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Residents' Participation in Traditional Community Activities and Its Impact on Future River Environmental Program in Yogyakarta, Indonesia

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Abstract
This study investigates the impact of residents' participation in traditional community activities on their future intentions toward environmental improvement. Structural equation modelling (SEM) and a questionnaire survey of 300 residents across three different areas were used. The results indicate a higher sense of environmental responsibility of residents in areas where the government's ecological programs are engaged than in places where non-governmental organizations (NGOs) are involved. However, residents demonstrate a greater intention to participate in future river environments with NGO involvement. The underlying motivation for participating in community activities is crucial in shaping residents' future intentions regarding river ecological programs.

Keywords: Community activity; Urban water environment; Future intention; SEM analysis

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1.0 Introduction

In Indonesia, the traditional community activity known as gotong royong (GR) is crucial in enhancing and maintaining neighbourhood environments. GR involves collective action and mutual aid among community members, fostering social cohesion and addressing local issues. However, more than GR alone may be required in communities facing severe environmental challenges. Such communities need additional government and non-governmental organizations (NGOs) support to tackle these complex problems effectively. Yogyakarta is renowned for its strong community ties and adherence to traditional values, making it a prime example of where the spirit of GR remains vibrant in environmental initiatives. The city's commitment to GR contributes to a unique sense of place and fosters a strong citizen bond (Indraswara et.al., 2022). In the context of microenvironments such as homes and interiors, the traditional community in Yogyakarta continues to uphold the concept of sacred and profane spaces (Setiadi, 2022). When this concept is applied to an urban setting, urban rivers are often perceived as dirty spaces, diminishing their significance in the eyes of the community.

To combat this perception, environmental activists have been promoting the idea of the river as a front yard, aiming to elevate its importance and encourage community engagement in river conservation. This campaign leverages GR as a tool for regular river clean-

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ups and maintenance, highlighting the socially driven nature of the activity. Evaluating the sustainability of GR in future environmental programs is essential to ensure its long-term effectiveness. Despite its prevalence, the impact of GR on ecological awareness and action, particularly in river environments in Indonesia, has yet to be thoroughly investigated. This research aims to find behavioural predictions between participants' motivation and intention to participate in river environmental improvement programs in the future.

2.0 Literature Review

Research on environmental participation and behavioural intention in Indonesia and Asia is well-established. For instance, Iman et al. (2019) explored the relationship between individuals' intentions, their knowledge of environmental issues, and how these factors influence ecological behaviours. Their findings indicate a significant correlation between environmental knowledge and behavioural intention, which drives ecological actions. This research highlights the critical role of knowledge as a catalyst for developing intentions to engage in environmental improvements. According to their study, individuals' actions in adopting environmentally friendly behaviours are strongly influenced by their prior knowledge and understanding of environmental issues.

Sugiarto et al. (2022) investigated the relationship between pro-environmental behaviour, education, and the intention to engage in environmental improvement. Their study found that while education alone does not directly affect pro-environmental behaviour, individuals' understanding of ecological awareness significantly influences their intention, leading to pro-environmental actions. This suggests that education fosters environmental awareness and knowledge, enhancing pro-environmental behaviour. Furthermore, Ong Tze Xien et al. (2020) Explain that ethnicity and education influence behavioural intentions to reduce non-revenue water consumption. This finding complements the factors in behavioural plans influenced by environmental knowledge and environmental concerns.

In a related study, Moon et al. (2015) examined the impact of norms, beliefs, and values on behavioural intentions in Pakistan, specifically focusing on consumer choices for environmentally friendly products. Their findings reveal that social and personal norms influence individuals' intentions to adopt environmentally friendly behaviours more than personal values and beliefs. This underscores the importance of strengthening social and personal norms to encourage consumers to make ecologically responsible choices. Both studies highlight the importance of education and social norms in shaping pro-environmental behaviours and intentions. Education is vital for instilling environmental knowledge and awareness, while social norms play a significant role in guiding individuals' environmental actions and consumer choices.

Chawla (2008) emphasized that individuals' motivation to engage in environmental improvement actions is significantly influenced by their early engagement with the environment, which heightens their ecological sensitivity. The study found that while environmental knowledge alone does not directly lead to environmental action, developing skills to determine effective environmental improvement strategies drives real action. This skill set is crucial, as individuals are more likely to take action when they can see their efforts' tangible results and benefits. In addition, community involvement is also influenced by the length of stay around the river area. The longer they have lived in the area, the more willing they are to participate (Mumbi & Watanabe, 2021)

Similarly, Pan et al. (2018) investigated the behavioural intentions of tourism students by examining three key variables: environmental knowledge, environmental sensitivity, and environmental responsibility. Their findings revealed that environmental knowledge alone does not directly influence environmental behavioural intentions. This is because knowledge can only be effectively applied with the necessary competence to act. The study highlighted that environmental sensitivity plays a critical role in fostering a sense of empathy towards the environment, generating a sense of environmental responsibility, and motivating individuals to engage in environmental actions. The researchers concluded that direct contact with the environment and exposure to environmental issues are essential for developing environmental knowledge to inform and guide students' actions.

Both studies underscore the significance of imparting environmental knowledge and cultivating the practical skills and sensitivity necessary to translate that knowledge into meaningful action. Early engagement with the environment and exposure to environmental challenges is critical in fostering a sense of responsibility and empowering individuals to take proactive steps toward ecological improvement.

Alias (2019) further found that knowledge and attitudes toward river pollution significantly impact individual behaviour regarding river sustainability. Correct knowledge tends to have positive effects, while distorted knowledge negatively influences individual environmental behaviour. Therefore, it is crucial to disseminate accurate information about river pollution and minimize the spread of misinformation concerning river ecological issues.

Zhou et al. (2023) aimed to bridge the gap between intention and behaviour by presenting a framework comprising five variables: publication and education, attitude, subjective norms, behaviour intentions, and behaviours. Their study revealed that while publication and education influence farmers' intentions to sort waste, subjective norms play a more substantial role in translating intention into environmental behaviour. Thus, effective waste management education must be supplemented with subjective solid norms to actualize ecological behaviour. Mould, S. A. et al. (2020) Found that motivation does not directly become action because it goes through enablers and barriers. Enablers such as government funding strongly stimulate individuals to participate in river environmental programs.

Research on community activities in river environments includes Ohashi's (2002) study in Japan, which examined citizen participation and activities utilizing river sites. In Indonesia, Darwis (2002) provided a detailed report on community empowerment in the Code River, Widodo (2010) highlighted the local wisdom approach in upgrading slum areas along the Code River, and Nurmandi (2006) studied community-based wastewater management in urban riverside settlements in Yogyakarta. The literature on behaviour intention extends beyond Indonesia to other Asian regions, where similar communal characteristics prevail. Knowledge, attitudes, norms, values, and beliefs motivate individuals to engage in pro-environmental activities. However, before taking action, individuals must first form an intention, which must be supported by a strategy to justify the action.

3.0 Methodology

Quantitative survey methods were used in this research to collect data on subjects' participation in GR. Descriptive statistical and path analyses were used to process survey data to find their participation motivation and future intentions in the river environmental program. We interviewed nine neighbourhood unit leaders to understand how Gotong Royong (GR) activities are planned and executed in different areas along the Code River bank. These leaders were chosen because GR activities are organized at the neighbourhood unit level, and they are deeply involved in addressing social and environmental issues within their communities. We distributed 304 questionnaires, one to each household across three areas along the Code River bank, ensuring a high response rate by conducting door-to-door interviews. CD I had 93 respondents, CD II had the highest number with 114 respondents, and CD III had 97 respondents. The questionnaire was divided into four sections: demographic information, involvement in GR activities, environmental awareness, and future intentions regarding ecological programs. We used SPSS 19 and AMOS 19 software to analyze the data, comparing residents' involvement profiles and future intentions related to river cleaning initiatives across different areas.

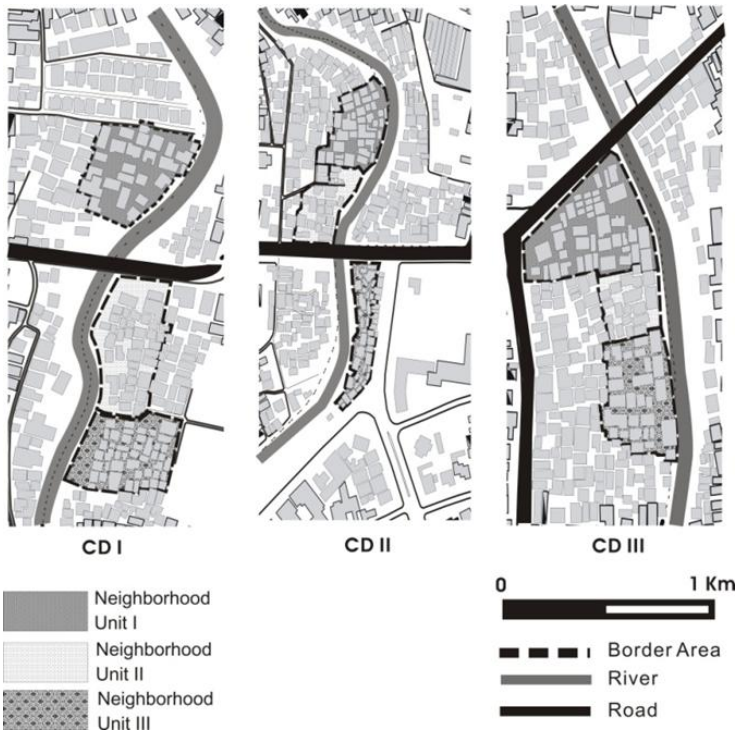


Fig. 1: Survey Location
(Source: Author, 2023)

4.0 Findings

This study's target areas are in densely populated neighbourhoods (Fig.1), each with distinct community characteristics shaped by their unique development histories. These areas are Cokrodiningratan (CD I), Gondolayu (CD II), and Cokrodirjan (CD III). CD I is inhabited by a more established community capable of self-development with minimal government and NGO intervention. It is well-known for its initiative, the Merti Code Festival, an annual event honouring the river through special ceremonies and art performances. CD II, in contrast, faced significant challenges in the early 1980s. It was home to illegal settlers living in poverty without proper sanitation. Redevelopment efforts led by NGOs transformed this area, garnering national attention due to its success. CD III benefited from local government assistance in developing the riverbank area. In 2005, the national government built condominiums for low-income residents as part of an urban slum upgrading policy. All three regions continue to uphold the traditional community activity of Gotong Royong (GR), which has been instrumental in neighbourhood improvement initiatives led by NGOs or the government. This continuity makes them ideal for a comparative study on the effectiveness and sustainability of GR in different community contexts.

4.1 Planning and Management of Gotong Royong Activity

Based on the interviews with the nine neighbourhood unit leaders, it was revealed that the majority of residents actively participate in Gotong Royong (GR) activities. The detailed results of these interviews, focusing on the planning and management of GR, are presented in Table 1. One major obstacle identified in the river cleaning efforts is the garbage that flows downstream from upper stream areas. This ongoing challenge has made many residents feel their efforts are futile, causing them to concentrate their cleaning activities primarily around their immediate neighbourhoods rather than the river.

GR activity frequency varies across the areas studied, reflecting their unique needs and circumstances. As shown in Table 1, CD II is the most active in GR activities, followed by CD I. These areas are particularly vulnerable during the rainy season, necessitating

extensive preparations to mitigate flood damage. Standard measures include installing stacked sandbags along flood-prone zones. Conversely, CD III, located in a busier neighbourhood, is less active in GR activities compared to the other two areas. The differing levels of engagement in GR activities highlight the impact of local conditions and community priorities on environmental participation.

Table 1. Interview results on GR activity in each studied area

AREA	AREA UNIT	Frequency in a month	Target Of GR	Decision Process	Obstacles
CD I	I	2 or 3	river	Community meeting	strong water current
	II	1	Neighborhood and river	assesement	garbage from the upper stream
	III	3	Neighborhood and river	Community meeting	garbage from the upper stream
CD II	I	4	Neighborhood and river	assesement	Tools
	II	2	Neighborhood and river	assesement	Piles of garbages
	III	2	Neighborhood and river	assesement	Stucked garbages
CD III	I	1	Neighborhood	assesement	Bamboo fish cage and garbages
	II	2	River	Community meeting	Garbage flocking the river
	III	2	Neighborhood and river	Community meeting	Smell and garbages

(Source: Author, 2023)

4.2 Residents 'Involvement Profile in Three CD Areas

Table 2 presents the demographic percentages of respondents from each studied area. Generally, all residents are eligible to participate in GR activities; however, the head of the family holds the social obligation to join as a contribution to the community. Typically, this role falls to an adult married man or an adult woman if the male head of the family is absent or unavailable. We cross-tabulated the areas, analyzing the frequency of participation, roles in GR, time allocation, preferences for GR, and reasons for joining. Using the Chi-square method, we found significant differences in the reasons for joining and roles in GR across the three areas.

Table 2. Respondents' demographics

		CD I	CD II	CD III
Gender	Male	60.2	35.1	37.1*
	Female	39.8	64.9	62.9
Education	Elementary School	25.8	26.3	18.6
	Junior High School	20.4	23.7	18.6
	Senior High School	44.1	28.1	52.6
	College	5.4	6.1	2.1
	No schooling	4.3	15.8	8.2
Occupation	Goverment employee	15.1	.9	5.2
	Private employee	18.3	19.3	16.5
	Labour	15.1	14.0	13.4
	Small entreprenuer	5.4	13.2	16.5
	Student	17.2	18.4	15.5
	No job/retired	29.0	34.2	33.0
Age group	10-20	14.0	20.2	14.4
	21-30	20.4	7.9	17.5
	31-40	16.1	16.7	9.3
	41-50	16.1	14.9	26.8
	51-60	20.4	28.9	19.6
	61-70	11.8	10.5	7.2
	71-80	1.1	.9	5.2
Position in the family	Head of household	45.2	22.8	22.7
	Family member	54.8	77.2	77.3
			*in precentage	

(Source: Author 2023)

This research categorized the reasons for joining GR into three groups: social responsibility, environmental responsibility, and not important. "Social responsibility" is the reason for joining because they want to socialize and maintain closeness, while "environmental responsibility" is a form of awareness to restore ecological damage. The last one is "not important", it is a form of compulsion to join because it feels inappropriate if you leave. Our findings indicate that respondents in CD III are predominantly driven by environmental responsibility, with the highest proportion compared to CD I and CD II (Fig. 3). This area has been successfully targeted for slum upgrading by the government, resulting in a well-maintained neighbourhood. In contrast, CD II, which received intensive NGO assistance in the past, has the lowest proportion of respondents motivated by environmental responsibility. Instead, CD II has the highest

percentage of respondents participating in GR due to social responsibility. This reflects the early advocacy efforts of the NGOs, which prioritized building social solidarity among settlers in the CD II area.

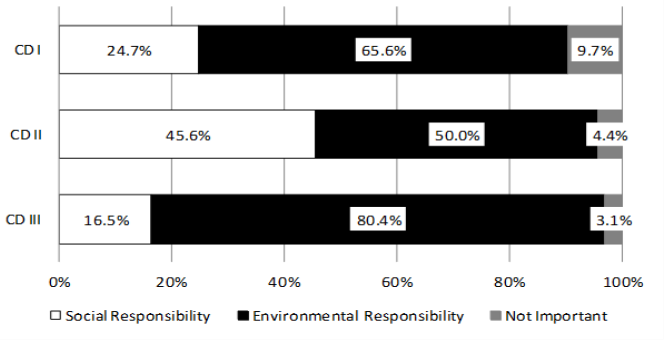


Fig. 2: Cross tabulation of respondents' reason for joining GR
(Source: Author 2023)

Although CD III has the most significant proportion of respondents with environmental responsibility reasons when joining GR, their role in GR activity is less critical than CD II and CD I. Only 22.7 % of respondents in CD III are capable of helping the primary worker when joining GR compared to 64% in CD II and 58.1 % in CD I (Fig. 4). The development of the CD III area is mainly assisted by local government which placed its residents as a passive actor during the process of development. Most of the construction projects were carried out by contractors with less involvement from the residents. The residents are primarily involved in maintaining the project after its completion and can add any public facility afterwards through GR activity.

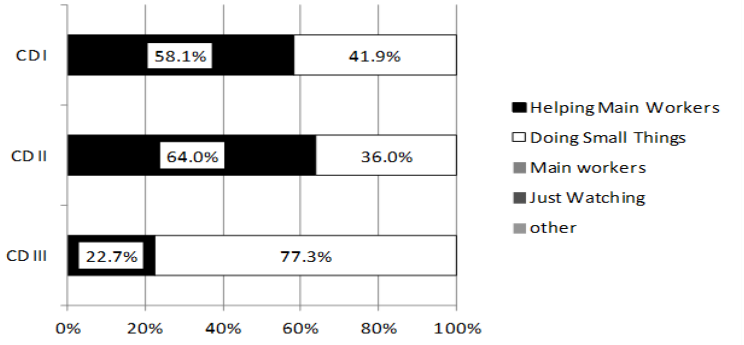


Fig. 3: Cross tabulation of respondents' role in GR
(Source: Author 2023)

Because the nature of GR activity is socially driven, we also measured the external influences that affected respondents' awareness of the river caring activity. We used five scales of agreement on four statements of external influences. These external influences are parents, friends, leaders, and peer pressure. ANOVA test was used to analyze the mean differences between studied areas. The result showed that leaders and parents are two external influences that are significantly different among the three studied regions (Table 3).

Table 3. External influences of respondents

		Sum of Squares	df	Mean Square	F	Sig.
my parent set good example on caring this river for me	Between Groups	4.053	2	2.026	3.259	.040
	Within Groups	187.181	301	.622		
	Total	191.234	303			
my friends set good example on caring this river for me	Between Groups	.026	2	.013	.399	.671
	Within Groups	9.855	301	.033		
	Total	9.882	303			
leaders set good example on caring this river for me	Between Groups	3.956	2	1.978	13.855	.000
	Within Groups	42.978	301	.143		
	Total	46.934	303			
My friends will consider me as bad person if I did not join	Between Groups	.276	2	.138	.214	.807
	Within Groups	193.984	301	.644		
	Total	194.260	303			

(Source: Author, 2023)

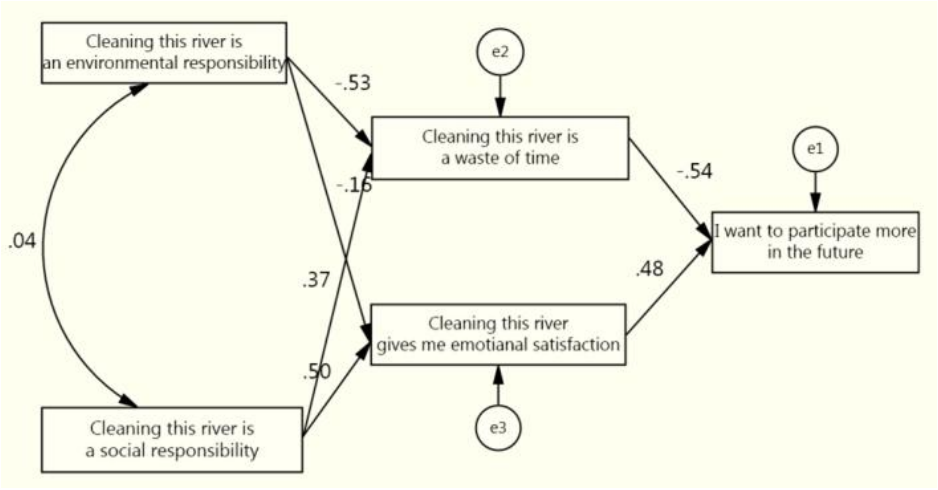
5.0 Discussion

5.1 Residents' Future Intention

To understand residents' future intentions in each studied area, we used path analysis to predict their intentions based on four variables. These variables consist of two parts. Part one is variables concerning the motivation or reason for joining GR. The motivation or reason for joining GR is split into two main categories: social responsibility and environmental responsibility. Part two is variables concerning their view on GR activity. This view was divided into emotional satisfaction and waste of time. In this path analysis, we want to see why they join GR, their view on GR activity, and how it influences their future intention.

5.2 CD I

Path analysis in CD I (Fig. 7) showed that respondents with environmental responsibility have higher regression weight on emotional satisfaction than those with social responsibility. However, the difference needs to be higher.



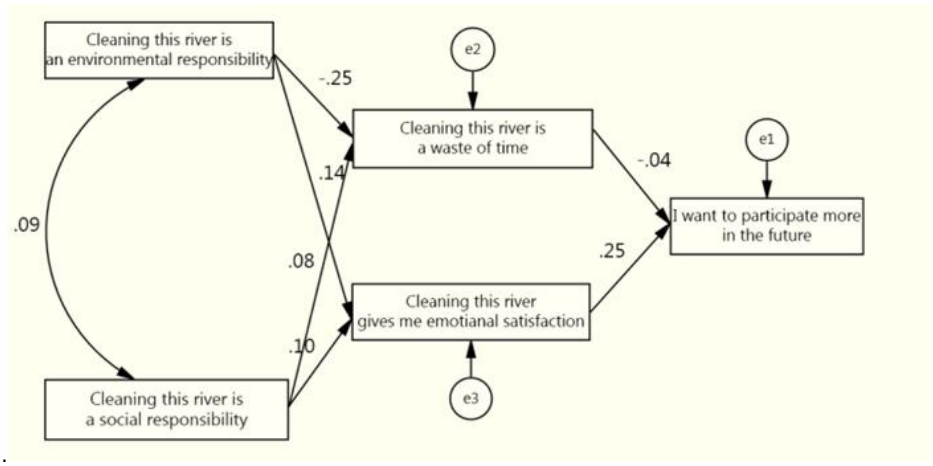
GFI= 0.982 AGFI=0.910

Fig. 4: Path analysis in CD I
(Source: Author, 2023)

On the other hand, respondents with social responsibility, although the value is small, still believe GR is a waste of time. CD I is between CD II and CD III regarding its residents' future intentions. Residents with emotional satisfaction in CD I are not as eager as those in CD II (Fig. 8) to participate more in future cleaning river programs; however, they are slightly higher than those in CD III (Fig. 9) areas in this regard.

5.3 CD II

In the CD II area, respondents with environmental responsibility showed negative regression weight on a view of cleaning rivers as a waste of time and as giving emotional satisfaction (Fig. 8). This means that in CD II, the action of cleaning rivers as an environmental act does not have much effect on respondents' willingness to join cleaning river activities. Respondents with environmental responsibility viewed cleaning river activity as neither good nor bad.



GFI=0.982 AGFI=0.910

Fig. 5: Path analysis in CD II
(Source: Author, 2023)

Respondents with social responsibility demonstrated high emotional satisfaction, indicating that they view cleaning the river as a service to the community. However, these respondents also saw the activity as a waste of time. Respondents with environmental responsibility in CD I also showed a lack of emotional satisfaction, though the values were not as harmful as in CD II. In CD II, the negative values suggest disappointment with the impact of their efforts. Respondents who experienced emotional satisfaction in CD II showed a high likelihood (0.48) of participating in future river environmental programs. Conversely, those who considered cleaning the river a waste of time exhibited strong negative values regarding future participation (-0.53).

5.4 CD III

The regression weight for respondents with environmental responsibility in CD III (Fig. 9) showed a similar trend to those in CD I. Respondents in both areas found cleaning river activities emotionally satisfying and did not view them as a waste of time. However, the regression weights in CD III were slightly higher than in CD I (Fig. 7). Although some respondents who viewed cleaning river activities as a waste of time were still willing to participate in the future, their regression weight value was meagre. This suggests that emotional satisfaction is a more reliable predictor of respondents' future intentions to join river environmental programs.

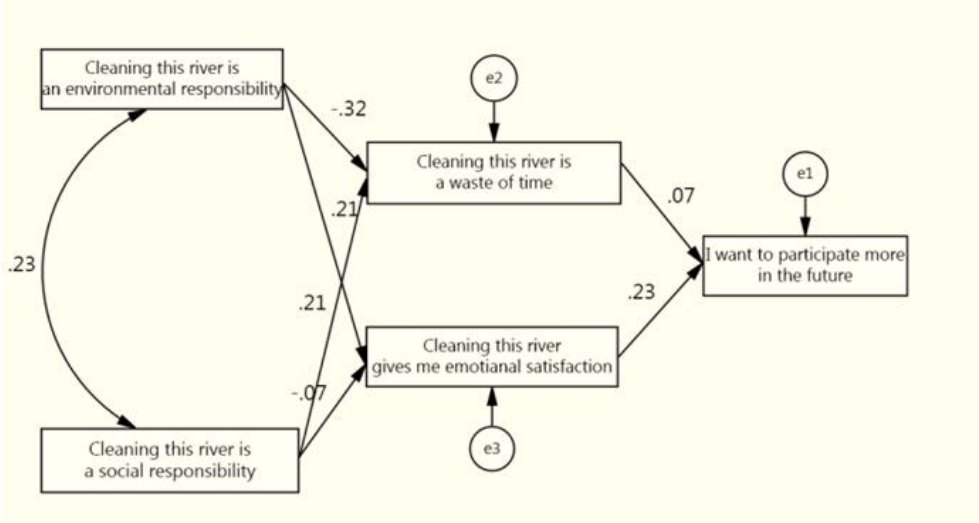


Fig. 6 Path analysis in CD III
(Source: Author, 2023)

5.5 Implications of findings for participants' future intentions

Emotional satisfaction is a predictor of behaviour to participate in river improvement activities in the future. These findings show that even though the initial intention is social if it results in emotional satisfaction, they will be more likely to participate in the future.

6.0 Conclusion & Recommendations

Each studied area in this research has unique characteristics that affect residents' future intentions regarding river environmental programs. In CD II, the results are divided into two categories: respondents with emotional satisfaction are likely to participate more in the future, while those who view the activity as a waste of time are not. Interestingly, in the CD II area, the source of this emotional satisfaction comes from respondents with social responsibility, a unique tendency compared to the other studied areas. Across all three studied areas, respondents with environmental responsibility do not view cleaning river activities as a waste of time. This suggests that ecological awareness is crucial in eliminating negative views toward environmental actions, while those with strong environmental awareness need to feel more satisfied with their efforts. If respondents with environmental responsibility can find greater satisfaction in their actions, future participation in river environmental programs is likely to increase significantly. However, it is essential to acknowledge the study's limitations, such as the participants' social environment cohesiveness, which can significantly impact their willingness to join any social activity regardless of their motivation. Further research can focus on the younger generation's interest in community social activities related to river conservation.

Paper Contribution to Related Field of Study

This paper clarifies the role of traditional community activities in improving urban rivers in Indonesia. The social nature of traditional activities can be channelled into environmental activities to solve ecological problems related to the water environment. It gives a path to developing environmental programs based on Indonesian society's social capital.

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