Innovation as Stewardship: Creation Theology and Sustainable Product Development

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ABSTRACT

Growing environmental pressures have intensified calls for innovation that supports sustainable development, yet innovation itself can also increase consumption and ecological strain. This study examines innovation as stewardship by bringing creation theology into dialogue with sustainable product development. Using a conceptual desk review approach, the paper synthesises scholarly literature on innovation, sustainability, and business development alongside theological and biblical interpretations of creation and stewardship. The analysis shows that sustainable product development is most effective when social and environmental considerations are integrated from the earliest stages of design, material selection, and production. It also highlights the importance of interdisciplinary collaboration and organisational capabilities in sustaining responsible innovation over time. From a theological perspective, the study argues that innovation reflects human responsibility as stewards of creation and must therefore be guided by restraint, accountability, and care rather than novelty or growth alone. The paper contributes to sustainability and innovation discourse by framing innovation as a moral practice and offering stewardship as a guiding principle for responsible product development and long term ecological wellbeing.

Keywords: Innovation; Stewardship; Sustainable Product Development; Creation Theology; Sustainability

INTRODUCTION

The issue of innovation as stewardship in creation theology and sustainable product development has received increased attention in recent times (Maseno & Mamati, 2021). The call for innovation has become heightened in different parts of the world (Maseno & Mamati, 2021). The concept of innovation is mostly used in different ways by firms in their business models to help create value added outcomes as well as product development. However, without a strategic implementation strategy developed with input from a wide variety of stakeholders both inside and outside the company, it cannot be operationalized successfully, particularly when bringing innovation to market (Maseno & Mamati, 2021). Different forms of innovation can be distinguished based on the volume or scope of newly generated information. In general, researchers use the terms radical innovation when discussing new products or services and incremental innovation when discussing minor adjustments to already existing products or services (Maseno & Mamati, 2021). Other researchers have noted that innovation strategies can also be grouped according to different standards and the degree to which they can disrupt or maintain existing or established systems (Maseno & Mamati, 2021).

Every company must find a method that works best for them because there is no one size fits all approach to encouraging innovation. Regarding innovation as a major strategy to achieving a company's goals, there are also disagreements within the scientific community. Erixon and Weigel are quite critical that innovation has not bolstered the global economy as it ought to (Maseno & Mamati, 2021). Nevertheless, it has affected the labor market instead. According to some practitioners, some employees oppose innovation because they believe it would change their current situation and make their jobs less secure (Maseno & Mamati, 2021). In this context, innovation needs to be understood not only as a technical activity, but also as a moral and social

practice, because it affects people, work, and the wider community of creation. When innovation is treated as stewardship, it is expected to serve human flourishing while also protecting the integrity of the natural environment (Maseno & Mamati, 2021). This framing brings creation theology into conversation with sustainable product development, since both are concerned with responsible use of resources, accountability to stakeholders, and long run consequences for life systems.

Innovation as stewardship suggests that product development should not focus only on market success, speed, or novelty. It should also consider whether a product is designed in a way that reduces waste, limits pollution, and respects the limits of ecosystems. In practice, this means that innovation choices can be evaluated through questions of purpose, responsibility, and care. It also means that firms may need to think about the ethical implications of their design decisions, including the materials selected, the energy used in production, and the product life cycle after use. If innovation is pursued without stewardship thinking, it can unintentionally deepen social inequality, increase consumption, and expand resource extraction beyond what is sustainable. For this reason, the connection between innovation and sustainability remains important, but it also remains contested, because innovation can both solve problems and create new ones (Maseno & Mamati, 2021).

Research Problem

The main problem is that it is unclear what kind of innovation is needed to address the problems associated with sustainable development. The two most significant long term challenges to the sustainability of society may be climate change (Khaw et al., 2022; Włoch et al., 2025) and the depletion of fossil fuels (Khaw et al., 2022; Włoch et al., 2025). One situation to think about is whether climate change will have a catastrophic effect before energy shortages cause a significant economic slowdown, or vice versa (Khaw et al., 2022; Włoch et al., 2025). It is debatable if socio technological change in a developing economy is even possible, even though drastic innovation is needed to stop these scenarios from occurring (Khaw et al., 2022; Włoch et al., 2025). Even if it is theoretically feasible, it is still unclear if the necessary transformation can occur quickly enough or if it will take decades for the two issues to materialize (Khaw et al., 2022; Włoch et al., 2025). It is undeniable that many innovations do not promote sustainable development, especially when they lead to increased consumption and resource usage by producers. This uncertainty raises a practical and theological tension: societies want innovation to solve environmental problems, yet the same innovation processes can also intensify environmental pressure when they are driven mainly by profit and continuous growth.

Objective of the Paper

The objective of this paper is to assess innovation as stewardship within creation theology and sustainable product development, with attention to how innovation can support responsible product development and how stewardship principles can guide firms and communities toward sustainability. In doing so, the paper analyses the relevance of innovation to sustainable product development, and it also identifies the challenges associated with sustainable product development through stewardship innovation.

Significance of the Study

The study is of critical significance to religious bodies because it will help in making informed decisions on innovative stewardship. Academically, the outcome of the paper will serve as a source of reference material for further studies. Finally, policy makers will benefit from the paper with regard to making policies on product development via innovation stewardship.

Conceptual and Theoretical Review

Understanding Innovation among Businesses

In this paper, innovation is treated as a practical means through which businesses reshape ideas into products and processes that respond to sustainability pressures. In sustainability discussions, innovation often refers to the deliberate search for new ways of meeting demand for goods and services while reducing harm to the natural environment and supporting long term value creation (Khaw et al., 2022; Jalo & Pirkkalainen, 2024).

This understanding fits the paper's central concern, because sustainable product development requires more than novelty. It requires purposeful change that reduces waste, limits resource depletion, and improves the environmental outcomes of what firms design, produce, distribute, and retire.

Innovation is commonly described as the adoption of a new concept or behaviour within an organisation. This may involve a new product, service, technology, or method of operating (Khaw et al., 2022). In the present study, that definition is important because it keeps the focus on action rather than intention. Innovation only becomes meaningful when it is implemented, tested, and used in real settings, where its effects on production, consumption, and resource use can be observed (Khaw et al., 2022). This is also where the stewardship lens becomes necessary. A firm may innovate successfully in the market sense, yet produce outcomes that increase material throughput, encourage excessive consumption, or shift environmental burdens across communities or generations. For this reason, innovation that supports sustainable product development must be assessed not only by speed or competitiveness, but also by its direction and its consequences for creation.

Two additional points sharpen the relevance of innovation to this paper. First, innovation can help firms cope with environmental constraints and shifting stakeholder expectations. When firms build the capacity to experiment and learn, they can respond more effectively to changing regulations, climate risks, resource scarcity, and customer concerns about ethical production and environmental impact (Khaw et al., 2022). Second, innovation is not automatically positive. Researchers caution that some innovation can make systems more fragile, particularly when it increases complexity without improving resilience, or when it creates dependence on inputs that are scarce or politically vulnerable (Khaw et al., 2022; Włoch et al., 2025). This warning aligns with the research problem in the introduction, where climate change and fossil fuel depletion create urgency but also uncertainty about what kind of innovation is actually needed.

Innovation within firms is often discussed in terms of incremental and substantial change. Incremental innovation involves improvements to existing products and processes, while more substantial innovation involves larger shifts that may reshape what is produced and how it is produced (Khaw et al., 2022). Both forms matter for sustainable product development. Incremental changes can reduce energy use, improve durability, and lower waste across the product life cycle. More substantial changes may be required when current designs depend on fossil fuel intensive inputs or when production systems generate harms that cannot be reduced through small adjustments. Yet even substantial innovation can fail to support sustainability if it simply creates new markets that expand consumption and resource extraction. This is why the stewardship framing is essential to the conceptual review. Stewardship demands that innovation is guided by responsibility, restraint, and care for the integrity of creation, rather than by novelty alone.

Finally, innovation is shaped by organisational realities. Firms differ in their ability to invest in experimentation, protect intellectual assets, and scale new solutions. Larger firms often have stronger resource bases, while smaller firms may innovate through specialisation, focused expertise, and niche solutions that improve components rather than entire systems (Khaw et al., 2022). For the purposes of this paper, the key issue is not firm size in itself, but whether the innovation choices of any firm are aligned with sustainable product development and with stewardship values. Innovation becomes a stewardship practice when it intentionally seeks value that is responsible, environmentally mindful, and oriented toward long term wellbeing (Khaw et al., 2022; Jalo & Pirkkalainen, 2024).

Business Development

Business development in this paper is understood as the set of strategic choices and organisational actions that help a firm grow, remain competitive, and adapt to changing market and societal expectations. Within the context of innovation as stewardship and sustainable product development, business development is not limited to expanding sales or entering new markets. It also includes building the internal capacity to design products responsibly, strengthen partnerships that support sustainability goals, and respond to emerging risks such as resource scarcity, regulatory pressure, and shifting consumer preferences (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024).

A central idea is that firms gain advantage when they are alert to change and ready to act on it. This may involve being flexible enough to exploit new technological opportunities, forming partnerships that bring in critical knowledge and resources, and overcoming constraints through creative use of non research and development inputs (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). In a sustainability setting, these capabilities matter because product development increasingly requires new materials, cleaner processes, and redesigned value chains. Firms that can learn quickly, collaborate effectively, and adopt workable innovations earlier are more likely to remain relevant as sustainability expectations rise.

However, business development does not happen in a vacuum. Innovation and growth are shaped by shared values and common understanding within the organisation, as well as by the wider cultural, political, social, and economic context in which the firm operates (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). This matters for the present paper because stewardship is not only a technical commitment. It is also a values commitment. If a firm claims to pursue sustainable product development, its internal norms must support responsible decision making, honesty about trade offs, and concern for long term impact. When these values are weak, sustainability language can become a public relations label rather than a guiding principle for product design and operational practice.

The conceptual literature also suggests that innovative and non innovative organisations tend to differ in their internal characteristics, especially in how culture supports experimentation, learning, and performance (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). For business development, culture matters because it influences what employees notice, what they are rewarded for, and how they respond to problems. A culture of pride in quality, and a climate that treats success as a shared achievement, can strengthen commitment to innovation goals (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). In the context of sustainable product development, this type of culture can encourage teams to pursue product improvements that reduce waste, improve durability, and minimise harmful environmental effects, even when such changes require effort, coordination, or short term cost.

At the same time, the paper recognises that innovation driven business development creates uneven outcomes across firms. Some organisations are more equipped than others to benefit from opportunities, especially where investment, skilled labour, and access to production and distribution resources are limited (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). This is important for stewardship innovation because sustainable product development can be resource demanding. It may require redesign, testing, supplier change, and new compliance processes. Firms with limited resources may therefore struggle to adopt sustainability oriented innovations, even when they recognise the need. This does not mean smaller firms cannot contribute. Rather, they often innovate through focus and specialisation, finding workable solutions in defined areas and creating value through targeted improvements.

For the purposes of this study, business development is therefore conceptualised as more than growth seeking behaviour. It is the strategic shaping of organisational capacity, culture, and partnerships in ways that support innovation that is responsible and sustainability aligned. This framing connects directly to the paper's argument that innovation must be guided by stewardship. If business development is pursued without stewardship values, the firm may grow while also increasing ecological pressure through more extraction, more consumption, and more waste. If business development is shaped by stewardship, growth and competitiveness are pursued with moral restraint, accountability, and a clear concern for the wellbeing of people and the wider creation (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024).

Existing Theories

Design thinking is used in this paper as a practical theory that explains how organisations can develop products in a way that is both innovative and responsible. It fits the paper because sustainable product development requires more than technical improvement. It requires careful attention to people's needs, environmental impacts, and the real life context in which products are designed, used, and disposed of (Maseno & Mamati, 2021). Design thinking provides a structured way of doing this by treating product development as an iterative learning process rather than a one time technical decision.

At the centre of design thinking is a human centred approach. This approach starts by studying the people affected by a product, including customers and other stakeholders, and then translating what is learned into product ideas that can be tested and improved (Maseno & Mamati, 2021). In the context of this paper, the value of this approach is that sustainability problems are often experienced by people long before they appear as business costs. For example, communities may face pollution, scarcity, or health concerns linked to production and waste. A product development process that begins with empathy can therefore help firms recognise sustainability issues early and design products that reduce harm rather than shifting burdens to others.

Design thinking is also useful because it works through stages that support continuous refinement. These stages commonly include understanding the situation, defining the problem clearly, generating ideas, developing prototypes, and testing solutions (Maseno & Mamati, 2021). This staged approach aligns well with sustainable product development because sustainability is rarely solved by a single design choice. Trade offs often appear during prototyping and testing, such as when a material is cheaper but more harmful, or when a design is attractive but difficult to recycle. Iteration helps teams confront these trade offs openly and improve the design step by step, instead of assuming the first solution is good enough.

Another strength of design thinking is its emphasis on collaboration across disciplines. Sustainable product development usually involves technical, environmental, financial, and ethical considerations at the same time. Design thinking encourages teams to combine these perspectives, which improves the chance that a product will be both viable for the firm and responsible toward the wider environment (Maseno & Mamati, 2021). This is especially important for stewardship innovation, because stewardship requires decisions that are accountable, not decisions made within one narrow department without considering the broader effects.

The conceptual review also notes that stakeholder participation can be challenging, particularly when the process is interactive and repeated. Different stakeholders may have different priorities, and there may be time and budget limits that restrict deep engagement (Maseno & Mamati, 2021). Yet stakeholder involvement remains important for this paper's argument, because stewardship is not only about internal corporate goals. It is also about listening, fairness, and responsibility to those affected by innovation outcomes. In addition, design thinking can be combined with broader collaboration approaches that bring in outside knowledge and experience, which can widen the range of possible sustainability solutions (Baldassarre et al., 2024).

In summary, design thinking is adopted here as a theory of responsible innovation practice. It helps explain how firms can move from intentions about sustainability to concrete product development decisions that are tested, improved, and aligned with stewardship values.

The **theology of innovation** provides the moral and spiritual foundation for this paper's understanding of innovation as stewardship. Rather than viewing innovation only as a technical or economic activity, this perspective understands human creativity as a responsibility entrusted to humanity within the created order. In theological terms, innovation is part of humanity's calling to care for creation, develop its potential, and ensure that human action contributes to life, order, and wellbeing rather than destruction or exploitation (Maseno & Mamati, 2021).

Biblical narratives present human creativity as a gift that operates in relationship with divine purpose. In the account of Joseph in Egypt, innovation appears in the form of wise planning, interpretation, and administrative foresight, which enabled society to prepare for scarcity and protect life during famine (Genesis 41:37–57). This story illustrates that innovation guided by wisdom and responsibility can strengthen social resilience rather than promote excess. Similarly, the construction of the tabernacle reflects creativity inspired and directed toward sacred ends, where skill, craftsmanship, and design were used in service of worship and communal identity (Exodus 31:1–11). These narratives are significant for this study because they frame innovation as purposeful, relational, and accountable, not as an end in itself.

At the core of the theology of innovation is the idea that human creativity reflects the image of God. Humanity is described as being created in the divine image and entrusted with the task of exercising care, responsibility, and governance over creation (Genesis 1:26–28). From this perspective, innovation becomes an extension of stewardship. It is not simply about producing more, faster, or cheaper goods, but about using knowledge and

skill in ways that protect the integrity of creation and promote the common good (Maseno & Mamati, 2021). This theological framing aligns closely with sustainable product development, which seeks to reduce environmental harm while meeting genuine human needs.

Christian theological reflection has long engaged with questions of creativity, work, and responsibility. Early thinkers such as Augustine emphasized that human understanding and creativity are shaped by divine illumination, suggesting that knowledge and invention are not morally neutral but oriented toward truth and goodness. Medieval theologians further explored the relationship between faith, reason, and human ingenuity, arguing that creativity can be an expression of moral vocation when it serves justice and communal wellbeing. These traditions reinforce the idea that innovation should be evaluated by its ethical direction, not only by its technical success.

During the Reformation period, renewed emphasis was placed on vocation and the moral value of ordinary work. Human labour, including creative and technical activity, was understood as a sphere in which faith is lived out through responsibility and service. This view strengthens the argument of this paper by showing that innovation in business and product development can be a site of moral practice. When firms design products responsibly, manage resources carefully, and consider long term consequences, they participate in a form of stewardship that is consistent with theological understandings of work and creativity.

In more recent theological reflection, innovation has been linked to ecological responsibility and the future of creation. Contemporary theological thought increasingly recognises that technological progress without moral restraint has contributed to environmental degradation and social inequality. As a result, innovation is now often discussed in relation to care for the earth, intergenerational responsibility, and the limits of growth. From this perspective, innovation is valuable when it supports the flourishing of all creation, and harmful when it accelerates exploitation or undermines ecological balance.

For this paper, the theology of innovation therefore serves two purposes. First, it provides a normative framework that explains why innovation must be guided by stewardship rather than by profit or efficiency alone. Second, it strengthens the link between creation theology and sustainable product development by grounding business innovation in moral accountability, care, and restraint (Maseno & Mamati, 2021). Innovation, when shaped by theological insight, becomes a disciplined practice aimed at sustaining life and honouring the trust placed in humanity as stewards of creation.

Dynamic capabilities theory is used in this paper to explain how organisations sustain innovation over time, especially when conditions are uncertain and changing. This theory is relevant because sustainable product development is not a single decision or a one off project. It demands continuous adjustment as firms face new environmental pressures, changing consumer expectations, evolving regulations, and shifting technology options. In simple terms, dynamic capabilities describe a firm's ability to integrate, build, and reorganise internal and external skills quickly in response to change (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). For this study, that definition matters because it highlights that sustainable innovation depends on organisational learning and renewal, not only on creativity.

The theory also suggests that capabilities are expressed through routines and learned practices that help a firm achieve specific outcomes. In the context of sustainable product development, such outcomes may include improved material selection, better life cycle decisions, cleaner production methods, and stronger coordination across supply chains (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). This aligns with the paper's argument that stewardship oriented innovation must be practical. A firm may desire to innovate responsibly, but without the capacity to learn, coordinate, and reconfigure resources, those intentions may not translate into real changes in product development.

Dynamic capabilities are also helpful for understanding competition and disruption. In many industries, new firms enter markets by offering better quality, lower pricing, or more attractive alternatives to existing products. This competitive pressure pushes incumbent firms to adapt. The relevance to this paper is that sustainability can become one of the areas where disruption occurs. Firms that treat sustainability as part of product value may gain legitimacy and market advantage, while those that fail to adapt may lose trust and relevance. In this

sense, dynamic capabilities provide a lens for explaining why some organisations can move towards sustainable innovation faster than others (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024).

For smaller firms, dynamic capabilities are particularly important because they often face resource limits. Sustainable product development may require redesign, new supplier relationships, compliance knowledge, and technical experimentation, all of which can strain limited budgets and expertise. Dynamic capabilities theory helps explain how such firms can still compete by sensing opportunities, managing risks, and reconfiguring resources creatively rather than relying only on scale (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024). In this way, the theory complements the earlier conceptual discussion about unequal innovation capacity across firms, while still recognising that smaller firms can innovate through focus, learning, and partnerships.

Most importantly, dynamic capabilities theory supports the paper's stewardship framing by clarifying what responsible innovation requires inside organisations. Stewardship is not only an ethical commitment. It requires operational ability. Firms must be able to align innovation choices with long term environmental responsibility, and that alignment demands ongoing renewal of knowledge, routines, and decision processes. When organisations build dynamic capabilities, they are better positioned to modernise their resources, strengthen their innovation culture, and respond to sustainability demands in ways that improve product outcomes and reduce harm (Diaz et al., 2021; de Medeiros et al., 2022; Correggi & Ates, 2024).

METHODOLOGY

This study adopted a desk review research design, which was appropriate given the conceptual and interpretive nature of the research problem. The focus of the paper was not on measuring behaviour or testing variables empirically, but on examining how innovation can be understood as stewardship within creation theology and sustainable product development. A desk review design made it possible to engage deeply with existing academic, theological, and biblical literature, and to synthesise insights across disciplines without the need for primary data collection.

The design enabled a systematic examination of secondary sources drawn from several bodies of literature. These included peer reviewed journal articles on innovation and sustainable product development, theological writings on creation, stewardship, and ecological responsibility, and biblical commentaries focusing on Genesis chapters one and two. Together, these sources provided the conceptual and ethical foundation required to explore innovation as both a practical business activity and a moral responsibility. The research population therefore consisted of published scholarly journals, theological commentaries, and recognised religious texts that directly addressed themes of innovation, stewardship, sustainability, and creation care.

Selection of literature was guided by relevance rather than representativeness. Because the study was not statistical in nature, probability sampling was not required. Instead, a purposive approach was used to identify key works by theologians, environmental ethicists, and sustainability scholars whose contributions were directly related to the research objectives. This approach ensured that the analysis reflected a range of perspectives while remaining focused on materials that meaningfully addressed the intersection of theology, innovation, and sustainable product development.

Data collection relied on content analysis as the primary analytical tool. This involved careful reading, comparison, and classification of arguments found in theological texts, biblical interpretations, and sustainability studies. Attention was given to how different authors defined stewardship, understood human responsibility toward creation, and linked innovation to environmental and social outcomes. Through this process, recurring ideas, tensions, and areas of agreement were identified and organised.

Analysis was primarily descriptive and thematic. The literature was grouped into logical themes such as innovation practice, stewardship principles, ethical responsibility, and sustainable product development. These themes were then interpreted in light of the study's objectives, with particular attention to how theological insights could inform contemporary innovation practices. Because of the qualitative nature of the study, no

statistical tools were employed. Instead, thematic coding was used to organise insights and support coherent interpretation.

Throughout the research process, ethical considerations were observed. Only credible and authoritative sources were used, and arguments were presented faithfully without misrepresentation. Transparency was maintained through a clear description of the selection, evaluation, and interpretation process, thereby ensuring the integrity and reliability of the study's methodological approach.

DISCUSSION AND ANALYSIS OF FINDINGS

Advantages and Challenges of Sustainable Innovation

Sustainable innovation offers clear value for organisations and for society when it is designed from the outset to reduce environmental harm while still meeting real human needs. Across the reviewed literature, sustainable innovation is linked to improvements in production efficiency, better resource use, and reduced waste, especially when sustainability considerations are integrated into product design and process choices rather than added later as a corrective measure (Diaz et al., 2021; de Medeiros et al., 2022). When firms treat sustainability as a design requirement, they are more likely to make decisions that lower energy consumption, minimise material loss, and improve the overall environmental profile of products across their life cycle (Diaz et al., 2021; Mengistu et al., 2024). Over time, these improvements can translate into cost savings through reduced input use and lower waste handling burdens, while also strengthening operational discipline and performance (de Medeiros et al., 2022).

A further advantage is competitiveness and legitimacy. As consumer awareness increases and regulatory expectations tighten, firms that innovate sustainably can build stronger reputations, reduce compliance risk, and access markets where sustainability standards are becoming non negotiable (Diaz et al., 2021; de Medeiros et al., 2022). Sustainable product development also tends to benefit from cross functional collaboration, because it requires technical insight, design capability, and managerial coordination at the same time. Where such collaboration is effective, it can improve decision quality and support innovation that is both technically viable and socially acceptable (Diaz et al., 2021; Maseno & Mamati, 2021). From the stewardship framing developed earlier in the paper, these benefits matter because they show that responsible innovation is not only a moral claim. It can also be a disciplined way of producing goods that better respect environmental limits while still supporting organisational goals (Maseno & Mamati, 2021).

However, the review also highlights that sustainable innovation is not automatically sustainable in its outcomes. A key challenge is the risk of unintended consequences. Innovation can increase demand, expand production volumes, and lengthen supply chains, which may offset efficiency gains and create new environmental burdens (Mengistu et al., 2024). Even when individual products become cleaner or more efficient, system level effects can undermine sustainability when consumption rises or when improvements encourage faster replacement cycles. In practical terms, a product that is designed with better materials and lower energy use may still contribute to unsustainable outcomes if it drives higher overall consumption or if firms intentionally shorten product life to maintain competitiveness (Diaz et al., 2021; Mengistu et al., 2024). This challenge reinforces the paper's central tension: innovation can solve sustainability problems, but it can also intensify them when it is driven mainly by growth and market pressure rather than by responsibility.

Another challenge concerns organisational capability and uneven capacity across firms. Sustainable innovation often demands investment in design improvement, supplier development, testing, and process change. Firms differ in their ability to mobilise these resources. The literature on dynamic capabilities suggests that sustained innovation under changing conditions depends on an organisation's ability to reconfigure skills and routines over time (Correggi & Ates, 2024). This matters because sustainability pressures evolve. Regulations change, technologies improve, and stakeholder expectations shift. Organisations that cannot learn and adapt may struggle to sustain their innovation efforts, even when they recognise sustainability as important (Correggi & Ates, 2024). For stewardship oriented innovation, this implies that moral intent must be matched by operational capacity, otherwise the result may be aspirational language without durable practice (Maseno & Mamati, 2021).

A further practical challenge is coordination across stakeholders. Sustainable innovation often requires alignment between designers, engineers, managers, suppliers, and customers. When priorities conflict, such as when cost pressures dominate over environmental goals, sustainability features may be reduced or treated as optional. The review implies that firms need structured decision processes that keep social and environmental concerns visible from the beginning of product development, not as late stage additions (Diaz et al., 2021; de Medeiros et al., 2022). From a stewardship perspective, this is also an ethical issue, because responsible innovation requires consistency between what an organisation claims and what it actually builds into products and operations (Maseno & Mamati, 2021).

Overall, the findings suggest that sustainable innovation offers strong potential benefits, including efficiency gains, competitive advantage, and improved legitimacy, especially when sustainability is embedded in product development decisions early and supported by cross functional collaboration (Diaz et al., 2021; de Medeiros et al., 2022). At the same time, significant challenges remain, including rebound effects, pressure toward shorter life cycles, unequal organisational capacity, and coordination difficulties across stakeholders (Correggi & Ates, 2024; Mengistu et al., 2024). The stewardship framing strengthens the interpretation of these findings by insisting that innovation should be judged not only by novelty or market success, but by whether it genuinely reduces harm, protects long term wellbeing, and aligns organisational practice with responsible care for creation (Maseno & Mamati, 2021).

Biblical Interpretation on Sustainability

The desk review indicates that biblical interpretation, especially of Genesis chapters one and two, provides a strong theological basis for sustainability when these texts are read through the lens of stewardship rather than exploitation. Across the reviewed material, the creation narratives are treated as more than an account of origins. They are also read as a framework for understanding human responsibility within the created order. This matters for the present paper because it links sustainable development to a moral calling grounded in creation theology, and it offers a way to evaluate innovation not only by usefulness or profitability but by faith informed responsibility (Maseno & Mamati, 2021).

A key finding is that the term dominion in Genesis has often been misunderstood when it is detached from the wider moral logic of the biblical narrative. In some historical readings, dominion has been interpreted as permission to use nature without limits. However, the reviewed interpretations emphasise that dominion is better understood as accountable leadership within creation, where human authority is exercised as care, protection, and responsible management rather than domination for selfish gain. This stewardship reading aligns with the repeated affirmation in Genesis that creation is good, which implies that the non human world has value beyond its immediate usefulness to human beings. Within this framework, sustainable development becomes consistent with faith, because it reflects respect for the goodness, order, and purpose of creation.

The Genesis narrative also presents human work as both productive and protective. Genesis two describes the human role in the garden using language that conveys cultivation and care, suggesting a balance between using creation and preserving it. This balance is essential for sustainability thinking, because it affirms that economic activity is not wrong in itself, but it must be disciplined by responsibility. From the perspective of innovation as stewardship, this supports the argument that product development should not be pursued through extraction and waste alone. Instead, innovation should seek designs and processes that maintain the integrity of the created world while meeting legitimate human needs (Maseno & Mamati, 2021).

The review also highlights the theological significance of limits and restraint. In Genesis, patterns of rhythm and rest are present in the creation account, and this can be interpreted as a moral pattern for human economic and technological activity. Sustainability requires restraint, because unlimited production and consumption eventually exceed ecological limits. In theological terms, restraint is not a weakness but a form of wisdom. When applied to innovation and product development, this principle encourages firms and societies to measure progress not only by growth but also by whether development respects environmental boundaries and supports long term wellbeing.

At the same time, the review suggests that biblical interpretation is not always uniform, and the desk review approach makes these tensions visible. Different theological perspectives may emphasise different aspects of creation care. Some interpretations stress stewardship as a mandate for responsible management. Others introduce alternative emphases that expand the discussion beyond traditional stewardship, for example by calling attention to relationality, inclusion, and the need to examine how power shapes human interactions with creation. These divergent emphases do not necessarily reject stewardship, but they can challenge narrow or overly managerial approaches that treat creation care as only a technical responsibility. Instead, they invite a broader moral vision in which sustainability involves justice, care, and moral accountability at the same time (Maseno & Mamati, 2021).

The findings further show that the study's reliance on secondary sources shaped the limits of what can be concluded. Textual interpretation can build strong theological arguments, but it does not automatically show how faith communities and organisations apply these principles in daily practice. As a result, while the reviewed literature supports the idea that creation theology can motivate sustainability and guide innovation choices, the evidence remains interpretive rather than observational. This limitation points to a clear need for future work that examines how churches, businesses, and policy actors translate stewardship language into practical sustainability behaviour and measurable outcomes.

Overall, the desk review supports the conclusion that Genesis one and two can be read as a moral foundation for sustainability, especially when dominion is interpreted as stewardship and human work is framed as cultivation plus care. This strengthens the paper's central claim that sustainable product development is not only a technical requirement but also a theological responsibility. Innovation becomes most faithful to this biblical vision when it is directed toward protection of creation, responsible use of resources, and long term flourishing rather than short term gain (Maseno & Mamati, 2021).

Implications for Theory, Policy, and Practice

Theoretical Implications

This paper extends thinking about innovation by reframing it as a stewardship practice rather than a purely technical or market driven activity. When innovation is treated as stewardship, innovation becomes a moral and social act that must be assessed by its direction, its consequences, and its long term effects on people and the wider environment. This perspective strengthens theory by adding an ethical dimension to common innovation discussions that often focus mainly on competitiveness, novelty, or short term performance. It suggests that innovation theory can be improved when it accounts more clearly for responsibility, restraint, and accountability as part of the innovation process, especially in settings where product development affects ecosystems and human wellbeing.

The discussion also supports a more integrated view of sustainable product development. Instead of treating sustainability as a later stage corrective action, the paper positions sustainability as a design requirement that should shape decisions from the earliest stages of product development. This has theoretical value because it links product innovation to life cycle thinking, stakeholder responsibility, and long term value creation. It also supports the idea that innovation outcomes cannot be judged only at the level of a single product or single firm. A stronger theoretical approach should recognise system level effects, including the risk that efficiency gains can be undermined when innovation expands consumption or speeds up replacement cycles. In this way, the paper contributes to theory by highlighting that sustainable innovation must be evaluated both by immediate improvements and by broader patterns of production and consumption.

Finally, the paper highlights the importance of organisational capacity for sustaining responsible innovation. Theoretical discussions often assume that once a firm chooses sustainability, it can implement it. The analysis in this paper suggests that sustainable innovation requires internal capabilities that support learning, coordination, and adaptation over time. Therefore, theory should treat innovation stewardship as a continuing organisational practice rather than a one time decision.

Managerial Implications

For managers, the main practical implication is that sustainable innovation is most effective when social and environmental concerns are integrated from the outset of product development. This means sustainability should shape design goals, material choices, production methods, packaging decisions, and end of life planning. Treating sustainability as an early design concern helps organisations identify risks and opportunities sooner, reduces costly redesign later, and improves the coherence of product decisions.

Managers should also recognise that sustainable product development depends on collaboration across disciplines. Product designers, engineers, procurement teams, environmental specialists, and business leaders need shared goals and clear coordination. Sustainable innovation is weakened when these groups work in isolation or when sustainability is treated as a side task for a single unit. Strong internal collaboration supports balanced decisions, where technical feasibility, cost, customer appeal, and environmental responsibility are considered together.

In addition, managers should pay attention to organisational culture. Sustainable innovation requires employees who are willing to experiment, learn, and improve processes. Culture shapes whether staff treat sustainability as a real priority or as a public relations message. Leaders therefore need to encourage honesty about trade offs, support learning from failure, and reward innovation efforts that improve long term product responsibility rather than only short term gains.

A final managerial implication is the need to avoid unintended effects. Even when products become more efficient, organisations should check whether innovation is driving higher consumption or shorter product life cycles. Responsible innovation requires not only better products but also better patterns of production and consumption. This calls for careful monitoring of product performance and a commitment to durability, repairability, and responsible marketing.

Policy Implications

For policy makers, the paper suggests that sustainable innovation is strengthened when policies encourage early integration of environmental and social requirements into product development. Policy frameworks can do this by setting clear standards for product responsibility, requiring transparent disclosure across product life cycles, and rewarding firms that build sustainability into design rather than treating it as an afterthought.

Policy also has a role in supporting stakeholder engagement. Sustainable product development involves customers, suppliers, regulators, and communities, and each group can provide insight about risks and practical constraints. Policies that encourage stakeholder consultation, industry collaboration, and shared learning can improve the quality of innovation decisions and reduce the gap between sustainability goals and real outcomes.

Finally, policy makers should consider incentives and accountability together. Incentives can encourage firms to invest in sustainable design and cleaner production. Accountability mechanisms ensure that sustainability claims are credible and that innovation does not become a label without substance. Effective policy therefore combines supportive measures with clear expectations, monitoring, and consequences for misleading claims or harmful practices.

CONCLUSION

This study set out to examine innovation as stewardship by bringing creation theology into dialogue with sustainable product development. Drawing on a desk review of academic, theological, and biblical literature, the paper has shown that innovation cannot be treated as a neutral technical activity if it is to contribute meaningfully to sustainability. Instead, innovation must be understood as a morally guided practice that shapes how resources are used, how products are designed, and how long term consequences for people and the environment are addressed. By framing innovation within stewardship, the study clarifies that responsible product development involves purpose, restraint, and accountability, not only efficiency or market success.

The analysis demonstrates that sustainable innovation offers clear advantages when social and environmental considerations are integrated early in the product development process. Such integration can improve resource efficiency, reduce waste, strengthen organisational legitimacy, and support long term competitiveness. At the same time, the findings reveal persistent challenges. Innovation can unintentionally increase consumption, shorten product life cycles, and shift environmental burdens when it is driven mainly by growth pressures. These tensions confirm that innovation alone does not guarantee sustainability. Its direction and governance matter just as much as its technical content.

From a theological perspective, the paper shows that biblical interpretations of Genesis provide a strong ethical foundation for sustainability when dominion is understood as stewardship. Human creativity and work are presented as responsibilities exercised within limits, where care for creation accompanies productive activity. This reading challenges extractive approaches to innovation and supports a vision of development that respects ecological boundaries and the intrinsic value of the non human world. In this sense, creation theology deepens sustainability discourse by grounding it in moral responsibility rather than in compliance or reputation alone.

The study also highlights the importance of organisational capacity. Sustainable product development requires learning, coordination, and adaptability over time. Without these capabilities, stewardship risks remaining a moral aspiration rather than a lived practice. While the desk review approach limits direct observation of practice, it provides a coherent framework for understanding how innovation, theology, and sustainability can be aligned.

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