

The Socio-Cultural Influence of the Community on the Road Project Activities of the Mountainous Papua Province

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Abstract: Road infrastructure development in the Papua Highlands Province is influenced not only by technical aspects but also by the socio-cultural characteristics of indigenous communities. This study aimed to analyze community socio-cultural characteristics and examine their partial and simultaneous effects on road project completion. A mixed methods approach with an Explanatory Sequential Design was employed, combining questionnaire-based quantitative data and qualitative interviews. The results indicate that socio-cultural characteristics are characterized by strong customary values, community participation, local leadership, communication, conflict resolution, and socio-economic conditions. Partial analysis showed that only Social Structure and Local Leadership (X_3) and Communication and Conflict Resolution (X_4) significantly affected project completion, while the other variables were not individually significant. However, all socio-cultural variables simultaneously had a significant effect on project completion ($F = 7.297$; $p < 0.001$). These findings highlight the importance of integrating socio-cultural considerations into road infrastructure management in indigenous areas.

Keywords: Road Infrastructure, Socio-Cultural Factors, Indigenous Communities, Project Completion, Papua Highlands Province.

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I. INTRODUCTION

Road infrastructure development is one of the government's main instruments in realizing equitable development, improving regional connectivity, and encouraging national economic growth. In areas with difficult geographical characteristics, the existence of roads not only serves as a means of transportation, but also as a link for public access to education, health, government, and economic services. The success of road construction is greatly influenced by the ability to manage various project risks, both technical and non-technical. In recent years, studies have shown that socio-cultural factors of the community are increasingly recognized as one of the important determinants that influence the success of infrastructure project completion, especially in areas with strong customary systems and social structures.

Mountainous Papua Province is one of the priority areas for infrastructure development in Indonesia as part of the policy to accelerate the development of the eastern region of Indonesia. This area has geographical characteristics in the form of high mountains, isolated valleys, and limited transportation access, so that road construction is a strategic

need to improve connectivity between regions. However, development challenges do not only come from natural conditions, but also from the socio-cultural characteristics of indigenous peoples who still hold fast to traditional values, customary leadership systems, customary rights, deliberation mechanisms, and strong communal relationships. In practice, these various socio-cultural aspects can affect the project implementation process through community support, communication processes, acceptance of projects, and the potential termination of work if not managed properly.

A number of studies have examined the socio-cultural aspects of the Papuan people from various perspectives. Bresca and Muhaimin (2023) show that the customary law and local wisdom of the Dani Tribe function as guidelines in social life, conflict resolution, and the regulation of relationships between community members[1]. Veronika (2013) also explained that the people of the Central Highlands of Papua have a cultural knowledge system that places the harmonious relationship between humans, nature, and community as the basis of social life[2]. From a legal perspective, Mahfud (2017) emphasized

that the protection of customary rights still faces various problems in the implementation of national policies, which often arises conflicts between development interests and the rights of indigenous peoples[3]. These studies show that the socio-cultural and institutional dimensions of customary affairs have a major influence on the dynamics of development in Papua, although the study still focuses on anthropological, legal, and community governance aspects.

Other research has more discussed the relationship between society and infrastructure development. Egbebi (2024) proves that culture affects the effectiveness of communication in construction projects, thus having implications for project performance[4]. Rusim's research identified that the delay in road construction in Papua was not only influenced by technical factors, but also by social, environmental, and social factors[5], [6]. Tiksian's (2024) research shows that community participation is an important factor in the success of road infrastructure development[7], while Fangohoi et al. (2026) found that resolving customary land conflicts requires an approach that integrates governments and customary institutions[8]. In addition, Indriane emphasized that conflict resolution mechanisms based on local wisdom are more effective in building understanding than a formal approach. Meanwhile, Suryanti and Nyulistiowati (2019) emphasized the importance of risk management in infrastructure development as part of efforts to maintain the sustainability of project implementation[9].

Revealing various previous studies that have discussed customary law, customary rights, community participation, cross-cultural communication, and project risk management, most of the research is still carried out separately according to the discipline. Anthropological research focuses more on the cultural characteristics of the community, legal research focuses on the protection of customary rights, while construction research focuses more on the technical risks of projects. Until now, there is still very limited research that integrates socio-cultural factors of the community as variables that can be measured quantitatively to explain their influence on the completion of road projects, especially in the context of infrastructure development in Mountainous Papua Province. As a result, the relative contribution of each sociocultural dimension to the successful completion of the project has not been empirically explained.

This research offers novelty through the development of an empirical model that integrates the socio-cultural dimension of the community into the analysis of the performance of road project completion using a quantitative approach based on Structural Equation Modeling–Partial Least Squares (SEM-PLS). In contrast to previous research that was descriptive, normative, or qualitative, this study statistically measured the relationship between the socio-cultural characteristics of the community and the completion of road projects. The results of the research are expected to make a theoretical contribution in expanding the study of construction project management in indigenous people-based areas and provide practical contributions as the basis for the preparation of social management strategies for the government, contractors, consultants, and stakeholders in the implementation of infrastructure projects in Mountainous Papua.

Based on this description, this study aims to analyze the socio-cultural characteristics of the community around the road construction site in the Mountainous Papua Province, analyze the socio-cultural influence of the community on the partial completion of road projects, and test the socio-cultural influence of the community simultaneously on the completion of road project activities. The results of the research are expected to produce an empirical model regarding the relationship between socio-cultural factors and project completion performance so that it becomes the basis for the formulation of social management policies that are more adaptive to the characteristics of indigenous peoples in Mountainous Papua.

II. LITERATURE REVIEW

➤ *Social Culture in Infrastructure Development*

Socio-cultural society is a system of values, norms, beliefs, customs, interaction patterns, and social institutions that develop in a community and become a guideline in community life. In the context of infrastructure development, socio-cultural factors not only determine the level of public acceptance of a project, but also affect the communication process, decision-making, conflict resolution, and sustainability of project implementation[10]. Various studies show that construction projects carried out in indigenous areas require a different social approach compared to projects in urban areas because the success of the project is greatly influenced by the ability of the implementers to understand the cultural characteristics of the local people. In the Mountainous Papua region, socio-cultural influences are becoming increasingly dominant because the community still maintains a strong customary system, customary rights, traditional leadership, and deliberation mechanisms as the basis for development decision-making. Therefore, the socio-cultural community is seen as one of the non-technical factors that affect the completion of road projects.

➤ *Dimensions of Social Culture*

➤ *Customary Values and Norms*

Customary values and norms are a set of rules, ethics, and habits that are inherited from generation to generation and are used as guidelines in regulating relationships between individuals, groups, and the use of customary territories[11]. In the customary territory of La Pago, customary norms are still the basis for determining land use, dispute resolution, land division, and approval of development activities[12]. The existence of customary norms causes every development activity to gain social legitimacy from indigenous peoples in order to be accepted. Ignoring these norms has the potential to cause social conflicts, work stoppages, and community rejection of projects. Therefore, customary values and norms are one of the main dimensions that affect the success of road construction in Highland Papua.

➤ *Local Wisdom*

Local wisdom is traditional knowledge that has developed through people's experience in interacting with the natural and social environment over generations[13]. In the people of Mountainous Papua, local wisdom is reflected in the livelihood system, settlement patterns, traditional houses, traditional

clothing, traditional calendars, and natural resource management. Community activities such as gardening, hunting, traditional festivals, and cultural activities are carried out based on the time that has been agreed upon from generation to generation[14]. This condition causes the implementation of road projects to pay attention to the social calendar of the community so that construction activities do not conflict with traditional life. Thus, local wisdom serves as the basis for adaptation of development to the characteristics of the local community so that it can reduce the potential for conflict during the implementation of the project.

➤ *Norms of Traditional Beliefs and Rituals*

Traditional belief norms and rituals are belief systems that regulate people's relationships with ancestors, nature, and spiritual values that are inherited from generation to generation. The people of Mountainous Papua still carry out various rituals such as stone burning, traditional ceremonies, cultural festivals, respect for ancestors, and religious activities that are often related to land use and the opening of new territories[15]. In addition, there are certain areas that are considered sacred so that they cannot be used without the consent of indigenous peoples. In the implementation of road projects, neglect of traditional rituals and sacred locations can trigger community rejection and hinder the completion of the work. Therefore, understanding of traditional belief norms and rituals is an important part of managing the relationship between project implementers and local communities.

➤ *Values of Togetherness and Kinship*

The value of togetherness and kinship illustrates the strong social relations of the people of Mountainous Papua which are built on the ties of tribes, clans, clans, and genealogical relationships. This social structure forms a high level of solidarity so that important decisions are generally made through deliberation involving all interested groups[16]. In the context of road construction, the involvement of all elements of society is an important factor because neglect of one group can lead to horizontal conflicts and rejection of projects. Therefore, the success of the project is not only determined by the technical capabilities of the contractor, but also by its ability to build harmonious social relations with all indigenous groups.

➤ *Respect for Traditional Heads and Community Leaders*

Traditional heads and community leaders are traditional leaders who have social legitimacy in regulating people's lives, maintaining customary law, managing customary rights, and becoming decision-makers in various community issues. Their authority comes from the recognition of the community, lineage, and mastery of history and customs so that every decision taken has high moral power[17]. In road construction, the approval of the customary head is often the main requirement before a project can be implemented in customary territory. In addition, the traditional head also functions as a mediator between the community and the government and contractors in resolving various problems that arise during the implementation of the project. Therefore, the active involvement of indigenous leaders is an important factor in creating community support for infrastructure development.

➤ *Road Project Completion*

The completion of a road project is the level of success of the project in achieving the goals of time, cost, quality, and scope of work according to the contract. In construction project management, project completion is influenced by both technical and non-technical factors. In areas with indigenous characteristics such as Mountainous Papua, socio-cultural factors are one of the important determinants that affect the smooth implementation of projects. The level of community acceptance, the effectiveness of communication, conflict resolution, and the support of indigenous leaders can accelerate or hinder the completion of work[6]. Therefore, the success of the road project is the result of the interaction between the technical management ability of the project and the effectiveness of managing the socio-cultural aspects of the community around the development site.

III. METHOD

➤ *Research Design*

This study uses mixed methods with Explanatory Sequential Design, which is a research approach that begins with the collection and analysis of quantitative data, then continues with the collection of qualitative data to explain, strengthen, and interpret the results of quantitative analysis. The quantitative approach is used to examine the influence of community socio-cultural factors on road project activities, while the qualitative approach is used to gain a deeper understanding of the socio-cultural conditions of the community, communication processes, the role of indigenous leaders, and various phenomena that affect the implementation of road projects in Mountainous Papua Province.

➤ *Research Location and Time*

The research was carried out on road construction and improvement projects in five districts in Mountainous Papua Province, namely Jayawijaya Regency, Yalimo Regency, Tolikara Regency, Nduga Regency, and Lanny Jaya Regency. The selection of the location is based on the high intensity of road infrastructure development and the characteristics of indigenous peoples who still maintain socio-cultural values in daily life. Data collection is carried out on ongoing projects as well as projects that have been completed within the last three to five years.

➤ *Population and Sampling*

The research population includes all stakeholders involved in the implementation of road projects in Papua Mountainous Province, namely implementing contractors, supervisory consultants, government officials, traditional leaders or tribal chiefs, and communities around the project site. The sampling technique uses purposive sampling, which is the selection of respondents based on certain criteria, including: (1) directly involved in the implementation of road projects; (2) understanding the socio-cultural conditions of the local community; and (3) willing to be a research respondent. Number of samples

➤ Data Collection

The research used primary data and secondary data. Primary data was obtained through field observation, distribution of questionnaires to respondents, and semi-structured interviews with key informants consisting of commitment officials, implementing contractors, supervision consultants, traditional leaders, village heads, and communities around the project. Interviews are conducted after quantitative analysis to clarify the statistical results obtained. Secondary data was obtained through literature studies, contract documents, contract addendums, project implementation reports, work handover minutes (PHO), technical justifications, and various other supporting documents.

➤ Instrument Development

The research instrument is in the form of a questionnaire which is prepared based on the results of a literature review on socio-cultural factors of the community and the success of the implementation of road projects. The independent variable is the Socio-Cultural Community (X) which is measured through five dimensions, namely: (1) customary values and norms; (2) local wisdom; (3) norms of beliefs and customary rituals; (4) the value of togetherness and kinship; and (5) respect for traditional heads and community leaders. The dependent variable is Road Project Activities (Y) which is measured through indicators of timeliness of completion, smooth implementation of work, minimal social disturbances, and overall project performance.

Each indicator was measured using a five-point Likert scale, namely 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree. The preparation of indicators refers to the socio-cultural theory of the community, construction project management, and the results of previous research relevant to infrastructure development in indigenous peoples' areas.

➤ Research Hypothesis

The research hypothesis is formulated as follows.

H₀: Socio-cultural factors of the community have no effect on road project activities in Mountainous Papua Province.

H₁: Socio-cultural factors of the community affect road project activities in Mountainous Papua Province.

➤ Data Analysis

Data analysis was carried out in stages using IBM SPSS Statistics with a significance level of 5%. The hypothesis is accepted if the *p-value* is < 0.05 or the *t-statistical value* > 1.96. The data from the interviews were analyzed using the Miles and Huberman interactive model which included data reduction, data presentation, and conclusion drawn. The results of the qualitative analysis were used to explain and strengthen the quantitative findings so that a more comprehensive understanding of the socio-cultural influence of the community on road project activities in the Mountainous Papua Province was obtained.

IV. RESULT AND DISCUSSIN

➤ Characteristics of Respondents

Tabel 1. Characteristics of Respondents

Features	Quantity (n)	Percentage (%)
Gender		
Male	36	94,7
Women	2	5,3
Age		
25–34 years old	3	7,9
35–44 years old	14	36,8
45–54 years old	17	44,7
≥55 years old	4	10,5
Final Education		
High School/Vocational School	3	8,1
Diploma (D3/D4)	4	10,8
Bachelor (S1)	26	70,3
Magister (S2)	5	13,5
The Doctor (S3)	0	0,0
Job Title/Position		
Director/Director	8	21,1
Commitment Making Officer (PPK)	7	18,4
Quantity Engineer	6	15,8
Field Supervisor	6	15,8
Field Supervisor Coordinator	3	7,9
Site Manager	2	5,3
PPTK	1	2,6
Site Engineer	1	2,6
Field Supervisor	1	2,6

Supervisory Consultant	1	2,6
Field Implementer	1	2,6
Technical Staff	1	2,6
Work Experience		
<10 years	7	18,4
11–15 years	15	39,5
16–20 years old	7	18,4
>20 years old	9	23,7

A total of 38 respondents participated in this study consisting of government officials, contractors, supervisory consultants, and technical personnel who were directly involved in the implementation of road projects in the Mountainous Papua Province. The composition of respondents was dominated by men (94.7%), with the largest age group in the range of 35–54 years. This condition shows that the majority of respondents are professionals who have

adequate experience in managing road construction projects. In terms of education, most of the respondents have a Bachelor's degree (S1), while based on work experience, the majority have worked for more than ten years in the construction sector. These characteristics show that the information obtained comes from respondents who understand the technical aspects and socio-cultural conditions during the implementation of road projects in Mountainous Papua.

➤ Descriptive Statistics

Table 2 Descriptive Statistics

Variabel	Mean	SD	Category
Community Values and Customs (X1)	3,90	1,17	Height
Community Perception and Participation (X2)	3,78	1,34	Height
Social Structure and Local Leadership (X3)	3,87	1,27	Height
Communication and Conflict Resolution (X4)	3,64	1,33	Height
Socio-Economic Conditions of the Community (X5)	4,04	1,12	Height
Road Project Completion (Y)	62,82	12,94	Height

All research variables obtained an average score in the high category, which shows that respondents gave a positive assessment of socio-cultural factors of the community and road project activities in Mountainous Papua Province. The Community Socio-Economic Conditions (X₅) variable had the highest average value of 4.04 (SD = 1.12), which indicates that road construction is perceived to provide social and economic benefits for the surrounding community. In contrast, the Communication and Conflict Resolution (X₄) variable had the lowest average value of 3.64 (SD = 1.33), although it was still

in the high category, indicating that the communication and conflict resolution aspects still require more attention in the implementation of the project. Meanwhile, the variable of Road Project Activities (Y) obtained an average value of 62.82 with a standard deviation of 12.94, which shows that the project implementation is generally considered good despite variations between projects. Overall, the results of the descriptive analysis provide an idea that socio-cultural factors of the community are perceived to have an important role in road project activities in the Mountainous Papua Province.

➤ Multiple Linear Regression Analysis

Tabel 3 Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the estimate
1	.730a	.533	.460	9.51472

Source : Data Analysis, 2026

Model summary table, *Adjusted R Square value* 0.460. This means that socio-cultural factors are influential by 46%,

while the rest (54%) are influenced by other factors in the completion of road projects in Papua Mountainous Province.

Table 4 Anova

Model	Sum of squares	df	mean square	F	Sig.
Regression	3302.756	5	660.551	7.297	<.001
Residual	2896.955	32	90.53		
Total	6199.711	37			

Sumber : Analisis Data, 2026

➤ *Hipotesis :*

H0 : X1 – X5 has no simultaneous effect on Y, H1 : X1 – X5 has a simultaneous effect on Y. In the ANOVA table , the value F = 7.297 (greater than 0.05). So subtract H₀ and

accept H1 which means that X1 – X5 have a simultaneous effect on Y.

Table 5 Influence of variable X on project completion

Variabel	t - count	T - Table	Sig	Remarks
X1	-0,362	2,037	0,720	Insignifikan
X2	-1,349	2,037	0,187	Insignifikan
X3	-2,145	2,037	0,040	Signifikan
X4	-4,826	2,037	< 0.001	Signifikan
X5	1,446	2,037	0,158	Insignifikan

Source : Data Analysis, 2026

Based on Table 5, the results of the t-test show that Social Structure and Local Leadership (X3) and Communication and Conflict Resolution (X4) have a significant effect on the completion of road projects because they have significance values of 0.040 and < 0.001, respectively, which are smaller than 0.05. Meanwhile, Community Values and Customs (X1), Community Perception and Participation (X2), and Community Socio-Economic Conditions (X5) did not have a significant effect because the significance value was greater than 0.05. Thus, it can be concluded that only the X3 and X4

variables have a significant effect on the completion of road projects in the Mountainous Papua Province.

The **Sig values** of the variables X3 (Social Structure and Local Leadership) = 0.040 and X4 (Communication and Conflict Resolution) = <0.001 (less than 0.05), meaning that the variables X3 (Social Structure and Local Leadership) and X4 (Communication and Conflict Resolution) partially had a significant effect on the variables Y (Completion of Road Projects in Mountainous Papua Province).

➤ *Model Regression:*

$$Y = 102,432 - 0,201X_1 - 0,765X_2 - 1,178X_3 - 2,394X_4 + 0,742X_5$$

$$Y = 102,432 - 0,201(22) - 0,765(26) - 1,178(28) - 2,394(20) + 0,742(28)$$

$$Y = 98,010 - 19,890 - 32,984 - 47,880 + 20,776$$

$$Y = 45,136 - 47,880 + 20,776$$

$$Y = -2,744 + 20,776$$

$$Y = 18,032$$

This value can be interpreted as the predicted value of the completion of a road project based on the socio-cultural conditions included in the model. If the total score of variable Y does indeed have a range that includes 18.032, then the result is still reasonable and can be used for interpretation.

V. DISCUSSION

➤ *Socio-Cultural Characteristics of the Community Around Road Project Locations in Mountainous Papua Province*

The results of the descriptive analysis show that all socio-cultural dimensions of the community are in the high category. The variable of Community Socio-Economic Conditions (X5) obtained the highest average score (Mean = 4.04), followed by Community Values and Customs (X1) (Mean = 3.90), Social Structure and Local Leadership (X3) (Mean = 3.87), Community Perception and Participation (X2) (Mean = 3.78), and Communication and Conflict Resolution (X4) (Mean = 3.64). The findings show that respondents view socio-cultural aspects as an inseparable part of the implementation of road construction in Papua Mountainous Province.

This condition occurs because the people of Highland Papua still have a strong relationship with the customary-based social system. Land ownership, decision-making, and

conflict resolution are still influenced by customary norms and the authority of tribal chiefs or community leaders. Therefore, the success of the project implementation is determined not only by the technical aspects of construction, but also by the ability of the project implementer to understand the socio-cultural characteristics of the local community. In addition, the high assessment of socio-economic conditions shows that the community views road construction as a means of increasing access to education, health services, trade, and economic mobility so that infrastructure projects receive relatively good acceptance.

These findings are in line with the Social Capital theory put forward by Putnam (1993), which states that shared values, beliefs, social norms, and community networks are social capital that determine the success of the implementation of development programs[10]. In the context of Mountainous Papua, this social capital is reflected through strong customary ties, local leadership, and relationships between community groups that influence the project implementation process.

The results of this study also support the research of Yigitcanlar et al. (2020) who stated that the success of infrastructure development is greatly influenced by the ability of projects to accommodate the social conditions of local

communities[18]. Similarly, research by Amoah and Pretorius (2022) shows that construction projects in indigenous areas require an understanding of cultural characteristics as a basis for building harmonious relationships with communities[19]. However, these results are different from the research of Osei-Kyei et al. (2017) who found that in some modern urban projects, technical and managerial factors are more dominant than socio-cultural factors because societies already have a more established level of urbanization and institutional systems[20]. These differences show that the influence of socio-cultural characteristics is greatly influenced by the regional context.

➤ *Socio-Cultural Influence of the Community on the Completion of Road Projects in Mountainous Papua Province*

The results of partial regression analysis showed that only Social Structure and Local Leadership (X3) and Communication and Conflict Resolution (X4) had a significant effect on the completion of road projects. In contrast, Community Values and Customs (X1), Community Perception and Participation (X2), and Community Socio-Economic Conditions (X5) did not show a statistically significant influence.

The significance of the variables of social structure and local leadership shows that the road construction process in Highland Papua is greatly influenced by the existence of indigenous leaders as parties who have social legitimacy in the community. Approval, support, and resolution of various field problems are generally carried out through the customary leadership mechanism so that the involvement of community leaders is an important factor in accelerating project completion. On the other hand, communication and conflict resolution are the most dominant factors because infrastructure projects often intersect with issues of customary rights, differences in interests between groups, and community demands. Open communication and conflict resolution through deliberation can reduce the potential for work stoppages and improve the smooth implementation of projects. On the other hand, the insignificance of the variables of values and customs, community perception and participation, and socio-economic conditions can be explained because these three factors tend to be basic conditions that have been inherent in the people of Mountainous Papua. Customary values are respected by all parties so that they are no longer a distinguishing factor between projects. Similarly, community participation and socioeconomic conditions were relatively uniform at the research site, so the variation was not large enough to explain the difference in project completion statistically. In other words, the success of a project is determined more by how local leaders are involved and how conflicts are managed than by the mere existence of cultural values themselves.

The findings support the theory of Stakeholder Theory (Freeman, 1984) which explains that the success of a project is influenced by the ability of the project manager to build relationships with key stakeholders[21]. In the context of Mountainous Papua, traditional leaders and community leaders are the main stakeholders who have a great influence on the smooth running of the project. In addition, the theory of

Collaborative Governance (Ansell & Gash, 2008) also explains that communication, dialogue, and conflict resolution are prerequisites for successful collaboration in public development[22]. The results of this study are in line with the research of Amila (2022) who stated that effective communication between contractors, the government, and the community is an important factor in the success of construction projects[23]. Research by Osei-Kyei and Chan (2017) also shows that the involvement of local stakeholders can increase the success of infrastructure projects[20]. However, the results of this study differ from the research of Enshassi et al. (2009) who found that community participation is the dominant factor in infrastructure projects in conflict areas[24]. This difference is allegedly caused by the characteristics of the Mountainous Papuan community who still place traditional leadership as the center of decision-making so that the influence of individual participation becomes smaller

➤ *Simultaneous Socio-Cultural Influence of the Community on the Completion of Road Projects in Mountainous Papua Province*

The results of multiple regression analysis showed that all socio-cultural variables simultaneously had a significant effect on the completion of road projects with a value of $F = 7.297$ and $p < 0.001$. In addition, the Adjusted R^2 value of 0.460 indicates that the model is able to account for about 46% of the variation in project completion, while the rest is influenced by other factors outside the model, such as technical aspects, funding, geographical conditions, weather, logistics, security, and project management capacity.

The findings show that although not all variables are partially significant, together socio-cultural factors still make a significant contribution to the successful completion of the project. This indicates that the implementation of road projects in Mountainous Papua is a complex process so that various socio-cultural aspects complement each other in influencing the implementation of the project. Customary values shape social norms, local leadership directs decision-making, communication becomes a means of coordination, while socio-economic conditions affect the level of community acceptance of development. The interaction between these variables produces a collective influence that is greater than the influence of each variable separately.

These findings are in line with the Project Success Theory (Aaron, 2001) approach, which states that the success of a project is influenced by a combination of technical, organizational, and external environmental factors[25]. In infrastructure projects in indigenous peoples' territories, the socio-cultural environment is part of external factors that need to be managed in an integrated manner so that time, cost, and quality targets can be achieved. This research also supports the results of research by Silvius and Schipper (2014) who stated that social and sustainability aspects are one of the determinants of the success of modern construction projects[26]. Similarly, research by Yang et al. (2015) shows that integrated stakeholder management increases the chances of success of infrastructure projects[27]. However, the Adjusted R^2 value of 46% indicates that there is still a 54% variation in project completion that is influenced by other

factors. Therefore, further research needs to include variables such as geographical conditions, weather risks, logistics systems, regional security, and project management capabilities so that the resulting model has a higher clarity power.

VI. CONCLUSION

The socio-cultural characteristics of the community around the road construction project in the Mountainous Papua Province are shown by the strong influence of values and customs, community perception and participation, social structure and local leadership, communication and conflict resolution, and socio-economic conditions of the community. All variables are in the high category, which shows that socio-cultural aspects are an important factor in the implementation of road projects. The results of the interviews strengthened these findings by showing that the involvement of traditional leaders, respect for customary rights, and problem solving through deliberation are the main characteristics that support the smooth development of development.

Partial influence shows that only Social Structure and Local Leadership (X_3) and Communication and Conflict Resolution (X_4) have a significant impact on the completion of road projects in the Mountainous Papua Province. In contrast, Community Values and Customs (X_1), Community Perception and Participation (X_2), and Community Socio-Economic Conditions (X_5) did not have a significant effect individually. These findings indicate that the success of project completion is determined more by the effectiveness of local leadership, the role of indigenous leaders, intensive communication, and deliberative conflict resolution mechanisms than by other socio-cultural factors in isolation.

The simultaneous influence showed that all socio-cultural factors, namely Community Values and Customs (X_1), Community Perception and Participation (X_2), Social Structure and Local Leadership (X_3), Communication and Conflict Resolution (X_4), and Community Socio-Economic Conditions (X_5), together had a significant effect on the completion of road projects in Highland Papua Province, as shown by the results of the F test ($F_{cal} = 7.297$; $p < 0.001$). Thus, the success of project completion is determined not only by technical aspects, but also by the ability to manage socio-cultural factors in an integrated manner through an approach that respects customs, strengthens local leadership, builds effective communication, and prioritizes participatory conflict resolution.

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