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An opinion survey of Delay in Road Construction in City Area and its effects

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Abstract

Purpose: *This study aims to investigate the causes and effects of delays in road construction across various areas in Nepal. Its objective is to identify the key factors contributing to these delays and examine how they affect different stakeholders, including the general public, businesses, and the government.*

Method: *This research used a mixed-method approach, combining a questionnaire survey with Focus Group Discussions (FGDs) to gather comprehensive data on road construction delays. Key stakeholders, particularly those impacted by road construction projects, were surveyed to collect their views on the causes of delays and the resulting consequences.*

Results: *There is identified several major factors causing delays in road construction projects in Nepal including frequent government changes, alterations in project design, low labor productivity, inadequate planning, political interference and protection, and a shortage of resources.*

Conclusion: *The study concludes that delays in road construction projects not only increase costs but also diminish public trust, growing public dissatisfaction. Stakeholders expressed frustration with the slow pace of construction, emphasizing its adverse effects on businesses, public health, and road safety.*

Keywords: Delayed, road construction, cost, hampered health, road accident

I. Introduction

In every country, infrastructure plays very important role to achieve high economic growth and development (Assaf et al.,1995). Among several infrastructures, role of road infrastructure is very crucial. Road transport is an important sector of economic activity, especially in developing countries, where it plays vital role in marketing agricultural products and providing access to health, education, agricultural inputs and extension services. The construction industry is one of the important ingredients for the development of the economy (Alnuaimi & Mohsin, 2013). Fan and Kang (2005) argue that various stages of a roadway project have

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distinct effects. The construction phase, in particular, generates a significant number of job opportunities and enhances the skills of the local workforce involved in the project.

The impact of road transportation in developed regions is also significant. Efficient road system gives a country a competitive edge in moving goods economically. In the opposite, lacks of accessibility or poor road conditions are obstacles to agriculture, industry and trade, and may hinder the entire development effort. Nevertheless, the contributions of transport to national development may be difficult to quantify in economic terms.

Horvat et al. (2021) state that political instability and geopolitical risks can lead to delays in road construction. Frequent changes in political power can disrupt construction by causing contract cancellation, renegotiations, or reallocations, as mentioned by (Aziz & Abdel-Hakam, 2016). Additionally, Mejia et al. (2020) point out that weather conditions, such as heavy rainfall and flooding, can further disrupt and delay road construction projects.

Construction industry, which is the leading sector in domestic market, has also become one of the leading sectors in global market. GDP from construction in Nepal increased to Rs. 153253.39 million in 2020 from Rs. 145183.18 million in 2019 (CBS, 2020). This shows the importance of the construction industry in the national economy. Construction has been an aspect of life since the beginning of human existence. Presently, the construction sector is leading and expected to spearhead modernization and industrialization in Nepal, besides to improving the livelihood of the people in the sector In Nepal, the project implementation level is very poor. Most of the projects are not completed within the given time schedule. Hence, projects have failed to achieve their desired objective. Due to delayed completion of the project, the cost of the project increases on one side, and on the other, it increases the dissatisfaction level of the common people towards the government (Agrawal et al., 2010).

Evaluating the effects of delays in road construction is essential for road users' livelihoods since it has a direct impact on a number of their everyday activities and commercial ventures. Due to longer travel times, diversions, and lower business productivity as a result of partial or complete road closures during construction, delays in road construction can result in higher expenses for road users (Amoatey & Ankrah, 2017). Businesses that depend on effective transportation networks for their operations may face severe economic consequences as a result of these delays (Stevic et al., 2022). In order to lessen the effects and guarantee a more unified project delivery, it is crucial to comprehend the reasons behind delays, which include budgetary concerns, insufficient contractor expertise, and modifications in the project's scope (Stevic et al.).

This study aims to identify the major causes of delays in road construction projects within Butwal sub-metropolitan city and their impact on the economy. By identifying key inefficiencies, the research seeks to assist authorities in addressing these issues, leading to more efficient project implementation. As road infrastructure is crucial for economic growth and poverty reduction, the study's findings are relevant beyond individual projects. The outcomes are intended to improve timelines for future construction projects and provide insights that contribute to broader economic development.

II. Reviews

Timely completion of projects is a critical benchmark for assessing both the performance of a project and the efficiency of the organization managing it. It is one of the most significant indicators of project success. Delays in construction projects often result in additional costs, extended time frames, and conflict among involved parties, including designers, contractors, and consultants (Syed et al., 2003). Despite advances in technology and management practices, delays remain a persistent issue in the construction industry worldwide.

Delays in construction projects are a common phenomenon across various regions. For instance, the construction industry in Kenya is particularly affected, with over 70% of projects missing their deadlines, often exceeding the planned duration by more than 50%. Factors such as client payment delays, bureaucratic inefficiencies, poor planning, and adverse weather conditions were found to contribute to these delays. Seboru (2015) recommends improving financial management, reducing bureaucracy, and enhancing planning processes as key solutions to mitigate these issues.

Similarly, Egypt's civil engineering projects face significant time overruns. A study that investigated 293 causes of delay identified key factors through questionnaires and the use of the Relative Importance Index (RII). The findings highlighted that while contractors and engineers tend to agree on delay causes, there is often a disconnect between contractors and consultants. The study also developed a predictive model to estimate project durations, offering insights into improving time and cost management (Aziz & Abdel-Hakam, 2016).

The effects of road construction delays in Ghana's Ashanti Region extend beyond project inefficiency, affecting the livelihoods, transportation, business activities, and health of local communities. A survey of 2,252 respondents across six road projects identified poor management, inadequate supervision, and funding issues as primary causes. The study emphasizes that delays, while disruptive, did not show a significant relationship with economic activities. Recommendations include awarding projects based on merit and improving communication among stakeholders (Obiri-Yeboah et al., 2024).

In Nepal, the construction industry significantly contributes to economic growth by providing employment and attracting foreign direct investment (FDI). However, time overruns are frequent, particularly in National Competitive Bidding (NCB) projects within municipalities. Koirala & Shahi (2024) found that more than half of the projects experienced delays due to factors such as adverse weather, limited contractor involvement, and inadequate site management, leading to significant cost overruns.

Payment delays in government-funded construction projects are a significant issue, particularly in Surkhet, where 61 projects were analyzed. The study, with high data reliability (Cronbach's alpha = 0.978), found that budget unavailability is the primary cause of delays according to both employers and contractors. Contractors also highlighted issues like procedural mistakes and material price escalation. Both parties agree that payment delays cause cash flow problems and hinder project progress. To mitigate delays, employers recommend better documentation, while contractors emphasize clearer understanding and adherence to contract terms (Paudel et al., 2024).

Further research by Subedi and Joshi (2020) in Gandaki province highlighted similar delay factors, including adverse weather, slow decision-making, and land acquisition issues. Using the RII and Cronbach's alpha, they identified these delays as major obstacles to project completion. The study advocates for improved risk management, contractual management, and pre-execution planning to reduce delays and improve project outcomes.

Despite extensive research on construction delays, significant gaps remain, especially regarding the specific impact of delays on local economies, public health, and road safety in urban settings. This is particularly evident in cities like Butwal sub-metropolitan city, where road construction delays have broader implications for business activities and overall economic health. This study seeks to address this gap by analyzing the causes and effects of delays on various sectors, offering actionable recommendations for improving project management and economic outcomes.

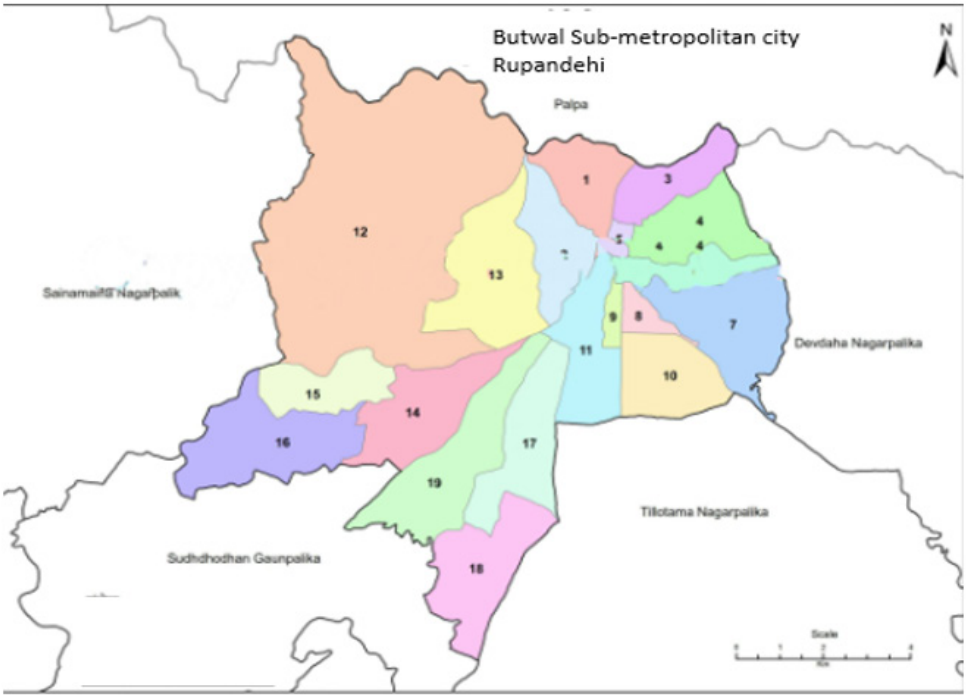
III. Methodology

The study has been undertaken through an intensive literature review and a survey on selected areas, to know the opinion of stakeholders in the study areas. The study useda questionnaire survey together with focus group discussion to obtain required information for the same purpose.

Butwal sub-metropolitan city has been purposefully selected as the study area due to the significant delays in road construction within the city's core. The slow pace of infrastructure development has adversely impacted various stakeholders, including business owners, travelers, and residents, who have faced continued disruptions. This location offers a representative case of urban road construction challenges, making it an ideal setting to investigate the underlying causes of delays and their effects on the local community and economy.

Figure 1

Map of Butwal Sub-metropolitan city, Rupandehi



The study employed a mixed-method approach, combining a questionnaire survey with Focus Group Discussions (FGDs) to gather comprehensive data on road construction delays. The FGDs were crucial in providing deeper insights beyond the survey, allowing stakeholders directly affected by the delays to share their personal experiences. Participants in the FGDs included building owners, businessmen, road users, and intellectuals, which helped capture diverse perspectives on the causes and consequences of the delays. These structured, moderated discussions fostered collaborative exploration, enabling the study to gather detailed, context-specific information on the impact of the delays.

The selection of 160 respondents for the study was carefully determined to ensure a balance between manageability and representativeness. Stratified sampling was used to categorize respondents into four key groups building owners, businessmen, road users, and intellectual

persons based on their varying levels of involvement and impact by the delays. The sample size for each group ranged from 20 to 60 respondents, depending on their relevance to the study and availability. This method ensured that each group was adequately represented, capturing a comprehensive range of experiences and making the findings more robust and generalizable to the affected population.

Table 1

Selection of Respondents

Respondents	No.	Sectors
Building owners	30	Owners whose buildings are located between Rajmarg Chauraha to Goalpark.
Businessman	60	Businessman whose businesses are located in the construction areas.
Road users	50	Those persons who use vehicles in construction areas frequently.
Experts	20	Those who are either within the Rupandehi or outside the Rupandehi district.
Total respondents	160	

Cross tabulation is a suitable analytical tool for this study. It allows us to compare responses across different stakeholder groups, visualize categorical survey data, and identify patterns or discrepancies in perceptions of road construction delays. This method helps reveal how various factors and opinions are associated with the impact of delays.

IV. Results and Discussion

Causes of Delay in Construction Projects

There are various factors that contribute to causes of delays in construction projects. These range from factors inherent in the technology and its management to those resulting from the physical, social, and financial environment (Karunakaran et al., 2019). Frequent changes in government, changes in design, low labor productivity, inadequate planning, political protection, and scarcity of resources are the predominant factors for the delay in the completion of road projects in Nepal. Kamanga and Steyn (2013) investigated the causes of delays in road construction projects in Malawi and identified several primary factors.

These included fuel shortages, insufficient cash flow and financial difficulties faced by contractors, a shortage of foreign currency affecting the importation of materials and equipment, slow payment procedures by the client for progress payments, and a lack of sufficient equipment. Sweis (2013) examined the causes of time overruns in public construction projects in Jordan and identified several key factors contributing to delays. These included an excessive number of change orders from the owner, inadequate planning and scheduling by the contractor, ambiguities and errors in the specifications and drawings, slow decision-making by the owner, and the poor qualifications of the consultants, engineers, and staff assigned to the project.

Likewise, in Nepal, the country has experienced socio-political issues such as protests, strikes, and local conflicts that have disrupted construction activities and led to project delays. Community disputes, land ownership issues, and political disagreements are the major dominant factors that impact the smooth progress of road construction projects (Khair et al., 2016). Based on the literature review, major causes of delay in the construction of road projects are listed below.

- Shortage of construction materials.

- Late delivery of construction materials.
- Shortage of skill labour, labour strike and low productivity of labour.
- Insufficient number of constructionequipment.
- Inadequate number of modern equipment in construction site.
- Inadequate fund allocation by authority.
- Delay payment to contractors and sub-contractors.
- Improper planning and scheduling of the construction work.
- Inadequate time estimating for the construction work.
- Inadequate cost estimation for the project.
- Lack of communication and coordination between different sections.
- Slow response and poor inspections form authority level.
- Inflation / (Price fluctuations).

Effects of Delay in Construction Projects

Delays are a persistent issue in the road construction sector, and time and cost overruns have been highlighted as their primary consequence. Some researchers, though, have detected additional implications of project delays in road construction. According to Kikwasi (2013), cost and time overruns, compromised quality, arbitration, conflicts, litigation, low-profit margin or financial loss, contract cancellation, and complete abandonment of the project are some of the outcomes of delays. Some of the effects in the context of Nepal are given below.

1. Owner of the building loses their house rent during the construction period.
2. Businessmen are facing many problems while searching for new places and shifting their business from the constructing location to another location. They also lose business income.
3. Constructing areas' people and road users are facing dust and health problems and their health expenses increased significantly.
4. It increased the number of road accidents and added traveling expenses in the city areas.
5. Due to delayed completion of the project, the cost of the project increases on one side, and on the other, it increases the dissatisfaction level of the ordinary people towards the government.

Perception of the Stakeholders: An Opinion Survey

To understandthe viewsand perceptions of key stakeholders, a set of questionnaires were distributed to the major stakeholders of the Butwal sub-metropolitan city consisting of total 160 respondents. Besides, an extensive discussionwith some experts was also organized to gather the required information.

Analysis of Stakeholders' Perceptions

Perceptions of the stakeholder towardsdelay in road construction in Butwal city are presented in the following tables.

In Table 2, the responses reflect a common dissatisfaction among stakeholders regarding the current pace of road construction in the city. Every respondent expressed discontent with the slow speed of construction, indicating that the delays are a significant issue. Additionally, all stakeholders agreed that these delays have a detrimental effect on business activities, underscoring the economic impact of the construction hold-ups. The health of the local population is also perceived to be negatively affected by the delays, with respondents

highlighting concerns about increased health problems due to ongoing construction. Furthermore, there is a consensus that the delays contribute to a rise in road accidents within the construction zones, illustrating the broader safety implications of the prolonged construction process.

Table 2

General Perception of the Stakeholders

Questions	Perception of the Respondents	
	Yes	No
1. Are you satisfied with the present speed of construction of road in your areas?	0	160
2. Do you feel construction of delayed in roads affect business activities?	160	0
3. Do you feel delayed in construction of roads hampered health condition of the human beings?	160	0
4. Do you feel delayed in construction of roads increases accidents in this area?	160	0

Note. Field survey, 2023

Table 3

Questions to the Businessman

Questions	Answers of the Respondents	
1. How long have you been doing business in this current place?	More than 5 years	Less than 5 years
	53	7
2. Do you feel delays in road construction directly affect your business operations?	Yes	No
	60	0
3. How much percentage of business income have you lost due to the delay in the construction of the road in this area?	Up to 30 percent	30 to 60 percent
	38	22
4. What are you thinking about the planning of business from the current place?	Shifting or planning to sell	Conducting from current place
	44	16

Note. Field survey, 2023

In Table 3, regarding conducting their business from their current place, around 90 percent of businessmen reported that they have been conducting their business from the present place for more than five years even though they are facing problems in construction areas. Around 10 percent of businessmen are conducting their businesses for less than five years. Regarding the effect on business activities due to delay in road construction, all the businessmen replied that delays in the construction of roads negatively affect business activities.

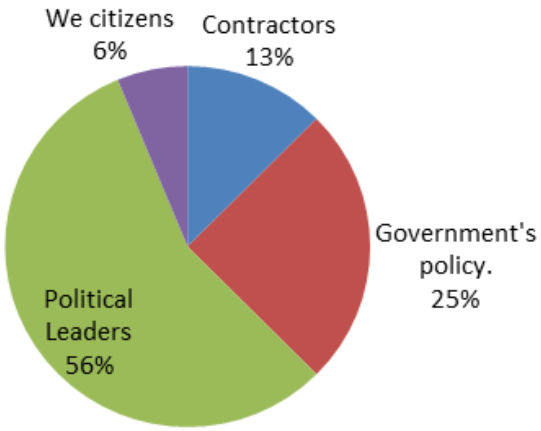
Regarding loss of income due to the delay in the construction of the road, about two-thirds of businessmen replied that their business declined up to 30% and about one-third of businessmen replied that their business declined by more than 30 to 60% because of delay in constructing roads in this area.

Similarly, regarding the planning for conducting business, about 75% of businessmen replied that they have two alternatives i.e. either it is necessary to shift from their current place to a

new place to continue their business or it is urgent to exit from business by selling others. About 25% of businessmen replied that they are planning to continue their business from a current place even if they are facing problems. They thought that after the completion of the construction, it would be very difficult to find the current place to continue the business.

Figure 2

Responsible in the Delayed in Construction of Road

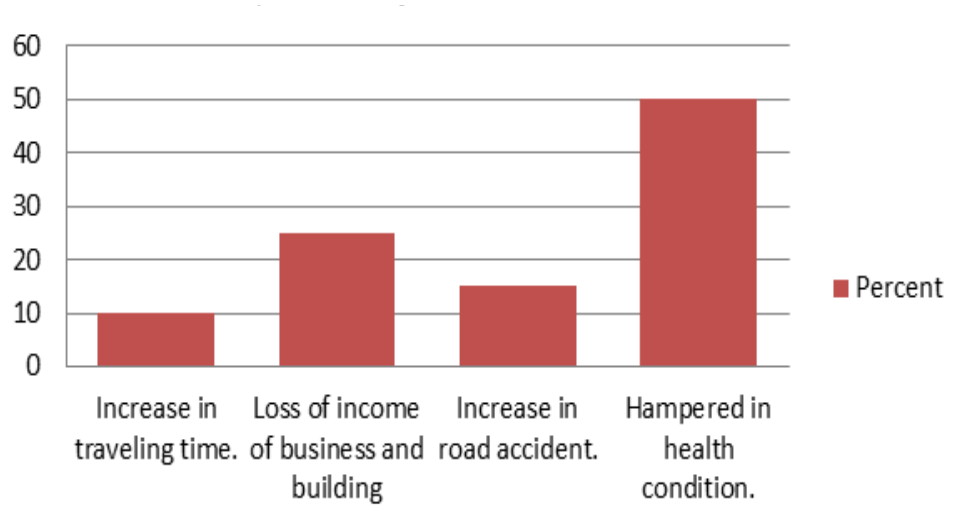


Note. Field survey, 2023

In figure2, regarding responsibility for the delayed construction of roads in the city area, many of the stakeholders (more than 50%) blamed the political leaders, 25% of stakeholders said that lack of suitable government policy, and few stakeholders are also accepted that not giving interest from the citizens' side also cause in the delayed in construction of the road in city areas.

Figure 3

Impact of Delayed in Construction of Road



Note. Field survey, 2023

In figure 3, regarding the impact of the delayed construction of roads in the city area, many of the stakeholders (50%) replied that it hampered the health conditions of the people, 25% reported that it reduces the income of business and building owners and few stakeholders replied that it increases traveling time and road accidents in the construction areas.

Table 4

Suggestion for Completion of Road

Measures for the completion of construction of road within the limited time periods	Opinion of stakeholders
Realistic duration and cost must be set for construction project.	20
Before choosing a contractor, it is necessary to examine contractors' capacity and reputation in the field of construction.	90
Government should penalty or put in black list to those contractors who could not complete their project in contract time period.	50

Note. Field survey, 2023

In Table 4, regarding the suggestion for the completion of the road within a limited time, more than 50% suggested that for completion of the road in the given time period, it is necessary to examine contractors' capacity and reputation in the field of construction before choosing a contractor. About 30% of stakeholders suggested that for completion of the road in the given time period, the government should penalize or put on a blacklist those contractors who could not complete their project in the contract time period, and about 20% of stakeholders suggested that construction of the road in the city area, many of the stakeholders (more than 50%) blamed to the political leaders, 25% of stakeholders said that realistic duration and cost must be set for construction of road projects within the limited time periods.

The study first delves into the various factors contributing to delays in construction projects, identifying issues such as material shortages, labor strikes, and inadequate planning. Previous research highlights that these delays often stem from socio-political issues, insufficient resources, and poor management practices. Supporting this, the study aligns with findings from Agrawal et al., (2010), which discuss similar infrastructure challenges in India, including delays caused by political and socio-economic factors. Alnuaimi and Mohsin (2013) provide additional support by highlighting issues in Oman, such as inadequate planning and political problems, which reinforce the study's relevance to Nepal's context.

The consequences of these delays are then explored, revealing impacts like increased costs, health problems, and diminished business income. This aligns with Kikwasi (2013), who also identified time and cost overruns, as well as other negative outcomes such as conflicts and project abandonment. The study's survey results from stakeholders in Butwal city show a unanimous dissatisfaction with the slow pace of construction, with reports indicating that delays negatively affect business operations, health, and safety.

Data presented in figures suggest that stakeholders attribute these delays primarily to political leaders and inadequate policies, highlighting significant impacts on health, business income, and road safety. Based on these findings, the study offers several recommendations, including evaluating contractors' capacities before selection, implementing penalties for delays, and setting realistic project timelines and costs to improve the efficiency of construction projects.

V. Conclusion and Implication

The construction industry is one of the important ingredients for the development of the economy. In Nepal, the project implementation level is very poor. Most of the projects are not completed within the given time schedule. Hence, projects have failed to achieve their

desired objective. All stakeholders are dissatisfied with the present speed of construction of roads in the city area. The delayed construction of roads in city areas hampered the health of the common people and also reduces the business activities of the construction areas. For the completion of the road in the given time period, it is necessary to examine the contractors' capacity and reputation in the field of construction before choosing a contractor.

Based on the analysis, the following recommendations are forwarded which were gathered from the opinion of the stakeholders in thestudy areas.

- At the time of selecting contractors, concern authority should not select contractors based only on the lowest bid. It is essential to evaluate the contractors who can complete project in agreed time and works executed by contractors. In addition to this it is essential to evaluate holding of equipment capacity, with a good reputation, financial capacity, workload and experience in modern construction technology before selecting the contractor.
- It is suggested to formulate appropriate communication channel to coordination between the stakeholders must be formed by the contracting parties to deliver smooth flow of information to avoid unnecessary delays or wrong instruction.
- Realistic duration and cost must be set for project.
- Government body, contractor and consultants should plan for their work considering weather condition of the constructing areas.
- Government should punish to those contractors who are not completing their project in contract time period.

Road infrastructure has significant impact on economic growth and development, specially in developing countries like Nepal. Efficient road systems are vital for marketing agricultural products, accessing health and education services, and overall economic activities. However, the construction industry in Nepal, despite its significant contribution to the GDP, faces severe delays in project completion. These delays stem from many factors, including political instability, inadequate planning, resource shortages, and poor stakeholder coordination. The effects of these delays are diverse, affecting business operations, health, and public safety, and undermining public trust in the government. The study highlights the necessity of selecting competent contractors, setting realistic project timelines and budgets, and improving communication channels to mitigate these delays. Ultimately, addressing these issues can enhance road infrastructure, thereby promoting economic growth and improving the quality of life.

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