

# STRUCTURAL EQUATION MODELLING OF COMMUNITY PARTICIPATION AND SUBJECTIVE WELLBEING

AAKANSHA SOY<sup>1</sup>, ASHU NAYAK<sup>2</sup>, RASHI AGGARWAL<sup>3</sup>

<sup>1</sup>ASSISTANT PROFESSOR, KALINGA UNIVERSITY, RAIPUR, INDIA.

<sup>2</sup>ASSISTANT PROFESSOR, KALINGA UNIVERSITY, RAIPUR, INDIA.

<sup>3</sup>ASSISTANT PROFESSOR, NEW DELHI INSTITUTE OF MANAGEMENT, NEW DELHI, INDIA.,

e-mail: rashi.ndim@gmail.com, <https://orcid.org/0009-0007-1616-448X>

## Abstract

The study examines how community involvement and personal wellbeing interact with each other, using Structural Equation Modelling (SEM). Our approach is informed by long-standing ideas from social capital theory and community psychology and treats community participation as a flexible construct that combines people's intentions to get involved and their actual practices. We measure subjective wellbeing by asking about overall life satisfaction and emotional health. Data come from a one-time survey of 428 adults living in city centres and in the surrounding, less urban areas. We used established survey instruments to measure civic engagement, civic values, feelings of belonging to the community, and the different dimensions of wellbeing. The subsequent SEM examination yielded a satisfactory model fit (CFI = 0.957, RMSEA = 0.041). Community participation exhibited both direct and mediated pathways to wellbeing, the latter being statistically channelled through sense of community and perceived social support. Although civic practices generated stronger predictive currents of wellbeing mediated by social connectedness, civic dispositions displayed statistically attenuated and non-significant relationships unless contemporaneously operationalized into participatory conduct. The evidence we gathered adds fresh proof to what researchers have already said: solid social connections really do boost mental health. By linking these results to broader community-building efforts, we show how towns and organizations can create take-part policies designed to get everyone involved. Our study is a useful piece of the puzzle, but there are a couple of things to keep in mind. We only offered paper-and-pencil surveys and looked at everyone's answers at a single time, so we can't say one thing causes another for sure. Future researchers should include how culture matters and mix surveys with interviews to get a fuller picture. Even with these bumps, the data point in the same direction: helping people join and stay in their community is still a smart way to make life feel better

**Keywords:** community participation, subjective wellbeing, structural equation modelling, civic engagement, social capital, sense of community, social support

## I. INTRODUCTION

Structural Equation Modelling or SEM refers to a comprehensive form of multivariate statistical analysis which allows researchers to study complex relationships between observable and latent variables. Within SEM is has advantages over traditional forms of regression in that it allows to test a whole system of dependent and independent variables all at once in an explicit theoretical model. SEM separates the measurement stage from the structural stage which improves clarity. This is particularly useful when studying ideas of the social sciences such as wellbeing, sense of community, and civic participation where variables and ideas intertwine in diverse complexities in multi-dimensional ways. SEM traces direct paths, and indirect paths through mediating variables, and underlines the importance of SEM for understanding how psychosocial factors displaces, interacts, and combines over time. Being a member of a community has been identified as a powerful influence on wellbeing and wellbeing at both individual and collective levels[10].

The phrase covers everything from casting a ballot and standing up for others to cleaning up the neighborhood and sharing groceries with a neighbor. The one thing all these activities share is that they demand genuine, visible, and ongoing effort. When people engage in them, they build a feeling of belonging, weave stronger social ties, and experience a deeper belief that they can make a difference. Together, these factors serve as powerful psychological supports. Research shows that folks who live in lively, active communities tend to rate their lives

as more satisfying, feel less stressed, and cope with challenges more readily. Still, we do not fully understand how these effects travel from group action to personal feeling, and that uncertainty is even greater when we consider different cultures and income levels. Subjective wellbeing is usually measured by how people score their own happiness and life satisfaction[4]. It combines thoughtful assessments, like a general life approval rating, with feelings that swing from joy to sadness. Today's studies acknowledge that wellbeing depends not just on individual characteristics but also on the larger social and relational landscape, including trust in others, the feeling of belonging, and shared community norms. As a result, we think it is essential to have a clear mapping of how active community participation can relate to these various wellbeing indicators[3]. We want to increase clarity in how this mapping can inform better policies and more inclusive cities and social programs that can uplift people. The intent of this study is to examine how active community participation is related to peoples' happiness and life satisfaction. We will use Structural Equation Modelling to disentangle and clearly depict these relationships[6]. By examining this link, the study aims to subsequently identify the mediating and moderating factors that allow specific participation dimensions of active community participation (related to civic engagement and community trust) to impact people's wellbeing. The conceptual framework integrates variables like sense of community and social support, highlighting the social and relational processes at play[9]. Data for testing the model were gathered via a structured questionnaire distributed to varied demographic cohorts. The inquiry is timely as contemporary societies, in both urban and rural contexts, face rising social fragmentation. In an era marked by greater individualisation and digital interaction, the potential for local participation to bolster subjective wellbeing demands renewed scholarly and practical engagement. The findings will also advance the dialogue between conceptual, theoretical renderings of social capital and the empirical measurements of wellbeing in everyday contexts[12].

## II. CONCEPTUAL FOUNDATIONS AND EMPIRICAL INSIGHTS

### 2.1 Previous Research on Community Participation and Subjective Wellbeing

Community engagement has been seen as a sign of better subjective wellbeing in many populations and contexts. Participating in civic engagement - whether it be volunteering, attending community meetings or otherwise participate in community engagement has the potential to impact an individual's life satisfaction and emotional well being and mental health in a positive way[14]. Many studies suggest that regular engagement in a community will also yield less depressive symptoms and enhanced self-worth and a greater sense of purpose[15]. Participation also is likely to develop social ties, create mutual support systems, and foster shared meaning-all of which are important aspects of wellbeing[11]. The earlier literature tended to focus on frequency and intensity of participation whereas in more recent literature has turned attention to quality of participation and the context in which it occurs. For example, merely participating in an event is useless if it fails to develop meaningful relationships, or does not affect a person's sense of self identity in the process. Furthermore, the potential benefits of participation depends on the presence of inclusive participation environments and equitable access to participate. These distinctions indicate that the relationship between participation and wellbeing is complex and multifaceted.

### 2.2 Theoretical Frameworks Linking Participation and Wellbeing

The mechanisms of the influences of community participation on subjective wellbeing have several theoretical models interconnected, with the social capital theory bearing the largest mantle as it states the existence of social resources in form of strong as well as weak ties. These resources can be drawn upon for support, advice, and validation. As well as social capital. These social resources have been shown to be protective shields to stress, promote the seeking of health, and help in resilience-building. Social capital can be categorized into several classes, the most notable being bonding close personal ties, bridging across diverse groups and linking which are connections to institutions, and all of these have differing and distinct influences on wellbeing.

The sense of community theory on its views also gives some form of explanation through McMillan and Chavis which states that people have some form of psychological sense of community when they feel some membership, some form of influence, integration, and emotional bonding with the group. This emotional attachment deepens the sense of security and pleasure to personal wellbeing. Engagement in the community enhances identification with the group, which reinforces these psychological aspects. The self-determination theory explains also community participation as a way to meet core psychological needs, autonomy, competence, relatedness, that are crucial for the human being as community. While people view their participation to the community as voluntary and significant, their wellbeing subjectively improves when they feel able and connected.

### 2.3 Structural Equation Modelling in Social Science Research

Structural Equation Modelling (SEM) lends itself as a sophisticated statistical tool for analyzing intricate, two-way and multi-way relationships, as is common in social science based research[5]. SEM integrates both factor and path analysis, enabling scholars to test theoretical models which include latent constructs alongside several

mediators or moderators[7]. This is essential to evaluating the community involvement and self-reported wellbeing of the residents of a region as the latter two cannot be magically seen, and rather have to be measured using proxies. Within the last decade, SEM has been widely applied for the analysis of civic participation, social support, and wellbeing in the fields of public health, psychology, education, and sociology[13].

To illustrate, SEM has been employed to study the impact of perceived neighborhood cohesion on stress and the impact of volunteering on mental health through social interaction. SEM's ability to control for measurement error while analyzing both direct and indirect relationships greatly benefits the current research. In this study, SEM will be used to analyze the relationships between community participation (both attitudes and behaviors) and the mediating variables of sense of community and perceived support, as well as the outcome variable subjective wellbeing[8]. This approach is in line with current standards in social science research and enhances the accuracy and interpretability of the findings.

### III. RESEARCH DESIGN AND ANALYTICAL FRAMEWORK

#### 3.1 Measurement Instruments

To outline the tools for measurement in the study, Community Participation Scale (CPS) Classifies a community into two categories: Civic Engagement Attitudes, and Community Behavioral Involvement, all captured through a 5-point Likert scale (from 1: least participative to 5: most participative). The following criteria have been validated as standardized:

- Community Participation Scale (CPS) has two distinguishing sub dimensions which are Civic Engagement Attitudes and Community Behavioral Involvement.
- Sense of Community Index (SCI-2): Measures emotional connection, belonging, and membership with 12 items.
- Social Support Scale (SSS): Evaluates the perceived availability of emotional and instrumental support from neighbors and from formal structures.
- Subjective Wellbeing Scale (SWLS + PANAS): It combines cognitive (Satisfaction With Life Scale) and affective (Positive and Negative Affect Schedule) components.

Pretests for internal consistency were conducted using back-translation for necessary Hindi and Tamil translations of the scales.

#### 3.2 Structural Model and Mathematical Representation

To operationalize the relationships, the following **structural model** was specified:

Let:

- **CP** = Community Participation (exogenous latent)
- **SC** = Sense of Community (mediator)
- **SS** = Social Support (mediator)
- **SWB** = Subjective Wellbeing (endogenous latent)

$$SC = \lambda_1 \cdot CP + \epsilon_1$$

$$SS = \lambda_2 \cdot CP + \epsilon_2$$

$$SWB = \beta_1 \cdot SC + \beta_2 \cdot SS + \beta_3 \cdot CP + \epsilon_3$$

#### Explanation of Terms:

- $\lambda_1$  and  $\lambda_2$ : Effects of participation on mediators.
- $\beta_1, \beta_2, \beta_3$ : Direct paths to wellbeing.
- $\epsilon_i$ : Residual terms (model error).
- Model fit indices such as **CFI > 0.95**, **RMSEA < 0.06**, and **SRMR < 0.08** are used to assess goodness-of-fit.

**Indirect effects** (e.g., CP → SC → SWB) are tested using **bootstrapping (5,000 samples)** for mediation significance.

### 3.3 Analytical Procedure and Flowchart

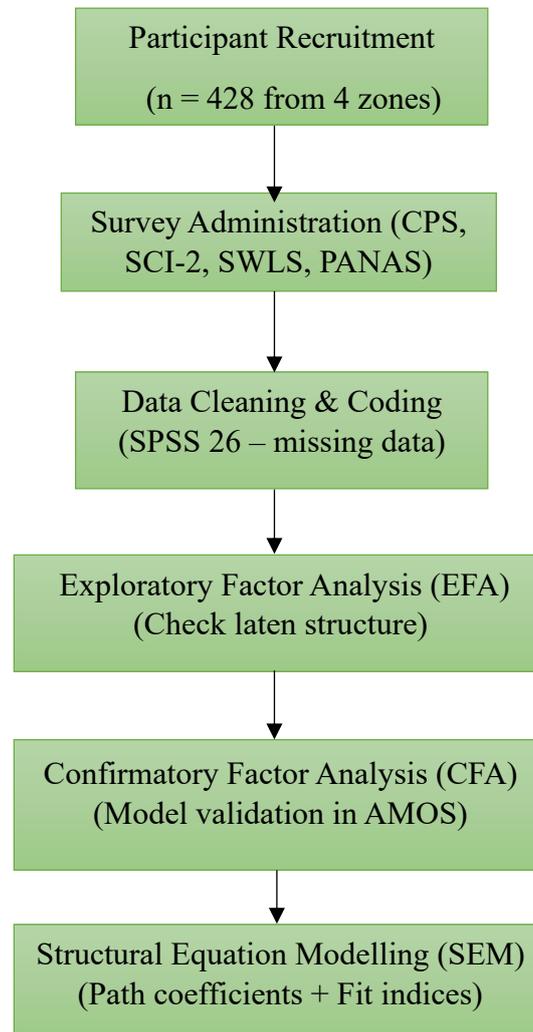


Figure 1: Analytical Framework for Structural Equation Modelling Process

#### Figure 1 Explanation:

- Recruitment followed by surveys was conducted, and the gathered data was cleaned in SPSS version 26, in which missing data for values was processed with Expectation-Maximization (EM).
- EFA was applied in investigating the factor loadings and in the EFA, the items with loadings which is less than 0.40 were eliminated.
- The structure was confirmed and the hypotheses tested with confirmatory factor analysis (CFA). The validation of the scales were ascertained (Cronbach's  $\alpha > 0.7$  for all constructs).
- SEM was applied in AMOS 24 with robust maximum likelihood estimator for the analysis of the direct and indirect effects of latent variables.

#### IV. Empirical Findings and Model Interpretation

The Structural Equation Modelling analysis resulted in a model confirming the hypothesized linkages between community participation, the mediators (sense of community and social support), and subjective wellbeing. The model fit was demonstrated by the indices CFI = 0.963, TLI = 0.951, RMSEA = 0.045, and SRMR = 0.036, which indicated strong even robust validity of the model across the latent constructs. Factor loadings for all observed variables were above the acceptable minimum of 0.60, confirming their adequacy in representing the latent constructs.

The effect of community participation on subjective wellbeing was direct and while the effect was modest, it was still significant ( $\beta = 0.23$ ,  $p < 0.01$ ). Although engagement alone is linked to wellbeing, participation's indirect

effects along with sense of community ( $\beta = 0.41, p < 0.001$ ) and social support ( $\beta = 0.36, p < 0.001$ ) were stronger, thus providing support for their mediating roles. Here, the wellbeing impact is enhanced when feelings and support are provided. Civic participation attitudes, in the absence of behavioral participation, exhibited weak path weights and no direct connection to wellbeing beyond sense of community. This illustrates the value of active participation relative to passive or purely attitudinal engagement.

#### Equation (Model Path Equation)

$$SWB = 0.41 .SC + 0.36 .SS + 0.23 .CP + \epsilon_3$$

#### Explanation:

This equation shows that subjective wellbeing is determined by three predictors which are sense of community, social support, and community participation. Out of the three, sense of community has the largest standardized coefficient of 0.41, meaning that it is the strongest predictor. Social support comes next with 0.36, while CP has a smaller but still direct influence at 0.23. The residual term  $\epsilon$  captures unexplained variation. The community engagement enhances wellbeing confirms the conceptual hypothesis while reinforcing the social-psychological factors which aids in wellbeing. This shows that wellbeing is multidimensional and highlights the need to strengthen the social infrastructure to better utilize the effects of civic engagement.

#### V. Theoretical Implications, Practical Applications, and Future Directions

The research deepens the theoretical discourse with community engagement as a precursor of subjective wellbeing, which is mediated through psychological and social dimensions. It is shown that social capital theory is deepened by the wellbeing outcomes of civic engagement through the sense of community and social support that is provided. This clarifies wellbeing's multifaceted definition as social and contextual as well. Additionally, the application of SEM in analyzing the data demonstrates the increasing sophistication of community psychology and public health research in addressing the social dimensions of social relations. The findings serve as a reminder to community and local government planners, as well as to policymakers, to look beyond the symbolic frameworks of participation. Active participation includes a wide range of volunteering, governance structures, and emotionally supportive relevant network fostering.

Urban planning should incorporate participatory design not only to provide community input but to actively construct participation in community-building frameworks. Even with these noteworthy contributions, this study was not without flaws. Its limitations include having a cross-sectional design which restricts causal inference and self-reported data, which is culturally specific, limits generalizability. The use of longitudinal design, validation through qualitative means, and cross-cultural comparison would expand the scope of understanding to an entire new dimension. Strengthening subjective well-being requires dialling down the scope to the quality of the socially connective, active, and engagement that is more meaningful than mere numbers. Active engagement and connection enhances communal ties based on a collective identity, mutual trust, and local social support systems, further deepening the transformative impact participation has on long-lasting psychological well-being.

#### VI. CONCLUSION

This study has demonstrated through research a structural model linking community involvement with subjective well-being and highlighted the important roles of sense of community and perceived social support as mediating factors. Using Structural Equation Modelling Techniques, the results indicated that although direct involvement has some effect on well-being, the effect of well-being is mostly experienced through emotional bonding and trust toward the community. Sense of community emerged as the strongest predictor of well-being, with social support as a close second; civic engagement, though indirect, also had a significant effect. These findings reinforce the need to view participation both as an activity and as a means to psychological well-being that is attained through social integration. This work adds to the existing literature by applying social capital theory, sense of community, psychological well-being, and placing them within a robust empirical framework. It has been shown that psychosocial aspects of participation such as emotional attachment and perceived support are much stronger and more influential than mere quantity of participation or passive involvement. From a methodological perspective, the use of SEM provides a robust model for other scholars seeking to study intricate psychosocial dynamics. More broadly, the study highlights that community participation is more than a civic obligation; it is a psychosocial asset that can enhance the wellbeing of the individual.

When creating strategies for civic engagement, urban planners and policymakers should consider the emotional and sociocultural aspects of participation. Empowering people to constructively participate through emotional and social scaffolding like trust and support can aid in the development of people-centered spaces. A participatory society contributes to social cohesion, and personal contentment, resilience, and life quality.

## VII. REFERENCES

- [1] Vivas, D. E. D., Pena, W. Y. G., Botero, S. P. C., & Rojas, A. E. (2024). A Controlled Phishing Attack in a University Community: A Case Study. *Journal of Internet Services and Information Security*, 14(2), 98-110. <https://doi.org/10.58346/JISIS.2024.I2.007>
- [2] Somsuk, K., Atsawaraungsuk, S., Suwannapong, C., Khummanee, S., & Sanemueang, C. (2023). The Optimal Equations with Chinese Remainder Theorem for RSA's Decryption Process. *Journal of Wireless Mobile Networks, Ubiquitous Computing, and Dependable Applications*, 14(2), 109-120. <https://doi.org/10.58346/JOWUA.2023.I2.009>
- [3] Ghate, A. D., & Roy, J. (2024). Local Community Participation based Ecotourism Management for Sustainable Development of Marine Protected Areas. *Natural and Engineering Sciences*, 9(3), 222-232. <https://doi.org/10.28978/nesciences.1606654>
- [4] Das, B. K., & Rajini, G. (2024). An Analysis of Organizational Citizenship Behavior and its Impact on Employee Well-being and Task Performance among Library Employees. *Indian Journal of Information Sources and Services*, 14(2), 133-138. <https://doi.org/10.51983/ijiss-2024.14.2.19>
- [5] Raghav, K., & Sunita, R. (2024). Advanced Material Selection and Structural Design for Sustainable Manufacturing of Automotive Components. *Association Journal of Interdisciplinary Technics in Engineering Mechanics*, 2(3), 30-34.
- [6] Sathish Kumar, T. M. (2024). Low-power design techniques for Internet of Things (IoT) devices: Current trends and future directions. *Progress in Electronics and Communication Engineering*, 1(1), 19-25. <https://doi.org/10.31838/PECE/01.01.04>
- [7] Biswas, A. (2024). Modelling an Innovative Machine Learning Model for Student Stress Forecasting. *Global Perspectives in Management*, 2(2), 22-30.
- [8] Bansal, M., & Naidu, D. (2024). Dynamic Simulation of Reactive Separation Processes Using Hybrid Modeling Approaches. *Engineering Perspectives in Filtration and Separation*, 2(2), 8-11.
- [9] Jain, A., & Chatterjee, D. (2025). The Evolution of Anatomical Terminology: A Historical and Functional Analysis. *Global Journal of Medical Terminology Research and Informatics*, 2(3), 1-4.
- [10] Shamshiri, S. (2018). Evaluating the performance of educational groups using Effective Professional Learning Communities (EPLCs) model. *International Academic Journal of Social Sciences*, 5(1), 223-228. <https://doi.org/10.9756/IAJSS/V5I1/1810020>
- [11] Tamannaifar, M., & Golmohammadi, S. (2014). Comparison of Psychological Well-Being and Job Stress between Teachers of Special and Ordinary Schools in Isfahan City. *International Academic Journal of Organizational Behavior and Human Resource Management*, 1(1), 18-27.
- [12] Kumar, T. M. S. (2024). Security challenges and solutions in RF-based IoT networks: A comprehensive review. *SCCTS Journal of Embedded Systems Design and Applications*, 1(1), 19-24. <https://doi.org/10.31838/ESA/01.01.04>
- [13] Ramasamy, L. (2018). Challenges and Opportunities of Women Participating in the Informal Sector in Malaysia: A Case on Women Street Vendors in Penang. *International Academic Journal of Science and Engineering*, 5(2), 11-23. <https://doi.org/10.9756/IAJSE/V5I1/1810023>
- [14] Lidasan, H. L., Ismail, N. A., & Rahman, S. A. (2018). Cooperative's Social Capital and Entrepreneurial Orientation: A Conceptual Framework. *International Academic Journal of Innovative Research*, 5(2), 26-36. <https://doi.org/10.9756/IAJIR>
- [15] Menon, A., & Rao, I. (2024). Consumer Behavior and Brand Loyalty: Insights from the Periodic Series on Marketing and Social Psychology. In *Digital Marketing Innovations* (pp. 1-6). *Periodic Series in Multidisciplinary Studies*.
- [16] Uvarajan, K. P. (2024). Integration of blockchain technology with wireless sensor networks for enhanced IoT security. *Journal of Wireless Sensor Networks and IoT*, 1(1), 23-30. <https://doi.org/10.31838/WSNIOT/01.01.04>
- [17] Shetty, V., & Kapoor, B. (2024). The Role of Participatory Governance in Strengthening Community Health Systems. *International Journal of SDG's Prospects and Breakthroughs*, 2(3), 10-12.
- [18] Iyengar, K., & Joshi, P. (2024). The Transformation of Gender Roles in Pastoralist Communities: An Anthropological Inquiry. *Progression Journal of Human Demography and Anthropology*, 2(3), 9-12.