Sustained Volunteerism: A Systematic Review of The Sustainability of Technology-Based Volunteer Participation

Andriyanti Asianto[1], Erlina Puspitaloka Mahadewi[2], Pawenary[3], Lista Meria[4]

[1]Student, Faculty of Economics and Business, Esa Unggul University, Jakarta, Indonesia
[2]Lecture, Faculty of Economics and Business, Esa Unggul University, Jakarta, Indonesia
*Corresponding Author:
email: tinuk.andriyanti@esaunggul.ac.id

Abstract.
This study examines sustained volunteerism as the continuity of voluntary engagement, including remaining active, not withdrawing from a program, or expressing an intention to return as a volunteer. Evidence appears across various contexts such as public health, telemedicine, sports activities, charitable organizations, and population surveys utilizing diverse outcome measures. This review examines the factors and forms of sustained volunteerism, drawing from English-language articles published between 2021 and 2026 that met established quality and indexing criteria. The research methodology involved a structured search using terms related to formal volunteering, community volunteering, volunteer retention, continuance, persistence, commitment, and both organizational and psychosocial factors. Data were extracted on study design, context, sample, outcome definitions, measurement timing, predictors, and risk of bias. The study designs encompassed qualitative research, longitudinal cohorts, cross-sectional surveys, prospective implementation studies, and a meta-analysis. Results: an organizational strategy that upholds initial agreements, provides reliable support, and adjusts roles through consultation is a sensible approach, though its causal effectiveness remains unestablished. Longitudinal studies and interventions utilizing standardized measures of actual retention are required. In conclusion, the evidence suggests that sustained volunteerism is a multidimensional outcome that cannot be captured by single, solitary measures.

Keywords: *sustainability company, sustainability of technology, **s**ustained volunteerism and volunteer participation.*

I. INTRODUCTION

Sustained volunteerism refers to the continuity of voluntary engagement, which includes remaining active, staying within a program, or intending to return as a volunteer. Evidence regarding this construct appears across various contexts such as public health, telemedicine, sports activities, charitable organizations, and population surveys with a wide range of outcome measures. This review examines the factors and forms of sustained volunteerism as presented in English-language articles published between 2021 and 2026 that meet established quality and indexing criteria. Meanwhile, a survey of sports event volunteers measured the intentions of episodic volunteers to participate in future major sporting events (Jie Zhou et al., 2024).

A key challenge lies in the transition from initial enthusiasm to sustained engagement. A case study of the "Community Champions" program in Birmingham prioritized the retention and expansion of volunteer roles in the post-pandemic period, while a three-wave study involving 700 university students examined intentions for sustained volunteering through the lenses of a "calling," volunteering norms, and the impact of the pandemic (Retzer A et al., 2023; Jie Zhou et al., 2024).

Sustained volunteerism encompasses the continuation of volunteer behavior, retention within a program, and the readiness to contribute again; these components are distinct in terms of both their conceptual definitions and how they are measured. In a longitudinal cohort study in the United States, the outcome was defined as any volunteer work performed within the 12 months prior to a follow-up assessment conducted four years after the baseline (Nakamura JS et al., 2022). Given that actual retention, subsequent activity, and future intentions are measured in diverse ways, a synthesis that distinguishes between these outcomes is necessary. This review examines studies on sustained, continued, long-term, or ongoing voluntary participation published between 2021 and 2026. Its objective is to map how sustained volunteerism is operationalized, identify the factors associated with it, and evaluate the strength of the evidence regarding volunteer retention.

II. RESEARCH METHOD

This study methodology employs a structured search using terms related to formal volunteering, community volunteering, volunteer retention, continuance, persistence, commitment, as well as organizational and psychosocial factors. Studies examining sustained voluntary participation or retention were included,

while one-off, mandatory, or paid activities lacking an element of sustained engagement were excluded. Data were extracted regarding study design, context, sample, outcome definitions, timing of measurements, predictors, and risk of bias. The certainty of the evidence was assessed using the GRADE approach.

Eligibility criteria

Studies are eligible if they examine sustained volunteerism, continued volunteer participation, or volunteer retention in voluntary activities. Studies focusing exclusively on one-time, mandatory, or paid participation lacking elements of sustainability or retention are excluded.

The period for inclusion is 2021–2026. Regarding quality, articles must be published in reputable journals indexed in Scopus and classified as Q1 or Q2 (based on Scopus quartile data at the time of verification). The extraction dataset notes the open-access status for six of the identified studies; however, as it does not specify the journal quartile for each individual study, the quartile status could not be further audited within the scope of this review.

Information sources and search.

The search encompassed Semantic Scholar, PubMed, OpenAlex, arXiv, and ClinicalTrials. Four search strategies combined terms such as "formal volunteering," "community volunteering," "nonprofit volunteering," "voluntary service," "voluntary work," and "community/social participation" with terms like "sustained volunteering," "volunteer retention," "continuance," "continued participation," "persistence," and "commitment."

Predictor terms included motivation, satisfaction, role identity, organizational support, social support, psychological contract, and financial incentives. This scope aligns with a case study evaluating organizational and programmatic support (Retzer A et al., 2023). Another included cohort study assessed health and psychosocial predictors (Nakamura JS et al., 2022), while a survey focused on sporting events examined "relational job design" (Jie Zhou et al., 2024).

Interviews in the context of telemedicine revealed a tension between mission-oriented volunteer work and financial incentives; some providers suggested that financial incentives could help sustain engagement over time (D'Souza K et al., 2024).

Selection Process

A total of 922 records were identified; 149 were screened at the title/abstract stage, and eight studies were included following a full-text assessment. The PRISMA flowchart summarizes the entire process of identification, deduplication, screening, and inclusion. Instrument validity was evaluated using Confirmatory Factor Analysis (CFA) with the assistance of AMOS. The test results show that all items had factor loading values above 0.50 and were therefore declared valid.

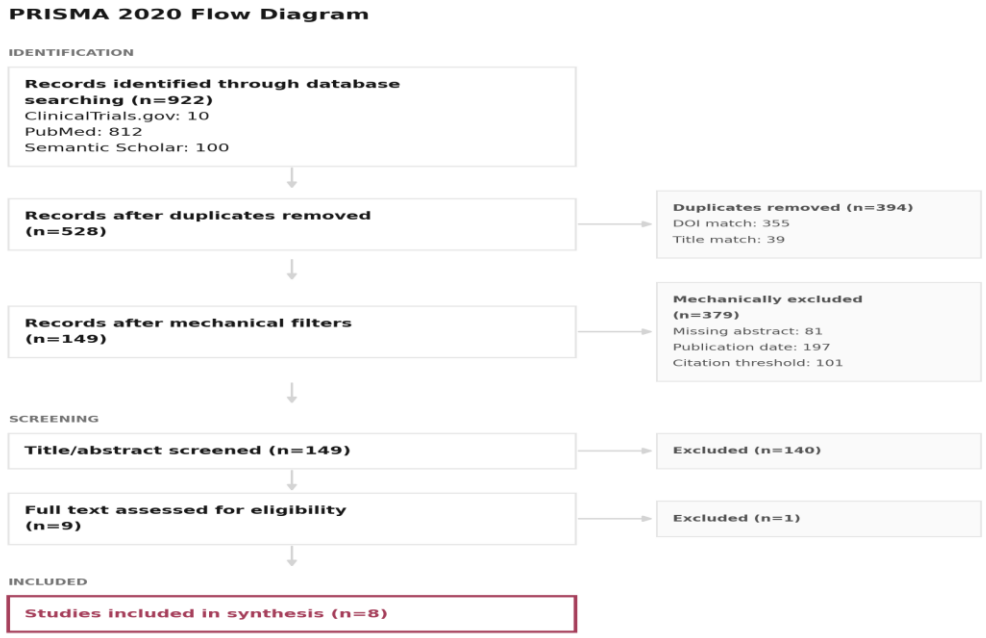
Reliability testing was conducted using Cronbach's Alpha, and all variables showed alpha values above 0.60: Recruitment and Selection (0.953), Training and Development (0.913), Performance Appraisal (0.932), Job Satisfaction (0.945), and Employee Performance (0.869), indicating a high level of internal consistency. Data analysis was conducted using Structural Equation Modeling (SEM) with AMOS to simultaneously test the relationships between variables. The mediating effect of Job Satisfaction was evaluated using Smart PLS. Model fit was evaluated using several goodness-of-fit indices, which showed that the proposed research model had an acceptable level of fitness.

III. RESULTS AND DISCUSSION

Data Extraction

Structured extraction covers study design, region, volunteer setting, sample size, follow-up duration, outcome constructs and definitions, measurement timing, scales or proportions, predictors, analytical models, estimates, and covariate adjustments. The study by Nakamura (Nakamura JS et al., 2022) measured subsequent volunteer activity as any volunteer work performed within the last 12 months. The study by Shelby (Shelby T et al., 2021) documented the proportion of volunteers retained, tracked by the number of weeks since they joined the program. The study by Su (Su J et al., 2024) measured the intention to return using a three-item Likert scale.

Table 1. PRISMA Diagram



Risk-of-bias Assessment.

Risk of bias was assessed by domain for available outcome data, covering missing outcome data, the randomization process (where relevant), outcome measurement, the selection of reported results, and deviations from interventions (where relevant). The randomization domain was not applied to non-randomized designs and was not enforced for qualitative studies. The prospective implementation study by Shelby (Shelby T et al., 2021) was documented as a curve showing the proportion of volunteers retained over the weeks since joining the program.

The cohort study by Nakamura (Nakamura JS et al., 2022) was rated as having "some concerns" regarding outcome measurement and the selection of reported results. The survey by Su (Su J et al., 2024) was rated as having "some concerns" in the outcome domain and a "high risk" in the randomization process. The meta-analysis by De Wit et al. (2022) utilized micro-data from six panel surveys, encompassing 952,026 observations from 267,212 respondents across 22 European countries.

Certainty-of-Evidence Assessment (GRADE)

The GRADE framework was applied to each outcome. The certainty of evidence for subsequent volunteer activity was rated as "very low" (Su J. et al., 2022). The certainty of evidence for actual retention/turnover within public health programs was also rated as "very low." The certainty regarding the intention to continue or return as a volunteer is incredibly low (Jie Zhou et al., 2024). Variations in study design and outcome definitions preclude the calculation of a combined estimate (Retzer A et al., 2023).

Table 2 below, eight studies cover public health contexts related to COVID-19, telemedicine, charitable organizations, sporting events, and transnational European organizations. The Birmingham case study is in the United Kingdom (Retzer A et al., 2023). Telemedicine interviews were conducted in India, comprising 18 interviews (D'Souza K et al., 2024). A cohort study on volunteer activity was conducted in the United States (Su J et al., 2022). A survey on sporting events was conducted in Wuhan, China (Su J et al., 2024).

A meta-analysis covers 22 European countries (Wit A et al., 2022). The most direct evidence regarding subsequent volunteer behavior comes from a cohort of 13,771 participants with a 4-year follow-up (JS et al., 2022). Evidence on program retention is derived from the Birmingham case study (Retzer A et al., 2023). A study on the implementation of contact tracing in New Haven documents volunteer retention by the number of weeks since joining the program (Shelby T et al., 2021).

Telemedicine interviews explore how the COVID-19 pandemic might influence future volunteer-based telemedicine programs (D'Souza K et al., 2024). Intentions were also assessed in the survey on sporting events (Su J et al., 2024). A three-wave study of university students assesses "sustained volunteering intention" (Zhou et al., 2024). The extraction table does not provide details on outcomes or study design that could be synthesized (Zhou et al., 2024). The meta-analysis by de Wit et al. includes 952,026 observations from 22 European countries

over 33 years, but it does not provide specific values for "sustained volunteerism" within the consolidated extraction (Wit A et al., 2022).

Subsequent Volunteer Activity

A longitudinal cohort study assessed volunteer activity four years after baseline. Among 13,771 participants, physical activity (≥1 time/week) was associated with subsequent volunteer activity, with an RR of 1.18 (95% CI 1.08–1.29); 45% of those who attended religious services weekly reported having engaged in volunteer work within the 12 months before that time point. (JS et al., 2022). The GRADE certainty for this outcome is "very low"; therefore, this association does not establish that increasing physical activity will lead to sustained volunteer behavior.

Quantitative Synthesis and Risk of Bias

Selected analyses utilized the mean difference (MD) for changes from baseline; however, as no two studies could be pooled, no combined estimate was generated. The study by Retzer employed a qualitative thematic analysis based on three focus groups, four interviews, and one email-based interview (Retzer A et al., 2023). The study by D'Souza utilized semi-structured interviews and focus groups (D'Souza K et al., 2024).

The study by Su employed regression analysis to examine future volunteer intentions (Su J et al., 2024). The study by de Wit employs several panel regression models based on six longitudinal surveys (Wit A et al., 2022). The study by Shelby presents retention curves by weeks since joining (Shelby T et al., 2021). The risk-of-bias "traffic-light" plot summarizes domain-level assessments and the uncertainties that underlie the downgrading of the certainty of the evidence.

Table 2. Characteristics of Included Studies

Article Title	Authors	Publication Year	Open Access Status	Design Study	Country or Region
Identifying pathways to increased volunteering in older US adults.	Nakamura JS; Lee MT; Chen FS; Archer Lee Y; Fried LP; VanderWeele TJ; Kim ES.	2022	Open Access	Longitudinal study (Lagged exposure-wide design, Health and Retirement Study)	United States
Potential impact of relational job design on future intentions of episodic volunteers in major sport events.	Su J; Li H; Ma H.	2024	Open Access	Qualitative Cross-sectional (Survey kuesioner online)	China (Wuhan)
Retaining public health volunteers beyond COVID-19.	Retzer A; Jones J; Damery S; Ullah H; Omonijo M; Varney J; Jolly K.	2023	Open Access	Qualitative (Focus group discussions, semi-structured interviews, email interviews)	United Kingdom (Birmingham)
How Does Perceived Calling Influence Sustained Volunteering Intention? The Role of Volunteering Norm and COVID-19 Pandemic Strength	Jie Zhou; Siqi Yue; Zhihua Xiao	2024	Open Access	Qualitative (Three-wave field survey questionnaire, moderated mediation model)	China

Article Title	Authors	Publication Year	Open Access Status	Design Study	Country or Region
A qualitative assessment of barriers and facilitators of telemedicine volunteerism during the COVID-19 pandemic in India.	D'Souza K; Singh S; Westgard CM; Barnhardt S.	2024	Open Access	Qualitative (In-depth semi-structured interviews & focus group discussion)	India
Lessons Learned From COVID-19 Contact Tracing During a Public Health Emergency: A Prospective Implementation Study.	Shelby T; Schenck C; Weeks B; Goodwin J; Hennein R; Zhou X; Spiegelman D; Grau LE; Niccolai L; Bond M; Davis JL.	2021	Open Access	Prospective Implementation Study (Mixed-methods / RE-AIM framework & multivariable regression)	United States (New Haven, CT)
The health advantage of volunteering is larger for older and less healthy volunteers in Europe: a mega-analysis.	De Wit A; Qu H; Bekkers R.	2022	Open Access	Meta-analysis (Quantitative panel data from 6 survey panels, OLS, fixed effects, quantile regression)	Europe (22 countries)
Five-year retention of volunteer community health workers in rural Uganda: a population-based retrospective cohort.	Hobbs AJ; Manalili K; Turyakira E; Kabakyenga J; Kyomuhangi T; Nettel-Aguirre A; Kyokushaba C; Rwandekeye P; Brenner JL.	2022	Open Access	Population-based retrospective cohort (Analisis data registri & multivariable logistic regression)	Uganda (Rural Uganda)

Actual retention and turnover in public health programs

In the "Community Champions" program in Birmingham, a qualitative case study involving 16 participants identified six themes: motivations and expectations, volunteer management, program organization, feeling valued, the need for ongoing roles, and interest in taking on new responsibilities (Retzer A et al., 2023).

This qualitative evidence suggests that maintaining the initial terms of engagement, implementing changes through consultation, and providing reliable, consistent management and support are factors conducive to retention, recruitment, and the repurposing of volunteers. A prospective implementation study of a contact-tracing program in New Haven documented the proportion of volunteers retained over time, measured in weeks since they joined the program. (Shelby T et al., 2021). The study report noted that high volunteer turnover makes the use of volunteers a feasible but not sustainable solution for addressing workforce shortages; it identified burnout, as well as changes in academic roles or schedules, as potential reasons for the decline in volunteer availability. The GRADE certainty for actual retention/turnover in public health programs is "very low."

Intention to continue or return to Volunteering.

In India, a qualitative study of the StepOne telemedicine network involved 15 semi-structured interviews and one focus group discussion with three participants. Providers describe a tension between mission-oriented

voluntary work and financial incentives; some suggest that financial incentives help sustain engagement over time (D'Souza K et al., 2024).

In Wuhan, a cross-sectional survey of 617 volunteers at a mega-sporting event assessed future volunteer intentions and relational job design (Su J et al., 2024). Regression analysis indicates that relational job design predicts future volunteer intentions through organizational commitment. A three-wave study of seven hundred university students reports that a "perceived calling" positively predicts volunteering norms, which in turn positively influences the intention to sustain volunteering; these norms mediate the relationship between the two. Both the direct and mediated effects were stronger when the COVID-19 pandemic was at its peak (Zhou et al., 2024). The GRADE certainty regarding the intention to continue or return to volunteering is "very low"; consequently, findings concerning calling, norms, relational job design, or incentives have not yet demonstrated an increase in actual retention.

IV. DISCUSSION

Summary of findings

The evidence points to three distinct types of outcomes: subsequent volunteer activity, actual retention or turnover, and the intention to continue or return. A prospective association between physical activity (≥1 time/week) and volunteer activity four years later with a relative risk (RR) of 1.18 (95% CI 1.08–1.29) was the only explicit effect estimate for subsequent activity identified in the extraction. (Su J et al., 2022).

The context of specific programs and qualitative findings highlight the importance of consistent support, clear initial agreements, consultation regarding role changes, and recognition; meanwhile, studies on contact tracing programs reveal challenges related to turnover in high-intensity implementation settings. (Retzer A et al., 2023; Shelby T et al., 2021)

All three primary outcomes are rated as having "very low" certainty according to the GRADE framework. Consequently, the evidence does not support a causal conclusion that specific individual factors, incentives, or management practices will necessarily increase sustained volunteerism. The evidence is best interpreted as a foundation for designing and testing retention strategies, rather than as definitive estimates of effectiveness.

Strengths and limitations of the evidence and of this review

A strength of the evidence is its breadth across various contexts ranging from charitable organizations and public health programs to telemedicine initiatives and sporting events. The study by Retzer employs qualitative methods to explore the experiences of volunteers (Retzer A et al., 2023). The study by D'Souza utilizes interviews and focus groups. (D'Souza K., et al., 2024). The study by Su employs a cross-sectional design, noting that this design precludes causal interpretation (Su J et al., 2024). The study by Nakamura measures volunteer behavior four years later. The heterogeneity of these constructs precludes pooling and limits direct comparability (Nakamura JS et al., 2022).

Limitations of the evidence base include a "some concerns" risk of bias in several observational outcome measures, the absence of quantitative outcomes in qualitative studies, and two studies for which the full content or a corresponding file/URL was unavailable for data extraction. The study by Su itself notes that its cross-sectional design and reliance on self-report measures hinder causal inference and raise concerns regarding common-method bias. (Su J et al., 2024). The study by Retzer also notes the potential for self-selection and social-desirability bias. A limitation of this review is that Scopus quartile metadata and language details are not specified for each study in the extraction table; consequently, these criteria cannot be re-verified at the article level based on the information provided.

Comparison with prior reviews

No previous reviews were identified for inclusion; therefore, an empirical comparison with earlier meta-analyses could not be conducted within this corpus. The available primary literature underscores a persistent challenge: the lack of an established, most effective method for sustaining volunteer enthusiasm following an emergency, highlighting the need for program maintenance strategies. Planned intervention or cohort studies incorporating transparent adjustments for covariates would be particularly valuable for increasing the level of certainty, which is currently rated as "very low."

V. CONCLUSION

In the eight included studies, "sustained volunteerism" manifests in various forms such as subsequent engagement, actual retention (or turnover), and the intention to volunteer again rather than as a single, uniform outcome. Evidence of "very low" certainty links the continuation of volunteering to both individual factors and organizational practices; however, the causal effectiveness of specific retention strategies has yet to be established.

Implications for practice and research**.** For practice, very low-certainty evidence supports the testing rather than the implementation as a proven solution of retention packages that clearly define roles and expectations from the outset, maintain consistent and relevant communication and support, prevent volunteers from incurring personal expenses, and involve volunteers before expanding their roles. In high-pressure programs, such strategies should be accompanied by turnover monitoring, as studies on contact tracing have documented volunteer retention rates based on the number of weeks since joining.

Conclusion of this research: future research should employ a consistent definition of actual retention, distinguish the continuation of behavior from mere intention, track volunteers beyond the crisis response or post-event period, and report numerical data that facilitates synthesis. Future research should prioritize the use of standardized measures for actual retention, as well as longitudinal or intervention-based study designs that allow for data pooling.

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