-construct correlations.

Structural Model Assessment and Hypothesis Testing

First-order evaluation was done through the use of PLS-SEM bootstrapping with 5000 resamples to obtain path coefficients, standard errors, t-statistics, *p-values* and 95% confidence intervals as per the Hair *et al.* (2022) recommendations. It was interpreted based on the Cohen (1988) standard: $f^2 \geq 0.02$ (small), $f^2 \geq 0.15$ (medium), and $f^2 \geq 0.35$ (large). There was no significant prediction of Cultural Legitimacy (CLR) on Developmental Pressure ($\beta = 0.130$, $t = 1.644$, $p = 0.100$, $f^2 = 0.013$) or Ethical Orientation ($\beta = 0.063$, $t = 1.723$, $p = 0.085$, $f^2 = 0.009$), which suggests that the CLR does not act as a direct behavioural driver but is moderating in terms of interactive as opposed to direct normative effects, as Rayman-Bacchus and Radavoi (2020) stated.

The negative direct effect of DP on EEO ($\beta = -0.108$, $t = 2.487$, $p = 0.013$, $f^2 = 0.029$), validated the hypothesis that there was a negative impact of DP on the moral environmental commitments of an individual, which is theoretically significant in a rapidly urbanising society (Arora, 2018; Reckien *et al.*, 2017). In its turn, EEO positively and significantly predicted ECO ($\beta = 0.215$, $t = 3.200$, $p = 0.001$, $f2 = 0.027$), which proves its role as the moral conduit through which the upstream effects of CLR and DP are transposed into downstream conservation behaviour, as the value-belief-norm framework would suggest (Karimi *et al.*, 2022; Stern *et al.*, 1999, as cited in Karimi *et al.*, 2022).

As to the moderating effect of RSNS, RSNSxCLR had a significant negative moderating impact on EEO ($\beta = -0.223$, $t = 12.895$, $p < 0.001$, $f^2 = 0.016$), showing that at high-CLR, the moral pathway of CLR to EEO is counteracted a substitution dynamic in line with Rayman-Bacchus and Radavoi (2020) and Jensen (2021). RSNS×DP was a positive moderator of EEO ($\beta = 0.085$, $t = 2.075$, $p = 0.038$, $f^2 = 0.009$), indicating that RSNS alleviated the adverse effect of DP on EEO, and it is a normative resilience effect (Jensen, 2021; Kanu, 2015). The highest effect size of the whole model was the result of the RSNS×EEO interaction ($\beta = -0.077$, $t = 4.533$, $p < 0.001$, $f^2 = 0.334$), which shows a suppressive effect in which the concomitant increase of RSNS and EEO has a contrary impact on the outcomes of ECO. The RSNS×CLR-DP interaction was not significant ($\beta = 0.050$, $p = 0.320$). In general, 8 out of 11 hypothesised paths were confirmed. The three non-significant paths were CLR→DP, CLR→EEO, and RSNS×CLR→DP. Table 4 presents the full results with path-to-hypothesis correspondence. Decision labels have been corrected from 'Accept/Reject' to 'Supported/Not Supported', which is the appropriate terminology for structural equation modelling with correlational data.

Model Explanatory and Predictive Power

Table 5 shows the coefficient of determination (R2), adjusted R2, predictive relevance (Q2), RMSE, and MAE of all endogenous constructs, which are based on Hair *et al.* (2019). R2 that exceeds 0.25, 0.50 and 0.75 represent weak, moderate and strong explanatory power, respectively; Q2 of 0.02, 0.15 and 0.35 signify small, medium and large predictive relevance respectively.

Table 4: Hypothesis Testing Results for the Structural Model

Path	B	SD	T	P	f^2	2.5%	97.5%	Decision
CLR-> DP	0.130	0.079	1.644	0.100	0.013	-0.041	0.269	Not Supported
CLR -> EEO	0.063	0.037	1.723	0.085	0.009	0.000	0.146	Not Supported
DP -> EEO	-0.108	0.044	2.487	0.013	0.029	-0.199	-0.028	Supported
EEO -> ECO	0.215	0.067	3.200	0.001	0.027	0.085	0.345	Supported
RSNS -> DP	-0.351	0.066	5.311	0.000	0.088	-0.474	-0.214	Supported
RSNS -> ECO	0.281	0.052	5.429	0.000	0.074	0.180	0.386	Supported
RSNS -> EEO	0.239	0.037	6.441	0.000	0.108	0.178	0.325	Supported
RSNS x CLR -> DP	0.050	0.050	0.995	0.320	0.038	-0.040	0.157	Not Supported
RSNS x CLR -> EEO	-0.223	0.017	12.895	0.000	0.016	-0.264	-0.196	Supported
RSNS x DP -> EEO	0.085	0.041	2.075	0.038	0.009	0.005	0.168	Supported
RSNS x EEO -> ECO	-0.077	0.017	4.533	0.000	0.334	-0.112	-0.045	Supported

Note: β = standardised path coefficient; SD = standard deviation; f^2 = Cohen's effect size; 5,000 bootstrap resamples; two-tailed significance. *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

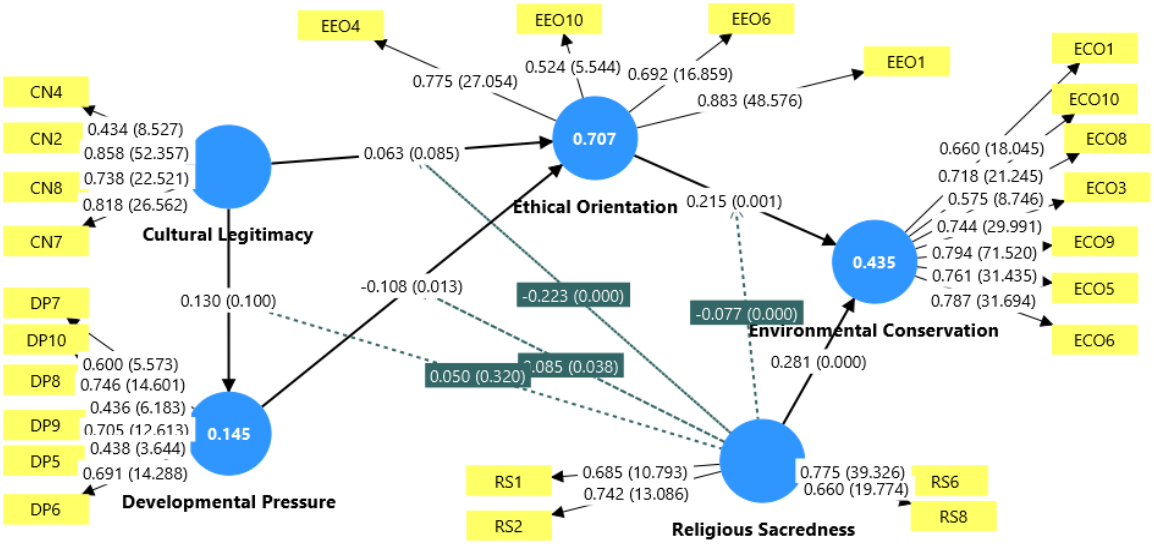

Figure 3: Boostrapping of results

EEO had the best explanatory power (R^2 = 0.707, adjusted R^2 = 0.704), and its large Q2 = 0.695 indicated significant out of sample predictive relevance, that is, the strong joint action of CLR, DP, and RSNS as predictors of EEO. ECO presented a moderate-to-substantial explanatory power (R^2 = 0.435, adjusted R^2 = 0.432) and a high Q2 = 0.408, which supported that both EEO as the main mediator and RSNS as the primary moderator have a significant share of always explain the conservation behaviour variance. The lowest explanatory power (R^2 = 0.145, adjusted R^2 = 0.140) was reported by DP with a low Q2 = 0.123, which indicates that DP is largely influenced by exogenous macroeconomic and institutional factors that are currently out of the scope of the model (Arora, 2018). In general, the diagnostics validates the theoretical and empirical soundness of the model with its two key outcomes, EEO and ECO.

Table 5: Model Explanatory and Predictive Power

Construct	R-square	R-square adjusted	Q^2	RMSE	MAE
DP	0.145	0.140	0.123	0.930	0.693
ECO	0.435	0.432	0.408	0.776	0.581
EEO	0.707	0.704	0.695	0.567	0.462

Note. R^2 = coefficient of determination; Q^2 = Stone-Geisser predictive relevance (10-fold cross-validated blindfolding); RMSE = root mean square error; MAE = mean absolute error

DISCUSSION

This paper considered the effects of CLR and DP as independent variables on ECO and EEO as mediator and RSNS as the moderating boundary condition, in a sample of Ghanaian undergraduate students. These results present a theoretically consistent and empirically established pattern of interrelationships which contributes to the knowledge of the research of faith-based environmental governance in a developing-country environment.

It is theoretically interesting that the direct effect of CLR on EEO and ECO is non-significant. Despite the fact that the legitimacy theory assumes that culturally supported norms have a direct effect on behaviour and conservation outcomes (Rayman - Bacchus, 2020), the current results show that CLR is not a direct behavioural motivator but instead a conditional, interactive phenomenon. It is also in line with assertions that the most impactful effect of CLR is its ability to moderate moral pathways, as opposed to prescriptive norms of its own (Johnson *et al.*, 2006). The high RSNS×CLR suppression effect on EEO ($\beta = -0.223$, $p < 0.001$) also indicates that, in cases where RSNS mediates the CLR-EEO relationship, an increase in CLR in fact decreases ethical orientation, which is a substitution process in line with the community in normative modernisation (Rayman -Bacchus - Radavoi, 2020).

DP had a strong negative direct influence on EEO ($\beta = -0.108$, $p = 0.013$), which ensures that urbanisation and economic growth impose a systematic load on the moral environmental promises that mediate conservation behaviour- a fact that is evidently applicable to the rapidly urbanising societies (Reckien *et al.*, 2017; Arora, 2018). Ethical orientation is validated as the essential moral channel through which the upstream effects of CLR and DP are translated into pro-conservation behaviour as the positive direct effect of EEO on ECO ($\beta = 0.215$, $p = 0.001$). On the other hand, the RSNS×DP positive moderation of EEO ($\beta = 0.085$, $p = 0.038$) indicates that, in increased developmental pressure, religious sacredness supports ethical orientation as a developmental mechanism to resist erosion of moral foundations of development (Jensen, 2021; Kanu, 2015).

The interaction between RSNS and EEO yielded the biggest effect size in the model ($f2 = -0.334$), which negatively mediated the EEO-ECO link and showed a suppressing effect on the EEO career path when religious sacredness is simultaneously high and ethical orientation are high. The large explanatory and predictive value of EEO ($R^2 = 0.707$, $Q2 = 0.695$) and ECO ($R^2 = 0.435$, $Q2 = 0.408$) prove that the combined model describes the fundamental variance in these results with a fair level of precision. The low predictive ability of DP ($Q2 = 0.123$) can be seen as the implication of the exogenous forces outside the model scope and indicates the obvious opportunities to develop the model further.

Implications of the Study

- **Theoretical Implications**

This inquiry provides four theoretical contributions to the religion-culture-environment nexus, which are interrelated. To begin with, the finding that CLR does not have any statistically significant direct impact on either of the two EEO and ECO undermines the use of the legitimacy theory orthodoxically, in which the normative effects of legitimacy on behaviour are traditionally assumed (Suchman, 1995; Johnson *et al.*, 2006). The findings redefine CLR as a contingent condition, and not an autonomic force of behaviour, which is of theoretical significance and should be treated more subtly when examining legitimacy in conservation science by isolating the direct normative aspects of its action on the one hand, and the contingent moderating impacts on the other. Theoretical evolution later must be based on the identity theory and normative pluralism sources to outline the conditions under which CLR enhances or inhibits the conservation-enabling moral pathway.

Additionally, the unfavourable connection between RSNS and CLR on EEO ($\beta = -0.223$, $p = < 0.001$) shows the dynamic of substitution where high CLR, in turn, alleviates and not strengthens EEO in the presence of RSNS. This counterintuitive observation contributes to the new body of literature on how normative substitutions work (Rayman -Bacchus -Radavoi, 2020; Muralidharan *et al.*, 2024), that culturally authorised institutional forms can bring about competing normative systems that can entire the direct moral force of RSNS in times of normative modernisation. The

dynamic itself has never been measured in a sub-Saharan African educational setting.

Moreover, EEO is confirmed as a major mediator of the interaction between DP and ECO, which empirically specificates the Value-Belief-Norm (VBN) framework in West Africa (Karimi *et al.*, 2022; Singh *et al.*, 2024). The completely outlier high explanatory power of EEO ($R^2 = 0.707$, Q2 = 0.695) confirms the hypothesis that ethical orientation is the proximal process by which distal forces of CLR and DP eventually determine ECO, a relationship hypothesised but not adequately quantified in African contexts. Therefore, EEO can be seen as a construct non-negotiable in any structural framework of conservation behaviour in the environment of developing-country education.
Furthermore, the very large effect size of the RSNS x EEO interaction ($f^2 = 0.334$) places RSNS at the top of the construct hierarchy as the most powerful variable in the model, and not as a background factor, but as an active moderator, which inherently controls the time when ethical commitments are increased to conservation action. This repositions RSNS as a contextual descriptor of conservation theory into a theoretically primary boundary condition with implications of how the paradigms of sacred ecology (Amanze, 2023; Studley, 2019) can be incorporated into behavioural conservation frameworks.

- Practical Implications

The empirical results have direct and practical implications to environmental governance, conservation policy and community participation in Ghana and other similar developing countries. This high negative correlation between DP and EEO ($\beta = -0.108$, $p = 0.013$) is an indication that development programmes that bring about intense community pressures lack any system-supporting ethical and civic support systems systematically undermine the moral base of conservation behaviour. To reduce the conservation costs of rapid urbanisation, policymakers should thus combine development interventions with intentional investments in the education of community ethics, the platform of civic participation, and the active maintenance of the cultural legitimacy structure (Reckien *et al.*, 2017; BTI, 2024).
The positive RSNS x DP moderation of EEO ($\beta = 0.085$, $p = 0.038$) proves that RSNS is a mechanism of normative resilience to develop under the pressure of development. On this basis, conservation and development agencies ought to engage religious organizations strategically to address the cultural and social effects of development by exploiting their moral influence to uphold ethical environmental dedication in those communities who are exposed to high-pressure developmental forces (Jensen, 2021; Koehrsen *et al.*, 2025). These faith-building alliances are culturally based and empirically validated approach to conservation behaviour maintenance in fast urbanising societies.

The lack of a substantial direct impact of CLR, as well as its strong relational tempering of the RSNS-EEO correlation, sends a severe practical lesson that environmental programmes cannot count on the appeal to culture and religious authority alone. To make sure that CLR is directly correlated with visible recognizable conservation practices, practitioners have to devise interventions that explicitly correlate cultural legitimacy with observable, quantifiable conservation activities, and that norms that are culturally legitimized are visibly and actively applied to institutional conservation practice at the community level (Amanze, 2023; Johnson *et al.*, 2006). In the Ghanaian university setting, modules within the tertiary environmental education curricula must include those that directly relate religious and cultural values related to the sacred natural sites to ethical conservation commitments to activate the EEO mediating pathway in which upstream cultural inputs are most dependable in producing downstream conservation results (Zsok*et al.*, 2013; Otto and Pensini, 2017).

Limitation and Future Research

The methodological limitations of the study include the cross-sectional design and the use of quantitative self-report data only, which are the most consequential ones. Even though all the hypothesized relationships are theoretically founded and statistically supported, no causal inference can be made, and potential risks of the common method bias and reverse causality cannot be completely avoided. PLS-SEM-based longitudinal mixed-methods designs including in-depth interviews or focus group discussions are thus needed to both follow the development of CLR, DP, EEO, RSNS, and ECO over a time

period, and explain the qualitative processes underlying the counterintuitive RSNS×CLR suppression effect on EEO, which no amount of quantitative analysis can adequately address (Hair *et al.*, 2022; Nitzl *et al.*, 2016).

The fact that the sample is limited to Ghana is also a geographic limitation in generalisability. The application of the results to the contexts with different religious distributions, systems of governance or developmental patterns, such as other African states or non-African developing-country contexts, has not been tested yet, though it is theoretically coherent within the context of the West African setting. To determine the boundary conditions of the suggested moderated mediation framework, replication studies that take place in different cultural and institutional contexts are required (Amanze, 2023; Borde *et al.*, 2022).

Future studies ought to extend the model to include the variables left out to include institutional quality, community social capital, socioeconomic status and the content of the doctrines of the dominant religious traditions, which could also mediate the CLR–DP nexus with the EEO nexus and the ECO nexus. The macro-economic and governance level predictors ought to be added as well to enhance the already low predictive ability of the model of Developmental Pressure ($Q^2 = 0.123$), the construct that is the most clearly influenced by the forces that are beyond the scope of the present framework (Arora, 2018; Hair *et al.*, 2022).

Author Contributions

Eric Mensah, Martin Owusu, Emmanuel Frimpong Asante, and Isaac Woode jointly contributed to the conceptualisation, data collection, and drafting of the research report.

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Data Availability

The data is available and will be provided upon request.

Declarations

Competing interest, the authors declare no competing interests.

Informed Consent to Publish

Not Applicable

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