
Strengthening Social Capital Through Digital Surveillance in the “Warga Jaga Warga” Manyar Sabrangan

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Abstract

Urban security currently faces the challenge of the degradation of social control due to high mobility and individualism, as occurred in RT 06 RW 03 Manyar Sabrangan, Surabaya. This study aims to analyze how the "Warga Jaga Warga" program can reconstruct the structure of social capital and enhance the effectiveness of community-based security systems by integrating simple digital technologies. Using the Participatory Action Research (PAR) method, the study involved permanent residents, boarding house tenants, and RT administrators, and collected data through participatory observation and interviews. The main findings show that using WhatsApp groups and vehicle identification stickers significantly increases communication intensity and residents' participation in collective environmental monitoring. The study concludes that strengthening bonding, bridging, and linking social capital through digital media functions as an effective social enabler, reweaving fragmented social relations within heterogeneous communities. In practice, this intervention model offers a security solution that is inclusive, low-cost, and adaptable to the digital rhythm of urban society, with a high capacity to be replicated by other communities facing similar threats of social dysfunction.

Keyword: Social Capital; Community Based Security; Digital Technology.

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Introduction

Environmental security is an important aspect in achieving the welfare and stability of urban society. In an urban context, security is not only about low crime rates but also about the quality of social relations, community cohesion, and the effectiveness of social control among residents. From a development sociology perspective, security is understood as the result of interactions between social structure, collective norms, and the level of trust that develops in society (Aldrich & Meyer, 2021). Studies show that safe environments are generally supported by strong social cohesion and community involvement in maintaining shared living spaces (Choi & Kim, 2022). However, high mobility and tendencies toward individualism in urban areas often weaken social relations and become a challenge in building community-based security systems.

This condition is evident in RT 06 RW 03 Manyar Sabrangan, Surabaya City. This area has the characteristics of a heterogeneous society dominated by migrants, especially students and workers living in boarding houses. High mobility and limited social interaction have led to decreased environmental awareness and suboptimal collective social control. This situation is reinforced by limited formal security facilities and the lack of active traditional security systems. Previous research also shows that urban areas with high mobility tend to experience a decline in social cohesion and community participation in maintaining environmental stability (Kim & Kang, 2022). As a result, a gap emerges between the need for a sense of security and the community's social capacity to respond to threats in its environment.

Theoretically, social capital is viewed as an important element in building community-based security through trust, social networks, and norms of reciprocity (Aldrich & Meyer, 2021). These elements encourage collective action among communities in addressing environmental issues (Lee, 2023). However, studies on social capital in heterogeneous and dynamic urban communities remain relatively limited. In addition, the use of digital technology is often positioned more as a formal surveillance tool rather than a medium that can strengthen social relations. Therefore, an approach is needed that connects the strengthening of social capital with the use of simple technology in urban community life.

At the practical level, conventional security systems such as night patrols often face obstacles due to low community participation. On the other hand, the use of formal technologies such as CCTV also has limitations in terms of cost and does not necessarily increase social engagement (Hasan Dwi Cahyono et al., 2024). These conditions indicate the need for more adaptive, affordable social innovation that aligns with the characteristics of urban society.

Security approaches that are not only technically effective but also capable of encouraging voluntary social participation have become an important need at the community level.

Research on community-based environmental security continues to develop with various focuses. Several studies place community participation as an important element in creating a safe and conducive environment. Yulianti T et al. (2022), Elfito et al. (2023), and Febrianto & Annida (2024) show that community involvement plays a major role in supporting the sustainability of neighborhood security systems. High levels of community participation not only strengthen collective monitoring but also improve the effectiveness of social control within the community. These findings are reinforced by Suseno et al. (2024), who emphasize that environmental security is also influenced by family resilience, social awareness, and society's collective responsibility for maintaining order and security in their living environment. However, these studies still mostly discuss community participation in conventional forms, such as patrols or face-to-face security activities, and therefore do not fully explain how digital technology can be used to strengthen community involvement in maintaining environmental security.

On the other hand, technological development has driven various innovations in environmental security systems. Gunawan et al. (2023), Cahyono et al. (2024), Subari et al. (2025), and Supriadi et al. (2025) found that technologies such as CCTV, the Internet of Things (IoT), and electronic security systems can enhance the effectiveness of environmental monitoring. In line with these findings, Asri et al. (2024) developed the Mo-Tamu application, which allows neighborhood administrators to monitor guests and visitor vehicles in real time, thereby improving residential area security. Meanwhile, Amalia et al. (2026) show that IoT-based security systems equipped with motion sensors, cameras, and automatic notifications can accelerate responses to potential security threats while increasing residents' sense of safety. Nevertheless, most of these studies still focus on technical aspects and system efficiency. Technology is largely positioned as a control and monitoring tool, while social aspects such as trust, solidarity, and interaction among residents have not received adequate attention.

Meanwhile, studies on social capital show that trust, social networks, and norms of reciprocity are important factors in fostering collective action in society. Aldrich and Meyer (2021) explain that social capital is a fundamental foundation for community resilience in facing various social problems. Furthermore, Lee (2023) shows that digital platforms can be an effective means of building and strengthening collective action in urban communities. These findings are consistent with Nasir's (2025) research, which shows that low community

participation, weakening social solidarity, and declining trust among community members contribute to feelings of insecurity in residential environments. In addition, Zikargae et al. (2022) and Bueloth et al. (2026) emphasize that participation and social trust are key determinants in ensuring the sustainability of community-based programs. Ekren et al. (2025) further argue that security cannot rely solely on technology, but must also consider social aspects and community behavior. However, these studies still discuss social capital in a relatively general context and have not specifically linked it to efforts to strengthen community security systems in heterogeneous urban areas, especially areas inhabited by permanent residents and boarding house tenants with high mobility.

Based on these studies, it is evident that research on community participation, security technology, and social capital has developed separately. Some studies emphasize the importance of community involvement in maintaining environmental security, while others focus on using technology to improve monitoring effectiveness. On the other hand, research on social capital tends to discuss social cohesion and relations without directly linking them to community security systems. This condition indicates that there is still a research gap that needs to be addressed: how digital technology can be used not only as a surveillance tool but also as a medium to strengthen social capital and encourage community participation in maintaining environmental security in heterogeneous urban areas.

Based on this research gap, this study proposes the “*Warga Jaga Warga*” intervention model, which integrates strengthening social capital with the use of simple digital technologies, such as WhatsApp groups and vehicle identification stickers. The novelty of this study lies in positioning technology not merely as a surveillance instrument but as a means to strengthen communication among residents, build trust, and increase collective participation in maintaining environmental security. In addition, the use of the Participatory Action Research (PAR) approach allows residents to be actively involved throughout the entire research process, from problem identification to program implementation and evaluation. Thus, this study not only contributes to the development of academic discourse on the relationship between social capital and community security but also produces an intervention model that can be implemented and replicated in other urban environments with similar characteristics.

Methods

This study employs a Participatory Action Research (PAR) approach oriented toward social action and the participatory production of knowledge. This approach is chosen because it

enables researchers and the community to jointly identify problems, design solutions, implement actions, and evaluate changes reflectively. In this study, PAR is used to both analyze and test social interventions in strengthening social capital and improving the effectiveness of community-based security systems. This approach is considered relevant for addressing security issues in heterogeneous communities that require adaptive and participatory solutions. Therefore, residents not only function as data sources but also as agents of change.

The research is conducted in RT 06 RW 03 Manyar Sabrangan, Manyar Sabrangan Sub-district, Mulyorejo District, Surabaya City, East Java, Indonesia, which is characterized by a heterogeneous population dominated by migrants, particularly boarding house residents. Participants include permanent residents, boarding house tenants, and RT administrators, selected purposively based on their involvement and relevance to the neighborhood security system. The involvement of these various actors simultaneously reflects the process of strengthening bridging and linking social capital within the community.

This study uses Robert D. Putnam's social capital theory as the main analytical framework. Putnam explains that social capital consists of social networks, trust, norms of reciprocity, and participation that encourage communities to carry out collective action effectively (Putnam, 2000). In this study, the concepts of bonding, bridging, and linking social capital are used to understand the dynamics of social relations within heterogeneous communities. The concept of linking social capital also refers to the relationship between residents and formal structures such as RT administrators and neighborhood security systems (Woolcock, 1998). Through this framework, simple technologies such as WhatsApp and vehicle identification stickers are understood as media that support communication, social participation, and community social control.

The intervention design is carried out through an iterative, reflective PAR cycle that includes problem identification, action planning, intervention implementation, and evaluation. The "*Warga Jaga Warga*" program is realized through the establishment of a residents' WhatsApp group, the use of vehicle identification stickers, and the distribution of security education media. This cycle can be repeated as needed, allowing adjustments based on ongoing social dynamics in the field.

Data are collected through participatory observation, semi-structured interviews, and documentation. Observation is used to understand social interactions and changes in residents' behavior during the intervention. Interviews are conducted to explore participants' experiences and responses, while documentation includes activity records, visual media, and digital

communication logs. The effectiveness of the intervention is evaluated using SMART-based indicators. These refer to increased community participation in maintaining neighborhood security, the intensity of communication and residents' engagement in digital media, the feasibility of the program according to local social conditions, the suitability of the intervention to the security needs of a heterogeneous community, and the implementation and evaluation of the program within the defined research period. These indicators are used to assess changes in collective awareness and the effectiveness of community-based security in a qualitative manner.

Data are analyzed qualitatively through the stages of data reduction, categorization, and interpretation, guided by social capital theory. The analysis focuses on changes in bonding, bridging, and linking social capital and their relationship to the use of simple technology to enhance social participation. The interpretive process is conducted by connecting empirical findings with the theoretical framework to produce an analysis that is both descriptive and analytical.

This study also considers ethical aspects. Participants are informed about the purpose of the research and are involved voluntarily. Participants' identities are kept confidential, and the intervention is designed to avoid any negative impact on the community. Thus, this study fulfills both methodological and ethical aspects, ensuring that the findings are academically and socially accountable.

Result and Discussion

First Argumentation

The initial condition of the study shows that the neighborhood security system in RT 06 RW 03, Manyar Sabrangan, was in a less optimal condition. Community participation in neighborhood watch (*ronda*) activities tended to be low and was not carried out consistently. The level of interaction between permanent residents and boarding house tenants was still limited. This situation was accompanied by an increase in motor vehicle thefts, which created a sense of insecurity in the surrounding area. Based on the observation results, communication among residents regarding neighborhood security remained sporadic and poorly coordinated. This condition was also reinforced by the results of an interview with one informant who stated, *“Actually, there is a schedule for ronda, but those who participate are often incomplete. Many residents are busy, while boarding house occupants rarely get involved in community activities. As a result, if there is an incident or a suspicious person, the information does not spread quickly to other residents.”* These initial conditions became the basis for implementing a community-

based intervention in this study.

During the intervention process, the “*Warga Jaga Warga*” program was implemented through several steps that developed gradually in the field. The formation of a WhatsApp group was the initial step residents used as a communication channel for neighborhood security. The group was utilized to share information, report environmental situations, and facilitate coordination among residents. In addition, vehicle identification stickers were gradually implemented as part of efforts to strengthen environmental monitoring. Educational media in the form of banners were also installed to remind residents of the importance of maintaining collective security. The implementation of the program was adapted to residents' responses and levels of engagement during the intervention process. One informant explained, “*After the WhatsApp group was created, information reached residents more quickly. If there are strangers or suspicious incidents, they can be reported immediately. The vehicle stickers also help because residents can more easily identify vehicles belonging to people in this area.*” Various intervention activities began to be used by residents to improve coordination and environmental security monitoring, as documented in Figures 1 and 2.



Figure 1: WhatsApp Group



Figure 2: Vehicle Stickers

Source: “*Warga Jaga Warga*” Program

Community participation in the program showed varied forms of involvement. Some residents were actively involved in sharing information, reporting suspicious activities, and encouraging others to participate through digital communication media. On the other hand, some residents were initially not actively involved but began participating as the program progressed. Boarding house tenants also began engaging in environmental communication, though their participation remained limited. Interaction in the WhatsApp group increased compared to before the intervention was implemented. The forms of participation that emerged were not only visible in formal activities but also in daily awareness of the surrounding

environment. One informant stated, *“At first, only a few people were active, but gradually more residents started responding in the group. If there is information or certain incidents, residents immediately remind each other. Boarding house tenants also began to read and occasionally provide information, although not all of them are active yet.”* This indicates an increase in residents' involvement in maintaining environmental security through communication and collective awareness that developed during the program's implementation.

Changes during the intervention process were observed in several conditions within the research setting. Community participation in the security system began to increase through involvement in communication and environmental monitoring. Communication among residents also became more intensive through the use of digital media. In addition, residents' attention to activities in the surrounding environment increased during the program. These changes developed gradually throughout the intervention process. Interaction between permanent residents and boarding house tenants also began to improve, although not yet evenly across all residents. One informant stated, *“Now residents respond more quickly when something unusual happens in the environment. Communication is more frequent because of the WhatsApp group, and some boarding house tenants have also started interacting with residents. It is not all active yet, but compared to before, there has been a noticeable change.”* The results of the intervention have encouraged increased communication, awareness, and community involvement in maintaining environmental security collectively.

In terms of output, this program produced several observable outcomes. The residents' WhatsApp group served as the primary communication channel supporting neighborhood security. The use of vehicle identification stickers helped in recognizing vehicles entering and leaving the area. In addition, installing educational banners became part of efforts to increase residents' awareness of environmental security. The program outputs were not only physical tools but also the formation of a communication system used throughout the intervention process. One informant stated, *“The WhatsApp group is very helpful because information can be delivered directly to all residents. Vehicle stickers also make it easier for us to identify whether a vehicle belongs to a resident or a boarding house occupant. The banners serve as a reminder that environmental security is a shared responsibility (see Figure 3).”* The program not only produced supporting security media but also created a more structured and easily accessible communication system for residents.



Figure 3: Reminder that Environmental Security

Source: “Warga Jaga Warga” Program

During program implementation, several obstacles emerged in the field. Individualistic attitudes still influenced the level of participation of some residents in community activities. In addition, some boarding house tenants showed limited involvement because they felt they did not have strong ties to the surrounding environment. Differences in residents' levels of concern also affected variations in program participation. Nevertheless, the use of digital communication media helped facilitate information dissemination and coordination among residents during the intervention process. One informant explained, *“There are still some less active residents because they are busy with their own affairs. Boarding house tenants are also not all willing to get involved because they feel they are only temporary residents here. However, with the WhatsApp group, information can still be conveyed more quickly, making coordination easier than before.”* Although achieving evenly distributed participation was challenging, digital communication media helped maintain smooth coordination and the dissemination of information during the program's implementation.

Second Discussion of the Second Argument

Based on Putnam's (2000) theory of bonding and bridging social capital and Woolcock's (1998) concept of linking social capital, it can be understood that the implementation of the “Warga Jaga Warga” intervention succeeded in increasing participation and social control at the community level through the strengthening of residents' social capital. The relationship between permanent residents and boarding house tenants was previously relatively limited. However, the use of digital communication media such as WhatsApp enabled the creation of a more inclusive and flexible interaction space among residents. The involvement of RT administrators in coordinating the program also strengthened the relationship between the community and formal structures within the neighborhood security system. This condition also encouraged the formation of cross-group social relationships that were previously fragmented,

while simultaneously strengthening residents' care and solidarity in maintaining neighborhood security. This intervention shows that strengthening adaptive social capital that aligns with the characteristics of heterogeneous urban communities can serve as a pathway to stronger social capital.

The success of this program intervention was influenced by several main factors, and the most prominent was the relatively high level of social acceptability among residents. This program was successfully accepted because it was considered capable of addressing community needs appropriately, without requiring major changes in daily activities. In addition, the use of technology already familiar to residents, such as WhatsApp, facilitated its implementation so that technical barriers could be minimized. Social acceptability in this context includes two main aspects. First, acceptance of the program as a whole. Second, residents' willingness to actively engage and fully participate in the program's implementation. This condition reveals that interventions rooted in social practices that already exist and develop within society have a higher level of acceptability compared to arrangements that do not have an existing social foundation. With flexibility in the way and timing of contributions, it is expected that the level of success and the positive impact of the implemented intervention can increase significantly.

When comparing the findings of this study with conventional security approaches that have been implemented so far, it can be concluded that there is a significant difference in models. Traditional ronda systems that rely on physical presence in the field show a relatively low level of adaptability to the characteristics of modern urban communities, making environmental security difficult to sustain in the long term. On the other hand, security approaches based on formal technological installations, such as CCTV, tend to prioritize surveillance and remote monitoring. Although they offer advantages in monitoring efficiency, such technological models still have not been able to encourage active social participation from residents as a whole. In the context of community-based security, the "*Warga Jaga Warga*" intervention model occupies a unique position different from other approaches. This program offers a strategic approach that successfully integrates the strength of community social capital with the use of simple, easily accessible technology. Through this integration, the program not only functions to improve the effectiveness of environmental surveillance more optimally, but also effectively strengthens social relations and solidarity among residents significantly. This uniqueness and differentiation are its main advantages, simultaneously addressing the limitations of previous security approaches.

The success of this intervention program cannot be separated from the strong network

support among various parties during its implementation process. Within this network, RT administrators play a strategic role as coordinators, connecting various elements within the community. Meanwhile, residents act as the main actors who directly implement and maintain the neighborhood security system in their daily lives. The presence of good coordination from RT administrators, along with active participation from residents, forms the main foundation supporting the success and sustainability of this community-based security program. This program has succeeded in encouraging varied participation from across different layers of society. This collaboration among various actors demonstrates a process of institutional embeddedness, in which security interventions do not stand alone but are deeply embedded within the community's existing, institutionalized social structure. This formed support network plays an important role in strengthening the program in the long term, considering that this success is achieved by involving various parties actively from the RT level to the broader territorial level. The existence of this strong social network becomes the main capital in sustaining the “*Warga Jaga Warga*” intervention program so that it can continue to be implemented sustainably.

Although this intervention program has recorded positive and encouraging results, it cannot be denied that its implementation also faces several limitations related to the level of success achieved. One of the main challenges that still frequently arises is the individualistic attitude that persists among some residents, thereby hindering the creation of equal and comprehensive participation among community members. For example, some boarding house tenants show resistance or rejection of this program due to their low level of social attachment to the surrounding environment. This phenomenon indicates that the strengthening of bridging social capital is still not functioning optimally and requires a longer time to develop fully. Thus, it can be concluded that this intervention cannot yet be considered fully successful in achieving all its objectives, although it shows significant progress compared to the previous condition. These limitations clearly indicate that social change processes cannot occur instantly or in a short time. Therefore, more mature and sustainable follow-up strategies are needed to strengthen the involvement of all community groups more actively and deeply.

Based on these findings, this intervention has a relatively high potential for sustainability, mainly because it is supported by social acceptability, support networks, and easily accessible technology. However, program sustainability still depends on the consistency of community participation and the ability to adapt to social dynamics. Therefore, continuous efforts are needed to strengthen community engagement and maintain program relevance. In this context,

the intervention is not only understood as a short-term solution, but as an ongoing social process that continuously evolves. Thus, this study shows that the success of an intervention is not only determined by its initial design, but also by its ability to adapt in the long term (Woolcock, 1998).

Conclusion

The implementation of the “*Warga Jaga Warga*” intervention program in RT 06 RW 03 Manyar Sabrangan demonstrates that the effectiveness of a community-based security system is highly dependent on the success of social capital reconstruction within the reality of a heterogeneous urban society. Through the strengthening of bonding, bridging, and linking social capital dimensions, this intervention succeeded in transforming residents’ interaction patterns from previously passive and individualistic to more participatory and collaborative. The integration of simple digital technology, such as WhatsApp groups and vehicle identification sticker systems, has proven not only to function as a mechanical surveillance tool but also to act as a social enabler capable of reweaving fragmented communication between permanent residents and boarding house tenants. The utilization of this digital media effectively reduces social barriers and enhances informal social control in an organic manner through more open information flow and flexible coordination. Although this program shows a significant increase in collective participation and neighborhood security awareness, sociological challenges in the form of individualistic attitudes and low emotional attachment among some boarding house tenants remain a limitation in optimizing bridging social capital. However, the high level of social acceptability of this low-cost, inclusive, and adaptive intervention model provides strong prospects for the program's sustainability. Theoretically, this study confirms that social capital can be reactivated through the harmonization of traditional social structures and contemporary digital instruments. The “*Warga Jaga Warga*” model offers a practical solution with strong potential to be replicated in other urban communities in order to address the challenges of social dysfunction and security degradation in dynamic urban areas.

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