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Article

Examining the role of lecturer servant leadership in fostering post-millennial student engagement and its impact on learning outcomes

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ABSTRACT

The post-millennial generation's reliance on digital learning tools, compounded by the COVID-19 pandemic, has created an urgent need to redefine pedagogical leadership in higher education. This study fills a critical gap in the literature by empirically testing how servant leadership directly impacts student engagement and learning outcomes. Using a cross-sectional quantitative design data were collected via Likert-scale questionnaires from 100 undergraduate students purposively sampled from private universities with suboptimal e-learning infrastructure. Structural equation modeling (SEM) in AMOS 22 revealed that servant leadership strongly predicts student engagement with an estimated value (λ = 0.911, p <0.001), the influence of Lecturer Servant Leadership on student learning outcomes is significant with a value (λ = 0.609, p = 0.020) and the influence of student engagement on student learning outcomes is small but has a significant impact with a value (λ = 0.160, p <0.001). From the calculation results obtained, the indirect effect of Lecturer Servant Leadership on learning outcomes is 0.146 or 14.6% mediation effect, which means Total Effect = Direct Effect (0.609) + Indirect Effect (0.146) = 0.755, with Proportion of mediation = 0.146 / 0.755 ≈ 19.3%. The results prove that by encouraging "engagement" as cognitive participation, emotional investment, and behavioral interaction, student learning outcomes will increase by lecturer servant leadership model.

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Introduction

Lecturers, students, curriculum, and educational resources of higher education institutions inextricably link to the organization of learning. The efficacy of the educational process necessitates lecturers' comprehension of students' qualities and demands, including their backgrounds, learning interests, and learning styles. Currently, a new cohort known as post-millennials, or after millennials generation, is succeeding the millennials generation who have completed their education and entered the workforce, along with subsequent generations still in school. Each generation's requirements in the higher education learning process are among its numerous distinctive characteristics. We refer to the cohort born after 1996 as the post-millennial generation. The majority

of this generation is currently in their schooling phase, preparing to enter the workforce. This generation is designated as Gen-Z, since they were born subsequent to generation Y, or millennials; the term i-Gen was assigned to signify their emergence in the internet era; gamers; and Gen 2020 due to their collegiate status and impending graduation (Halloran et al., 2021).

The internet and technology dominate the lives of the post-millennial generation, influencing the evolution of their features and preferred learning paradigms. This generation posits that online learning is optimal, exhibiting greater independence and informality while employing active methodologies such as interactive simulations, role-playing, and project-based learning techniques (Halloran et al., 2021).Higher education institutions must swiftly adjust to the evolving traits of the post-millennial generation and modify their environments and learning approaches to meet these expectations. Nearly all universities globally have adopted the online learning approach.

The pedagogical process at universities is experiencing significant transformation. Subsequent to the World Health Organization or WHO's designation of COVID-19 as a global pandemic in March 2020, improvements in information technology transformed the educational paradigm, partially addressing the requirements of the post-millennial era. Higher educational institutions has experienced significant transformations, shifting from traditional in-person instruction to distance learning, remote teaching and learning (RTL), or online learning models (Ahshan, 2021). Students now engage in class with instructors, peers, and educational resources through the distant learning approach. Assessing learning outcomes, namely alterations in attitudes and value systems that are directly quantifiable in in-person education, becomes difficult within this learning approach.

Organization must assess the learning process undertaken, as the institution has expended all its resources on this endeavor. Post-COVID-19, colleges predominantly employ online learning approaches to meet the demands of the post-millennial generation's educational paradigms. The assessment of learning outcomes is not an isolated concept; institutions can evaluate these outcomes based on various elements, including the learning environment, instructors, students, facilities, and utilized platforms (Panigrahi et al., 2018).

Learning outcomes indicate the total efficacy of the educational process, assessed by the student's capacity to complete the course and the final score achieved. Modifications in pedagogical approaches through online techniques can influence the assessment of learning outcomes and student comprehension. Success in distant learning hinges on behavioral modification (Zhoc et al., 2018), which may be quantified through academic performance and elevated cognitive engagement (A. Lee, et.al, 2020). Universities employ diverse methodologies to evaluate learning outcomes, including GPA assessments, self-evaluations, and test-based evaluations (Caspersen & Smeby, 2021).

This research design will employ self-reported measurements through a survey of students engaged in distant learning to assess learning outcomes. The evaluation of learning outcomes through the measurement of students' attitudes regarding the online learning process might reflect their comprehension of the efficacy of this mode of education and its influence on academic results. Self-assessment is suitable for the educational process in higher education institutions concerning generic learning outcomes, which are typically classified as cognitive, social, and personal development outcomes (Zhoc et al., 2018).

A valuable criterion for evaluating the efficacy of online learning models is student engagement. Students actively engaged in the online learning process are vital to their success in enhancing their comprehension of instructional information. Student engagement is a methodical endeavor that encompasses a blend of cognitive, emotional, and behavioral components in the educational process (Heilporn et al., 2021). A fundamental concept in the online learning model for understanding student behavior during the learning process is student engagement, which exemplifies the effectiveness of academic practices and teaching at postsecondary institutions (Delfino, 2019).

The efficacy of higher education institutions in executing and delivering quality education can be assessed through student engagement in the learning process (J. Lee et al., 2019). Student engagement refers to the active involvement of students in academic and co-curricular activities associated with

educational institutions, demonstrating a strong dedication to educational and learning objectives (Reschly & Christenson, 2022). Student engagement refers to the active participation of students in the execution of effective education and their dedication to educational and learning objectives by utilizing their resources, thereby positively influencing learning outcomes and achieving high academic performance (A. Lee, et.al, 2020; Chiu, 2022).

Student engagement is a multifaceted notion encompassing behavioral, emotional, cognitive, and agentic dimensions (Chiu, 2022). According to Fredericks et al. (2004), the aspects of student engagement encompass: Participatory or behavioral involvement, which includes engagement in academic and social or extracurricular activities, constitutes one dimension of student engagement. Emotional participation includes affective responses, both positive and negative, to the educational setting, including instructors and peers. Cognitive engagement pertains to the involvement with concepts, including investment strategies or strategic learning (Zhang & McNamara, 2018; Chiu, 2022). 4). Agentic engagement is characterized by participation in starting and actively contributing to the educational process (Chiu, 2022).

Enhancing student engagement in the educational process is the obligation of lecturers and higher education institutions. The enhancement of student knowledge and skill in the subject matter indicates the efficacy of instructional strategies employed by lecturers to foster student motivation and academic performance. The role of the lecturer as a class leader is a critical responsibility in the learning process, especially in the context of online distance learning (Cao, 2022), where the lecturer's leadership is very crucial (Chiu, 2022).

As information technology and the internet continue to evolve in online learning models, studying leadership becomes increasingly important and necessary (Matkin, 2022). Developing an effective leadership model in this online learning the situation is the task of higher education institutions and lecturers. An effective leadership model is important in developing the professionalism of lecturers, the level of academic success of students, and the development of higher education institutions as a whole (Cao, 2022). An example of successful leadership The roles of lecturers and higher education institutions are different. While lecturers, with their leadership styles, are crucial to the implementation and success of learning outcomes, institutions are responsible for facilitating the transition from a physical learning environment to a virtual learning environment or developing a blended model. The lecturers are at the forefront of change in higher education institutions with limited infrastructure and resources. Lecturers must play an active role in developing their leadership model in the classroom (Aldholay, et.al, 2020).

Servant leadership is a modern leadership paradigm rooted in the philosophies of Robert K. Greenleaf (1904-1990), founded on the values, beliefs, and principles of the leader (Khatri et al., 2021). The servant leadership model is favored by numerous companies due to its capacity to engage, attract, and cultivate followers by appealing to their hearts, souls, and minds (van Dierendonck & Patterson, 2018). This leadership style is applicable in several institutions (Eva, et.al, 2019), including universities (Latif & Marimon, 2019). Formulating a leadership model within educational institutions is highly strategic; leaders in these settings encounter increasingly intricate challenges amidst constrained budgets and requisite programs (Barnes, 2005). Concurrently, the leadership model in education must equip followers (students) to confront real-world scenarios by fostering enhancements in their emotional, physical, and cognitive capacities (Malingkas, et.al, 2018).

Instructors, as leaders inside the classroom, must be dedicated to serving as an inspiration for both students and peers (McCann & Sparks, 2018). One approach to lecturer leadership conduct in the classroom is servant leadership, sometimes known as lecturer-servant leadership. The core notion of the lecturer as a servant leader corresponds with the tenet of servant leadership (Greenleaf, 1997), which emphasizes service as the foremost priority. In the educational environment, it signifies that the lecturer, as a leader, is obligated to prioritize students' interests over their own, focusing on student development and welfare (Khatri et al., 2021).

As servant leaders in the classroom, lecturers must accommodate students' inherent variances. Lecturers must address these variances through varied teaching methods to ensure that learning orientation prioritizes student needs. Lecturers and servant leaders exemplify ethical behavior and integrity in their interactions, fostering a transparent and honest learning environment that is democratic and trustworthy, thereby establishing ethical standards in the classroom and promoting democratic decision-making (Nichols, 2011; (Khatri et al., 2021).

The focus of this research is to develop and test the effectiveness of the lecturer leadership model in the classroom at higher education institutions that have limited resources and infrastructure. This study tests Teacher Servant Leadership (TSL) as a classroom lecturer's leadership model. Because the servant leadership model is a complete leadership style that emphasizes fostering relationships and strengthening followers' attachment on an emotional, intellectual, ethical, and spiritual level, it was chosen for online learning (Eva, et.al, 2019), and the essence of leadership is changing behavior and encouraging the performance of subordinates (Yukl & Gardner, 2019). Another reason is that servant leadership employs an approach that fosters the development of future-ready student characteristics, empowers them, and fosters a spirit of community building among students and society at large (Khatri et al., 2021).

Methods

This research is exploratory in nature, using quantitative methodology with descriptive verification objectives by means of data acquisition using surveys, this method is used to explain the influence of the paradigm of the influence of lecturer servant leadership on student engagement and its subsequent influence on student learning outcomes.

The assessment of the Lecturer Servant Leadership variable employs the Servant Leadership Behaviors Scale (SLBS-6) indicator, developed by (Sendjaya et al., 2019), which was adapted for the context of higher education in Indonesia by Amruloh et al., (2022). The instrument consists of closed-ended questions measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), to capture respondents' levels of agreement with various statements. The adaptation process involved contextualizing the original SLBS-6 items to reflect lecturer–student interactions within Indonesian higher education institutions. Each item in the questionnaire begins with the phrase, "In the learning process, I perceive my lecturer...," followed by statements that reflect key dimensions of servant leadership, such as empowerment, humility, authenticity, interpersonal acceptance, providing direction, and stewardship. This approach ensures that the instrument remains both culturally relevant and psychometrically sound for assessing servant leadership behaviors in an academic context.

To measure the Student Engagement variable, this study adopts four dimensions conceptualized by Skinner et al. (2009), which were later operationalized by (Chiu, 2022) into five specific items. These items reflect various aspects of students' behavioral and emotional involvement in learning activities. A five-point Likert scale was employed for the responses, ranging from 5 (strongly agree) to 1 (strongly disagree), enabling participants to express the extent of their engagement. The statements were adapted to fit the context of online learning and begin with the phrase, "In the online learning process, I endeavor to exert greater effort...," followed by action-oriented assertions designed to capture students' active participation and commitment.

The factors of learning outcomes are assessed using the Student Self-Evaluation Scale (SSC) created by Zhoc et al., (2018), encompassing cognitive results, social outcomes, and self-growth outcomes, each represented by five indicators. The questionnaire was designed with a Likert scale with responses that range from strongly agree (point 5) to strongly disagree (point 1). Each statement in this quiz commences with, "The online learning process enhances my creative thinking, and so forth."

The research respondents were undergraduate students who are part of the post-millennial generation or Gen-Z at universities in Purwakarta Regency, which has a population of 6.353 in 2023.

The Slovin formula (Sugiono, 2022) was used to select the research sample, which consisted of 100 samples. The determination of respondents was carried out using the clustered method, proportional, and simple random sampling. Clustered samples based on study groups, namely the socio-economic field consisting of five colleges and technology two colleges, with the number of samples taken proportionally from each college simple random sampling. The questionnaire was administered using a Google form sent to a subset of active students registered at each higher education institution (PDDIKTI). After conducting the research, the research respondents using clusters were divided into two categories: socioeconomic fields represented by two economics colleges (65%) and technology fields represented by one technology college (35%), with respondents ranging in age from 17 to 21 years old and an average age of 19.04 years. Based on gender, respondents consisted of 40 men (405) and 60% of women.

Before model testing begins, the data is assessed for reliability using indicators based on the Variance Extracted (AVE) and Construct Reliability (CR) formulas. The indication reliability standards are based on the AVE and CR formulae. According to (Ghozali, 2018), a variable indicator is considered credible when the AVE value is ≥ 0.05 and the CR is ≥ 0.07. Reliability test results as shown in the table 1.

Table 1. Instrument Reliability Testing

Variable	*Construct* Reliability	Average Variance Extracted (AVE)	Conclusion
Lecturer Servant Leadership	0,967	0,56	Reliable
Student Engagement	0,784	0,15	Reliable
Learning Outcomes	0,927	0,406	Reliable

Source: Primary data, processed (2023)

Based on this information, it can be concluded that all indicators of Servant Leadership, Organizational Commitment, organizational citizenship behavior and Lecturer Performance are declared "reliable" and can be continued for the next analysis stage.

Data were analyzed with the AMOS SEM Version 22 tool to evaluate the hypothesis. Confirmatory Factor Analysis (CFA) was conducted to validate the factor structure of each measuring scale included in the study before evaluating the structural model. Structural Equation Modeling (SEM) was employed to validate our proposed model, illustrating the structural relationships among learning outcomes, student engagement, and lecturer-servant leadership as a whole.

Results and Discussion

Based on the results of data collection from respondents, the results of the data analysis are presented in Figure 1 and Table 1.

Table 2. Feasibility Testing Index SEM

Index	Cut-off Value	Result	Fit Category
Chi-square (χ^2)	< critical value (e.g., 216.649)	182.297	Good Fit
p-value	≥ 0.05	0.000	Poor Fit
RMSEA	≤ 0.08	0.140	Poor Fit
GFI	≥ 0.90	0.747	Marginal Fit
AGFI	≥ 0.90	0.628	Marginal Fit
CMIN/DF	≤ 2.00	2.047	Marginal Fit
TLI	≥ 0.90	0.795	Marginal Fit
CFI	≥ 0.90	0.837	Marginal Fit

From the Table 2, shows that the overall criteria for the Full Model are fit, and the model is acceptable. Thus, the primary premise of SEM analysis in this study is accepted, implying that there

is no significant difference between the covariance matrix data of the observed variables and the covariance matrix of the given model (implied covariance matrix). This demonstrates that the structural equations in the overall model of this study can be used to describe the link and influence of exogenous factors on their endogenous variables.

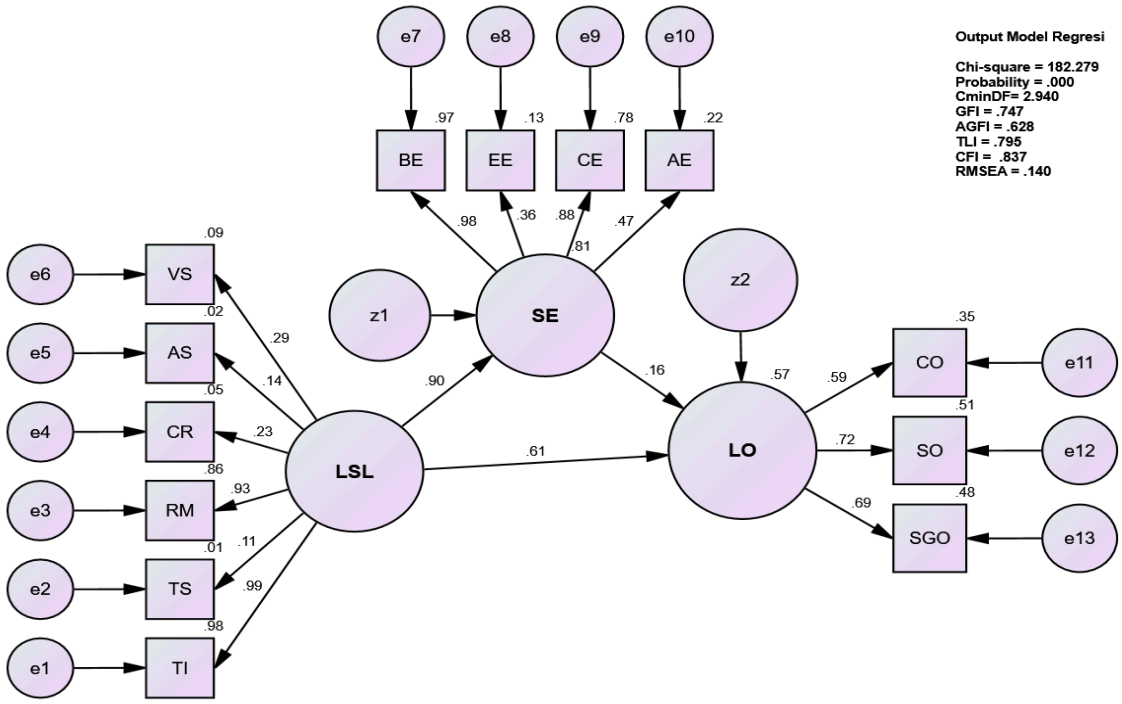

Figure 1. Overall research model

Based on the results of the regression weight analysis and standardized regression weight on the model, using the fit model criteria, it can be shown by the following table 2 of Goodness of Fit Index.

Table 3. Interpretation of Overall Model Data Processing Results

Variables and Dimensions			Estimate ( )	Estimate	S.E.	C.R.	p-value
Student Engagement	<-- -	Lecturer Servant Leadership	0.911	0.812	0.149	17.239	***
Learning Outcomes	<-- -	Lecturer Servant Leadership	0.609	0.572	0.173	2.386	0.020
Learning Outcomes	<-- -	Student Engagement	0.160	0.483	0.167	1.665	***

Source: Primary data, processed (2023)

Based on the data analysis findings shown in Figure 1 and Table 3, the following conclusions can be drawn:First Question: Lecturer Servant Leadership's Effect on Student Engagement. The analysis reveals that Lecturer Servant Leadership (LSL) has a strong and statistically significant positive influence on Student Engagement, as demonstrated by estimate (λ) of 0.901, a standardized path coefficient (β = 0.812), a critical ratio (C.R.) of 17.239, and a p-value below 0.001. This relationship is particularly salient in higher education institutions (HEIs) that increasingly rely on online learning modalities to educate post-millennial students (Generation Z), who exhibit distinct learning preferences–such as valuing autonomy, authenticity, collaboration, and technological integration. These learners thrive in educational environments that offer not only content mastery but also relational support and personalized engagement.

Second question: Examining whether lecturer-servant leadership has an impact on learning outcomes. The analysis reveals that Lecturer Servant Leadership (LSL) exerts a moderate yet statistically significant direct influence on Student Learning Outcomes, with a standardized path coefficient (β = 0.572), a critical ratio (C.R.) of 2.386, and a p-value of 0.020. This suggests that students who perceive their lecturers as servant leaders–those who prioritize student growth, demonstrate empathy, and foster a sense of purpose–are more likely to achieve better academic outcomes.

The third question focuses on analyzing how student participation influences the relationship between learning outcomes and lecturer-servant leadership. With a Z-score of 4,653 > 1.96 and table 3 above, The analysis reveals that student engagement plays a partial yet significant mediating role in the relationship between lecturer Servant Leadership (SL) and learning outcomes. The indirect effect of SL on outcomes, transmitted through engagement, is 0.146 (calculated as 0.911 [SL → Engagement] × 0.160 [Engagement → Outcomes]). This suggests that while SL strongly enhances engagement (β = 0.911, p < 0.001), engagement itself has a small but meaningful influence on final learning outcomes (β = 0.160, p < 0.001). When combined with the direct effect of SL on outcomes (β = 0.609, p = 0.020), the total effect reaches 0.755, indicating that SL exerts a substantial overall impact. However, only 19.3% of this total effect (0.146 / 0.755) is mediated by engagement, meaning the majority (80.7%) of SL′s influence operates through other pathways–such as direct mentorship, improved instructional clarity, or enhanced student motivation. This partial mediation implies that while fostering engagement is beneficial, institutions should also focus on other SL-driven mechanisms to maximize learning outcomes. Future research could explore these additional pathways to better understand how SL comprehensively shapes academic success.

Based on the findings above, the research results can be explained In online learning environments, post-millennial (Gen Z) students at small institutions encounter particular difficulties, such as diminished peer interactions, digital weariness, and a lack of institutional resources (Dumford & Miller, 2018). With its focus on authentic self, covenantal relationships, responsible morality, transcendent spiritual values, transformative influence, and volunteering to assist subordinates, Lecturer Servant Leadership (SLS) has become a significant framework for tackling these issues that students encounter in online learning (Sendjaya et al., 2019). It is commonly acknowledged that the lecturer servant leadership paradigm positively enhances student engagement and learning outcomes. According to study results, students' learning outcomes improve when they participate in online learning settings. This finding is consistent with a recent review of the literature on online learning (Martin et al., 2022).

Servant leadership, characterized by behaviors such as empowering others, demonstrating humility, and providing emotional (van Dierendonck & Patterson, 2018; Eva, et.al, 2019; Latif & Marimon, 2019) and academic support, cultivates psychological safety and trust as key antecedents of student engagement (Wong & Liem, 2022; Chan et al., 2021). In online learning environments, where physical distance can create emotional detachment and academic disengagement, the presence of servant leadership behaviors lecturer becomes crucial in bridging relational gaps. Students are more likely to perform better academically when they feel seen, heard, and supported by their instructors, even in virtual spaces (Means & Neisler, 2023).

When students perceive their lecturers as servant leaders, they are more likely to internalize a sense of responsibility, motivation, and connection to their academic roles. This heightened engagement reflects the same mechanisms observed in employee behavior within organizational contexts, where servant leadership has been shown to promote job involvement, affective commitment, and proactive behaviors. Therefore, within the educational domain, the lecturer functions not merely as a transmitter of knowledge but as a facilitator of meaningful academic and personal growth, driving student engagement through relational and value-based leadership practices.

For small colleges serving post-millennial students online, servant leadership isn't merely beneficial - it's essential (Savin-Baden & Fraser, 2023). The demonstrated impacts on both

engagement and student outcomes, even in resource-constrained environments, suggest that investing in SLS development may be among the most cost-effective strategies for improving online education quality. As higher education continues to evolve digitally, these findings highlight the enduring importance of human-centered leadership in virtual spaces. Recent research by (Kählke et al., 2023) confirms that "high-touch" online teaching methods significantly improve engagement for this demographic, particularly in institutions with limited technological infrastructure.

Based on the research results, recommendations for theoretical implications and practical implications can be provided. Higher education institutions are transforming the online learning model into a more enjoyable learning environment by enhancing the leadership skills of their lecturers through a model of servant leadership, also known as lecturer-servant leadership. The results of the statistical test above have implications for the post-millennial generation who are studying at the higher education level and have expectations of a more enjoyable learning environment and a digital-based and more independent learning model (Halloran et al., 2021). Higher education institutions must adapt their teaching methods for the post-millennial age, notably in light of COVID-19, which has significantly altered the traditional classroom learning model in favor of online learning. The post-millennial generation can benefit from the online learning paradigm since it can improve their motivation and academic performance (Chiu, 2022).

Higher education institutions should carry out an analysis of learning effectiveness by looking at increasing student involvement in learning and students' cognitive understanding through the GPA they obtain at the end of the learning process. Evaluation can also be carried out by students through self-assessment of learning outcomes by measuring increased understanding of cognition, changes in social attitudes, and the desire to develop (Zhoc et al., 2018).

The theoretical implication found in this study is that the key factor in developing a learning climate that is following the characteristics of the post-millennial generation is strengthening the role of the lecturer in the classroom. Lecturers in the classroom do not only act as facilitators who link curriculum, teaching materials, students, and student learning outcomes. The role of the lecturer is very crucial in the online learning model (Cao, 2022; Chiu, 2022) where the lecturer also acts as a leader in the class who is responsible for creating a pleasant learning climate and achieving learning goals in the class (Malingkas et al., 2018). The results of the research that has been done prove that the servant leadership model is appropriate for lecturers to apply in building a pleasant learning climate, encouraging student involvement, and improving their learning outcomes.

Apart from its theoretical and managerial contributions, this study has several limitations. First, the determination of the unit of analysis and sample is limited to higher education institutions that have limited learning facilities. Given these limitations, it is necessary to conduct more comprehensive research in the future, incorporating a wider range of analytical units, both in terms of sample size and higher education clusters. Second, the scope of this research is limited to determining the lecturer leadership model in the classroom, specifically the servant lecturer model, which is a suitable choice. However, there are numerous other lecturer leadership models in other classes that this study did not discuss. In the future, a more in-depth study is needed about lecturer leadership models in the classroom and other factors that influence student learning outcomes. Third, self-assessment data was used in this study, which takes a causality approach. Therefore, prejudice is still a possibility. Therefore, future research that is more in-depth or longitudinal is required.

Conclusion

The analysis reveals that Lecturer Servant Leadership (LSL) exerts a strong and statistically significant positive influence on Student Engagement. The findings underscore the substantial impact of servant leadership practices in higher education settings. From the perspective of human resource management, this result aligns with theories emphasizing the role of leadership in fostering a supportive organizational climate that encourages individual commitment and discretionary effort.

The analysis indicates that Lecturer Servant Leadership (LSL) has a moderate and statistically significant direct effect on Student Learning Outcomes. This finding suggests that students who perceive their lecturers as servant leaders–those who prioritize student growth, show empathy, and foster a sense of purpose–are more likely to achieve better academic outcomes. Lecturer SL also exerts a moderate direct influence on Student Learning Outcomes. This result is statistically significant, indicating that students who perceive their lecturers as servant leaders tend to report better academic outcomes. Although the effect size is not as strong as that on engagement, it remains meaningful in showing the broader impact of servant leadership on student learning outcomes.

This result is especially relevant in the context of post-millennial learners (Gen Z), who are typically digitally native, value authentic relationships, and expect personalized, purpose-driven learning experiences. In online learning environments–where physical distance can create emotional detachment and academic disengagement–the presence of servant leadership behaviors (such as responsiveness, empowerment, and emotional support) becomes crucial in bridging relational gaps. Students are more likely to perform better academically when they feel seen, heard, and supported by their instructors, even in virtual spaces. This finding is particularly pertinent when considering the characteristics of the post-millennial generation (Generation Z), who are digital natives with distinct learning preferences. Generation Z students value authenticity, personalized learning experiences, and meaningful engagement with their instructors. In online learning environments, where physical interactions are limited, the presence of servant leadership behaviors becomes crucial. Instructors who exhibit servant leadership can bridge the relational gap inherent in virtual settings by fostering a supportive and inclusive learning atmosphere. This approach aligns with the preferences of Generation Z students, enhancing their motivation and academic performance.

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