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Connecting Margins to the Mainstream: Road Construction by the Nepali Army as a Catalyst for National Unity

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ABSTRACT

National integration and equitable development have long been hampered by Nepal's mountainous terrain and historical regional disparities. This study looks at how the NA contributes to the development of road infrastructure as a means of fostering connectivity, national cohesion, and socio-economic change. The main issue discussed is the continuation of insufficient transport networks, which are made worse by poor governance, scarce resources, and regional disarray. The study intends to assess the effects of army-led road projects on social cohesion, state legitimacy, and inclusive growth, guided by important research questions about the opportunities, difficulties, and ramifications of these projects. Using a mixed-method, exploratory design, the study combines analysis of policy documents, planning reports, and secondary literature with questionnaire surveys and KIIs with local communities, army officials, and policymakers. Results show that army-led initiatives have improved local economies, decreased center-periphery divides, increased physical connectivity, and increased public confidence in state institutions. But there are still issues, from threats of militarization in development governance to poor interagency coordination, and a lack of democratic oversight. According to the study, the NA's developmental role is crucial to accomplishing the balanced growth and integration objectives of the National Planning Commission's Sixteenth Plan (2023/24–2028/29), but it also necessitates institutional safeguards to maintain environmental integrity and democratic accountability. Environmental evaluations, community involvement, open communication, and civil-military coordination mechanisms are all emphasized in policy recommendations. The importance of the study lies in establishing army-led infrastructure as a social and strategic tool for promoting harmony, adaptability, and sustainable national growth in Nepal.

Introduction

From the rough Himalayan mountains to the lowland Terai plains, Nepal boasts a remarkable geographic diversity. Although this terrain adds to Nepal's natural beauty and cultural diversity, it has historically made it more difficult to connect, integrate as a nation, and achieve balanced development. The hilly areas, Karnali, and Sudurpashchim were still physically and mentally separated from Kathmandu, the political and administrative hub. As a result, there was little

state presence in these regions, development initiatives were intermittent, and marginalized populations continued to feel excluded. Inaccessible highways and transport networks hindered economic exchange, mobility, access to health and education, and the assimilation of outlying communities into the national fabric. Thus, roads and transport networks have political as well as technical and economic functions; they are tools of nation-building that promote communication, inclusivity, and a sense of shared identity (Anderson, 1983; Scott, 1998).

In addition to fulfilling its constitutional defense mandate, the Nepali Army (NA) has taken on a broader developmental role over the last 20 years. The government can mobilize the army for disaster relief and national development under Article 267 of the 2015 Constitution of Nepal. The NA has undertaken or assisted in the construction of vital highways like the Kanti Lokpath, the Kaligandaki and Karnali corridors, and multiple north-south strategic routes to the Chinese border after being armed with disciplined labor, engineering know-how, and logistical capacity. These projects drive through some of the nation's most challenging terrain and geostrategic hotspots, where civilian agencies and contractors frequently encounter capacity, security, or political interference issues.

The NA's involvement in this kind of infrastructure development has ramifications on several levels. First of all, it increases state visibility in areas that were previously ignored, which promotes a feeling of community and lessens the impression that the state is not there. By facilitating the flow of people, goods, services, and tourists, it also fosters socio-economic development. Thirdly, these roads are strategically and geopolitically important because they improve Nepal's internal unity and put it in a better position to contend with regional powers like China and India. Ultimately, by establishing common areas, lowering regional inequalities, and strengthening social cohesion across caste, ethnic, and geographic divides, road construction by a national security organization may help to promote national unity.

These contributions are not without controversy, though. Critics contend that integrating the military into civilian development could reduce transparency, concentrate power, and obfuscate the distinction between military and civil roles. Others wonder if building roads alone, without concurrent socio-economic and political inclusion, can bring the country together. Despite these discussions, there is still little scholarly focus on how Nepal's military-led infrastructure development and national integration interact. Few studies currently in existence look at how the Army's physical connectivity changes state-society relations and promotes national cohesion; the majority concentrate on disaster response, peacekeeping, or military diplomacy.

By critically examining how road infrastructure constructed by the NA fosters national unity and helps marginalized areas integrate into the mainstream, this study aims to close this gap. It looks into the socio-economic, political, and symbolic effects of these road projects, examines local communities' and policymakers' viewpoints, and assesses the potential of military-led development as a means of fostering national development.

By doing so, the study adds to the larger conversation about the dynamics of center-periphery relations in post-conflict Nepal, the changing role of military institutions in development, and infrastructure as a tool of state-building. Additionally, it offers policy-relevant insights for future infrastructure development that is inclusive, sustainable, and strategically sound.

Despite years of development and federal restructuring, Nepal still faces issues of fragmented national identity, weak state presence, and persistent regional inequality. Inadequate road infrastructure keeps remote mountainous areas cut off from markets, healthcare, education, and government, which exacerbates marginalized communities' sense of isolation. Corruption, political meddling, and logistical difficulties have made it difficult for government organizations to carry out road projects in these areas.

In this regard, the NA has proven to be an organization that can build strategic roads in difficult terrain. Scholarly examination of its wider social and national ramifications is still lacking, though. This study examines how local communities view military participation in development, whether army-led road construction promotes national unity or exacerbates civil-military tensions, and whether it lessens the physical and psychological distance from the national centre. Additionally, it looks at related socio-economic, cultural, and geopolitical effects.

This research investigates the effects of NA-led road construction on socio-economic development, state-citizen relations, and national unity in Nepal after 2006. It looks at military engagement in infrastructure as a means of bridging impoverished areas to the national mainstream, with a focus on areas like the Mid-Hill Highway, Karnali Corridor, Kali Gandaki Corridor, and northern border districts like Humla, Mustang, and Dolpa. Theoretically, it incorporates ideas from military sociology, borderland development, state-building, national integration, center-periphery relations, and infrastructure politics, with implications for other isolated areas of Nepal.

Literature Review

Directives, Principles, and State Policy

By actively participating in disaster response, UN peacekeeping missions, environmental protection, humanitarian assistance, and development initiatives both domestically and internationally, the NA has rapidly broadened its role beyond traditional defence (Nepali Army, 2025). Its visibility and reputation have been further enhanced by its participation in infrastructure development (Nepali Army, 2025). Four national pride projects, including the National Defence University and the Kathmandu-Terai/Madhesh Fast Track Road Project (KTFT Road Project, 2021), have been entrusted to the army by the Nepali government.

Peace, order, and security are essential for both development and effective governance (National Planning Commission [NPC], 2025). The National Planning Commission's (NPC) development plans have included road construction initiatives in order to increase the ability of security agencies to handle a variety of security challenges through increased professionalism, modernization, skills, and sufficient resources (NPC, 2025).

Infrastructure and Nation-Building

Road connectivity, in particular, has long been acknowledged as a key tool for state consolidation and nation-building. Researchers such as Anderson (1983) and Scott (1998) contend that by uniting geographically disparate populations under a single national identity, roads promote economic integration, administrative control, and the creation of an "imagined community." Roads facilitate the movement of people, ideas, security forces, and governing structures by

reducing the physical distance between the centre and the periphery. Infrastructure in post-conflict or developing nations has both symbolic and practical purposes, promoting socio-political cohesion and identifying the state's presence.

Roads as Agents of Social and Economic Transformation

Road access facilitates trade, tourism, agricultural commercialization, cultural exchanges, and access to health and education, as demonstrated by studies carried out in South Asia, Africa, and Latin America (Bryceson, 2009; Banerjee et al., 2012). According to research by Sharma and Bista (2019), the construction of rural roads in Nepal boosts local economic activity, lowers transportation costs, and increases school enrolment. However, Meyer (2016) highlights that infrastructure may exacerbate inequality if it is not accompanied by policies on inclusion, governance, and education.

Military Involvement in Development

In fragile, borderland, or post-conflict areas, militaries frequently participate in development initiatives worldwide. Building roads, bridges, and border infrastructure is a major activity for military institutions in nations like China (People's Liberation Army), India (Border Roads Organisation), and Pakistan (Frontier Works Organisation). Military developmentalism is associated with border security, strategic depth, and national integration, according to scholars (Rizvi, 2018; Desai, 2015). That said, academics like Finer (2003) and Huntington (1957) express concerns about the militarization of development, diminished civilian oversight, and democratic accountability.

The Nepali Army in Development and Infrastructure

After the democratic transition in 1990, the Nepali Army formally started taking part in road construction; however, following the Maoist insurgency in 2006, its role grew considerably. The NA completed projects like the Karnali Highway, the Mid-Hill Highway, and important north-south corridors in areas where civilian contractors were hesitant because of political unrest, risk, or a lack of security. Under military supervision, more than 3,000 kilometers of strategic roads were built or improved, according to NA Headquarters Reports (2018–2024).

Local communities frequently view the army favorably due to its efficiency, discipline, and capacity to finish projects in difficult terrain, according to researchers like Adhikari (2020) and Shrestha (2022). Critical viewpoints, however, draw attention to possible worries regarding the marginalization of civilian institutions, budget transparency problems, and the militarization of development (Bhattarai, 2021). There is still little scholarly research linking these infrastructure initiatives to identity formation and national cohesion.

Road Connectivity, State Presence, and National Unity in Nepal

Historically, there has been little state presence in Nepal's outlying districts, which has led to uneven development and poor national integration. Army-built roads serve two purposes: they improve mobility and state visibility. Road access improves market connectivity and lessens the perception of state abandonment, according to studies conducted in the Karnali region (Dhungana, 2017). Similarly, studies on Mustang and Humla (Tamang, 2021) show that by connecting border communities with the national administration and economy, infrastructure projects strengthen national identity.

Political instability, regional inequalities, and ethnic movements have frequently threatened Nepal's national unity. According to scholars, inclusive governance, decentralization, and cultural sensitivity must be combined with infrastructure-led integration (Lawoti & Hangen, 2013). Infrastructure offers the physical framework for the development of economic and social integration, even though it cannot bring a country together on its own.

Research Gap

Despite increasing scholarly interest in infrastructure-led development and civil-military cooperation, there are still significant research gaps in the context of Nepal. While earlier studies acknowledge the NA's efficiency in executing strategic road projects, they seldom look at how these initiatives affect national integration, especially in remote and marginalised areas. Few studies examine how army-led road construction affects local communities on a sociocultural, economic, and psychological level or evaluate how these interventions affect public views of state legitimacy, civil-military relations, and national unity. The alignment of military-led development with federal governance frameworks, civilian oversight mechanisms, and long-term decentralisation goals has also received little attention, creating a significant policy-level gap. Therefore, the question of whether military involvement in development lessens regional disparities or unintentionally creates new institutional or social tensions is still not sufficiently addressed in academic and policy discourse.

Conceptual Framework

This study is grounded in the theoretical knowledge that road infrastructure, particularly when built by an organisation that represents national unity like the NA, lessens geographical marginality, increases state visibility, and fosters national integration.

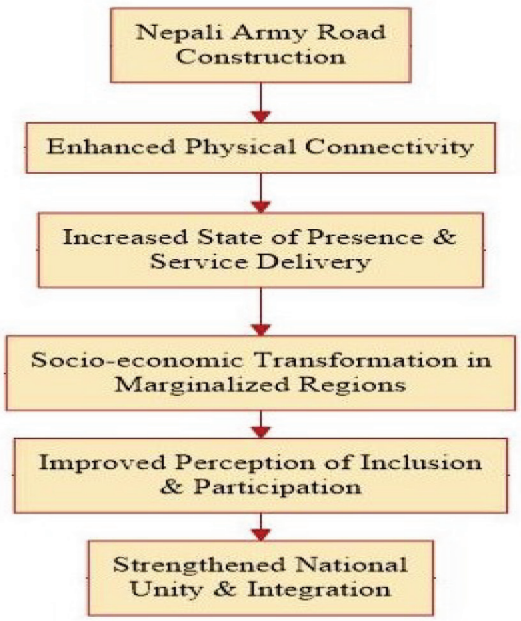

Figure 1. Conceptual Framework
Source : Researcher, 2025

Methodology

Research Nature and Approach

Understanding how NA-led road construction promotes national unity, state presence, and socio-economic development in remote areas of Nepal is the goal of this exploratory, multidisciplinary study. Because there isn't enough research on this subject in the literature, the study examines perceptions, experiences, and results related to military-led infrastructure development rather than testing established theories. Using a case study approach, it focuses on road corridors like the northern border route, the Karnali Corridor, the Koshi Corridor, etc.

Based on interpretivism, a mixed-method approach is employed, combining quantitative data based on a Likert scale with qualitative tools like Key Informant Interviews (KIIs) and document analysis of reports, army publications, and policy documents. This approach gathers quantifiable information from residents on their perceptions of socio-economic change, connectivity, and trust in state institutions. The nature of the study is exploratory, descriptive, and analytical. Along with examining a little-studied subject, it also discusses actual experiences and examines the ways in which army-led infrastructure affects development, integration, and state presence in isolated areas.

Research Design

To ensure triangulation, a convergent mixed-methods design was used, gathering qualitative and quantitative data simultaneously. While statistical results supported observed patterns, qualitative findings offered a deeper interpretation. The study's validity and analytical depth were improved by this integration.

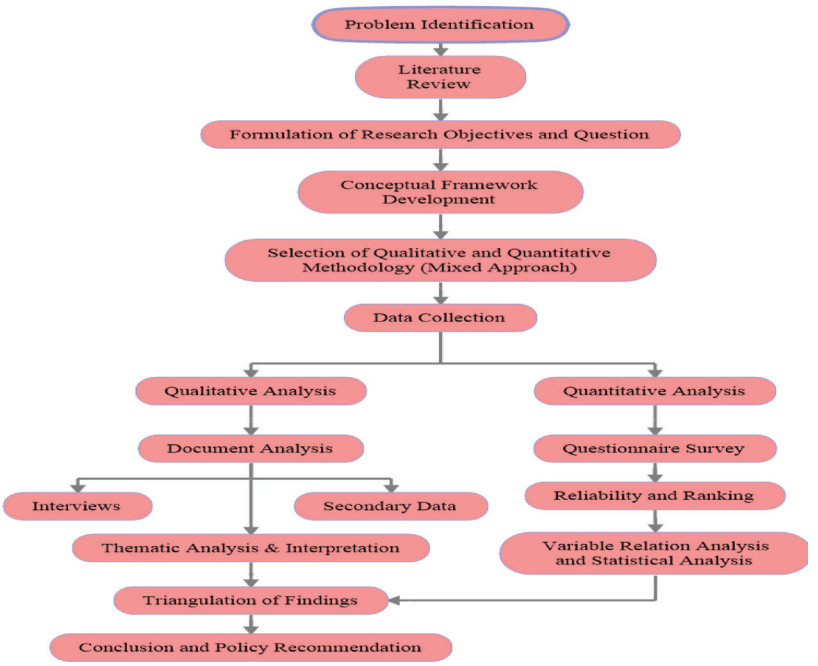

Fig 2. Research Design Flowchart
Source : Researcher, 2025

Population, Sampling, and Sample Size

Experts with knowledge of the geopolitics–infrastructure interface, including representatives from different ministries, army engineers and officers working on road construction, local government representatives, and specialists in infrastructure, national security, development studies, and adults living in the district impacted by NA-built roads were among the study's participants.

To find knowledgeable participants, a purposive sampling technique was employed. To guarantee a range of institutional viewpoints, 20–25 key informants were interviewed for the qualitative component. The Yamane formula, which is appropriate for large or unknown populations, was used to determine a sample of 100 respondents for quantitative analysis with a 5% margin of error. Convenience sampling was used to choose participants, guaranteeing their informed and voluntary involvement.

Data Collection Methods

Both primary and secondary data were used to strengthen triangulation.

Primary data were collected through:

(a) ***Questionnaire Surveys***: distributed through Google Forms, measuring opinions on state presence, national unity, socio-economic development, and connectivity using a five-point Likert scale (1 being strongly disagree and 5 being strongly agree).

(b) ***Key Informant Interviews (KIIs)***: Deeper understanding of policy goals, implementation difficulties, civil-military relations, and community reactions can be gained through semi-structured interviews with experts, officials, and community leaders. The conversations were guided by ten open-ended questions.

Secondary data was gathered from institutional sources, including the NA Headquarters (Jangi Adda) and relevant offices. For road construction-related information, first-hand secondary data was obtained from the Directorate of Development and Construction (DDC) at Jangi Adda. Additionally, details regarding national pride projects, such as the Kathmandu-Terai/Madhesh Fast Track Road Project, were collected through direct communication with the respective project offices.

Data Analysis Techniques

A mixed analytical framework was employed.

(a) ***Qualitative analysis***: Interviews will be transcribed, coded, and analyzed using thematic analysis. Themes such as "state presence," "connectivity and identity," and "civil-military relations" will be interpreted.

(b) ***Quantitative analysis***: Survey data were processed using SPSS 24, OriginPro Lab 2024, R-Studio, Mindjet MindManager, and Excel. Descriptive statistics (means and frequencies) summarized respondent opinions, while regression analysis tested hypothesized relationships among the mediating variables.

Hypotheses

H_o: Road construction carried out by the Nepali Army does not significantly contribute to connecting remote regions with the national mainstream or promoting national unity.
H_1: Road construction carried out by the Nepali Army significantly contributes to connecting remote regions with the national mainstream and promoting national unity.

A 5% significance level ($\alpha = 0.05$) determined acceptance or rejection of the null hypothesis.

Ethical Considerations

The study adhered to the rules of ethical research. Anonymity was guaranteed, confidentiality was upheld, and informed consent was acquired. Participants were free to leave at any moment, and the data was only used for scholarly research.

Limitations

Field engagement was limited by time, location, and access constraints, which made online surveys necessary. Because of geopolitical sensitivity, access to senior policymakers was restricted. Conditions during the study period are reflected in the findings, which could change as regional relations change. Notwithstanding these difficulties, using a variety of data sources improved validity and credibility.

Data Analysis and Data Operationalization

The process of turning abstract ideas into quantifiable and analyzable study components is made clear by the operationalization of variables.

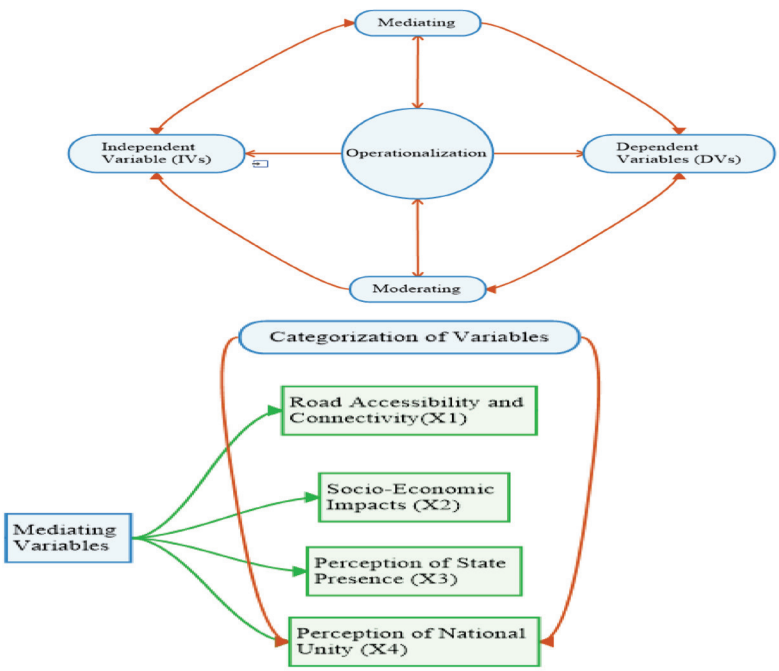

Fig 3. Operationalization of Variables
Source : Researcher, 2025

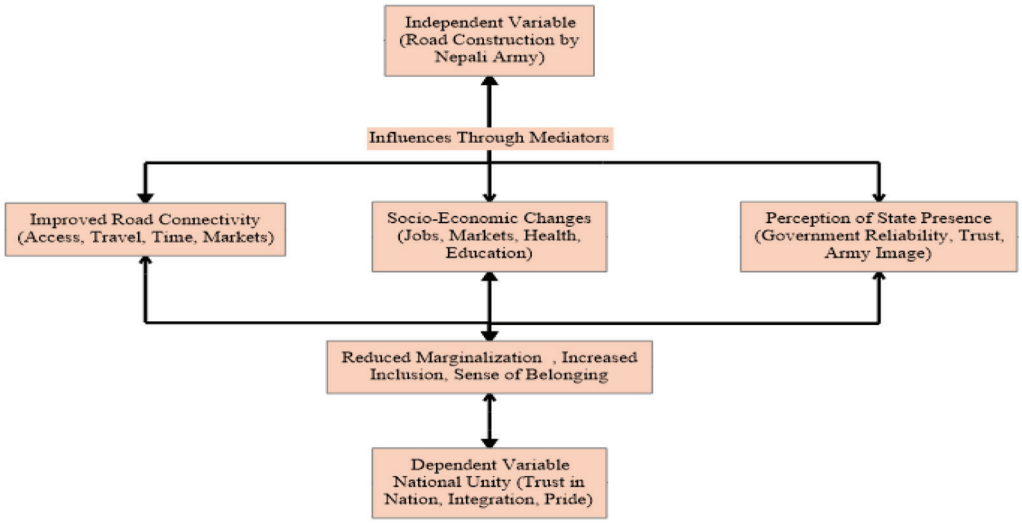

Figure 4. Relationship Between Variables
Source : Researcher, 2025

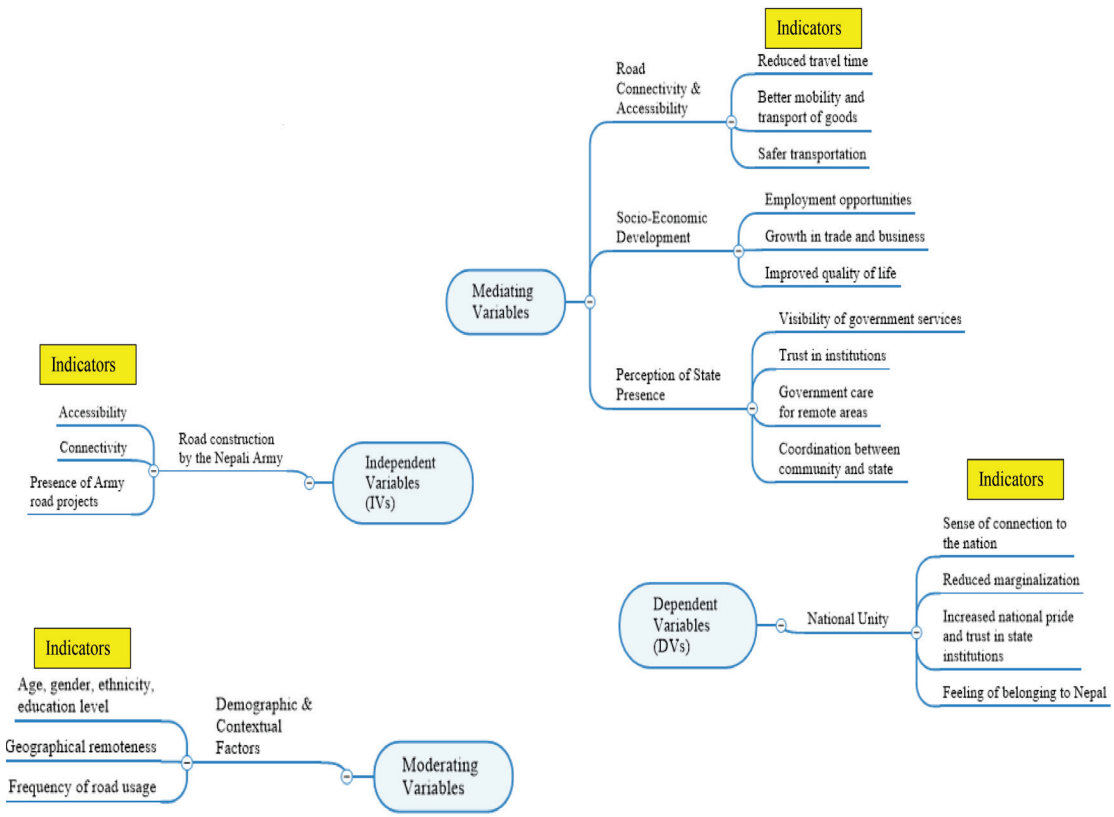

Figure 5. Different types of variables and their indicators
Source : Researcher, 2025

Data Analysis and Interpretation

Statistical Data Analysis and Interpretation

Validity and Reliability of Data*:* The questionnaires created and utilised in this study underwent a reliability test. The Cronbach's alpha test was employed to evaluate the questionnaire's internal consistency. The validity of survey questions is assessed using the Cronbach's alpha coefficient. The formula for Cronbach's alpha is Alpha $\alpha = (\frac{k}{k-1})(\frac{s_y^2 - \Sigma s_i^2}{s_y^2})$

where, K = number of items, s^2_y = Average Covariance between item pairs, s^2_i = Average Variance. The alpha value obtained for this study is shown below

Table 1: *Cronbach alpha value*

Cronbach's Alpha	No. of Items
0.82	16

Table 2: *Cronbach's alpha level of reliability*

Alpha Score	Level of Reliability
0-0.2	Less Reliable
>0.20-0.40	Rather Reliable
>0.40-0.60	Quite Reliable
>0.60-0.80	Reliable
>0.80-1.0	Very Reliable

Source: Hair, 2010

Relative Importance Index (RII): A statistical technique for ranking factors according to their perceived significance, especially when working with Likert-scale data, is the Relative Importance Index (RII). It assists in determining which criteria are most significant to the respondents. Likert-scale questionnaires are commonly used to collect data, and each factor's weighted average (RII value) is determined. Items are then ranked using these values in order of importance, with an RII of 1 denoting the highest perceived impact.

Table 3: *RII calculation of the variables*

S. No	Statements on subject	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total	RII	Rank
1	Road Accessibility and Connectivity	1160	664	6	0	0	**1830 2000**	0.915	1
2	Socio-Economic Impact	805	928	21	0	0	**1754 2000**	0.877	4
3	Perception of State Presence & Trust in Army	1065	744	3	0	0	**1812 2000**	0.906	2
4	Perception of National Unity & Integration	875	856	33	0	0	**1764 2000**	0.882	3

Source : Researcher, 2025

As can be seen from the above table, the variable "Road Accessibility and Connectivity," which is ranked first, has the highest RII. Similarly, "Socio-Economic Impact" has the lowest RII and, as a result, the lowest rank. According to the RII, the variable with the highest rank is assigned

the highest priority, and its relationship to the other variables is established. Thus, regression and correlation analysis were performed based on the output above. Figure 5 displays the number of respondents for each Likert scale.

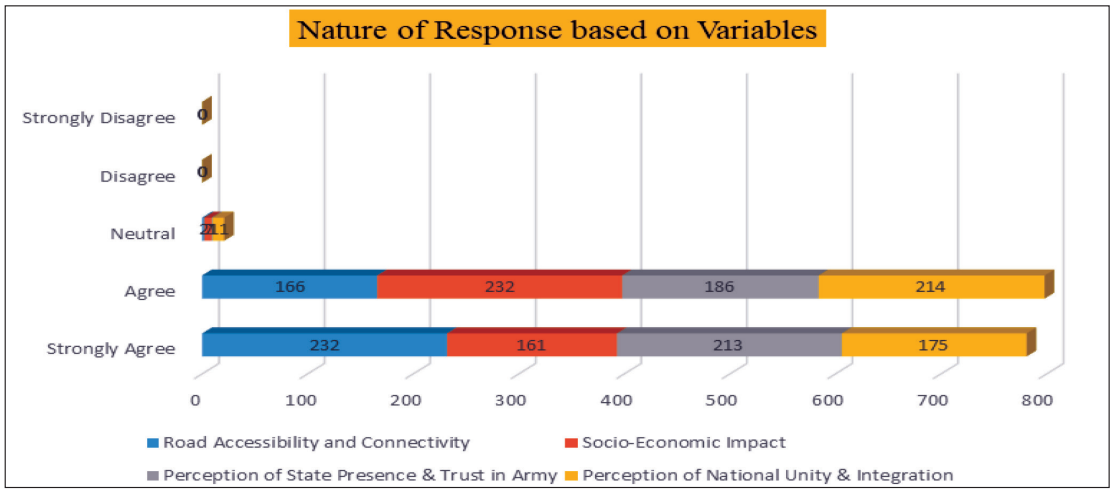

Figure 6. Nature of responses based on variables
Source : Researcher, 2025

Correlation and Regression Analysis: Two important statistical techniques for analyzing relationships between variables are correlation and regression. The correlation coefficient (r), which goes from -1 to +1, is used to quantify the strength and direction of a linear relationship. Values close to the extremes indicate stronger associations. By simulating the relationship between a dependent variable and one or more independent variables, regression goes one step further and makes predictions possible. Multiple regression employs multiple predictors, whereas simple regression uses just one. Essentially, regression explains and forecasts how one variable affects another, while correlation shows the strength of the association. Table 4 displays the correlation table.

Table 4: *Correlation values among the variables*

		Road Accessibility and Connectivity	*Perception of State Presence & Trust in Army*	*Perception of National Unity & Integration*	*Socio-Economic Impact*
		Y (1)	***X 1 (2)***	***X 2 (3)***	***X 3 (4)***
Road Accessibility and Connectivity	***Y (1)***	1	0.707	0.833	0.558
Perception of State Presence & Trust in Army	***X 1 (2)***	0.707	1	0.686	0.626
Perception of National Unity & Integration	***X 2 (3)***	0.833	0.686	1	0.619
Socio-Economic Impact	***X 3 (4)***	0.558	0.626	0.619	1

Source : Researcher, 2025

The aforementioned matrix indicates that "Perception of National Unity & Integration" and "Road Accessibility and Connectivity" seem to be key interconnected components within this framework, exhibiting stronger correlations with other variables. This implies that in order to create unity by creating connectivity, it is essential to comprehend and manage these two areas. The correlations highlight the necessity of integrated strategic planning by pointing to a complex interplay where changes in one area can have repercussions in other areas.

The correlation among the various variables is shown in the figure below along with the heat map of the above correlation matrix. The heat map allows visualization of the relation in a systematic manner.

Correlation matrix (pearson)

	Y	X_1	X_2	X_3
Y	1	0.70652	0.832932	0.558205
X_1	0.70652	1	0.686403	0.625746
X_2	0.832932	0.686403	1	0.618995
X_3	0.558205	0.625746	0.618995	1

Figure 7. Heat Map of the correlation matrix
Source : Researcher, 2025

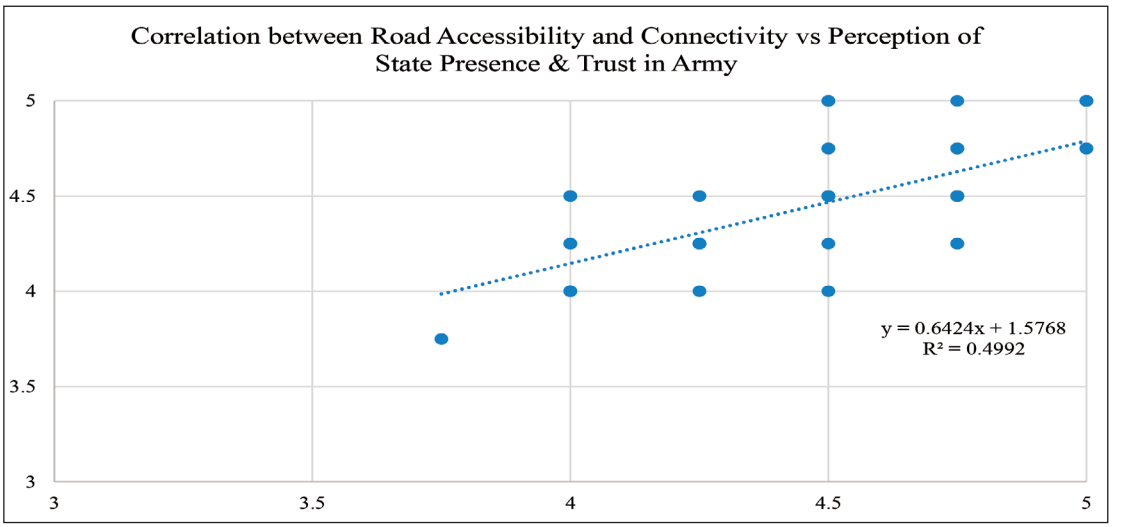

Figure 8. Correlation between Y and X_1
Source : Researcher, 2025

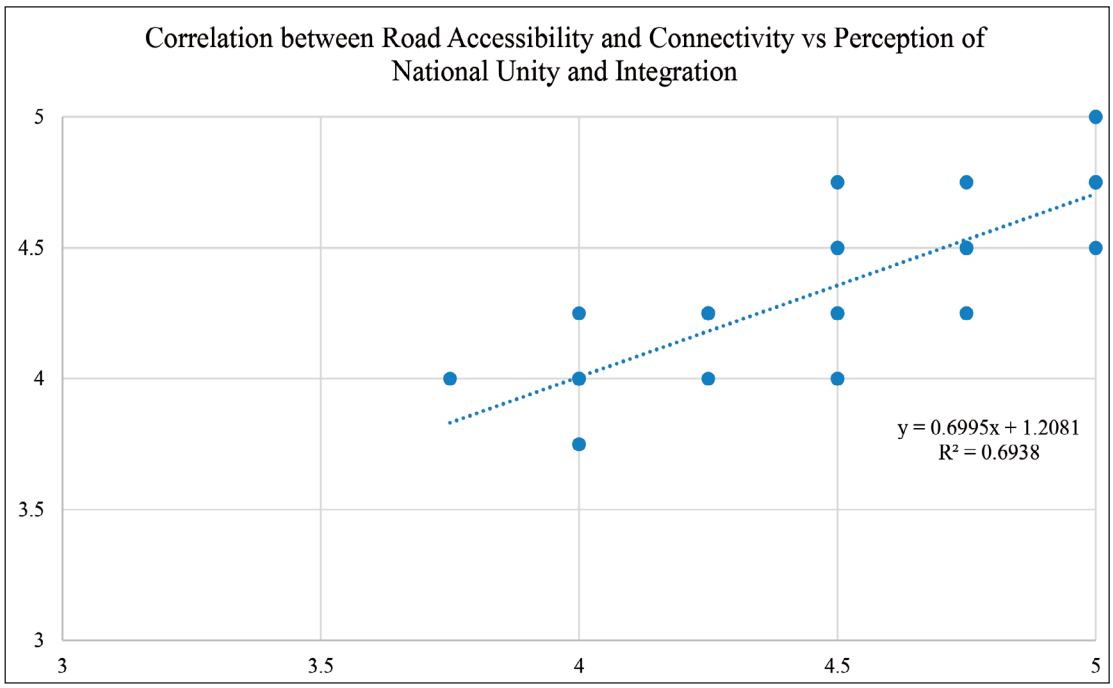

Figure 9. Correlation between Y and X_2
Source : Researcher, 2025

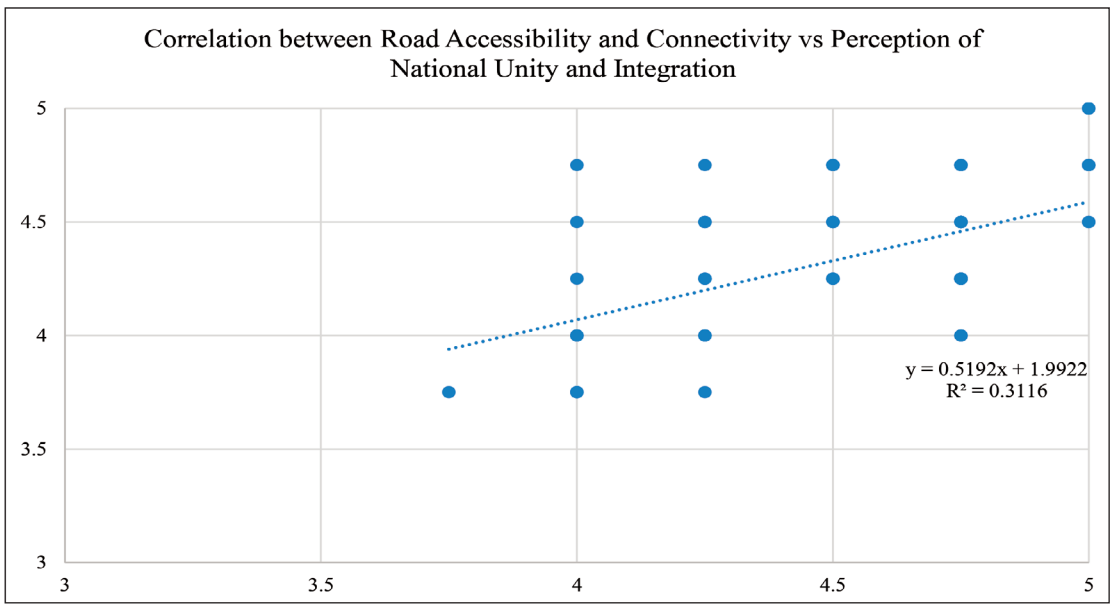

Figure 10. Correlation between Y and X3
Source : Researcher, 2025

Analysis of regression was done. The other variables were used to calculate the performance of the variable (Y). This specific variable was chosen because it is ranked 1 and has the highest weightage determined by the RII. Thus, Table 5 displays the regression's output.

Table 5: *ANOVA Table*

ANOVA

	df	*SS*	*MS*	*F*	*Significance*
Regression	3	7.1989	2.3996	85.7629	4.65615E-27
Residual	96	2.6861	0.0280		
Total	99	9.885			

Source : Researcher, 2025

The regression model is highly significant, as the ANOVA table demonstrates. The F-statistic of 85.763 and the extremely low Significance F (4.6561E-27), with regression and residuals having 3 and 96 degrees of freedom, show that the independent variables taken together have a strong and significant impact on the dependent variable.

Table 6: *Regression Coefficients*

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*VIF*
Intercept	-0.1313	0.3043	-0.4315	0.6671	-0.7354	0.4727	
$\mathbf{X_1}$	0.2869	0.0860	3.3384	0.0012	0.1163	0.4576	2.1578
$\mathbf{X_2}$	0.7902	0.0924	8.5505	0.0000	0.6068	0.9737	2.1284
$\mathbf{X_3}$	-0.0170	0.0778	-0.2191	0.8270	-0.1715	0.1374	1.8500

Source : Researcher, 2025

The table presents the coefficients and related statistics for a regression model. The intercept, with a value of -0.1313, represents the estimated value of the dependent variable when all independent variables (X_1, X_2, X_3, X_4) are zero. For the independent variables, X_3 has a coefficient of -0.0170, indicating a negative relationship with the dependent variable, meaning that for every one-unit increase in X_3, the dependent variable is estimated to decrease by 0.017 units, assuming other variables are held constant. Conversely, X_1, X_2, and have a positive relationship.

A VIF (Variance Inflation Factor) value below 2.5 generally indicates a low degree of multicollinearity among independent variables in a regression model. Multicollinearity occurs when independent variables are correlated with each other, potentially leading to unstable and unreliable regression coefficient estimates. A VIF below 2.5 suggests that the variance of the regression coefficients is not inflated to a concerning degree by these correlations

Also, the final relation of the variable (Y) with respect to the other variables is shown by the following equation:

$$\mathbf{Y} = (-)0.1313 + 0.2869\ \mathbf{X_1} + 0.7902\ \mathbf{X_2} + (-)\ 0.0170\ \mathbf{X_3}$$

Results of the multiple linear regression indicated that there was a very strong collective significant effect between the X_1, X_2, X_3, and Y, (F (2, 97) = 129.9, p < .001, R2 = 0.73, R2adj = 0.72). The individual predictors were examined further and indicated that X_1 (t = 3.501, p < .001) and X_2 (t = 9.038, p < .001) were significant predictors in the model, and was a non-significant predictor in the model.

The Regression plots are shown in the figure below

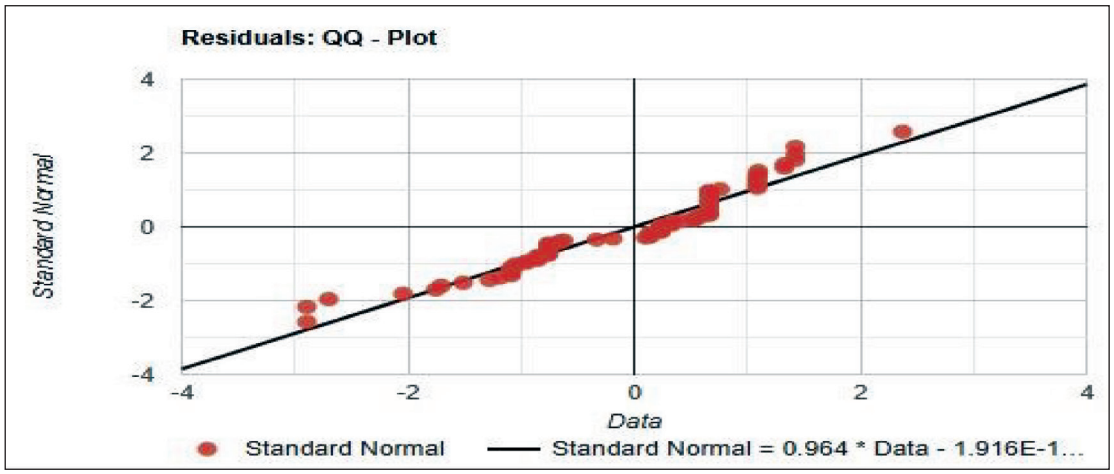

Figure 11. Residuals plot
Source : Researcher, 2025

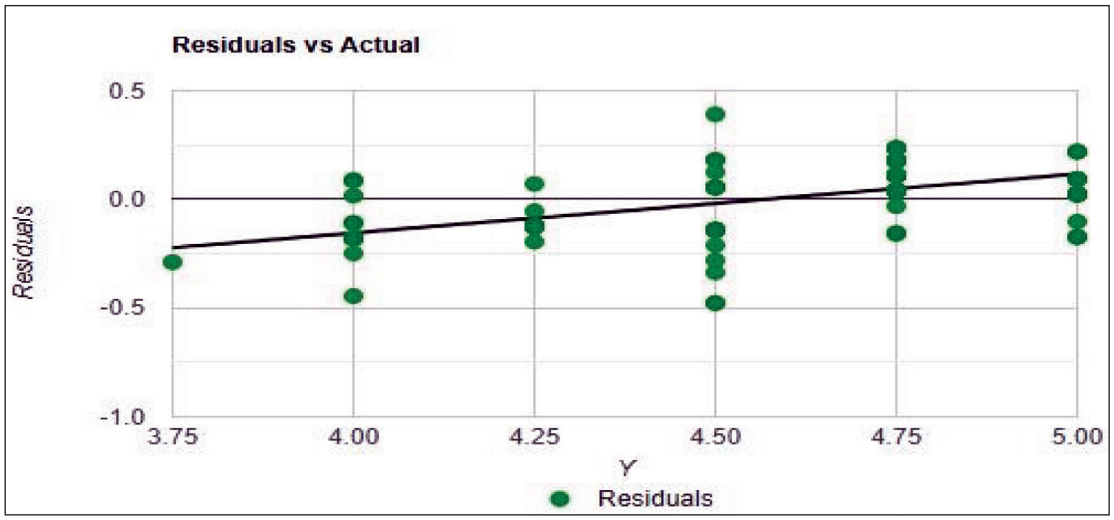

Figure 12. Residual vs Actual
Source : Researcher, 2025

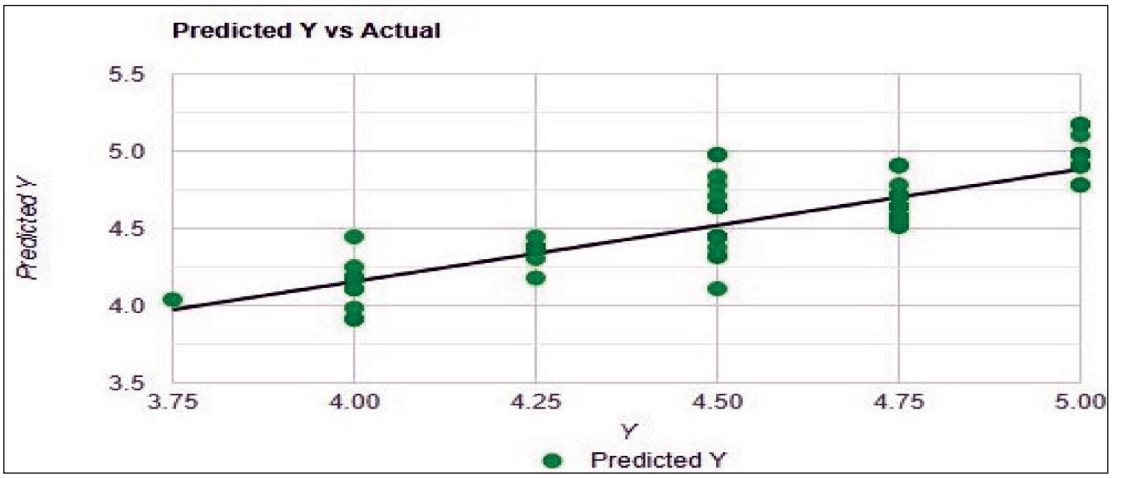

Figure 13. Predicted vs Actual
Source : Researcher, 2025

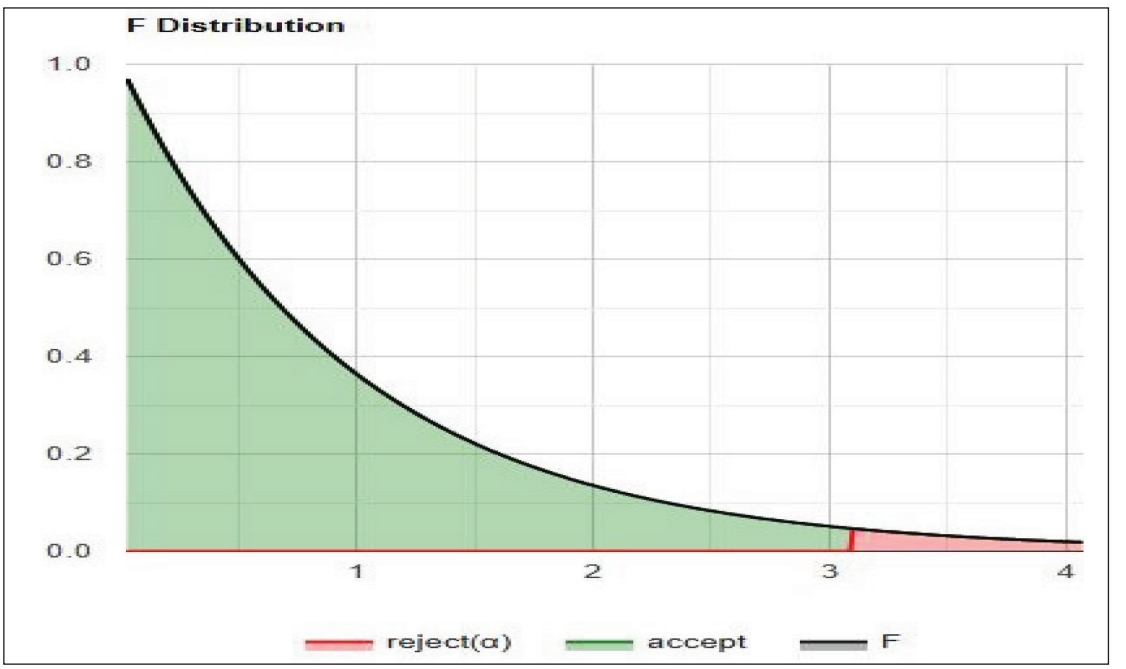

Figure 14. F- Distribution
Source : Researcher, 2025

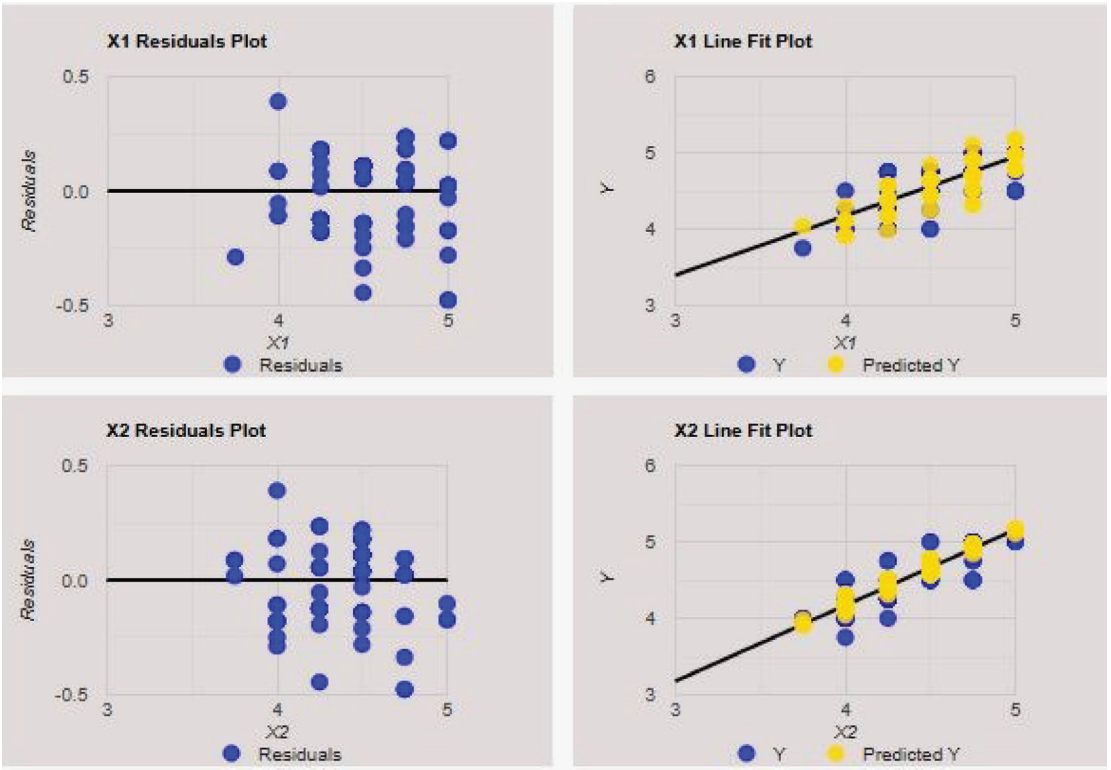

Figure 15. Residuals Plot of different variables
Source : Researcher, 2025

Multiple linear regression

The backward stepwise method is used to produce an initial screening of the predictors.

Table 7: *Regression Statistics*

Regression Statistics	
Multiple R	0.8534
R Square	0.7283
Adjusted R Square	0.7198
Standard Error	0.1673
Observations	100

Source : Researcher, 2025

Y and X relationship: R square (R^2) equals 0.7283. It means that the predictors (X_i) explain 72.8% of the variance of Y. Adjusted R square equals 0.7198. The coefficient of multiple correlation (R) equals 0.8534. It means that there is a strong correlation between the predicted data ($\hat{y}$) and the observed data (y).

Goodness of fit: Overall regression: right-tailed, F (2,97) = 129.9 p-value = 0. Since p-value < α (0.05), we reject the H_o. The following independent variable is not significant as a predictor for Y: X_3. Therefore, it was excluded from the model. The Y-intercept (b): two-tailed, T = -0.4944, p-value = 0.6220. Hence, b is not significantly different from zero. It is still most likely recommended not to force b to be zero.

Validation

Residual normality: For residual errors, linear regression makes the assumption that they are normal. The Shapiro-Wilk p-value is 0.00006543. The data is thought to be non-normally distributed.

Homoscedasticity - homogeneity of variance: The White test p-value equals 0.1102 (F=2.2559). It is assumed that the variance is homogeneous.

Multicollinearity - intercorrelations among the predictors (X_i): There is no multicollinearity concern as all the VIF values are smaller than 2.5.

Priori power - of the entire model (3 predictors): The power to test the entire model is strong: 0.9403. The power to prove that each predictor is significant is always lower than the power to test the entire model.

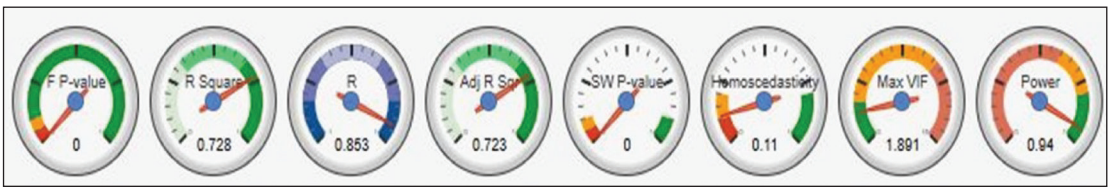

Figure 16. Different test statistics value shown in a speedometer chart
Source : Researcher, 2025

Key Informant Interviews (KIIs)

KIIs with policymakers, NA officials, local government representatives, development specialists, and community leaders were carried out to enhance contextual understanding and supplement the quantitative survey. Perceptions of how the NA's road construction has aided in national cohesion, connectivity, and socio-economic development in Nepal's remote areas are examined in these interviews.

Role of NA in Development

The NA is widely regarded by key informants as a disciplined and effective organisation that can build roads in difficult-to-reach areas where civilian agencies are constrained. Their participation is seen as a representation of national service that goes beyond security responsibilities.

Contribution to National Unity

By reducing the isolation of isolated communities, army-built roads have strengthened a sense of national identity. According to the respondents, connectivity strengthens national unity by fostering administrative, economic, and emotional integration with the state.

Socio-Economic Impact

Improvements in access to markets, healthcare, education, tourism, and jobs were reported by informants. Goods transportation benefits farmers, and youth mobility leads to employment and education opportunities. This change has decreased dependency and migration.

Geopolitical and Security Significance

The roads contribute to national security by improving strategic mobility along China's and India's sensitive border areas. By strengthening state presence in outlying areas, they also aid in balancing geopolitical influence.

Community Participation and Trust-Building

Regional differences exist in community participation. Trust between civilians and the army has increased in areas where locals are working, donating land, or consulting. Lack of participation has led to slight resistance in some places.

Challenges Faced

The main issues noted are rough terrain, landslides brought on by the monsoon, a lack of funding and equipment, land disputes, and administrative hold-ups. Despite these obstacles, the Army's command structure kept the project moving forward.

Sustainability and Maintenance

All informants emphasized the importance of poor maintenance following road completion. The army, local government, and Department of Roads (DoR) decision of responsibility, which causes degradation during monsoon seasons.

Cultural and Social Cohesion

Road access has promoted inter-caste interactions, cultural exchange, festival mobility, and a decrease in feelings of exclusion. Nowadays, remote communities engage with the general public more frequently.

Policy and Institutional Support

Although there are policies in place, there is still a lack of coordination between army institutions, local governments, and ministries. More precise legal requirements and funding for army-led development are suggested by experts.

Future Recommendations

For such projects to be sustainable over the long run, informants suggest increased community involvement, consistent funding, cooperative monitoring systems, environmental assessments, and clearer policies.

Secondary Data Analysis

Policies, reports, records, and scholarly articles were used to gather data on road networks. First-hand information was acquired through the Directorate of Development and Construction (DDC) Office in Jangi Adda, and the Fast Track Road Project was contacted for the National Pride Project. Below is a presentation of the road project that NA is currently working on.

Table 8: *Road project currently undertaken by NA*

S N	Name of Road Project	Location	Total Length (cm)	Length in km completed till 2025 September
1	Khandbari-Kimanthanka Road Project	Sankhuwasabha, Bhotkhola Gaunpalika	10.51	10.51
2	Karnali Corridor (Khulalu-Laifu-Sarisalla Sector) & (salisalla-simikot sector) Road Project	Humla-Kalikot-Bajura	22.05	18.56
3	Benighat- Arughat-Larkebhanjyang Road Project	Chum Nubri Gaunpalika, Dharche Gaunpalika, Gorkha	92	40.28
4	Darchula Tinkar (Kothedhar Tinkar) Road Project	Byas Gaunpalika, Darchula	79	18.02
5	Kathmandu-Terai/Madhesh Fast Track (Expressway) Road Project	Kathmandu-Makwanpur, Bara	70.977	41.37% Physical Progress

Source : DDC, 2025

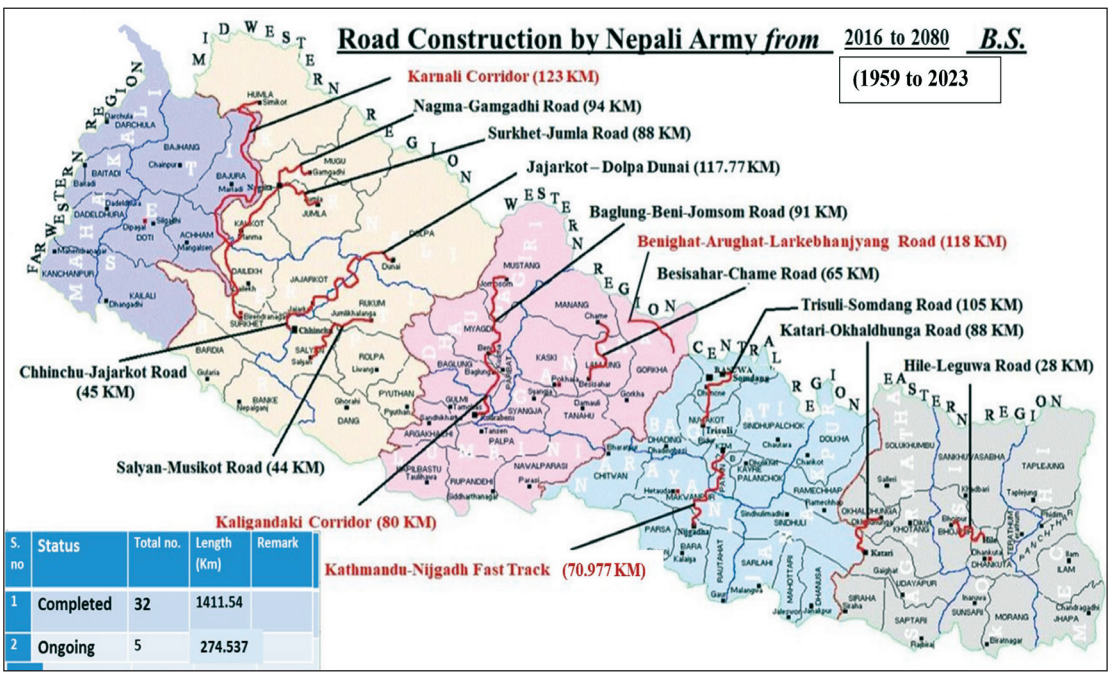

Figure 17. Road constructed by Nepali Army Directorate of Development and Construction
Source : DDC, 2025

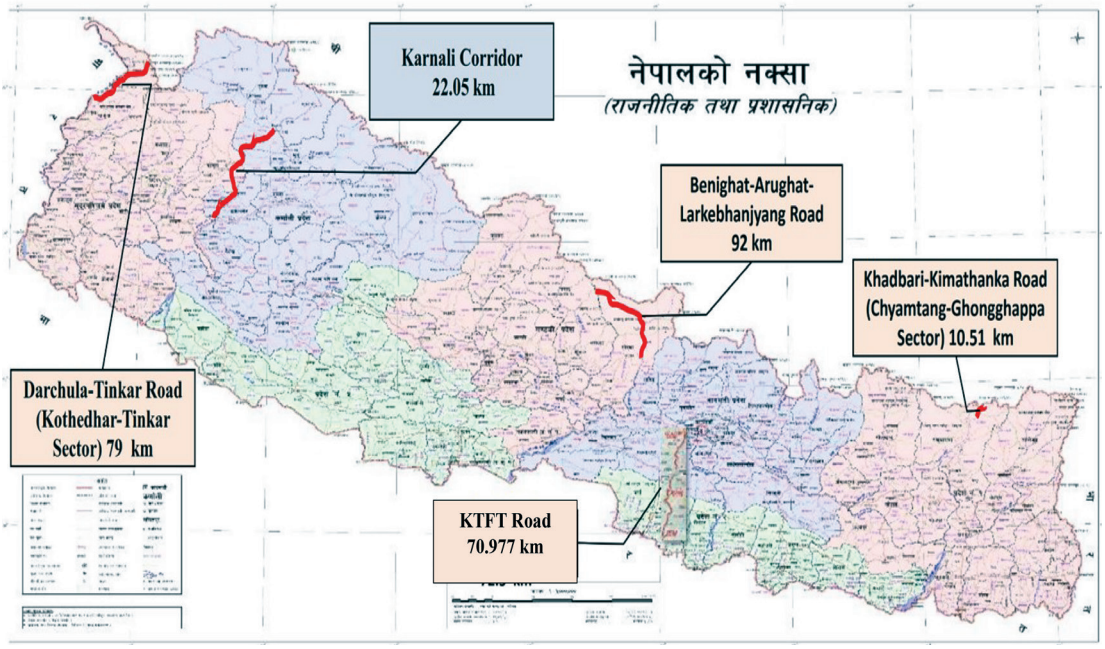

Figure 18. Roads currently undertaken by NA
Source : DDC, 2025

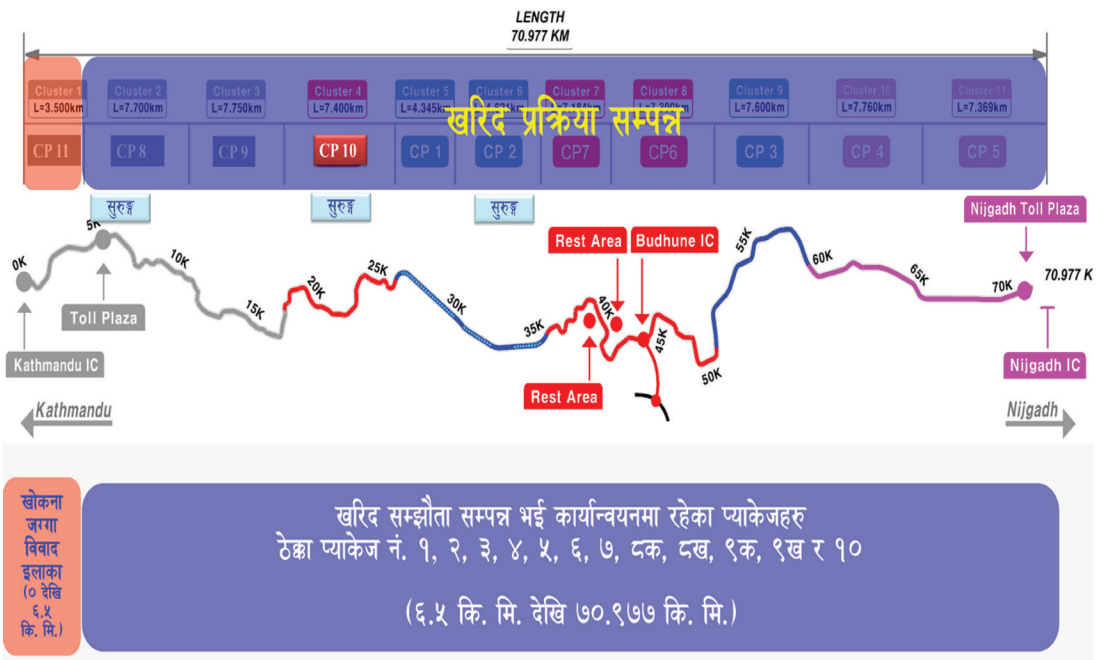

Figure 19. KTFT Road Project alignment showing different packages undergoing for construction
Source : KTFT Road Project, 2025

By constructing strategic road networks that have improved national integration and transformed isolated and underdeveloped areas, the NA has been instrumental in the country's infrastructure development. The 105-kilometer Kantipath road, which connects Kathmandu to the Indian border, and the Kharipati–Nagarkot road, which made Nagarkot a popular tourist destination in Nepal, are two significant early projects. A significant engineering accomplishment is the 105-kilometer Trishuli–Somdang road, which was completed in 1990 despite the extremely difficult northwest terrain of Kathmandu. In a similar vein, the 28-km Hile–Leghuwaghat road enhanced regional connectivity, while the 88-km Katari–Okhaldhunga road, concluded in 2005, gave communities in the Everest region access to necessities.

The 232-kilometer Surkhet–Jumla road, built mostly by the NA, is one of the most impressive projects and is frequently cited as one of the biggest achievements in contemporary Nepal. In addition to building roads, this project included rural upliftment programs like irrigation channel rehabilitation, micro-hydropower projects, and vocational training for underprivileged groups. The 86-kilometer Salyan–Musikot road, which provided access to some of the most remote and destitute areas, and the 91-kilometer Baglung–Beni–Jomsom road, which made it easier to travel through picturesque and agriculturally productive areas, are two other noteworthy contributions.

In order to balance development goals with security requirements, the army also built the 45-km Drabya Shah Marga, 37-km Satdobato–Niwel–Balua, 39-km Gorkha–Manakamana, and 45-km Gorkha–Aarughat–Orkhet roads. The 65-kilometer Besi Sahar–Chame road, which runs along the Annapurna Circuit, has greatly boosted tourism and local livelihoods in the mountainous areas. Some of Nepal's most isolated districts have been connected by additional projects like the 107-km Chhinchu–Jajarkot, 112-km Jajarkot–Dolpa, 31-km Devsthal–Chaurjahari, 145-km Musikot–Burtibang, and 91-km Nagma–Gamgadhi roads, which have improved access to services, accelerated socioeconomic development, and strengthened the Nepali Army's standing as a major force behind the country (Yadav & Adhikari, 2024; Rankin et al., 2017).

Case Study

Surkhet–Jumla Road and Its Role in National Unity and Development

In Nepal's remote Karnali region, the Surkhet–Jumla Road (about 232 km), constructed primarily by the NA, is a groundbreaking development project. Jumla was one of the most remote areas before its development, with no access to state services, markets, healthcare, or education. Along with ensuring timely completion in difficult terrain, the Army's involvement promoted trust and a sense of national belonging among local communities by symbolizing state presence.

By promoting mobility, intergroup communication, and cultural exchange, the road improved social cohesion. It improved livelihoods and decreased transportation costs by increasing trade in apples, herbs, and regional agricultural products. Through vocational training, irrigation repair, and micro-hydropower, the NA also aided in community development. The Surkhet–Jumla Road increased national cohesion, decreased regional inequalities, and incorporated distant communities into Nepal's socio-political structure by connecting the country's periphery and centre.

North-South Koshi Corridor (Khadbari–Kimanthanka Road Project)

An important part of Nepal's North-South Koshi Corridor, which connects Nepal to China, is the Khadbari–Kimanthanka Road Project in Sankhuwasabha District. Due to severe geology, security concerns, and a lack of private sector capacity, construction in the most difficult mountainous sections stalled while civil contractors finished most of the accessible alignment. Because of the NA's technical know-how, logistical prowess, and capacity to function in hazardous and difficult geographic conditions, the government of Nepal entrusted the remaining portions to it.

By blasting through rocky formations to open the last 10.51 km well below the par time of the Chyamtang–Ghonghoppa stretch in August 2025, the NA made a significant breakthrough that allowed continuity along the 162 km corridor. Prospects for regional economic growth, hydropower access, border connectivity, and trilateral trade with China and India have all greatly improved as a result of this milestone. This case highlights the necessity of clear policy coordination and civilian oversight to ensure long-term institutional balance while demonstrating how army-led infrastructure can supplement civilian efforts when private contractors are unable to deliver. The project shows how army-led infrastructure can support civilian efforts in strategically important and logistically challenging environments, even though widening and blacktopping are still pending.

Prospects, Challenges, and Discussion

Prospect

The NA's road construction projects significantly advance infrastructure development, socio-economic transformation, and national integration. Army-led road projects support national goals of connecting remote provinces with economic centres, which is in line with the NPC's Sixteenth Plan (2023/24–2028/29), which places a high priority on inclusive development, strategic connectivity, and balanced regional growth. Initiatives like the Kaligandaki Corridor and the Surkhet–Jumla link remote regions to administrative, medical, educational, and commercial hubs.

Stronger faith in state institutions is a major possibility because, in contrast to civilian contractors, communities tend to see the NA as disciplined, trustworthy, and free of corruption. Public trust in the state's ability is bolstered by the successful completion of projects in challenging environments where private contractors are hesitant. Additionally, by physically and symbolically bridging the "center-periphery" gap, increasing state visibility, and lessening feelings of abandonment, army-led infrastructure strengthens national unity.

Socio-economic opportunities include enhanced mobility for marginalized groups, employment during construction, agricultural commercialization (apples, herbs in Jumla), and increased tourism (e.g., Nagarkot, Mustang). Roads in border regions strengthen disaster response, promote cross-border trade with China and India, and enhance geostrategic positioning. Nepal aspires to greater regional integration and trilateral economic diplomacy, as evidenced by the KTFT Road Project and North-South corridors.

Contemporary Challenges

Notwithstanding its advancements, army-led road infrastructure still faces a number of socio-political, institutional, and environmental obstacles. The fuzziness of civil-military lines is one issue that sparks discussions about democratic accountability and supervision. Although the Nepali Constitution's Article 267 allows the NA to participate in development, detractors warn that a greater military presence in civilian areas could complicate role of local governments, restrict transparency, and lead to a reliance on the army rather than civilian organisations.

In the delicate Himalayan landscape, environmental issues are serious. In Karnali and Sudurpashchim province in particular, roads frequently cause landslides, deforestation, and soil erosion. Sustainability is further threatened by inadequate maintenance procedures and the lack of long-term environmental assessments. From the standpoint of governance, delays, cost overruns, and effort duplication are caused by the NPC, DoR, local governments, and the NA's disjointed coordination. Furthermore, bureaucratic red tape and delays exacerbate coordination gaps by delaying timely decision-making.

Efficient execution is impeded by political meddling and financial limitations. Despite the prioritization of national pride projects, development is hampered by delays in budget disbursements due to overlapping approval processes and disputes over land compensation. In certain areas, communities voice concerns about unequal benefit distribution, low local participation, and insufficient consultation.

Discussion

The NA's involvement in road construction is a paradox of contestation and opportunity. In keeping with the long-term goal of "Prosperous Nepal, Happy Nepali," it bolsters state legitimacy and advances the NPC's vision of "Good Governance, Social Justice, and Prosperity." It also represents a workable solution to poor governance in isolated areas. However, an ongoing reliance on the army could unintentionally jeopardize civilian organisations in charge of decentralization, infrastructure development, and democratic accountability.

Even in delicate areas, timely completion is made possible by the Army's orderly chain of command, apolitical posture, and capacity to settle land and community disputes, which promotes public confidence. On the other hand, underbidding, litigation, political shielding, which can cause projects to be delayed for decades (as demonstrated by the Melamchi Water Supply debacle), and budget deficits can cause civilian projects to stall or be abandoned. The Army's dependability makes it a unifying force in areas where civilian capacity is still limited, with 32 strategic roads completed and more in the works.

By physically connecting isolated, marginalised communities to the state and enhancing access to markets, services, and administrative institutions, army-led road construction has improved national unity. These ties increased interaction between various groups, promoted mobility and shared economic opportunities, and lessened geographic isolation. Communities felt more involved in national development as roads made it possible for the state to be present through schools, health posts, and local government, strengthening a sense of shared nationhood, trust, and belonging. Over time, this shared mobility develops interdependence, mutual understanding, and trust in national institutions. Consequently, connectivity turns isolation into inclusion and diversity into cohesion, serving as the means by which unity arises.

Nevertheless, excessive military involvement in development can weaken subnational governments' authority and restrict community engagement, transparency, and participatory planning in Nepal's federal system. Even though military-led implementation is frequently effective, it may marginalize inclusive, rights-based development strategies because it is subject to different accountability systems than civilian organisations. Maintaining institutional balance in in the best interest of people and country. Military involvement should remain complementary and time-bound, guided by cooperative planning with civilian agencies, strict oversight, social and environmental safeguards, and well-defined capacity-transfer strategies, to maximise benefits and minimise risks. Growth in infrastructure can promote inclusive governance, social cohesion, and long-term national integration with the help of such an integrated approach.

In summary, the NA's infrastructure initiatives are an essential instrument for national integration, particularly in underserved areas. The government must encourage community involvement, balance military effectiveness with democratic transparency, and establish cooperative planning processes between the NPC, the army, and civilian agencies in order to optimize benefits. By using an integrated approach, road infrastructure can be transformed into a long-term force for inclusive development, social cohesion, and national unity.

Findings, Conclusion, and Recommendation

Findings

The study shows that the NA's participation in road building has improved Nepal's social cohesiveness, national unity, and regional connectivity. The state's presence in rural and border areas has historically been constrained by factors such as poor infrastructure, political marginalization, and geographic isolation. Project completion in regions where civilian contractors failed because of challenging terrain, security issues, or financial irregularities was made possible by the NA's technically competent, disciplined, and anti-corruption structure.

Widespread public confidence in the NA's effectiveness and impartiality is evidenced by KIIs and questionnaire surveys, which view it as a representation of stability and national unity. By establishing vital connections between the economic centre and the periphery, roads like the Kathmandu–Terai/Madhesh Fast Track would increase market accessibility, state legitimacy, and mobility. Local employment, trade, tourism, and public service accessibility have all improved, according to communities along these corridors.

Nonetheless, the results also highlight governance and structural issues. Military involvement in civilian infrastructure has sparked worries about limited local participation, role duplication, and democratic oversight. Long-term threats to sustainability are posed by environmental degradation, particularly landslides and deforestation. Progression is still hampered by delays in land acquisition, budget disbursement, and agency coordination (NPC, DoR, MoD, and local governments). Notwithstanding these difficulties, the Army's participation is in line with the Sixteenth Plan of the NPC (2023/2024–2028/2029), which prioritizes inclusive, integrated, and regionally balanced infrastructure development.

Conclusion

The study comes to the conclusion that NA-led road construction is a strategic tool for state-building that goes beyond simple connectivity. It promotes national integration, strengthens the bond between the state and its citizens, and restores faith in public institutions. In order to turn geographic isolation into opportunity, the NA's credibility, organizational discipline, and technical capacity have proven crucial in implementing projects in isolated and unsafe areas.

However, it is necessary to manage this developmental militarization carefully. An over-reliance on the army for civilian infrastructure could jeopardize civil agencies' institutional autonomy. Along with infrastructures, equitable service delivery, inclusive governance, and participatory planning are crucial for national unity. Developing infrastructures can also promote shared trust and long-term cohesion through a whole-of-nation strategy that aligns the military, government, and communities. Thus, even though the army has played a crucial role in infrastructure development, it must develop within a framework that strengthens rather than replaces the ability of civilian governance.

Connectivity increases interaction and access to opportunities by bridging psychological and physical gaps. Interdependence and trust in national institutions increase as remote communities connect to markets and state services. Over time, this shared mobility transforms isolation into inclusion, making connectivity the means by which unity emerges.

This model's potential and drawbacks are best illustrated by the KTFT case, which has increased national pride and connectivity while also revealing weaknesses in interagency coordination and environmental compliance. For future of civil-military cooperation in national development, a balanced strategy that balances effectiveness with accountability is essential.

Policy Recommendations

To strengthen the developmental impact of army-led infrastructure initiatives, several key policy measures are essential

(a) **Institutionalize Civil–Military Coordination:** to guarantee agreement in project selection, budgeting, and monitoring, the NPC, Ministry of Defence, and DoR should establish a Joint Infrastructure Coordination Mechanism.

(b) **Strengthen Democratic Oversight:** To preserve the Army's professionalism within the bounds of the constitution, parliamentary committees and provincial governments should have oversight project progress, environmental compliance, and public accountability.

(c) **Integrate Environmental Safeguards:** All army-led road projects must have thorough Environmental Impact Assessments (EIAs) and plans for climate resilience, especially in delicate mountain ecosystems.

(d) **Enhance Local Participation:** In order to promote sustainability and ownership and to be in line with Nepal's federal governance structure, involve local governments and communities in the planning, payment, and maintenance stages of projects.

(e) **Establish Sustainability and Maintenance Framework:** Establish post-construction maintenance units to keep roads operational and climate-resilient, overseen by the army and local governments.

(f) **Ensure Capacity Development and Knowledge Transfer:** Encourage technical exchange initiatives between civilian engineering schools and the NA's Directorate of Development and Construction to decrease reliance and increase shared expertise.

(g) **Promote Strategic Communication and Transparency:** Public trust will be strengthened, and good governance practices will be demonstrated through regular public reporting on project milestones and expenses.

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