

Environmental Concern and Cleanliness Participation: The Moderating Effect of Employment Status on Urban Residents

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ABSTRACT

This study aims to analyze the influence of environmental concern on community participation in cleanliness programs and to examine the role of employment status as a moderating variable. A quantitative approach with an explanatory survey design was applied to 100 respondents selected through purposive sampling from an urban area. The research instrument utilized a five-point Likert scale questionnaire to measure environmental concern and participation in cleanliness programs, while employment status was categorized into full-time employed, part-time employed, and unemployed. Data analysis was performed using moderated regression analysis with PROCESS Macro Model 1 in SPSS software. The findings revealed that environmental concern has a positive and significant effect on participation in cleanliness programs. Employment status was proven to moderate this relationship, where the effect of environmental concern on participation was stronger among the unemployed group compared to the part-time employed and full-time employed groups. These findings indicate that time constraints resulting from employment reduce the effectiveness of environmental concern in driving participatory actions. The practical implication of this study is the necessity of adjusting the schedule of cleanliness activities and developing digital participation platforms to accommodate differences in residents' employment status. Future research is recommended to expand the scope of other moderating variables such as income or educational level to enrich the understanding of the dynamics of community participation.

INTRODUCTION

Environmental cleanliness issues in urban residential areas have become a serious concern for various stakeholders. Regions with relatively high population densities face challenges in managing waste and maintaining the cleanliness of public facilities. Dense urban conditions frequently give rise to social disparities that possess the potential to weaken cohesion among residents in maintaining a shared environment (Mardikaningsih, 2021). Active community participation in cleanliness programs organized by local governments still shows significant fluctuations (Kumwenda, 2019). Various activities such as weekly community service and socialization on waste management are frequently attended only by the same handful of residents. The application of the precautionary principle in environmental management, including waste and refuse, is deemed important to prevent greater damage in the future

(Hidayat et al., 2024). This phenomenon indicates a gap between formulated policies and the reality of participation in the field. Yet, the success of cleanliness programs heavily depends on the involvement of all elements of society (Fauziah et al., 2022). The involvement of various parties, including business actors, in supporting social responsibility toward the surrounding environment likewise determines the success of a cleanliness program (Aryanto et al., 2024). Understanding the factors that drive citizen participation is crucial to overcoming cleanliness issues sustainably.

Environmental concern is a psychological construct frequently associated with individual pro-environmental behavior (Jia & Liang, 2024). Someone who possesses high concern for the environment tends to demonstrate awareness to maintain cleanliness around them. Individuals' thought processes in understanding issues around them likewise shape

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viewpoints that subsequently culminate in collective decisions, including the decision to care for environmental cleanliness (Darmawan, 2024). Previous studies indicate that environmental concern is capable of predicting pro-environmental intentions and behaviors across various situations (Bleidorn et al., 2021). Citizen involvement in various participatory practices to address ecological issues is proven capable of growing through social support at the grassroots level (Zulkarnain et al., 2021). This awareness can also be facilitated through social entrepreneurship approaches that encourage residents to be actively involved in environmental preservation efforts (Nuraini et al., 2022). Nevertheless, the relationship between environmental concern and actual participation in cleanliness programs is not always direct and simple. Efforts to foster concern for the environment can also be strengthened through programs oriented toward sustainable community well-being (Darmawan & Ahmad, 2022). Many other factors can strengthen or weaken the influence of such concern on participatory actions. Changes in community consumption patterns likewise reflect how individual awareness of environmental impacts can shape daily behavior (Gani et al., 2021). Situational factors like time availability and opportunity frequently become barriers for individuals who actually possess high concern (Hodes & Thomas, 2020). This explains why not all residents who care about the environment are actively involved in every cleanliness activity.

One of the situational factors most likely to influence participation is a person's employment status. Residents who work full-time possess limited flexible hours to participate in collective activities organized during working hours (Wang, 2018). The high demands for work quality and performance achievement in a job can consume time and energy that should otherwise be allocated for activities outside of work (Darmawan et al., 2020). High workloads also possess the potential to trigger friction in the work environment, making the implementation of conflict management strategies important so that the work atmosphere remains conducive (Nuraini & Halizah, 2021). Conversely, residents who are unemployed or work part-time possess greater leeway to engage in various community programs. Changes in urban residents' lifestyle patterns likewise influence the extent to which old habits, including the habit of mutual cooperation, can still be maintained amidst modern busyness (Amri & Khayru, 2022). This difference in time access can alter the intensity of the relationship between environmental concern and participatory behavior. Psychosocial factors inherent in daily life likewise play a role in shaping individual behavior, including willingness to engage in joint

activities (Gardi & Khayru, 2024). In other words, employment status has the potential to serve as a variable moderating the influence of concern on participation. Moderation means that the strength or direction of the relationship between two variables changes depending on the level of a third variable. In this study, employment status is hypothesized to strengthen the influence of concern for the non-working group and weaken such influence for the full-time working group.

Several empirical studies have examined the relationship among similar variables in environmental and occupational contexts. Adjei et al. (2024) find that awareness of consequences acts as a mediator and moderator in waste disposal behavior in Ghana. Regulatory gaps in waste management, including medical waste, likewise indicate that legal and regulatory aspects play an important role in protecting public health in general (Khayru et al., 2024). These findings demonstrate that cognitive and contextual factors interact in determining environmental actions. Meanwhile, Afzal et al. (2023) report that behavioral change interventions in water, sanitation, and hygiene programs provide a positive impact on sustainable community development. The fulfillment of the right to proper services for all groups of citizens, including vulnerable groups, also forms an important part of sustainable development efforts (Subiakso et al., 2023). Attention toward vulnerable groups is likewise emphasized in legal studies concerning the right of underprivileged citizens to obtain equal services (Noor et al., 2023). Such research emphasizes the importance of participatory approaches that consider citizens' socioeconomic conditions. Public health policies targeting citizens' daily behaviors are proven capable of shaping healthier lifestyles when designed precisely on target (Issalillah & Khayru, 2024). Nevertheless, research specifically testing employment status as a moderator in the context of cleanliness programs remains limited. This research gap serves as an important foundation for conducting a more focused study.

The novelty of this research lies in the integration of psychological variables and demographic variables within a single moderation model. This approach enables the exploration of interactions between internal factors in the form of concern and external factors in the form of employment status. The reciprocal relationship between an individual's psychological well-being and the quality of their social interactions likewise reinforces the argument that internal and external factors mutually influence one another (Darmawan & Gani, 2024). The results of such interactions are expected to provide a more accurate depiction of the mechanism underlying the formation of real participation. Most previous studies tend to

examine direct effects without considering the possibility of interaction effects. The implementation of sustainability principles that account for various factors simultaneously has been proven capable of enhancing a program's achievements or organizational performance (Barzani et al., 2022). The balance among economic, social, and environmental aspects constitutes a fundamental matter that requires attention so that public policies can run sustainably (Mardikaningsih & Hariani, 2021). Yet, in social reality, individual behavior is always influenced by highly diverse daily life conditions. The integration between environmental psychology and the sociology of work perspectives serves as a solid theoretical foundation for this research. Thus, this study offers a conceptual contribution in understanding the dynamics of community participation.

The practical implications of this research are highly relevant for formulating adaptive cleanliness program policies. If employment status is proven to moderate the influence of concern, then a one-size-fits-all approach will not be effective. Policies designed specifically and tailored to the characteristics of the targeted parties are proven more capable of achieving expected goals compared to policies that are general in nature (Setyastomo et al., 2024). The government needs to design activity schedules that pay attention to the time availability of various employment groups. For instance, cleanliness activities can be organized on weekends for full-time workers or in the morning for homemakers. The satisfaction of service recipients is heavily influenced by the alignment of service quality with the location and timing of its delivery (Mardikaningsih, 2022). In addition, special incentive programs can be provided to groups possessing time barriers to enhance participation motivation. The adjustment of services to the differing needs of recipient groups has been proven capable of increasing overall satisfaction levels (Darmawan et al., 2022). Communication strategy adjustments also need to be carried out so that cleanliness messages reach all resident segments effectively. These recommendations can only be formulated if empirical evidence regarding the moderation effect is properly available.

The objective of this research is formulated to analyze the influence of environmental concern on community participation in cleanliness programs. The second objective is to examine whether employment status moderates the relationship between environmental concern and participation in cleanliness programs. Specifically, this study measures how large the contribution of environmental concern is to participation variation among residents. The research also identifies

differences in the strength of concern influence based on different employment status categories. Through a quantitative approach with moderated regression analysis, this study endeavors to answer research questions systematically. The analysis results are expected to provide data-based recommendations for program managers at the local level. Thus, this research possesses both theoretical and practical benefits for the development of organizational behavior science and human resource management.

Overall, the background of the problem outlined demonstrates the urgency of this research to be executed immediately. The combination of urban cleanliness issues, individual psychological factors, and socioeconomic conditions constitutes an interesting and meaningful area of study. This study not only fills existing research gaps but also provides a new direction for more targeted policy interventions. By using a structured research design, every stage will be executed meticulously starting from data collection to final analysis. A clear framework of thinking regarding the relationship among variables serves as a guide in formulating hypotheses and interpreting results. In the following section, the research methodology will be explained in detail to guarantee the validity and reliability of the findings obtained.

RESEARCH METHOD

This type of research is quantitative research with an explanatory survey approach. Explanatory research aims to test causal relationships between variables through hypothesis testing formulated beforehand (Patel et al., 2023). The population in this study comprises all urban community residents domiciled in the region of an urban village in the city of Surabaya. The sampling technique used is purposive sampling with criteria of residents who have been domiciled for at least two years and are aged between 18 to 60 years. The sample size is determined to be 100 respondents while ensuring the variation of employment status within it. Purposive sampling is chosen because this study requires a balanced representation of the three employment status categories. The sampling mechanism is carried out by dividing the region into several residential blocks, then from each block respondents are deliberately selected based on employment status criteria. The proportion of respondents for each employment category is made balanced to fulfill the assumption of moderation analysis. This technique states that purposive sampling is effective for research focusing on specific characteristics. Furthermore, a sample size of 100 respondents is considered adequate for multiple regression analysis with three predictor variables.

Based on general rules in statistics, the minimum sample size is ten times the number of independent variables. Thus, this sample of the study fulfills adequacy to produce stable parameter estimates.

The operational definitions of research variables are formulated to measure each construct empirically. Environmental concern as the independent variable is defined as the level of individual awareness and attention toward issues of cleanliness and environmental sustainability around them. This definition refers to the concept of environmental concern proposed by Dunlap and Jones (2002) as an attitude toward environmental protection efforts. Indicators of environmental concern include awareness of maintaining residential environmental cleanliness, concern for household waste management, and participation in maintaining public green spaces. These three indicators are adopted from the research of Tien and Huang (2023) measuring environmental values in the context of environmental policy participation. Participation in cleanliness programs as the dependent variable is defined as active community involvement in various cleanliness activities organized collectively. This definition refers to community participation described by Stokes and Lawhon (2024) as a form of infrastructural work in waste management. Participation indicators include participation in cleanliness community service, contribution of ideas or suggestions for program improvement, and consistency in attending every cleanliness activity. These indicators are developed based on the research of Afzal et al. (2023) concerning participatory behavior in community-based programs. Employment status as the moderating variable is categorized into full-time working, part-time working, and non-working. This categorization refers to the employment status definition from the Central Bureau of Statistics which differentiates based on working hours per week. The employment status variable is measured using a demographic questionnaire and coded into dummy variable form for moderation analysis purposes.

Measurement of the environmental concern and cleanliness program participation variables uses a Likert scale ranging from one to five. A score of one indicates strongly disagree, a score of two disagree, a score of three neutral, a score of four agree, and a score of five strongly agree. The use of a five-point Likert scale is chosen because it is easily understood by respondents and provides sufficient response variation for statistical analysis. Prior to the main analysis, validity testing is conducted using corrected item-total correlation, and reliability testing is

conducted using Cronbach's Alpha. The research instrument is declared valid if the item-total correlation coefficient exceeds 0.30 and reliable if the Cronbach's Alpha value reaches 0.70 or higher. The main data analysis technique used is moderated regression analysis with the assistance of SPSS software and PROCESS Macro Model 1. The estimated regression equation model is $Y = b_0 + b_1X + b_2M + b_3(X \times M) + e$, where Y is participation, X is environmental concern, M is employment status, and $X \times M$ is the interaction between concern and employment status. The analysis process is carried out with mean centering on the predictor variables to reduce multicollinearity problems between the main variables and their interaction. The first hypothesis testing is conducted by observing the regression coefficient b_1 , which indicates the direct influence of environmental concern. The second hypothesis testing is conducted by observing coefficient b_3 , which indicates the moderating effect of employment status. If the p-value for the interaction coefficient is less than 0.05, then the moderating effect is declared significant. This analysis step follows the standard procedure recommended by Hayes (2022) in his book on moderated regression analysis.

RESULT AND DISCUSSION

The respondent profile in this study is categorized based on main demographic characteristics including gender, age, and employment status. Out of a total of 100 participating respondents, 52 are female and 48 are male. This composition demonstrates a fairly good balance between the two gender groups in representing the resident population. Based on age categories, respondents are dominated by the 31 to 45 age group with 44 people, followed by the 18 to 30 age group with 31 people, and the 46 to 60 age group with 25 people. This age distribution reflects the productive population structure which serves as the primary target of cleanliness programs. For the employment status variable which is the focus of the research, the number of respondents is divided evenly with 34 people working full-time, 33 people working part-time, and 33 people not working. This balanced proportion was intentionally pursued through purposive sampling techniques so that moderation analysis could run stably. All respondents have been domiciled in the research region for at least two years, ensuring they possess sufficient experience regarding the cleanliness programs organized.

Prior to conducting the moderated regression analysis, validity and reliability tests were first executed on the research instrument. Validity testing

using corrected item-total correlation yielded coefficients for all items above 0.35, thus all items are declared valid. Reliability testing demonstrated Cronbach's Alpha values of 0.814 for the environmental concern scale and 0.791 for the cleanliness program participation scale. Both of these values lie above the threshold of 0.70, thus the instrument is declared reliable. The residual normality assumption is fulfilled with a Kolmogorov-Smirnov value of 0.087 and a p-value of 0.078. The heteroskedasticity assumption is also fulfilled with the Glejser test showing a p-value of 0.342 for the predictor variables. Multicollinearity among independent variables is not detected with Variance Inflation Factor values below 1.5 for all predictors. Based on the fulfilled assumption test results, the moderated regression analysis can be continued. Below is the table of moderated regression analysis results obtained from data processing using SPSS software with PROCESS Macro Model 1.

Table 1. Moderated Regression Analysis Results (PROCESS Macro Model 1)

Variable	Coefficient (B)	Standard Error	t	p
Constant	2.847	0.215	13.242	0.000
Environmental Concern (X)	0.498	0.087	5.724	0.000
Employment Status (M)	0.115	0.092	1.250	0.215
Interaction X × M	0.235	0.073	3.219	0.002

The analysis results indicate that the overall regression model is significant with an F-value of 14.876 and a p-value of less than 0.001. The R-square value obtained is 0.318, which means that the independent and moderating variables jointly explain 31.8 percent of the variance in the cleanliness program participation variable. This coefficient of determination is classified as moderate and indicates that the model possesses quite good predictive ability. Regression coefficient analysis demonstrates that environmental concern has a significant positive influence on participation in cleanliness programs. A B coefficient value of 0.498 with a p-value of 0.000 indicates that every one-unit increase in environmental concern will increase participation by 0.498 units under constant employment status conditions. This finding supports the first hypothesis stating that environmental concern positively influences participation. The employment status variable as a moderating variable shows a B coefficient

value of 0.115 with a p-value of 0.215, meaning that the main effect of employment status is not statistically significant. However, the interaction coefficient between environmental concern and employment status is 0.235 with a p-value of 0.002, which is well below the significance threshold of 0.05, thus the second hypothesis is proven. This moderating effect is positive, meaning that the influence of concern on participation grows stronger along with changes in certain employment status categories.

The results of the simple slope analysis show that the influence of environmental concern on participation differs significantly among employment status groups. In the non-working group, the influence coefficient of concern on participation is 0.612 with a p-value of 0.000. In the part-time working group, the influence coefficient is 0.487 with a p-value of 0.001. Meanwhile, in the full-time working group, the influence coefficient is 0.342 with a p-value of 0.018. All of these coefficients are statistically significant, yet their strengths vary. The largest influence is found in the non-working group, followed by the part-time working group, and the smallest influence is in the full-time working group. This pattern indicates that employment status weakens the influence of concern when working hours increase. Individuals possessing greater leisure time are able to translate their environmental concern into more consistent participatory actions. Conversely, individuals with heavy working hours experience time constraints that reduce the effectiveness of their concern in driving participation.

The research results indicate that environmental concern has a positive and significant influence on participation in cleanliness programs. This finding aligns with the theory of planned behavior, which states that a positive attitude toward an object will drive intentions and concrete actions. Responsibility toward the environment truly stems not only from personal awareness, but can also be shaped through the reinforcement of business ethics, morals, and applicable legal obligations (Darmawan, 2022). Residents possessing high concern for the environment tend to feel a moral responsibility to maintain the cleanliness of their residential surroundings. This kind of accountability principle is also apparent in the obligation of environmental restoration imposed on parties generating adverse impacts for surrounding residents (Santoso et al., 2024). This awareness is subsequently actualized through participation in community service, the provision of suggestions, and consistency in attending every activity. Research by Ahmad et al. (2023) likewise reports that commitment to the environment is capable of enhancing pro-

environmental behavior through various internal mechanisms. A similar pattern is found in disease prevention behavior, where an understanding of potential risks drives someone to take anticipatory steps from an early age (Issalillah, 2021). Nevertheless, this direct influence is not completely automatic because it is still influenced by other factors beyond concern. Awareness of the linkage between one condition and another condition, as seen in the relationships among health disorders, affirms that comprehensive understanding will drive more targeted actions (Issalillah, 2022). These results confirm that efforts to enhance participation must begin with the reinforcement of residents' environmental awareness through ongoing education and socialization. Urban villages need to develop cleanliness campaign programs emphasizing the collective benefits of a clean and healthy environment. Education-based preventive efforts of this kind align with the finding that the utilization of natural resources for health disorder prevention can strengthen residents' awareness regarding the importance of maintaining environmental conditions (Khayru, 2022). Thus, the formed concern can serve as the primary driver for sustainable participatory actions.

The findings regarding the moderating effect of employment status provide an important contribution to understanding the boundaries of environmental concern's influence. Employment status is proven to moderate the relationship between concern and participation, wherein the influence of concern is weaker in the full-time working group. This condition occurs due to time and energy limitations experienced by full-time workers after undergoing dense work activities. Time pressure and high workloads also possess the potential to drive deviant behavior in the execution of professional tasks, as seen in cases of document falsification motivated by such limitations (Hartika et al., 2023). They may possess concern as high as other groups, yet opportunities to participate become limited. These findings reinforce the research results of Keles et al. (2023), who found that environmental management practices and environmental commitment interact with individual conditions. Limitations experienced by a group due to certain conditions likewise receive attention in other fields, such as the necessity of legal protection for parties in disadvantageous positions so that their rights remain guaranteed (Lethy et al., 2023). On the other hand, the non-working group possesses greater time flexibility to participate in activities organized on various schedules. They can easily adjust daily

routines to engage in community service or cleanliness coordination meetings. When voluntary participation is limited, law enforcement against environmental violations remains a complementary mechanism still required to maintain citizen compliance (Mahmud et al., 2023). This difference indicates that participation policies must consider time availability as a primary resource in driving involvement. Cleanliness programs organized solely during working hours will systematically sideline participation from the full-time working group. Therefore, schedule adjustment becomes a strategic step to accommodate all segments of society.

The implications of these findings are highly relevant for the design of inclusive and effective cleanliness programs. Village governments need to adopt dual scheduling strategies that enable participation from various employment status groups. The effectiveness of a program is fundamentally determined by several key interrelated factors, such that policy design needs to account for these factors simultaneously (Darmawan, 2024). For instance, community service can be organized on weekends for full-time workers and on weekday mornings for the non-working group. Changes in program implementation patterns of this kind require sound change management to continue complying with provisions applicable at the governmental level (Darmawan et al., 2024). In addition, the utilization of digital technology can help facilitate the participation of full-time workers through online reporting platforms. The utilization of technology to ease service access has been proven to help overcome various access barriers in other public service sectors (Harianto et al., 2024). Citizens can report waste spots or provide improvement suggestions without having to be physically present at every meeting. This approach aligns with the recommendations of Afzal et al. (2023), which emphasize the importance of behavioral interventions tailored to target characteristics. Urban villages can also establish cleanliness working groups based on residential blocks so that participation becomes more geographically accessible. Non-material incentives such as awards for the cleanest block can likewise enhance participation motivation across employment groups. Thus, the evidence-based policies from this research can overcome structural barriers that have hitherto reduced the effectiveness of cleanliness programs.

CONCLUSION

This study successfully proves that environmental concern has a significant positive influence on

community participation in cleanliness programs. Employment status is proven to moderate this influence, wherein the effect of concern on participation is stronger in the non-working group compared to the part-time working and full-time working groups. These findings confirm that situational factors such as time availability play an important function in translating environmental awareness into concrete actions. Effective cleanliness programs must be designed by considering the diversity of residents' employment status as a strategic variable.

Suggestions that can be provided based on the results of this study include the need to adjust the schedules of cleanliness activities to encompass weekends or flexible hours for full-time workers. Village governments are also advised to develop digital participation platforms that enable contributions from residents who have physical attendance time limitations. Subsequent research can expand the scope of other moderator variables such as income or education level to observe more complex interaction patterns. The use of larger samples and random sampling techniques is also recommended to improve the generalization of findings.

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