JOURNAL OF THEORETICAL AND APPLIED MANAGEMENT
Jurnal Manajemen Teori dan Terapan
https://e-journal.unair.ac.id/jmtt
p-ISSN: 1979-3650 e-ISSN: 2548-2149

Original Research
Volume 17, No. 2, 2024 OPEN ACCESS

Servant Leadership's Impact on Green Behavior: Exploring Psychological Empowerment and Autonomous Motivation for the Environment in the Energy Sector

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Abstract

Objective: This study aims to understand the influence of servant leadership on employees' voluntary green behavior and green innovative work behavior, with psychological empowerment and autonomous motivation for the environment playing a role as sequential mediators in the energy sector.
Design/Method/Approach: Data was gathered through an online questionnaire sent to potential participants. A total of 328 eligible respondents were collected for analysis. This study utilized Covariance-Based Structural Equation Modelling (CB-SEM) to examine the connections between servant leadership, psychological empowerment, autonomous motivation for the environment, employees' voluntary green behavior, and green innovative work behavior.
Findings: A servant leader who influences employees' voluntary green behavior and green innovative work behavior must build psychological empowerment and autonomous motivation for the environment. In line with previous research, the role of mediation, psychological empowerment, and autonomous motivation for the environment simultaneously strengthen servant leaders to form environmentally friendly behavior.
Originality: The novelty of this study lies in adding the variable green innovative work behavior as a dependent variable that can be influenced by servant leadership. Previous studies have not combined green innovative work behavior with psychological aspects, including psychological empowerment and autonomous motivation for the environment. This research is conducted in the energy sector, which is expected to yield diverse results depending on the influencing factors.
Practical/Policy implication: Based on the findings, leaders, and management should promptly consider implementing employee development through servant leadership interventions. In the era of energy transition, these behaviors are crucial, with servant leadership, psychological empowerment, and autonomous motivation for the environment playing pivotal roles. Implementing these practices meets green bond criteria, indicating the company's commitment to environmentally friendly practices and enhances its reputation as an environmentally responsible entity, attracting stakeholders supportive of such initiatives.

Keywords: Servant leadership; Psychological empowerment; Autonomous motivation for the environment, Employees' voluntary green behavior; Green innovative work behavior.

JEL Classification: C31 M12, M54

DOI: https://doi.org/10.20473/jmtt.v17i2.53442
Received: January 1, 2024; Revised: February 28, 2024; March 28, 2024; April 9, 2024; Accepted: April 19, 2024; Available online: August 21, 2024

Published by Universitas Airlangga, Department of Management, Faculty of Economics and Business

1. Introduction

The energy sector faces various pressures to transition towards environmentally friendly energy sources. Climate change, occurring globally, has prompted the formation of the Paris Agreement to address climate change and its negative impacts. The Paris Agreement, initiated by world leaders, aims to reduce global greenhouse gas emissions to limit the increase in global temperatures to 1.5 degrees Celsius. Additionally, it provides financial support to developing countries to mitigate climate change (Bodansky, 2021). The implementation of the agreement gains commitments from all countries, with 195 parties (194 States plus the European Union), to reduce their emissions and collaborate in adapting to the impacts of climate change. The agreement also calls on countries to enhance their commitments over time. To strengthen these commitments, every five years, each country is expected to report an updated national climate action plan, known as the Nationally Determined Contribution (NDC).

Based on the strengthened commitment, every country has commitments to implement reductions in greenhouse gas emissions. In Western countries, this commitment is known as the European Green Deal (EGD). The EGD aims to achieve carbon neutrality by 2050, with a target of reducing greenhouse gas emissions by 55% by 2030 (from 1990 levels) and achieving net-zero emissions by 2050. This commitment is achieved through various programs aimed at developing renewable energy sources, improving energy efficiency, promoting green mobility, creating a sustainable green economy, and providing long-term benefits to society (Sipayung, 2024). One of the programs is "Clean Energy for All Europeans," which includes the development of renewable energy sources such as wind, solar, and biomass.

However, currently, these goals face challenges due to the geopolitical dynamics in the region, compounded by the fact that most of these countries are net importers of oil and gas, making them particularly exposed to energy reliability and market volatility risks (Cavina, 2023). By 2022, they have proposed that REPowerEU raise the renewable energy target (Hyvönen et al., 2023). According to Consultant Report (2023), the REPowerEU plan introduces measures to rapidly reduce dependence on fossil fuels from other countries and accelerate the green transition, aiming to emerge from the current crisis with a renewed commitment to climate action.

In other parts of the world, gas emissions reduction is reflected in groundbreaking goals. According to a government media accessible to the public in 2021, these goals include achieving a target reduction of greenhouse gas emissions by 50-52% below 2005 levels by 2030, achieving carbon pollution-free electricity by 2035, and achieving a net-zero emissions economy by 2050. Furthermore, legislation such as the Inflation Reduction Act (IRA) can embody implementing the net-zero emissions target. A vital goal of the act is to reduce carbon emissions by around 40% by 2030. The activities or content of the IRA focus on investments in deploying clean energy, expanding the electricity grid, and developing domestic clean technology manufacturing. Another effort to reduce greenhouse gas emissions is through cross-country cooperation. The Clean Energy Working Group (Chandak, 2023) or the Realization of Energy Transitions (Limanseto, 2022) are examples of bilateral cooperation for reducing gas emissions at the national and continental levels. Clean Energy Working Group and the Realization of Energy Transitions will focus on clean and renewable energy, including Carbon Capture and Utilization Storage (CCUS), geothermal, and energy storage.

However, with the commitments already made, the energy sector is responsible for around three-quarters of greenhouse gas emissions (IEA, 2023). This has been ongoing for a long time and has increased yearly (Ritchie et al., 2020). Based on the industry, coal, oil, and gas rank as the top three industries producing CO2 emissions, with Asia ranking first as the continent emitting the most CO2 emissions up to 2022 (Ritchie et al., 2023). The target of achieving net-zero emissions is difficult due to various other factors. Rising interest rates and project costs, permitting and siting challenges, and persistent supply chain issues hinder clean power development at a crucial time when it needs to progress (Bird & Womble, 2024). On a micro level, the investment challenge in developing clean energy is due to the high initial investment costs, which can reduce investor attractiveness (Permana, 2023). This motivation ultimately requires individual behavior that can improve environmental quality in the energy transition era. In 2023, the International Labor Organization (ILO) provided recommendations for retraining currently employed workers to minimize the negative impact on employment in the energy sector.

One of the behaviors that can improve environmentally friendly business practices is Employees' Voluntary Green Behavior (EVGB), and Green Innovative Work Behavior (GIWB) is the other. Employees with EVGB can help reduce the impact of adverse working conditions in the energy sector (ILO, 2023). GIWB plays a role in encouraging the development and application of environmentally friendly energy technology to develop a road map for energy transition in Indonesia (Ministry of Energy and Mineral Resources, 2022). The need for GIWB is also increasing with the issuance of green bonds to fund environmental projects, including in the energy sector. EVGB is employee behavior that exceeds organizational expectations, including prioritizing environmental interests, initiating environmental programs and policies, lobbying, activism, and influencing others (Norton et al., 2015). Aboramadan's research (2020) revealed that GIWB was formed by applying the concept of environmental management to innovative work behavior. GIWB can be conceptualized as employee dedication to generating, promoting, and realizing environmentally friendly ideas.

One of the factors that can shape EVGB and GIWB behavior is leadership. The shift in the need for leadership styles in the energy sector has been outlined in the 2023 McKinsey report. This leadership will empower small teams by giving them autonomy and responsibility in achieving goals and providing guidance and training. Hence, they have

multidisciplinary abilities to solve problems holistically and creatively. Empowerment is critical in operationalizing servant leadership (Newman et al., 2017). Through a caring approach towards subordinates, servant leaders contribute to employee development as an end in itself rather than simply achieving organizational goals (Van Dierendonck et al., 2014) and create a collaborative and inclusive work environment (Canavesi & Minelli, 2021) by encouraging active participation, listening to team member input, and fostering collaboration to achieve common goals.

Servant leadership characteristics related to caring and kindness can increase motivation to improve environmental quality. This increase in motivation will arise if the individual is psychologically empowered. Psychologically empowered individuals already have the four cognitions of meaning, competence, autonomy, and impact. This empowerment aligns with Self-Determination Theory (SDT), which expresses the psychological need for connectedness, competence, and autonomy. Psychologically empowered employees will internalize values related to involvement in self-determined tasks, especially those related to the environment (Ying et al., 2020). This has increased individual motivation to care about the environment (AME). This concern can be realized through the behavior of EVGB and GIWB. Research by Ying et al. (2020) revealed the influence of servant leadership catalysts on EVGB. Besides that, Khan et al. (2022) also revealed the impact of servant leadership on the formation of innovative employee behavior.

Various studies have been conducted on various types of leadership. However, this research provides insight and addresses the research gap regarding the influence of servant leadership on EVGB and GIWB, especially in the energy sector. This research has a significant gap, especially in the formation of GIWB. This is related to the new variable, GIWB, which still broadly discusses green innovative behavior as mediated in the context of teams and organizations. Arici and Uysal (2022) recommend several mediators at the individual level for future research. Arici and Uysal (2022) highlight the categorization of individual-level mediators, including motivational factors, to clarify the mechanism of the relationship between leadership and GIWB.

This research aims to examine the influence of servant leadership on EVGB and GIWB behavior, which has the following contributions. The first contribution is that this research emphasizes EVGB and GIWB behavior, formed by servant leadership mechanisms through independent psychological aspects. The second contribution is that this research sequentially examines the influence of servant leadership in shaping EVGB and GIWB. Furthermore, applying Self-Determination Theory (SDT) in this research provides a robust framework for understanding the motivation driving EVGB and GIWB. According to Burch (2018), the components of SDT explain the basic psychological needs, including autonomy (feeling of having control over their actions), competence (feeling effective in the activities they engage in), and relatedness (feeling connected to others). These three psychological needs are prerequisites for autonomous motivation. When these needs are met, individuals tend to be more motivated, perform better, and feel more satisfied in their lives, whether at work, in social relationships, or daily activities (Burch, 2018). Third, this research adopts a holistic model focusing on contextual aspects (servant leadership) and psychological aspects (psychological empowerment and autonomous motivation towards the environment) that impact EVGB and GIWB behavior. In particular, this research uses a sectoral (bottom-up) approach based on gas emission calculations. It focuses on the sector that uses the most fossil energy to produce, with energy producers ranking first. These energy producers include oil and gas, electric power, and mineral and coal industries.

This study utilized an online questionnaire that was distributed to employees in the energy sector. The data were analyzed using the CB-SEM method to confirm the theory of servant leadership shaping employees' voluntary green behavior and green innovative work behavior. This paper contains the study's background, which serves as an introduction. The following section will explain each variable's literature review and the hypotheses' development. Subsequently, the methodology employed in this study will be detailed. The results and discussion section will further elaborate on the hypothesis testing results. Finally, the conclusion will summarize the study findings, including implications, limitations, and recommendations for future research.

2. Theory and Hypotheses

2.1 Social Determination Theory (SDT)

Self-determination theory (SDT) posits that understanding human motivation requires considering fully the inherent psychological needs for competence, autonomy, and relatedness (Deci & Ryan, 2000). These psychological needs are closely related to motivation, as fulfilling these basic psychological needs affects an individual's motivation. Individuals who meet these needs tend to have better motivation (Deci et al., 2017). According to SDT, activities aimed at achieving goals can be influenced differently by motivation levels. Therefore, motivation is a critical concern studied in SDT as it determines one's goals and must fulfill basic psychological needs. Deci & Ryan (1985) also revealed an obligation to fulfill basic psychological needs first to enhance motivation, including competence, autonomy, and relatedness. When applied in the context of this research, SDT can provide insights into how to enhance motivation to elicit EVGB and GIWB by ensuring the fulfillment of basic psychological needs. These types of motivation form a continuum, with one of them being autonomous motivation. According to SDT in Kanat-Maymon, Elimelech & Roth (2020), individuals are autonomously motivated when they engage in an activity intrinsically, finding it exciting and

enjoyable, or when they recognize its value and purpose (identified regulation), not because of external pressure or external rewards.

Several studies have used SDT as the basis for their research framework. Kohnen et al. (2024) conducted a study in the healthcare sector using SDT to influence burnout and work engagement levels among nurses. The prerequisite for motivation in their research context is the perceived workplace conditions by nurses in the form of reduced job demands and improved job resources. A workplace that provides sufficient support is a basic psychological need required by employees as fuel to cultivate motivation, enabling them to perform and have optimal well-being (Kohnen et al., 2024). Additionally, Weinstein et al. (2023) also applied SDT in the context of education to examine effective workplaces that enhance motivation and academic well-being (less perceived job strain, job satisfaction, and lower turnover intention). Individuals experience well-being when their environments support their optimal motivation. SDT provides a valuable framework for understanding motivational strategies that promote positive workplace climate perceptions (Weinstein et al., 2023). These strategies encourage self-driven motivation and fulfill employees' psychological needs. Liu, Peng, and Wen (2023) also utilized SDT as the theoretical basis for their research in enterprise sectors, such as retailing and real estate. Researchers proposed the SDT as the basis for understanding how leadership factors influence employees' job crafting. In the study by Liu, Peng, and Wen (2023), good external contextual factors usually influence the formation of autonomous motivation by fulfilling individuals' basic psychological needs and promoting proactive employee behavior. Based on previous research, this study also utilizes SDT, which is expected to benefit organizations by providing good contextual factors to enhance motivation and achieve their goals.

One of the good contextual factors in this study is the intervention of a servant leader. The intervention of a servant leader is expected to cultivate employees' autonomous motivation. However, Burch's study (2018) indicates a weak relationship between leadership and the enhancement of autonomous motivation. This failure is attributed to leaders needing to ensure the fulfillment of basic psychological needs as a priority before shaping employee motivation. A servant leader can enhance autonomous motivation by prioritizing employees' well-being or putting their subordinates' needs first (Han et al., 2019). Burch's research (2018) reinforces the idea that SDT is a tool to ensure that servant leaders can fulfill basic psychological needs, thereby enhancing motivation and enabling employees to enhance EVGB and GIWB. This is achieved through the servant leaders' attitude of prioritizing the well-being of employees.

2.1. Servant Leadership Style on Psychological Empowerment and AME

The initial concept of servant leadership originated from Greenleaf (1970), who described a servant leader as someone who first serves others, starting with a natural feeling of compassion to serve as a servant and then lead. According to Eva et al. (2019), servant leadership entails strong character, self-awareness, and psychological maturity, with a perception that each follower is unique and has different needs, interests, desires, goals, and limitations, thus understanding the background, core values, beliefs, assumptions, and behaviors of each follower. Servant leadership is someone has seven characteristics consisting of the leader's involvement in the welfare and personal problems of his employees, assessment of the leader's concern for the people around the organization, the leader's ability to handle work problems, and understanding of the organization's goals, leader delegation related to the leader's trust in providing autonomy and responsibility towards subordinates, developing full potential to grow into capable followers, motivating leaders and prioritizing their needs and well-being, and behaving with integrity, honesty, and trustworthiness. The holistic approach of servant leadership plays a role in psychological empowerment.

Psychological empowerment, a key concept in our study, is defined as an individual's motivation towards their work. It can be understood through four dimensions: meaning, competence, self-determination, and impact (Spreitzer, 1995). Meaning refers to the value individuals attach to their work, involving an idealistic assessment of the fit between their role in the job and their beliefs. Competence is about self-efficacy or an individual's belief in their capability to perform their job based on their abilities. Self-determination relates to autonomy in one's work. The impact dimension involves employees' perception of their ability to influence or make a difference in organizational goals. Psychological empowerment theory posits that when employees feel empowered, they tend to take proactive initiatives in their work and go beyond their mandates (Spreitzer, 2008 in Ying et al., 2020). Psychological empowerment intrinsically motivates employees by showing that their work is meaningful and that they have complete freedom in carrying out their duties (Iqbal et al., 2020). As employees begin to feel adept at achieving positive outcomes, their perceptions of competence and impact also increase (Bandura, 1977).

The development of servant leadership research has encompassed analyzing cause and effect at the individual, group, and organizational levels (Eva et al., 2019). According to the Servant Leadership Systematic Review (2019), the advancement of servant leadership research has impacted subordinate behavior, including Organizational Citizenship Behavior (OCB), helping behavior, and proactive behavior. In Khan et al. (2022), servant leaders demonstrate that the success of psychological empowerment is due to the presence of a servant leader in their work environment. The servant leader's role impacts increasing innovative work behavior among employees in the service sector (Khan et al., 2022). A study by Khan et al. (2021) outlines that the presence of a servant-leader environment will induce psychological empowerment in employees. The findings of Newman et al. (2017) also reveal that servant leadership impacts employee psychological empowerment. Empowerment is emphasized as a critical behavior demonstrated by servant leaders

(Ehrhart, 2004 in Liden et al., 2008). This is due to the unique characteristics of servant leadership in meeting the needs, developing, and empowering others to reach their maximum potential. Based on this, the trait of a servant leader who can empower employees to reach their maximum potential enhances psychological empowerment in their subordinates. Based on this premise, the servant leadership position influences the psychological empowerment of employees, resulting in a hypothesis being formulated:
H1a: Servant leadership style has a positive influence on psychological empowerment.

Autonomous motivation is an individual's self-driven intention to act, free from external control or coercion. It is based on self-determination (Qiang et al., 2023). Autonomous motivation for the Environment (AME) is a concept that aligns with autonomous motivation. Self-determination theory (SDT) can express autonomous motivation as a condition where employees understand the value and purpose of their work, feel ownership and autonomy in carrying it out, and receive precise feedback and support so that employees are motivated independently and can be relied on to work better. According to SDT by Deci and Ryan (1985), as described in the study by Sass, Pauw, Donche, and Petegem (2018), autonomous motivation is crucial. Three types of regulations form it. Identified regulation involves individuals recognizing the importance of action in achieving the larger goals or aligning with their values and beliefs. Integrated regulation entails fully adopting action-related values and goals. Intrinsic regulation is the highest level, driven by an activity's inherent satisfaction and enjoyment rather than external factors. The formation of autonomous motivation is influenced by contextual and social factors such as leadership. Leadership can foster AME among employees by assisting in internalizing green values (Han et al., 2019). Servant leadership can increase motivation by prioritizing the good for employees, including protecting the environment, to increase motivation to care for the environment among employees. This is supported by research by Ying et al. (2020) that shows that the existence of a servant leader has a positive influence on increasing AME. Individuals with high autonomous motivation, resulting from servant leader intervention, are likely to effectively internalize and integrate the regulation of an activity or activities, including integrating green values such as EVGB and GIWB (Deng et al., 2024). Based on this, the researcher formulated the following hypothesis:
H1b: Servant leadership style has a positive effect on AME

2.2. Psychological Empowerment on EVGB and GIWB

EVGB is a type of green behavior that refers to actions to preserve the environment that are outside company policy but contribute to the organization's environmental sustainability. These behaviors include turning off lights when not in use, reusing waste paper to make draft memos, using stairs instead of elevators, etc. (Amrutha & Geetha, 2021). This behavior is voluntary without coercion from anyone, so EVGB can also be classified as extra behavior from an employee outside of his mandate. Norton, Parker, Zacher, and Ashkanasy (2015) argued that EVGB consists of employee initiative behaviors that exceed organizational expectations, including prioritizing environmental interests, initiating ecological programs and policies, lobbying and activism, and encouraging others to participate in similar actions.

Psychological empowerment in organizations is quite crucial for business activities in the industry. However, organizations still focus on achieving goals through various technical activities. Research by Zafar et al. (2022) reveals that employees who feel empowered will have confidence that they can work well and find meaning in their work. Psychological empowerment is described by an individual's motivation for their work, which is described through the dimensions of meaning, competence, self-determination, and impact (Spreitzer, 1995). This implies that there is value in their work in the presence of an idealized assessment of the role in their work and individual beliefs. As Spreitzer (1995) described, the dimension of competence can be defined as self-efficacy related to an individual's capability to perform their work based on their abilities. Self-determination is related to autonomy in their work.

Meanwhile, the impact dimension is where employees perceive their ability to influence or make a difference in the organization's goals (Spreitzer, 1995). Fulfillment of these four dimensions increases motivation, internalizes the values and goals of the organization as part of themselves, and provides voluntary initiatives aligned with the organization's goals and values. The impact dimension of psychological empowerment makes employees believe that doing their work can positively impact their organizational goals, including preserving the environment in line with EVGB (Ying et al., 2020). Employees who understand the importance of preserving the environment and have personal freedom tend to encourage employees to adopt EVGB (Ying et al., 2020). Servant leader interventions are expected to foster psychological empowerment among their subordinates by focusing on meeting their needs and providing opportunities for self-development, granting autonomy in their fields, fair treatment, accountability, and transparency in interactions. Therefore, this research has the following hypothesis:
H2a: Psychological empowerment has a positive effect on Employees' Voluntary Green Behavior (EVGB)

Green Innovative Work Behavior (GIWB) is directed toward generating, promoting, and realizing green ideas, such as generating ideas for recycling water bottles and waste reduction (Aboramadan, 2020). West and Farr (1990) in Blasco-Giner et al. (2023) define innovation as voluntary activities involving the introduction and implementation of new ideas, procedures, processes, or products to be adopted within an organization or workgroup, thereby benefiting

individuals, groups, organizations, and society at large. Innovative behavior in the workplace refers to generating and implementing a new idea within the organization through three stages: idea generation, idea promotion, and idea realization. This aligns with the concept of GIWB, which applies a green management perspective to innovative work behavior. GIWB is the process of generating and implementing new and valuable ideas that have environmentally friendly impacts on products, services, processes, and organizational practices (Wang et al., 2021). This behavioral process requires creativity, producing goods, services, or services that lead to reduced product consumption, reduced CO2 emissions, and other climate change effects (Liu et al., 2023).

GIWB is an extra behavior that is often associated with psychological empowerment. The study by Neway and Mulugeta (2022) reveals a relationship between psychological empowerment and innovative work behavior, where psychologically empowered employees internalize the meaningfulness of their work, thus increasing their interest in generating, promoting, and implementing creative ideas. Furthermore, increased self-efficacy makes employees feel capable of mastering tasks innovatively. Autonomy over their work can also enhance innovative behavior by allowing them to decide on actions when performing tasks. Psychologically empowered employees perceive that their behavior can make a difference in their work, potentially stimulating exploration, advocacy, and implementation of ideas and concepts as pillars of innovative behavior. Previous research reveals that employees will work more innovatively if they have the freedom and choice of how to complete specific tasks (Amabile & Gitomer, 1984 in Javed et al., 2019). A sense of freedom and ownership of choices can be formed from empowered employees (Amabile, 1988 in Javed et al., 2019). Thus, psychological empowerment will be related to green innovative work behavior, so the hypothesis will be formulated as follows:

H2b: Psychological empowerment has a positive influence on Green Innovative Work Behavior (GIWB).

2.3. AME on EVGB and GIWB

Employees with AME will internalize existing values because they are in line with individuals' internal values. Budzanowska-Drzewiecka and Tutko (2021) have already examined the impact of AME on Employee Pro-Environmental Behaviors (PEB). In their study, the definition of PEB refers to work behaviors aimed at the protection or improvement of the environment that are voluntary and can be performed by employees at all organizational levels. This aligns with the concept of EVGB, which involves voluntary environmentally conscious behavior beyond their job description (Ying et al., 2020). The Budzanowska-Drzewiecka & Tutko (2021) research also shows a positive relationship between AME and PEB. EVGB is considered an optional action contributing to environmental sustainability (Ying et al., 2020). These actions are often not recognized by the organization's formal reward systems, not described in job descriptions, not systematically monitored, and typically not controlled by environmental management policies. EVGB helps organizations develop environmental strategies and can also help shape environmentally conscious behavior in society (Daily et al., 2009). AME emerges after internalizing values identical to leadership, thereby increasing autonomous motivation for the environment and encouraging employees to engage in EVGB (Ahmed et al., 2023). In their study, autonomous motivation is crucial to determining employee behavior, especially in maintaining and sustaining EVGB. This is related to the nature of EVGB as an extra-role behavior that is implicitly needed and valued by the company, thus requiring internalization through increased autonomous motivation for the long term (Ahmed et al., 2023). Therefore, this study has the following hypothesis:

H3a: AME has a positive influence on Employees' Voluntary Green Behavior (EVGB).

Individuals who demonstrate passion in the form of AME also impact GIWB. Autonomous motivation consists of a spectrum of identified motivation, integrated motivation, and intrinsic motivation (Deci & Ryan, 1985). Identified motivation shows individual actions to achieve more significant goals or by identifying the value and benefits of these actions, which may not pleasure the behavior itself (Deci & Ryan, 1985). Integrated motivation refers to individuals who adopt/integrate the values and goals of specific actions into their own (Deci & Ryan, 1985). Meanwhile, intrinsic motivation is characterized by the individual's action of doing something for their purpose and providing intrinsic satisfaction. These three types of spectrum will form autonomous motivation (Sass et al., 2018).

Complex and risky innovation processes require excellent stability and motivation. AME plays a role in finding, sustaining, and implementing ideas. Gupta (2020) revealed that highly motivated employees will demonstrate high innovation behavior through personal support and feelings of choice rather than due to compliance with external rules and policies. In addition, Gupta (2020) found that integrating extrinsic motivation and intrinsic motivation further encouraged innovation among Research and Development organization employees. Based on these findings, the researcher formulated the following hypothesis, which is central to this study and its implications for the field of organizational behavior and innovation:

H3b: AME has a positive effect on GIWB

2.4. Psychological Empowerment as a Mediator

Psychological empowerment begins when employees believe in their ability to perform meaningful tasks and feel that they can influence and control the outcomes of their work. The cultivation of psychological empowerment is partly due to the characteristics of servant leadership. Servant leaders significantly impact psychological empowerment by treating employees with emotional support and respect, making them feel more meaningful in their work (Newman et al., 2017). The servant leader's concern for their employees' needs and providing opportunities for them to enhance their skills and knowledge will increase competence and self-efficacy, leading to employees feeling psychologically empowered. Social exchange theory (Blau, 1964) also suggests that the more empowered employees feel, the more likely they are to engage in extra-role behavior, such as EVGB. Zafar, Tian, Ho, and Zhang's (2022) research found evidence that psychological empowerment mediates the relationship between servant leadership and EVGB. Therefore, this study proposes the following hypothesis:
H4a: Psychological empowerment mediates the relationship between servant leadership and EVGB.

Psychological empowerment can serve as an intervention in forming positive extra-role behavior in organizations. It has also been identified as a mediator between servant leadership and various types of positive extra-role behaviors in organizations, such as IWB (Khan et al., 2021), Organizational Citizenship Behavior (Newman et al., 2017), employee creativity (Jin et al., 2019), work role performance (Tripathi et al., 2021), and perceived organizational support for the environment and employees OCBE (Lamm et al., 2015). Several studies have explored the mediating role of psychological empowerment between servant leadership and various types of positive extra-role behaviors in organizations. While there is limited research on the mediation of GIWB by psychological empowerment, the concept of the servant leader remains consistent in its role in psychologically empowering employees. Servant leaders support this by allowing employees to participate in decision-making processes (Newman et al., 2017).

Servant leaders, whose critical behavior is empowering employees (Newman et al., 2017, as cited in Schermuly et al., 2022), help develop employees' abilities to the point where they have a proactive attitude, creating a sense of security and enhancing their ability to generate new ideas and take on new challenges (Zeng & Xu, 2020). Dimensions related to innovative behavior are closely related to the concept of GIWB. GIWB involves applying a green management perspective to innovative behavior that leads to green ideas generation, promotion, and realization (Aboramadan, 2021). Based on these considerations, psychological empowerment strengthens servant leadership in enhancing GIWB. The single mediation relationship of psychological empowerment on innovative work behavior is strengthened by the research conducted by Bantha and Nayak (2020). Bantha and Nayak (2020) demonstrated the role of psychological empowerment as a mediating variable. Therefore, the hypothesis formulated is as follows:
H4b: Psychological empowerment mediates the relationship between servant leadership and GIWB.

2.5. Autonomous Motivation for the Environment as a Mediator

Empirical research on AME as a mediator with servant leadership antecedents is still relatively scarce. One such study, conducted by Ying et al. (2020), demonstrated the role of AME as a mediator between servant leadership and EVGB, with significant correlations among these three variables. Furthermore, AME can mediate with other leadership types impacting EVGB behavior (Ahmed et al., 2023). The ability of AME to mediate leadership variables and green voluntary behavior is supported by leaders who can internalize environmental care values in employees, making it more meaningful and motivating for them to engage in EVGB (Li et al., 2020). The support of servant leaders for the environment enhances employees' sense of competence and autonomy, which are essential for increasing AME (Ying et al., 2020). Based on these considerations, the researcher formulates the following hypotheses:
H5a: AME mediates the relationship between servant leadership and EVGB.

According to SDT theory, autonomous motivation consists of intrinsic motivation. Employees with high levels of intrinsic motivation are more likely to engage in pro-environmental behavior (Faraz et al., 2021). This aligns with the concept of AME, which reflects autonomous motivation for environmental care. In their research, Li et al. (2020) described AME as green intrinsic motivation that predicts and mediates green employee creativity. Creativity is closely related to GIWB behavior, as it is one of the abilities to generate new ideas that lead to green innovative behavior (Aboramadan et al., 2021). Employee creativity is associated with various forms of GIWB, including generating ideas for recycling water bottles or developing low-emission technologies. The role of a servant leader, characterized by humility and a willingness to listen to various employee ideas while fostering a tolerant work environment, helps cultivate green motivation, thus enhancing GIWB. The study by Blasco-Giner, Battistelli, Meneghel, and Salanova (2023) has shown the role of autonomous motivation as a mediator in the relationship between servant leadership and innovative behavior. Therefore, this study proposes the following hypotheses:
H5b: AME mediates the relationship between servant leadership and GIWB.

2.6. Psychological Empowerment and AME

The relationship between psychological empowerment and autonomous motivation for the environment is also evident in the study by Ying et al. (2020). The study explains that the Self-Determination Theory (SDT) is a theoretical foundation that aligns with the four cognitions of psychological empowerment (meaning, competence, autonomy, and impact). The Self-Determination Theory is a psychological framework that highlights the importance of motivation that originates from within the individual (intrinsic motivation) compared to motivation that arises from external pressures (extrinsic motivation) (Deci & Ryan, 1985). There are several critical points of the SDT, including the explanation of basic psychological needs. Basic psychological needs consist of autonomy (feeling in control of their actions), competence (feeling effective in activities performed), and relatedness (feeling connected to others). These three psychological needs are prerequisites for autonomous motivation. When these needs are met, individuals tend to be more motivated, perform better, and feel more satisfied in their lives, whether at work, in social relationships, or in daily activities. When employees feel that their work is meaningful, believe in their abilities, have autonomy in decision-making, and feel the impact of their actions, psychological empowerment ensures that the basic psychological needs of SDT are met, which in turn supports the emergence of autonomous motivation, especially towards the environment.

Psychological empowerment begins when employees believe in their abilities to perform meaningful tasks and feel they have complete autonomy (Iqbal et al., 2020). This is supported by the dimensions of psychological empowerment, including meaning, competence, self-determination, and impact. Empowered employees perceive themselves as capable, find meaning in their actions, and are more likely to act autonomously in decision-making and actions. Psychologically empowered employees are inclined to internalize values related to self-directed tasks, especially EVGB (Ying et al., 2020). This behavior is carried out without social pressure, making it an integral part of their self-identity. The research also revealed that psychological empowerment and AME are sequential mediators that strengthen green behavior outcomes. Therefore, we hypothesize:

H6a: Psychological empowerment is related to AME.

This hypothesis outlines the mechanism by which servant leadership shapes EVGB behavior through the roles of two sequential mediations. Servant leaders who prioritize developing and enhancing employees' potential represent the competence aspect of psychological empowerment. Additionally, servant leaders create room for participation, delegation, and empowerment, triggering the impact and self-determination dimensions of psychological empowerment (Schermuly et al., 2022). In their research, servant leadership did not show a significant difference in establishing the relationship between psychological empowerment and transformational leadership, empowering leadership, and servant leadership.

The dimensions of psychological empowerment align with psychological needs (relatedness, competence, and autonomy), which are prerequisites for forming autonomous motivation, especially those that lead to green behavior (Ying et al., 2020). Employees who are psychologically empowered to create autonomous motivation will positively impact the type of extra behavior in the organization, namely EVGB. This is because there is an internalization of the meaningfulness of what they do in their work. One study that can describe the servant leadership mechanism that impacts EVGB is Ying et al. (2020), which explains that employees under servant leaders internalize self-determined values without any social coercion, increasing employees involved in EVGB. Therefore, researchers have the following hypothesis:

H6b: Psychological empowerment and AME sequentially mediate the relationship between servant leadership and EVGB.

The mechanism of servant leadership shaping GIWB has yet to be widely supported by empirical evidence. However, some studies can illustrate the role of servant leadership in IWB (Qiang et al., 2023; Opoku et al., 2019; Zeng & Xu, 2020). Empirical evidence aligns with the concept of GIWB, in which implementing green management perspectives directs employees toward innovative green ideas (Aboramadan et al., 2021). Servant leadership can enhance psychological empowerment through altruism, optimizing creativity in innovation (Zeng & Xu, 2020). This is based on psychologically empowered employees who increase autonomous motivation for environmental care (AME) (Ying et al., 2020). Based on these considerations, servant leadership has a mechanism for shaping GIWB that is mediated by psychological empowerment and AME, leading to the following hypotheses:

H6c: Psychological empowerment and AME sequentially mediate the relationship between servant leadership and GIWB.

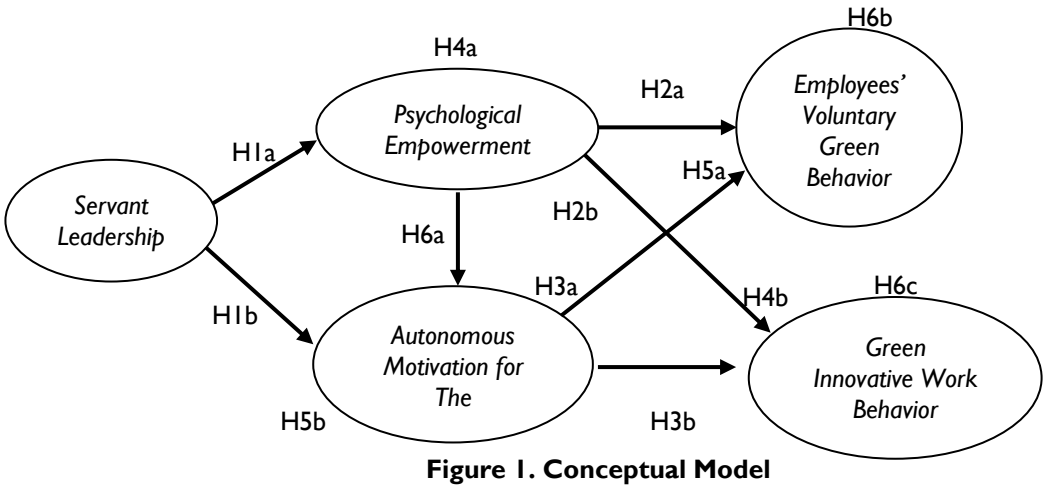

Figure 1. Conceptual Model

3. Methods

3.1. Research Context

This study focuses on employees working in the energy sector in Indonesia. Since the government, through The National Energy Council (DEN), has updated the National Energy Policy (KEN) with priorities centered on energy security, energy independence, low-carbon development, and climate resilience, these priorities will drive energy transition activities, which are currently intensifying in the energy sector (National Energy Council, 2023). The implementation of the four KEN priorities is pursued through a commitment to achieve Net Zero Emissions (NZE) by 2060. The target of reducing gas emissions by 31.89% through domestic efforts and 43.20% with international assistance is outlined in the Long Term Strategy for Low Carbon and Resilience Climate 2050 (LTS-LCCR). According to the International Energy Agency, gas emissions in Indonesia increased from 2000 to 2021. The electricity industry contributed around 40% of total CO2 emissions in 2021 (IEA, 2023). Additionally, Indonesia ranks fifth among Asian countries in CO2 emissions from fuel combustion.

A study by the Institute for Essential Services Reform and the University of Maryland (2022) found that the state-owned utility network must eliminate 9.2 GW of coal from its production activities before 2030. The early retirement of these coal-fired power plants will encourage companies to engage in environmentally friendly business activities. Based on these findings, the scope of this research is based on gas emission calculations carried out by the Ministry of Energy and Mineral Resources in 2020. The energy sector in this research uses a sectoral (bottom-up) approach with the coverage of energy producers as the highest contributors to gas emissions compared to other sectors. Energy producers include electricity, oil and gas, and mineral and coal industries. Based on hierarchy, the scope of this research covers employees from staff positions to middle-level managers, including senior managers.

3.2. Sample and Procedure

This type of research is quantitative and uses a cross-sectional research design. Data collection will involve distributing a self-administered questionnaire covering five variables using a Likert scale. The self-rated questionnaire will be distributed online via Google Forms to employees in the production and enabler departments at energy sector companies in Indonesia. This research was conducted in collaboration with companies.

The companies, approximately 58 in the energy sector, where the respondents work, are diverse in their vision and implementation of green management practices. Some, like public companies, have sustainability reports and business products aimed at achieving the NZE 2060 target. These business products include using a a 102 kWp rooftop solar power plant as fuel. On the other hand, private companies in this study, in their green management strategies, are assessed based on various factors such as the ownership of sustainability reports, vision, business service, business core, business strategy, business initiative, environmental management, emission control, reduction of fossil fuels, sustainable financial action plans, and the use of CCUS. Notably, some companies have been recognized with the Green PROPER Award 2023 for their exceptional environmental management, including biodiversity conservation.

Some companies provide employee data, including the e-mail addresses of each respondent. Apart from that, researchers also distributed questionnaires by snowballing. In the next stage, researchers will identify respondents with specific characteristics relevant to the research objectives. This study has criteria for respondents, requiring a minimum of one year of work experience in the sector, to be included because, at that point, employees can demonstrate innovative behavior. Additionally, employees are already familiar with the sector and their direct supervisors. Data collection was carried out in October 2023. The total of responses received by researchers amounted to 355

respondents. A total of 328 respondents met the sample characteristics for this study. Table 1 shows the demographics of respondents:

Table 1. Respondent characteristics

Category	Amount	Percentage
Gender		
Male	246	75%
Female	82	25%
Age		
15-24	18	5%
25-34	177	54%
35-44	71	22%
45-54	51	16%
55-64	11	3%
Education		
High School (SMA sederajat)	53	16%
Diploma (D1-D3)	55	17%
Bachelor's Degree (D4-S1)	195	59%
Postgraduate (S2-S3)	25	8%
Job Industry		
Oil and gas	73	23%
Mining	34	10%
Electricity	221	67%
Job Function		
Production & Exploration	209	64%
Enabler	119	36%
Working Experience (Energy Sector) (years)		
1-2	33	10%
>2-5	46	14%
>5-10	107	33%
>10-15	69	21%
>15	73	2%

3.3 Measures

The questionnaire will use a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree). The research instrument will use a 7-item global servant leadership measure developed by Liden et al. (2015) to measure servant leadership perceptions from subordinate assessments. The EVGB measurement involves 13 items developed by Robertson and Barling (2017). The Green Innovative Work Behavior (GIWB) variable in this study consists of 6 items adapted from Aboramadan (2021), which initially came from Scott & Bruce (1994).

The measurement of psychological empowerment follows Spreitzer's theory (1995), which consists of 12 items measured individually. This measurement has four dimensions, each consisting of 3 items. The AME variable will be assessed using the Pelletier et al. (1998) approach. Based on the Self-Determination Theory, autonomous motivation for the environment consists of intrinsic, integrated, and identified motivation.

Table 2. Definition and measurement

Variable	Operational Definition	Variable Measurement	Resource
Servant Leadership	A leadership style that prioritizes the interests and well-being of subordinates over their own, focusing efforts on helping subordinates grow to achieve their maximum	SL1: My leader can tell if something work-related is going wrong SL2: My leader makes my career development a priority SL3: I would seek help from my leader if I had a personal problem	(Liden, Wayne, Zhao, & Henderson, 2015; Liden, Wayne, Zhao, & Henderson, 2008)

Variable	Operational Definition	Variable Measurement	Resource
	potential and optimal career, as well as achieving organizational success.	SL4: My leader emphasizes the importance of giving back to the community SL5: My leader puts my best interests ahead of his/her own SL6: My leader gives me the freedom to handle difficult situations in the way that I feel is best SL7: My leader would NOT compromise ethical principles in order to achieve success	
Psychological Empowerment	Employees who feel empowered tend to take proactive initiatives in their work and deliver results that exceed their tasks.	PE1: The work I do is very important to me PE2: My job activities are personally meaningful to me PE3: The work I do is meaningful to me PE4: I am confident about my ability to do my job PE5: I am self-assured about my capabilities to perform my work activities PE6: I have mastered the skills necessary for my job PE7: I have significant autonomy in determining how I do my job PE8: I can decide on my own how to go about doing my work PE9: I have considerable opportunity for independence and freedom in how I do my job PE10: My impact on what happens in my department is large PE11: I have a great deal of control over what happens in my department PE12: I have a significant influence over what happens in my department	(Spreitzer, 1995; Spreitzer, 2008)
Autonomous Motivation for The Environment	Individuals pursue actions that are in line with and consistent with their core identity by internalizing green values.	AME1: For the pleasure I get in mastering new ways to help AME2: For the pleasure, I get in improving the quality of the environment AME3: Because I like the feeling I get when doing things for the environment AME4: For the pleasure of contributing to the environment AME5: Because taking care of the environment is an integral part of my life AME6: Because it seems to me that taking care of myself and taking care of the environment are inseparable AME7: Because it is part of the way I have chosen to live my life AME8: Because my environmental awareness has become a fundamental part of who I am AME9: Because it is a sensible thing to do something about the environment AME10: Because it is the way I have chosen to contribute to the environment	(Pelletier, et al., 1998; Ying, et al., 2020)

Variable	Operational Definition	Variable Measurement	Resource
		AME11: Because it is a reasonable thing to do something about the environment AME12: Because I think it is a good idea to do something about the environment	
Employees' Voluntary Green Behavior	The organization's formal reward systems should recognize the discretionary actions of employees that enhance environmental sustainability.	EVGB1: At work, I compost organic material whenever possible EVGB2: At work, I recycle whenever possible EVGB3: I help my co-workers be environmentally friendly at work EVGB4: I conserve the amount of materials I use at work EVGB5: I encourage my coworkers to turn off work-related equipment when not in use EVGB6: I promote environmentally friendly behaviors amongst my coworkers EVGB7: I persuade my organization to purchase environmentally friendly products EVGB8: At work, I reduce the amount of energy I use EVGB9: I discuss with my leader how my organization can become more environmentally friendly EVGB10: I participate in environmentally friendly events that are sponsored by my organization EVGB11: I suggest to my coworkers that they reduce the amount of materials they use EVGB12: I encourage my organization to support an environmental charity EVGB13: I encourage my organization to reduce its environmental impact	(Boiral, 2009; Robertson & Barling, 2017)
Green Innovative Work Behavior	Innovative work behavior by applying green management can be viewed as behavior oriented towards generating, promoting, and realizing green ideas.	GIWB1: I search out new environmentally-related technologies, processes, techniques, and/or product ideas GIWB2: I generate green creative ideas GIWB3: I promote and champion green ideas with other GIWB4: I investigate and secure the funds needed to implement new green ideas GIWB5: I develop adequate plans and schedules for the implementation of new green ideas GIWB6: I am environmentally innovative	(Scott & Bruce, 1994; Aboramadan, 2020)

4. Results and Analysis

This research will use the CB-SEM method for several reasons, as follows. First, CB-SEM can support this research's objectives by confirming a theory as a systematic relationship between several variables that can be tested empirically. This research examines servant leadership theory, which shapes green voluntary behavior and green innovative work behavior. The proposed theoretical model will determine how well it can estimate the covariance matrix for the sample data set through this method. Second, this research uses latent variables, which must be measured

using parameters from a questionnaire. Third, the analysis of this research is multivariate, so CB-SEM can test the influence of complex variables.

4.1. Confirmatory Factor Analysis

Good variable reliability measurements in SEM use a composite/construct reliability measure with a CR reference value of 0.70 and an average variance extraction measure with an AVE reference value of 0.50 (Hair, Black, Babin & Anderson, 2019). Convergent validity assessment uses factor loadings, where high factor loadings indicate that indicators on the same variable must meet a Standardized Loading Factor (SLF) of at least 0.5. However, Hair, Black, Babin, and Anderson (2016) also stated that if respondents have a minimum number of 250, an indicator with a minimum value of 0.35 is considered valid. According to Fornell and Larcker (1981), the variable tested is still said to be reliable even if the AVE value is below as long as it has a CR value above 0.70.

Table 3. Validity and reliability test

First-order Constructs	Second-order Constructs	Indicators	SLF (> 0.5)	CR (>0.7)	AVE (> 0.5)
Servant Leadership (SL)		SL1	0,46	0.82	0.40
		SL2	0.75		
		SL3	0,36		
		SL4	0.68		
		SL5	0.65		
		SL6	0.68		
		SL7	0.65		
Employees' Voluntary Green Behavior (EVGB)		EVGB1	0.51	0.93	0.52
		EVGB2	0.57		
		EVGB3	0.65		
		EVGB4	0.57		
		EVGB5	0.77		
		EVGB6	0.78		
		EVGB7	0.84		
		EVGB8	0.65		
		EVGB9	0.82		
		EVGB10	0.74		
		EVGB11	0.78		
		EVGB12	0.80		
		EVGB13	0.83		
Green Innovative Work Behavior (GIWB)		GIWB1	0.73	0.93	0.69
		GIWB2	0.86		
		GIWB3	0.81		
		GIWB4	0.88		
		GIWB5	0.89		
		GIWB6	0.82		
	Psychological Empowerment	ME	0.64	0.77	0.46
		C	0.59		
		SD	0.72		
		IM	0.75		
Meaning		ME1	0.67	0.86	0.68
		ME2	0.87		
		ME3	0.91		
Competence		C1	0.88	0.86	0.68
		C2	0.90		
		C3	0.66		

First-order Constructs	Second-order Constructs	Indicators	SLF (> 0.5)	CR (>0.7)	AVE (> 0.5)
Self-Determination		SD1	0.82	0.86	0.68
		SD2	0.83		
		SD3	0,82		
Impact		IM1	0.71	0.88	0.71
		IM2	0.86		
		IM3	0.94		
	Autonomous Motivation for The Environment	IMO	0.89	0.93	0.82
		IR	0.91		
		IDR	0.92		
Intrinsic Motivation		IMO1	0.79	0.90	0.68
		IMO2	0.85		
		IMO3	0.85		
		IMO4	0.82		
Integrated Regulation		IR1	0.77	0.91	0.71
		IR2	0.87		
		IR3	0.86		
		IR4	0.87		
Identified Regulation		IDR1	0.86	0.92	0.74
		IDR2	0.84		
		IDR3	0.86		
		IDR4	0.88		

Goodness of Fit

Table 4 shows the goodness of Fit analysis. Two out of four criteria, RMR and RMSEA, obtain Good Fit in Absolute Fit Indicators, and all five obtain Good Fit in Incremental Fit Indicators. These results suggest that the model used in this research is a good fit.

Table 4. Value of goodness of fit and structural model

GOFI	Good Fit Standard Value	Test Result	Conclusion
Absolute Fit Measure			
P value	≥0.05	0	Poor Fit
RMR	≤0.08	0.049	Good Fit
RMSEA	≤0.08	0.071	Good Fit
GFI	≥0.90	0.78	Poor Fit
Incremental Fit Measures			
NFI	≥0.90	0.96	Good Fit
NNFI	≥0.90	0.97	Good Fit
RFI	≥0.90	0.96	Good Fit
IFI	≥0.90	0.98	Good Fit
CFI	≥0.90	0.98	Good Fit

4.2 Hypotheses Testing

The t-value, a crucial statistical measure, determines the research hypothesis. In our case, we use a value of ±1.65 to determine significance. A positive t-value indicates a direct proportional relationship between variables, while

a negative t-value suggests an inverse relationship, as illustrated in Figure 2. The results of the t-values and mediation tests are detailed in Table 4.

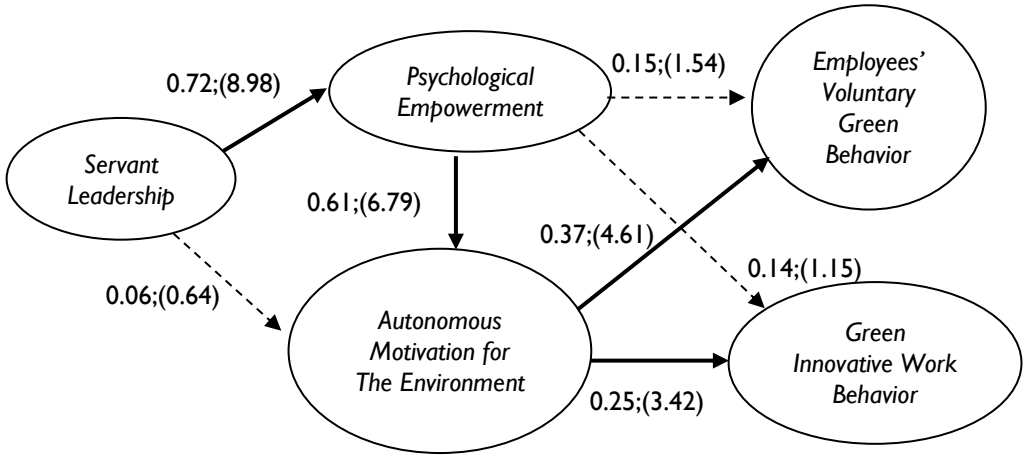

Figure 2. Path Result of Structural Model

Table 5. Hypotheses results

Hypotheses	Relationships	t-values	Conclusion
H1a	Servant Leadership → Psychological Empowerment	10.60	Supported
H1b	Servant Leadership → Autonomous Motivation for the Environment	0.64	Not Supported
H2a	Psychological Empowerment → Employees' Voluntary Green Behavior	0.96	Not Supported
H2b	Psychological Empowerment → Green Innovative Work Behavior	1.25	Not Supported
H3a	Autonomous Motivation for The Environment → Employees' Voluntary Green Behavior	4.13	Supported
H3b	Autonomous Motivation for The Environment → Green Innovative Work Behavior	2.78	Supported
H4a	Servant Leadership → Psychological Empowerment → Employees' Voluntary Green Behavior		Not Supported
H4b	Servant Leadership → Psychological Empowerment → Green Innovative Work Behavior		Not Supported
H5a	Servant Leadership → Autonomous Motivation for The Environment → Employees' Voluntary Green Behavior		Not Supported
H5b	Servant Leadership → Autonomous Motivation for The Environment → Green Innovative Work Behavior		Not Supported
H6a	Psychological Empowerment → Autonomous Motivation for The Environment	6.59	Supported

Hypotheses	Relationships	t-values	Conclusion
H6b	Servant Leadership → Psychological Empowerment → Autonomous Motivation for The Environment → Employees' Voluntary Green Behavior	3.89	Supported
H6c	Servant Leadership → Psychological Empowerment → Autonomous Motivation for The Environment → Green Innovative Work Behavior	4.25	Supported

4.3 Discussions

Servant leadership has consistently been found to influence psychological empowerment, as evidenced by several studies significantly. Additionally, research by Hoven et al. (2021) revealed a positive relationship between servant leadership, psychological empowerment, and Organizational Citizenship Behavior (OCB), indicating that a principal's servant leadership approach will likely promote empowerment and development. This finding is consistent with research by Baykal and Zehir (2018), which suggests that servant leadership positively affects followers' perceptions of empowerment. The most influential characteristic of a servant leader in this study, which significantly influences psychological empowerment, is when the leader focuses on their employees' needs, interests, and well-being. However, psychological empowerment alone has not been sufficient to shape employees' voluntary green behavior and green innovative work behavior, primarily due to resistance to change. According to Palmer et al. (2017), resistance occurs when the meaning and goals of the change have yet to be communicated, leading to employee concerns. One strategy to minimize resistance is implementing various management strategies tailored to the specific conditions that will continue to arise. Servant leadership can apply various management strategies that align with the characteristics of servant leaders, such as increased participatory decision-making, effective communication of change, and support for the needs of subordinates in facing the challenges of the energy transition era.

That is one of the contingency approaches when resistance is caused by fear of the unknown, where the strategies differ significantly from those involving participation and involvement (Palmer et al., 2017). Servant leaders could address resistance to change by fostering open communication channels where employees feel safe to express their concerns and ideas. Leaders could actively listen to employees' feedback and involve them in decision-making processes related to green initiatives. Servant leaders could provide training and support to help employees adapt to new practices and technologies, showing empathy and understanding toward their concerns. By actively involving employees and addressing their concerns, servant leadership can help mitigate resistance to change and facilitate a smoother transition towards green behavior in the energy sector. Additionally, as a change manager, the servant leader should consider giving those affected time to come to terms with what is required and the implications, find ways to avoid resistance by identifying features that will make change attractive to those involved, and select appropriate strategies depending on the cause or causes of the resistance.

Autonomous motivation towards the environment has been proven to positively and significantly influence employees' voluntary green behavior. Han et al. (2019) demonstrated that responsible leadership positively affects autonomous environmental motivation, encouraging employee involvement in organizational citizenship behavior towards the environment. Additionally, Kim & Lee (2022) found that green autonomy motivation, driven by employees' love and interest in the natural environment, leads to the generation of volunteering, promotion, and sharing of environmentally friendly ideas, thereby increasing their level of enjoyment and self-satisfaction, which in turn has a positive impact on pro-environmental behavior in the workplace. However, servant leaders have yet to directly increase motivation towards the environment because they must first fulfill basic psychological needs. Burch (2018) states that servant leaders must fulfill basic psychological needs, which consist of the need for competence, the need for social relationships (relatedness), and the need for autonomy.

The positive and significant effect of autonomous motivation for the environment on green innovative work behavior has been supported by various studies. For instance, Ren, Zhang, and Wei's (2021) study demonstrates autonomous motivation's positive influence on innovative work behavior. Individuals with autonomous motivation perceive their work as aligning with their values and interests. This perception enables individuals to be fully engaged in the activity. This concept can also be applied to autonomous motivation towards the environment. When subordinates have autonomous motivation towards the environment, they perceive their work as aligning with their values and interests, including being involved in green innovative behavior.

Servant leadership has positively influenced psychological empowerment Khan et al. (2022). Psychological empowerment, in turn, has been shown to affect intrinsic work motivation positively (Li et al., 2015), a key component of autonomous motivation. Furthermore, autonomous motivation for the environment has been found to have a positive

and significant effect on employees' voluntary green behavior (Budzanowska-Drzewiecka & Tutko, 2021). Regarding green innovative work behavior, servant leadership has been shown to trigger innovative work behavior through the sequential mediating role of psychological empowerment and job crafting Khan et al. (2021). These findings suggest that servant leadership can contribute to green innovative work behavior within organizations by fostering psychological empowerment and environmental motivation.

5. Conclusion

5.1. Theoretical Implication

This study concludes that the presence of servant leaders directly impacts the increase in psychological empowerment. Previous research has shown that servant leaders who empower their employees can enhance autonomous motivation for environmental concerns, developing employees' voluntary green behavior and green innovative work behavior. However, more than the sole mediating role of psychological empowerment or autonomous motivation for the environment is needed to foster employees' voluntary green behavior and green innovative work behavior. The research findings related to the failure of servant leaders to shape autonomous motivation for the environment serve as evidence that strengthens the SDT theory. Servant leaders must fulfill employees' basic psychological needs before enhancing motivation toward environmental issues. Furthermore, psychologically empowered employees may exhibit concerns about change, which may hinder the direct formation of employees' voluntary green behavior and green innovative work behavior. Therefore, servant leaders have two responsibilities: first, to empower employees, and then to enhance employee motivation toward environmental concerns, enabling employees to demonstrate voluntary green behavior and green innovative work behavior.

5.2. Practical Implication

We find that servant leaders can influence the sequential improvement of psychological empowerment and autonomous motivation for the environment. Therefore, we suggest companies consider servant leadership characteristics indicators for leadership assessment. Our findings have implications for organizations, suggesting that servant leadership characteristics should be considered indicators for leadership assessment. Training programs for leaders regarding the significance of servant leadership in the energy transition era should also be implemented. From this perspective, servant leaders have a broader impact, as they can benefit the organization by fostering a culture characterized by empathy, teamwork, and a solid commitment to environmental stewardship.

Moreover, servant leaders who prioritize the growth and development of their employees can create a more positive and fulfilling work environment, leading to increased employee satisfaction and well-being, especially during periods of change, since our findings show that servant leaders can directly enhance psychological empowerment. Forming small teams is a strategic step to empower employees and increase motivation as a platform for generating innovative, environmentally friendly ideas. Establishing small teams within departments can be a targeted intervention because a servant leader can encourage active participation, listen to input from team members, and promote collaboration to achieve common goals. Comprehensively, servant leaders can also oversee subordinates who consistently demonstrate voluntary green behavior and green innovative work behavior.

5.3. Limitation and Future Research

Data collection was conducted through a self-rated questionnaire method, which carries the risk of producing biased results and may influence the testing outcomes in this study. The data collection technique used non-probability sampling. Thus, the population needed to be more evenly represented. This was due to time constraints and limited data access in the energy sector. Based on these limitations, future research could employ additional measurement methods for the servant leadership variable by using assessments from leaders and subordinates to complement the measurement in this study, thereby broadening the research focus to provide a broader perspective. Conducting assessments of both leaders and subordinates provides a comprehensive overview to understand better the dynamics of interaction and perception gaps through assessments from both leaders and their subordinates. Subsequent studies could be conducted using probability sampling methods to obtain representative results, expand the scope or coverage of the research objects by targeting a multi-sector population, and extend the research period. Using probability sampling, researchers can make more robust generalizations, avoid bias in sample selection, and enhance validity, thus resulting in accuracy in research findings. Future research could also consider incorporating other independent variables that act as internal and external factors influencing servant leader intervention, such as organizational climate, individual orientation and intent, and identification related to change resistance. These three alternative variables are expected to provide additional information regarding the factors influencing organizations in the energy transition era.

Author Contribution

Author 1: conceptualization, formal analysis, investigation, methodology, validation, visualization writing original draft, data curation.
Author 2: review and editing, writing review and editing, supervision.

Financial Declaration
This study did not receive a designated financial grant from any public, private, or non-profit organization.

Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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