



**TRIBHUVAN UNIVERSITY  
INSTITUTE OF ENGINEERING  
PULCHOWK CAMPUS**

**Thesis No: PUL074MSCoM015**

**“Assessment of Impact of COVID-19 Lockdown on Nepal's Construction  
Sector Based on Selected Construction Projects”**

**by**

**Priyanka Thapa**

**A THESIS**

**SUBMITTED TO THE DEPARTMENT OF CIVIL ENGINEERING IN  
PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE  
OF MASTER OF SCIENCE IN CONSTRUCTION MANAGEMENT**

**DEPARTMENT OF CIVIL ENGINEERING  
LALITPUR, NEPAL**

**AUGUST, 2020**

## COPYRIGHT

The author has agreed that the library, Department of Civil Engineering, Pulchowk Campus, may make this thesis freely available for inspection. Moreover, the author has agreed that permission for extensive copying of this thesis for scholarly purpose may be granted by the Professor, who supervised the project work recorded herein or, in their absence, by the Head of the Department or concerning M.Sc Program Coordinator or dean of the Institute in which this thesis was done. It is understood that the recognition will be given to the author of this thesis and to the Department of Civil Engineering, Institute of Engineering, Pulchowk Campus in any use of the material of this thesis. Copying or publication or the other use of this thesis for financial gain without approval of the Department of Civil Engineering, Pulchowk Campus, Institute of Engineering and author's written permission is prohibited.

Request for permission to copy or to make any other use of the material in this thesis in whole or in part should be addressed to:

.....  
Head  
Department of Civil Engineering  
Pulchowk Campus, Institute of Engineering  
Pulchowk, Lalitpur  
Lalitpur, Nepal

## DECLARATION

I hereby declare that the thesis entitled “**Assessment of Impact of COVID-19 Lockdown on Nepal's Construction Sector Based on Selected Construction Projects**” submitted to the Department of Civil Engineering in partial fulfilment of the requirement for the degree of Master of Science in Construction Management, is a record of an original work done under the guidance of Asst. Prof. Santosh Kumar Shrestha, Institute of Engineering, Pulchowk Campus. This thesis contains only work completed by me except for the consulted material which has been duly referenced and acknowledged.

---

Priyanka Thapa

PUL074MSCoM015

**TRIBHUVAN UNIVERSITY**  
**INSTITUTE OF ENGINEERING**  
**PULCHOWK CAMPUS**  
**DEPARTMENT OF CIVIL ENGINEERING**

The undersigned certify that they have read, and recommended by the Institute of Engineering for acceptance, a thesis entitled “**Assessment of Impact of COVID-19 Lockdown on Nepal's Construction Sector Based on Selected Construction Projects**” submitted by Priyanka Thapa in partial fulfilment of the requirements for the degree of Master of Science in Construction Management.

---

Supervisor,  
Asst. Professor Santosh Kumar Shrestha  
Department of Civil Engineering  
IOE, Pulchowk Campus

---

External Examiner,  
Er. Krishna Raj Pant,  
SDE, Commission for Investigation of Abuse  
of Authority

---

Program Coordinator,  
Asst. Professor Mahendra Dhital  
M.Sc. in Construction Management  
Department of Civil Engineering  
IOE, Pulchowk Campus

August, 2020

## ACKNOWLEDGEMENT

I would like to express my heartiest appreciation towards the Pulchowk Campus, Institute of Engineering, Tribhuvan University for providing me an opportunity to accomplish a graduation from this reputed institute. I am thankful towards the Department of Civil Engineering for providing me an opportunity to pursue this research.

I wish to express my deep gratitude and sincere thanks to my thesis supervisor, Asst. Prof. Santosh Kumar Shrestha for his encouragement, inspiration and thoughtful guidance during the course of this study.

I would also like to express my thanks to M.Sc.in Construction Management Faculty and Program Coordinator Asst. Prof. Mahendra Raj Dhital, Department of Civil Engineering for providing moral support and valuable feedback during thesis work.

I am indebted to Mr. Sanjeev Koirala, Managing Partner, Claims and Dispute Resolution Consultancy (CRDC) Pvt. Ltd and all other members of CDRC for providing me the required data to carry out this research. Besides, I would also like to thank Mr. Badri Dhungana, Consultant Engineer of HPPCL (Herbs Production and Processing Co. Ltd.) Building for his cooperation and support. Moreover, I would like to thank all those who sincerely participate in the questionnaire survey.

Last but not the least, I am very grateful to my family and friends for their continuous encouragement and support, which motivated me to work harder and achieve my goal.

Priyanka Thapa

PUL074MSCoM015

August, 2020

## ABSTRACT

Coronavirus disease 2019 (COVID-19), a global pandemic as declared by World Health Organization (WHO) is causing severe impacts in almost all aspects of life in Nepal. In response to this pandemic, Nepal Government announced country-wide lockdown from 24<sup>th</sup> March, 2020 and ended on 21<sup>st</sup> July, 2020.

This study was carried out to assess the impact of COVID-19 lockdown on Nepal's construction sector based on selected construction projects. For this purpose, case study of five ongoing construction projects was taken into account and questionnaires were distributed to responsible officials (client, consultant and contractor) of those projects.

This study intended to find out impact of COVID-19 lockdown on: supply-demand trend analysis; cost and time of construction projects. Besides, this study also intends to find the contractual issues and claims associated with COVID-19 lockdown.

The study reveals that COVID-19 caused serious disruption on supply chain, project cost and time increases due to uncertainty regarding availability of subcontractors/suppliers/labor. Impact, however differs on the nature, scale and size of the project. Besides, study also implies that contractual disputes are likely to increase due to lockdown. Each contract and its conditions have to be carefully analyzed to determine a party's specific entitlement.

There is uncertainty as to when the situation becomes normal and construction work can be carried out with optimum efficiency.

**Keywords:** *Construction, Contractual issues, COVID-19, Impact, Lockdown*

## TABLE OF CONTENTS

COPYRIGHT .....	i
DECLARATION.....	ii
ACKNOWLEDGEMENT.....	iv
ABSTRACT .....	v
LIST OF FIGURES .....	x
LIST OF TABLES .....	xi
LIST OF ACRONYMS .....	xii
CHAPTER 1: INTRODUCTION.....	1
1.1 Background:.....	1
1.2 Problem Statement:.....	2
1.3 Research Questions:.....	3
1.4 Research Objectives:.....	4
1.5 Significance of The Study: .....	4
1.6 Study Scope and Limitations: .....	4
CHAPTER 2: LITERATURE REVIEW.....	6
2.1 COVID-19 Introduction:.....	6
2.2 WHO Guidelines: .....	6
2.3 Infectious Disease Act, 2020(1964): .....	9
2.4 Construction Scenario in Nepal: .....	10
2.5 COVID-19 and Nepalese Context: .....	11
2.6 Supply Chain Management: .....	11
2.6.1 Demand and Supply: .....	12
2.6.2 Disrupted Supply Chain: .....	13
2.7 Contractual Disputes:.....	14
2.8 Cost Overrun:.....	15

2.8.1	Causes of Cost Overrun .....	15
2.8.2	Causes of Time Overrun:.....	16
2.9	Claims in Contract: .....	16
2.10	Procurement Laws of Nepal:.....	17
2.10.1	Provisions Regarding Time and Cost in Relevant Acts/Standard Documents According to Public Procurement Act and Rules 2063.....	17
2.10.2	Standard Bid Document for Procurement of Works for Above 6 Million Rupees Issued by PPMO .....	18
2.10.3	Provision Concerning Extension of Contract Period: .....	20
2.11	Excerpts from FIDIC Conditions of Contract for Construction for Building and Engineering Works Designed by The Employer, 2017 Edition:.....	20
2.11.1	Clause 20: Employer's and Contractor's Claims: .....	20
2.11.2	Clause 20.2: Claims for Payment and/or EOT: .....	21
2.11.3	Clause 20.2.1 Notice of Claim: .....	21
2.11.4	Clause 8.5: Extension of Time for Completion:.....	21
2.11.5	Clause 13.6: Adjustments for Changes in Laws.....	22
2.11.6	Clause 8.6: Delay Caused by Authorities.....	22
2.12	FIDIC Harmonised Edition ,2010 .....	23
2.12.1	Clause 17.3: Employer's Risks: .....	23
2.12.2	Clause 17.4: Consequences of Employer's Risks: .....	23
2.12.3	Clause 19.1: Force Majeure:.....	24
2.12.4	Clause 19.4: Consequences of Force Majeure .....	24
2.13	COVID- 2019 Guidance Memorandum:.....	25
<b>CHAPTER 3: METHODOLOGY .....</b>		<b>26</b>
3.1	Research Method/ Strategy:.....	26
3.2	Framework of Research: .....	27
3.3	Study Area: .....	29



3.4	Variables for Questionnaire:.....	29
3.5	Questionnaire Design.....	30
3.6	Study Population:.....	30
3.6	Sample Size: .....	31
3.7	Pilot Test:.....	31
3.8	Questionnaire Response Rate: .....	31
3.9	Qualitative Data Analysis .....	32
3.10	Quantitative Data Analysis: .....	32
CHAPTER 4: RESULTS AND DISCUSSION .....		34
4.1	From Case Study:.....	34
4.1.1	Project Details .....	34
4.1.2	Project Wise Variation Percentage in Cost: .....	39
4.1.3	Project Wise Variation Percentage in Material Cost:.....	40
4.1.4	Project Wise Variation Percentage in Equipment Cost:.....	41
4.1.5	Project Wise Variation Percentage in Manpower Cost:.....	41
4.1.6	Project Wise Variation Percentage in Extended Overhead Cost:.....	42
4.2	Results and Discussion from Questionnaire Survey .....	43
4.3	Contractual Issues Raised in Claim Document.....	51
CHAPTER 5: CONCLUSION AND RECOMMENDATIONS: .....		59
5.1	Conclusion: .....	59
5.2	Recommendations:.....	60
5.3	For Future Study: .....	61
REFERENCES .....		62
APPENDIX – A .....		67
Questionnaire.....		67
APPENDIX – B.....		74

Letters Circulated by Government .....	74
Newspaper Snapshot .....	74
Snapshot of Labour Act.....	74
APPENDIX – C.....	82
Supporting Documents- Claim Documents.....	82

## LIST OF FIGURES

Figure 2-1 : Supply Chain Management .....	12
Figure 3-1: Research Methodology Flowchart.....	28
Figure 4-1: Cost Breakdown for Melamchi Project. ....	35
Figure 4-2: Cost Breakdown for Gorkha Hospital .....	37
Figure 4-3: Cost Breakdown for HPPCL Building .....	39
Figure 4-4: Project-Wise Percentage Variation in Cost. ....	40
Figure 4-5: Project-Wise Percentage Variation in Material Cost.....	40
Figure 4-6: Project-Wise Percentage Variation in Equipment Cost.....	41
Figure 4-7: Project-Wise Percentage Variation in Manpower Cost. ....	42
Figure 4-8: Project-Wise Percentage Variation in Extended Overhead Cost.....	42
Figure 4-9: Supply Chain Trend Analysis.....	43
Figure 4-10: Impact on Time And Cost .....	46
Figure 4-11: Contractual Issues.....	49
Figure 4-12: Other Impact Factors .....	53

## LIST OF TABLES

Table 3-4: Sample Size for Questionnaire Survey .....	31
Table 3-5: Response Rate for Questionnaire Survey .....	32
Table 4-1: Cost Breakdown for Melamchi Project.....	35
Table 4-2: Cost breakdown for Gorkha Hospital .....	36
Table 4-3: Cost breakdown for Road Project. ....	38
Table 4-4: Cost breakdown for HPPCL building. ....	38
Table 4-5: Project-Wise Percentage Variation in Cost.....	39
Table 4-6: Project-Wise Percentage Variation in Equipment Cost.....	41
Table 4-7: Project-Wise Percentage Variation in Manpower Cost. ....	41
Table 4-8: Project-Wise percentage Variation in Extended Overhead Cost.....	42
Table 4-9: Supply Chain Trend Analysis .....	44
Table 4-10: Overall Survey for Supply Chain Trend Analysis .....	44
Table 4-11: Impact on Time and Cost.....	47
Table 4-12: Overall Survey for Impact On Time and Cost .....	47
Table 4-13: Impact on Contractual Issues .....	50
Table 4-14: Overall Survey for Impact on Contractual Issues .....	50
Table 4-15: Other Impact Factors.....	53

## **LIST OF ACRONYMS**

%	Percentage
ADB	Asian Development Bank
COVID-19	Coronavirus disease 2019
EoT	Extension of Time
FCAN	Federation of Contractor's Association of Nepal
FIDIC	Fédération Internationale Des Ingénieurs-Conseils
FY	Fiscal Year
GDP	Gross Domestic Product
GoN	Government of Nepal
MoHP	Ministry of Health and Population
MS	Mean Score
PPA	Public Procurement Act
PPMO	Public Procurement Monitoring Office
PPR	Public Procurement Regulations
SCC	Standard Conditions of Contract
SCM	Supply Chain Management
WHO	World Health Organization

## CHAPTER 1: INTRODUCTION

### 1.1 Background:

The COVID-19 (Coronavirus disease 2019) pandemic in Nepal is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). A country-wide lockdown came into effect on 24<sup>th</sup> March 2020, and ended on 21<sup>st</sup> July 2020 (Pradhan, 2020). As of 9 August 2020, the Ministry of Health and Population (MoHP) has confirmed a total of 22,972 cases, 16,353 recoveries, and 75 deaths in the country (MoHP, 2020).

No industry is resistant to this crisis and engineering and construction is no exception. Construction industry members including owners, developers, contractors, subcontractors and supply chain vendors have experienced varying degrees of impacts as a result of the COVID-19 pandemic (Chivilo et al., 2020).

COVID-19 crisis touch almost every aspect of the construction process, and specifically issues as: supply chain delays and impacts, scheduling and adjustments contract or project notices for default, scheduling and adjustments; project suspension, termination and reinstatement; Occupational Safety and Health Administration (OSHA) and workplace safety compliance; work force management; material, subcontractor and; risk management and insurance; claims avoidance or, alternatively, claims management; and the disputes process (Chivilo et al. 2020).

Nepalese Construction Industry contributed around 10 to 11 percentages to GDP of the country and it uses around 35 percent of government budget and about 60 percentages of the nation's development budget is spent through the use of contractors (FCAN, 2012).

In the context of Nepal, the lockdown announcement brought the entire transportation and aviation industry to sudden halt. All borders were shut and all import-export activity came to a grinding halt, with the exception of food, fuel, medical supplies and few other essentials. Construction sites in Kathmandu and other urban centres of Nepal came to a sudden halt after the lockdown. Many of the larger contracts were halted under force majeure provisions. The government did try to ease the situation on April 21<sup>st</sup> by announcing that construction sites and industries that can house and feed workers in their own premises in relative isolation and can resume operations maintaining social

distancing precautions. This however, could be applied to about 250 construction sites and industries. Due to disruptions in labour supply and other reasons, even these sites are not operating at full capacity (The Asia Foundation, 2020).

In many construction and engineering contracts, parties generally specify the time for completion and/or expressly state that time is the essence of the contract (Abhinraj, 2020). The first, immediately apparent impact of COVID-19 on construction projects is the delay and disruption of project activities, which will inevitably lead to contractors' claims for additional time and costs (Aceris Law, 2020).

Almost all current construction contracts in the country will have to go through a time extension negotiation. Time extensions further contributes to increased overhead costs and reduce contractor's profits. It is also clear that supply chains across the globe as well as in Nepal have been disrupted. This too will have a cost-escalating effect. Additional workplace safety guidelines related to pandemic such as social distancing, use of sanitizers, etc. will have to change until a vaccine becomes available. Although, cost-escalation negotiation will be needed in most contracts but according to Nepali contract laws, contracts with performance period less than 15 months do not qualify for cost extension. Many contractor of ongoing construction projects will opt for claims. Claims can run into disputes. So far, the government has not come up with any guidance on this matter. As the largest client for the construction industry in the country, if the government fails to address this problem at a policy level, each contract under dispute will have to have its own dispute resolution process and its own resolution time, which can shift timelines for reviving the sector significantly (The Asia Foundation, 2020).

## **1.2 Problem Statement:**

The global spread of Coronavirus disease 2019 (COVID-19) is generating unprecedented delays, disruptions and uncertainty on construction projects. Restrictions on travel, social distance and quarantine are constantly disrupting supply chains, contractor workforces and the availability of governmental personnel for project inspections, with resulting delays and increased costs (Epstein et al., 2020).

The risk of exposure to construction personnel is no different than normal population. Owners must abide by the health and safety provisions on the site recommendation by

concerned authorities. Due to widespread impact of COVID-19 many construction projects will face delays and disruption (KPMG, 2020).

COVID-19 is also causing supply chain disruptions, cash flow issues and funding/financial restrictions. COVID-19 also imposes commercial risks such as, increase in commodity price, escalation in labour cost, extended performance costs, and higher interest payments to the bank. If contractors are compelled to purchase construction materials from suppliers charging higher costs due to COVID-19 interruptions, owners may be asked to foot the bill. Labour costs may also be higher if contractors are forced to choose from a limited pool due to travel restrictions. If project completion dates are extended, owners are also exposed to higher costs for internal project management staff, third party construction managers, and consultants (KPMG, 2020).

The responsibility for delays, disruption, and commercial risks are typically spelled out in construction contracts and appropriately allocated to the party in the best position to mitigate such risks. Delays caused by COVID-19 impacts may be covered under a force majeure or similar clause of the contract. While COVID-19 construction risks may vary by project type, size, and location, one thing is for certain – owners will need to implement strong controls to support stakeholders and protect contractual rights (KPMG, 2020).

COVID-19 pandemic is an unprecedented event affecting all sectors and parts of the world. Construction Industry is not an exception to this. Impact of COVID-19 has been felt in Nepalese construction industry including its different aspects like supply-chain disruption, impact on time and cost, contractual issues, occupational health and safety issues and so on. How long will the direct/indirect effect of COVID-19 is going to be continued? is still uncertain. Research of this kind has not been conducted in Nepal. Thus, research associated with these issues might prove beneficial to construction stakeholders.

### **1.3 Research Questions:**

The following research questions have been developed for this study:

1. What is the impact on demand and supply of construction materials, labor and equipment due to COVID-19 lockdown?



2. What is the impact on time and cost of construction project due to COVID-19 lockdown?
3. What are the contractual provisions and issues that addresses to COVID-19 lockdown?

#### **1.4 Research Objectives:**

1. To assess the impact on supply-demand trend analysis of material, manpower and equipment due to COVID-19 lockdown.
2. To assess the cost and time impact of COVID-19 lockdown on construction projects.
3. To find the contractual issues and claims associated with COVID-19 lockdown.

#### **1.5 Significance of The Study:**

This study will:

- Give idea to concerned stakeholders regarding supply-demand trend analysis in COVID-19 or similar pandemic situation.
- Give idea about bottle-neck causes to any project.
- Give construction stakeholders some insights about optimum utilization of material and resources in any similar situations.
- Give idea to concerned stakeholders about preparing contingency plan to counter-act against similar pandemic so that project would not have to face cost and time overrun.
- Give construction stakeholders some insights about the contractual issues associated with claim.
- Also explain the reason for cost and time overrun due to COVID-19.

#### **1.6 Study Scope and Limitations:**

- This research was based on the case study of selected construction projects. Hence, outcomes obtained from this research cannot be generalized.
- Case study projects were chosen as per convenience and access of the researcher because construction claim data of construction projects cannot be obtained conveniently.

- Since the impact of COVID-19 is still ongoing, data taken for this research are based on real-time data. The value may vary with time depending on the circumstances.
- Impact is interpreted from the claim documents which is purely contractor's perspective. Value of claim amount may be accepted or rejected depending on the circumstances.
- Cost and time impact and contractual issues/ claims related data due to COVID-19 is found out from selected construction projects only.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 COVID-19 Introduction:**

Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus. Most people infected with the COVID-19 virus will experience mild to moderate respiratory illness and recover without requiring special treatment. Older people, and those with underlying medical problems like cardiovascular disease, diabetes, chronic respiratory disease, and cancer are more likely to develop serious illness (WHO, 2020).

In response to COVID-19, countries across the globe have implemented a range of public health and social measures, including movement restrictions, partial closure or closure of schools and businesses, quarantine in specific geographic areas and international travel restrictions (WHO, 2020).

COVID-19 is transmitted primarily through respiratory droplets or contact with contaminated surfaces. Work-related exposures can occur anytime at the workplace, during work-related travel to an area with local community transmission, as well as on the way to and from the workplace (Koh & David, 2020).

The risk of work-related exposure to COVID-19 depends on the probability of coming into close (less than 1 metre) or frequent contact with people who may be infected with COVID-19 and through contact with contaminated surfaces and objects. Risk levels may be useful in carrying out a workplace risk assessment for exposure to COVID-19 and planning for preventive measures in non-healthcare workplaces. In these risk categories, persons referred to as 'known to be or suspected of being infected with COVID-19' generally refers to persons who have already had a positive test or diagnosis. Although such persons should be cared for in isolation, some occupations may still have a higher risk of exposure (WHO, 2020).

### **2.2 WHO Guidelines:**

Considerations for public health and social measures in the workplace in the context of COVID-19 as published by WHO with annex to considerations in adjusting public health and social measures in the context of COVID-19 (10<sup>th</sup> May, 2020):

"In response to COVID-19, countries across the globe have implemented a range of public health and social measures, including movement restrictions, partial closure or closure of schools and businesses, quarantine in specific geographic areas and international travel restrictions. As the local epidemiology of the disease changes, countries will adjust (i.e. loosen or reinstate) these measures accordingly. As transmission intensity declines, some countries will begin to gradually re-open workplaces to maintain economic activity. This requires establishing protective measures, including directives and capacity to promote and enable standard COVID-19 prevention in terms of physical distancing, hand washing, respiratory etiquette and, potentially, thermal monitoring, as well as monitoring compliance with these measures."

"On 16 April 2020, WHO published interim guidance that provides advice on adjusting PHSM (Public Health and Social Measures) while managing the risk of resurgence of cases. A series of annexes was developed to help guide countries through adjusting various public health measures in different contexts."

"COVID-19 is transmitted primarily through respiratory droplets or contact with contaminated surfaces (Koh & David, 2020). Work-related exposure can occur anytime at the workplace, during work-related travel to an area with local community transmission, as well as on the way to and from the workplace (Belingeri et al., 2020)."

"The risk of work-related exposure to COVID-19 depends on the probability of coming into close (less than 1 metre) or frequent contact with people who may be infected with COVID-19 and through contact with contaminated surfaces and objects. The following risk levels may be useful in carrying out a workplace risk assessment for exposure to COVID-19 and planning for preventive measures in non-healthcare workplaces."

"Low exposure risk: Jobs or work tasks without frequent, close contact with the general public and other co-workers, visitors, clients or customers, or contractors, and that do not require contact with people known to be or suspected of being infected with COVID-19."

"Medium exposure risk –Jobs or work tasks with close, frequent contact with the general public, or other co-workers, visitors, clients or customers, or contractors, but that do not

require contact with people known to be or suspected of being infected with COVID-19."

"High exposure risk –Jobs or work tasks with high potential for close contact with people who are known or suspected of having COVID-19, as well as contact with objects and surfaces possibly contaminated with the virus."

"Preventive measures: Decisions on closing or re-opening of workplaces and suspension or downscaling of work activities should be made in light of the risk assessment, the capacity to implement preventive measures, and recommendations of national authorities for adjusting public health and social measures in the context of COVID-19."

"Measures for all workplaces: Universal measures for preventing transmission of COVID-19 that apply to all workplaces and all people at the workplace, such as employers, managers, workers, contractors, customers and visitors, include the following:

#### Hand hygiene

- Regular and thorough handwashing with soap and water or hand hygiene with alcohol-based hand-rub.
- Hand hygiene stations, such as hand washing and hand rub dispensers.

#### Respiratory hygiene

- Promote respiratory etiquette by all people at the workplace. Ensure that medical face masks and paper tissues are available at the workplace.
- Develop a policy on wearing a mask or a face covering in line with national or local guidance. Masks may carry some risks if not used properly.

#### Physical distancing

- Introduce measures to keep a distance of at least 1 meter between people and avoid direct physical contact with other persons (i.e. hugging, touching, shaking hands), strict control over external access, queue management (marking on the floor, barriers).

- Cirrincione et al. (2020) stated to reduce density of people in the building (no more than 1 person per every 10 square meters), physical spacing at least 1 metre apart for work stations and common spaces, such as entrances/exits, lifts, pantries/canteens, stairs, where congregation or queuing of employees or visitors/clients might occur.
- Minimize the need for physical meetings, e.g. by using teleconferencing facilities.
- Avoid crowding by staggering working hours to reduce congregation of employees at common spaces such as entrances or exits.
- Implement or enhance shift or split-team arrangements, or teleworking.
- Defer or suspend workplace events that involve close and prolonged contact among participants, including social gatherings.
- Reduce and manage work-related travels.
- Cancel or postpone non-essential travel to areas with community transmission of COVID-19, provide hand sanitizer to workers who must travel, advise workers to comply with instructions from local authorities where they are travelling, as well as information on whom to contact if they feel ill while travelling.
- Workers returning from an area where COVID-19 transmission is occurring should monitor themselves for symptoms for 14 days and take their temperature twice a day; if they are feeling unwell, they should stay at home, self-isolate, and contact a medical professional."

### **2.3 Infectious Disease Act, 2020(1964):**

- (1) This Act may be called as the "Infectious Disease Act, 2020 (1964)".
  - (2) "It shall extend to the all over the Nepal."
  - (3) "It shall come into force immediately."
  - (4) "Powers to make special provisions."
- 
- (1) "Where any infectious disease develops or spreads or is likely to spread on the human beings throughout the Nepal or any part thereof, Government of Nepal may take necessary action to root out or prevent that disease and may issue necessary orders applicable to the general public or a group of any persons."
  - (2) "Government of Nepal may designate any official and confer necessary powers to such official to make necessary arrangements in order to root out or

prevent any infectious disease that has been developed or spread or is likely to spread on the human beings."

(3) "Without prejudice to the generality of sub-section (1) or (2), Government of Nepal may issue necessary orders for the purpose of conducting examination of any animals, birds being transported on foot or by any means of conveyance or of any passengers and holding any passengers by the official designated for examination in quarantine in hospitals or other places where the official is doubtful that such passengers have developed any infectious disease or of inspecting or controlling the transportation or movement by any means."

#### **2.4 Construction Scenario in Nepal:**

The construction of physical infrastructures, their rehabilitation and maintenance has become an important aspect of national economy. Nepalese Construction Industry contributed around 10 to 11 percentages to GDP of the country and it uses around 35 percent of government budget and about 60 percentages of the nation's development budget is spent through the use of contractors (FCAN, 2012).

Construction industry is regarded as the backbone of nation building as more than that of 70% of the gross capital formation is contributed by this sector. In Nepal, this industry contributes over 8% of GDP and has growth rate of more than that of the national average (Pandey, 2069).

This industry is one of the major contributors to the process of the development of the country. The wide range of output provides the basis for social and economic development of many sectors (Pandey, 2069).

GDP from Construction in Nepal increased to 55,121 NPR Million in 2018 from 50,595 NPR Million in 2017. GDP from Construction in Nepal averaged 36,923.28 NPR Million from 2001 until 2018, reaching an all-time high of 55,121 NPR Million in 2018 and a record low of 27,225.05 NPR Million in 2001 (Central Bureau of Statistics, 2018).

## **2.5 COVID-19 and Nepalese Context:**

Nationwide lockdown was announced on 24<sup>th</sup> March, 2020. The lock-down imposed by Nepal 's government effectively banned all movements of all people except to buy food and other essential items. After the lockdown, construction sites in Kathmandu and other urban areas came to a sudden halt. After 3-4 days due to lack of supplies and government enforcement of the lockdown, closed construction activities. Many of the larger contracts were halted under force majeure provisions (The Asia Foundation, 2020).

(The Asia Foundation, 2020) states that some of the construction sites with camp facilities operated for a few more days but they too came to a gradual halt due to the lack of official guidance and lack of supplies. The government did try to ease the situation on April 21 by announcing that construction sites and industries that can house and feed workers in their own premises in relative isolation can resume operations with due social distancing precautions but this “easing” could be applied to about 250 construction sites and industries. Due to disruptions in labour supply and other reasons, even these sites are not operating at full capacity.

Based on the post-pandemic revision of national accounts, the construction sector output for the year 2019-20 is expected be Rupees 488 Billion, which represents a contraction of 0.31 percent over the previous year. The sector employed 978,000 workers in 2018. Since the sector has been growing at an average rate of 9 percent each year since 2018, we can assume that the pre-pandemic employment numbers could have been around 1.2 million. Economist Paul Krugman has equated the effects of lockdowns on the economy to the effects similar to medically-induced coma on the human body—the longer the lockdown stays, the longer will be the recovery period and larger the risk of longer-term damages. (The Asia Foundation, 2020).

## **2.6 Supply Chain Management:**

The Supply chain management (SCM) is a concept that has originated in the manufacturing industry to control logistics. It reflects a management process by which enterprises administer and control the worldwide network of suppliers, factories, warehouses, distribution centres and retailers through which raw materials are purchased, transformed and distributed to customers. In construction, procurement and procurement



related activities occur during all stages of a construction project. Because of inevitable complexity and fragmentation of the construction process, supplies of resources like equipment, labour, material and other services are related (Nandhini et. al, 2017).

Finally, a simplified model for supply chain management in the construction industry is presented.

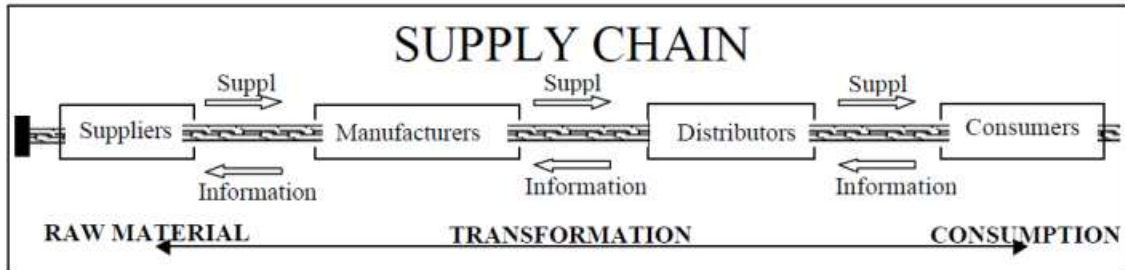


Figure 2-1: Supply Chain Management

In Fig. 2-1 is an example of a very simple supply chain for a single product. In this case, raw material is procured from vendors, transformed into finished goods in a single step, and then transported to distribution centres, and finally to customers. However, the realistic supply chains have multiple end products with shared components, facilities and capacities. SCM looks across the entire supply chain, rather than just at the next entity or level, and aims to increase transparency and alignment of the supply chain’s coordination and configuration, regardless of functional or corporate boundaries (Cooper & Ellram, 1993).

### 2.6.1 Demand and Supply:

Demand is the rate at which consumers want to buy a product. At higher prices, more of the commodity will be available to the buyers. This is because the suppliers will be able to maintain a profit despite the higher costs of production that may result from short-term expansion of their capacity. The market conditions also bring about situations in which the effects of demand and supply may affect building material price levels (Ortbals, 2004).

The concept of demand, which represents the market activity of consumers, can be defined as “the quantity of a good or service that consumers will be willing to purchase at any given price during a specific period of time, holding all other factors constant”. While the concept of supply can be defined as “the relationship between the price of a

good or service and the quantity that producers are willing and able to make available for sale in a given period of time, holding other things constant” (Klein, 1983).

### **2.6.2 Disrupted Supply Chain:**

According to The Asia Foundation (2020), lockdown announcement brought the entire transportation and aviation industry to sudden halt. Since, all borders were shut, all import-export activity came to a grinding halt. Even mining and quarrying that occurs in remote, isolated areas were stopped, despite there being no epidemiological reason to go to that an extreme. The cement industry, which depends on mining and quarrying of limestone was left without raw material. The crusher industry, which produces aggregate for concreting, was similarly stalled. Nepal’s steel milling, rolling and forging industries depend entirely on imported steel. Because India too was in a lockdown state and global supply chains as well are disrupted. Nepal’s construction steel industry is also likely to run out of stock soon. Import of raw materials for wires, pipes, and paints have not been allowed either. Brick kilns have not been able to replenish their coal stocks. The lockdown has created completely avoidable scarcities at the core of the construction industry. Even if India’s lockdown eases and the global supply chain recovers in the next 4-6 weeks, the supply chain of essential construction materials in Nepal is likely to remain disrupted for around three months after the lockdown is lifted and imports are allowed to resume.

In most large-value contracts (Rupees 50 million or more), contractors tend to source labour through labour contractors. Depending on the size of labour demand, many labour contractors in turn pass the hiring and payroll management functions to the labour foremen. The foremen then source potential workers from communities and villages in groups. The hiring chain, below the contractor, operates mostly on co-dependencies, trust, and relationships. Disruption of this kind is likely to induce inefficiencies once the recovery begins. The entire network will have to be restored, the labour contractors will have to recall or rehire the foremen, the foremen will have to bring their groups or find other groups, and the individual workers have to be ready to go back to work. Even if contractors wanted to ramp up construction activities immediately after the lockdown eases, factors like these will cause further delay (The Asia Foundation, 2020).

The busiest time in the construction industry is after the festivals get over in November and before the rains begin in June. The lockdown started on March and ended on July. Most construction sites operate at 10-15 percent capacity during June, July and August because once the rains start, seasonal workers return to their farms and roads travel becomes difficult and rains disrupt construction activities due to monsoon. It picks up slightly during September and slows down for the festivals in October. Given this cycle, a majority of the 1.33 million workers will not be re-employed until November of 2020, even if all other conditions, including the epidemic, become better in the next 6-8 weeks (The Asia Foundation, 2020).

## **2.7 Contractual Disputes:**

According to Abinraj (2020), there are multiple consequences of the lockdown, which would further increase the troubles for the sector like reverse migration, disruption of supply chains, amongst others. Cumulatively, all these circumstances would cause hindrance in meeting the obligations under the construction and engineering contracts and would lead to multiple legal wrangles for the industry post lifting of the current restrictions.

Almost all current construction contracts in the country will have to go through a time extension negotiation. Cost-escalation negotiation as well will be needed in most contracts. Claims can result into disputes. So far, the government has not come up with any guidance on this matter. As the largest client for the construction industry in the country, if the government fails to address this problem at a policy level, each contract under dispute will have to have its own dispute resolution process and its own resolution time, which can shift timelines for reviving the sector significantly (The Asia Foundation, 2020).

The predicted barrage of claims and disputes in thousands of contracts will have to be handled systematically and not on a case by case basis. A rapid survey of on-going contracts has to be carried out to identify which cost items have been genuinely affected by the pandemic and a guidance on how to handle cost escalation claims issued at the earliest so that contractual disputes do not get trapped in negotiations. The faster the government can manage to procure and pay, the faster will be the recovery of the sector

and faster will the money be in the hands of the construction workers who need the most (The Asia Foundation, 2020).

## **2.8 Cost Overrun:**

Cost overrun is described as the ratio of the change in the original contract amount to the original contract award amount. For the ease of comparison, the cost overrun can be converted into a percentage value. Mathematically it can be expressed as (Endut et al., 2005):  $\text{Final Contract Amount} - \text{Original Contract Amount} = \text{Cost overrun (Cost deviation)}$ . Chitkara (2011) reported that the cost is the budgeted expenditure, which the client agrees to commit to creating or acquiring the desired construction facility. Cost overrun is the difference between the actual final cost of a construction project at completion and the contract amount, agreed by the contractor the owner during the signing of the contract. Cost overrun also called cost increase, cost escalation or budget overrun. Cost overrun is a common problem worldwide, but it is a significant challenge in developing countries.

### **2.8.1 Causes of Cost Overrun**

Cost overrun is a major problem in both developed and developing countries. The causes of cost overrun in construction projects are varied, some are not only hard to predict but also difficult to manage. According to a study made in Turkey by Arditi and Pattanakitchamroon (2006), the important sources for cost overruns were found to be inflationary pressures, increases in material prices and workmen's wages, difficulties in obtaining construction materials, construction delays, deficiencies in cost estimates prepared by public agencies and unexpected sub soil conditions. From the study of factors influencing construction time and cost overruns for high-rise projects in Indonesia were found due to inflation, inaccurate material estimating and the degree of project complexity. The other factors were attributed to problems in finance and payment arrangements, poor contract management, material shortages, changes in site conditions, design changes, mistakes and discrepancies in contract documents, mistakes during constructions, price fluctuations, inaccurate estimating, delays, additional work, shortening of contract periods, and fraudulent practices and kickbacks (Nega, 2008).

### **2.8.2 Causes of Time Overrun:**

Time overrun is one of the most serious issues in construction industry globally. "Construction time overrun is the change between a project's actual contract period at the time of tender and its final contract period on which construction project is completed." Time overrun can result in many negative impacts on the construction project like budget overrun, low productivity, contract expiration, work acceleration resulting in bad quality, and disputes among construction stakeholders. It is observed that many construction projects face the issue of time overrun worldwide both in developing and developed countries like USA or UK. More than 40% of projects in construction industry experiences time overrun. Construction industry is not famous in terms of project completion within time. Ignorance of time overrun analysis resulted in many construction projects failing to complete on the given time frame. The major causes of time overrun for 47 % building construction project in Pakistan were economic issues faced by the contractors, inexperienced contractors, weather impact, and delay in supply of materials at site, mistakes in design, shortage of skilled labours, incompetent subcontractor, and errors in time estimation (Muhammed, 2019).

Effects of cost overrun are not confined to the construction industry but are reflected in the state of the overall economy of a country. They state that delays and cost overruns in construction projects prevent the planned increase in property and service production from taking place, and this phenomenon in turn affects, in a negative way, the rate of national growth (Arditi et al., 2006).

### **2.9 Claims in Contract:**

In the complex, risky, multiparty-involved, and dynamic nature of the construction business, completing a project successfully without any deviation from the primary contract is almost impossible. Changes and claims are, therefore, inevitable, especially in major projects. Construction claims are discerned as a time-consuming and expensive process, requiring great human endeavour and know-how to process them successfully. (Wilson, 1998). It is determined as an assertion to the right to additional money and extended performance time (Kumaraswamy, 1997). As a consequence, poorly managed practices significantly lead to the occurrence of many problems.

When unexpected events occur during construction processes, it is vigilant to inform the other party about the situation since it might result in claims afterward. The management of construction claims involves documentation not only for substantiating the claimant's entitlement but also for the assessment of such claims (Kartam,1999). Moreover, there are some aspects that should be considered during the process of filing a claim. Notification of a claim is required by a typical contract. Settlement through negotiation needs experts who have skills for negotiation with the objective to resolve claims in a non-adversarial manner since litigation and arbitration are too expensive and consume a lot of time. Since claims are used to indicate problems encountered during the construction process (Semple et al., 1999), many efforts have been made to identify their root causes in various areas with diverse framework objectives in order to enhance construction practices. In addition, the aspects of shortcomings in claim management processes have been extensively discussed. It has generally, been observed that issues originate from an ineffective documentation system when the project personnel fail to keep proper records (Jergeas & Hartman, 1995).

## **2.10 Procurement Laws of Nepal:**

### **2.10.1 Provisions Regarding Time and Cost in Relevant Acts/Standard Documents According to Public Procurement Act and Rules 2063**

Clause No. 53: Amendment to Procurement Contract

"A procurement contract may be amended by written consent of both the parties subject to non-alteration of the basic nature or scope of the work."

Clause No. 54: Variation Order

"If the circumstances that could not be foreseen at the time of signing of procurement contract arise in the course of implementation of the procurement contract, the competent authority may, by stating clear reasons thereof, issue as prescribed, a variation order for a variation up to fifteen percent and the variation order above it may be issued as per Government of Nepal, Council of Ministers by complying with the procedures as prescribed."

Clause No. 55: Price Adjustment in Procurement Contract

"If price needs to be adjusted in the course of implementation of a procurement contract having duration exceeding fifteen months the competent authority may adjust price."

Clause No. 56: Provision Concerning Extension of Contract Time Period:

"If the period of procurement contract is to be inevitably extended due to force majeure, failure of public entity to make available the materials to be made available by it or other reasonable causes, the competent authority may extend the period on the prescribed ground."

**2.10.2 Standard Bid Document for Procurement of Works for Above 6 Million Rupees Issued by PPMO**

Force Majeure:

"Force Majeure means an exceptional event or circumstance which is beyond a Party's control; which such Party could not reasonably have provided against before entering into the Contract; which, having arisen, such Party could not reasonably have avoided or overcome; and, which is not substantially attributable to the other Party."

Clause No. 27: Extension of the Intended Completion Date

"Project Manager shall extend the intended completion date if a compensation event occurs or a variation is issued which makes it impossible for completion to be achieved by the intended completion date."

"The following shall be Compensation Events:

- (a) The Employer does not give access to a part of the Site by the Site Possession Date pursuant to GCC 20.1.
- (b) The Employer modifies the Schedule of Other Contractors in a way that affects the work of the Contractor under the Contract.
- (c) The Project Manager orders a delay or does not issue Drawings, Specifications, or instructions required for execution of the Works on time.
- (d) The Project Manager instructs the Contractor to uncover or to carry out additional tests upon work, which is then found to have no Defects.
- (e) The Project Manager unreasonably does not approve a subcontract to be let.

(f) Ground conditions are substantially more adverse than could reasonably have been assumed before issuance of the Letter of Acceptance from the information issued to bidders (including the Site Investigation Reports), from information available publicly and from a visual inspection of the Site.

(g) The Project Manager gives an instruction for dealing with an unforeseen condition, caused by the Employer, or additional work required for safety or other reasons.

(h) Other contractors, public authorities, utilities, or the Employer does not work within the dates and other constraints stated in the Contract, and they cause delay or extra cost to the Contractor.

(i) The advance payment is delayed.

(j) The effects on the Contractor of any of the Employer's Risks.

(k) The Project Manager unreasonably delays issuing a Certificate of Completion.

(l) Force majeure events as determined by the Project Manager."

#### Clause No. 28: Acceleration

"When the Employer wants the Contractor to finish before the intended completion date, the Project Manager shall obtain priced proposals for achieving the necessary acceleration from the Contractor."

#### Clause No. 31: Early Warning

"Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the work, increase the Contract Price, or delay in the execution of the Works."

#### Clause No. 37: Changes in the Contract Price:

"If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item more than 25 percent, provided the change exceeds two percent of the initial contract price, the Project Manager shall adjust the rate to allow for the change."

#### Clause No. 38: Variations

"The Contractor shall provide the Project Manager with a quotation for carrying out the Variation when requested to do so by the Project Manager."



#### Clause No. 45: Price Adjustment

"Prices shall be adjusted for fluctuation in the cost of inputs only if provided for in the SCC. If so provided the amounts certified in each payment certificate, before deducting for Advance Payment, shall be adjusted by applying the respective price adjustment factor to the payment amount due."

#### **2.10.3 Provision Concerning Extension of Contract Period:**

"(1) Provisions concerning the extension of period of procurement contract shall be as provided in the concerned procurement contract.

(2) Notwithstanding anything contained in Sub-section (1), if the period of procurement contract is to be inevitably extended due to force majeure, failure of the Public Entity to make available the materials to be made available by it or other reasonable causes, the competent authority may extend the period on the prescribed grounds upon submission of application by the person obtaining procurement contract."

#### **2.11 Excerpts from FIDIC Conditions of Contract for Construction for Building and Engineering Works Designed by The Employer, 2017 Edition:**

##### **2.11.1 Clause 20: Employer's and Contractor's Claims:**

Clause 20.1: Claims

"A Claim may arise:

- (a) if the Employer considers that the Employer is entitled to any additional payment from the Contractor (or reduction in the Contract Price) and/ or to an extension of the DNP;
- (b) if the Contractor considers that the Contractor is entitled to any additional payment from the Employer and/or to EOT; or
- (c) if either Party considers that he/she is entitled to another entitlement or relief against the other Party. Such other entitlement or relief may be of any kind whatsoever (including in connection with any certificate, determination, instruction, Notice, opinion or valuation of the Engineer) except to the extent that it involves any entitlement referred to in sub-paragraphs (a) and/or (b) above."

**2.11.2 Clause 20.2: Claims for Payment and/or EOT:**

"If either Party considers that he/she is entitled to any additional payment by the other Party (or, in the case of the Employer, a reduction in the Contract Price) and/or to EOT (in the case of the Contractor) or an extension of the DNP (in the case of the Employer) under any Clause of these Conditions or otherwise in connection with the Contract, the following Claim procedure shall apply":

**2.11.3 Clause 20.2.1 Notice of Claim:**

"The claiming Party shall give a Notice to the Engineer, describing the event or circumstance giving rise to the cost, loss, delay or extension of DNP for which the Claim is made as soon as practicable, and no later than 28 days after the claiming Party became aware, or should have become aware, of the event or circumstance (the "Notice of Claim" in these Conditions). If the claiming Party fails to give a Notice of Claim within this period of 28 days, the claiming Party shall not be entitled to any additional payment, the Contract Price shall not be reduced (in the case of the Employer as the claiming Party), the Time for Completion (in the case of the Contractor as the claiming Party) or the DNP (in the case of the Employer as the claiming Party) shall not be extended, and the other Party shall be discharged from any liability in connection with the event or circumstance giving rise to the Claim".

**2.11.4 Clause 8.5: Extension of Time for Completion:**

"The Contractor shall be entitled subject to Sub-Clause 20.2 [Claims for Payment and/or EOT] to Extension of Time if and to the extent that completion for the purposes of Sub-Clause 10.1 [Taking Over the Works and Sections] is or will be delayed by any of the following causes:

- (a) a Variation (except that there shall be no requirement to comply with Sub-Clause 20.2 [Claims For Payment and/or EOT]);
- (b) a cause of delay giving an entitlement to EOT under a Sub-Clause of these Conditions;
- (c) exceptionally adverse climatic conditions, which for the purpose of these Conditions shall mean adverse climatic conditions at the Site which are Unforeseeable having regard

to climatic data made available by the Employer under Sub-Clause 2.5 [Site Data and Items of Reference] and/or climatic data published in the Country for the geographical location of the Site;

*(d) Unforeseeable shortages in the availability of personnel or Goods (or Employer-Supplied Materials, if any) caused by epidemic or governmental actions; or*

*(e) any delay, impediment or prevention caused by or attributable to the Employer, the Employer's Personnel, or the Employer's other contractors on the Site."*

#### **2.11.5 Clause 13.6: Adjustments for Changes in Laws**

"Subject to the following provisions of this Sub-Clause, the Contract Price shall be adjusted to take account of any increase or decrease in Cost resulting from a change in:

(a) the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws)

(b) the judicial or official governmental interpretation or implementation of the Laws referred to in sub-paragraph (a) above;

(c) any permit, permission, license or approval obtained by the Employer or the Contractor under sub-paragraph (a) or (b), respectively, of Sub-Clause 1.13 [Compliance with Laws]; or

(d) the requirements for any permit, permission, licence and/or approval to be obtained by the Contractor under sub-paragraph (b) of Sub-Clause 1.13 [Compliance with Laws], made and/or officially published after the Base Date, which affect the Contractor in the performance of obligations under the Contract. In this Sub-Clause "change in Laws" means any of the changes under sub-paragraphs (a), (b), (c) and/or (d) above."

#### **2.11.6 Clause 8.6: Delay Caused by Authorities**

"If:

(a) the Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities or private utility entities in the Country;

(b) these authorities or entities delay or disrupt the Contractor's work; and

(c) the delay or disruption was Unforeseeable, then this delay or disruption will be considered as a cause of delay under sub-paragraph (b) of Sub-Clause 8.5 [Extension of Time for Completion]."

## **2.12 FIDIC Harmonised Edition ,2010**

### **2.12.1 Clause 17.3: Employer's Risks:**

"The risks referred to in Sub-Clause 17.4 [ *Consequences of Employer's Risks* ] below, insofar as they directly affect the execution of the Works in the Country, are:

- (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country,
- (c) riot, commotion or disorder within the Country by persons other than the Contractor's Personnel,
- (d) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity,
- (e) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,
- (f) use or occupation by the Employer of any part of the Permanent Works, except as may be specified in the Contract,
- (g) design of any part of the Works by the Employer's Personnel or by others for whom the Employer is responsible, and
- (h) *any operation of the forces of nature which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventive precautions."*

### **2.12.2 Clause 17.4: Consequences of Employer's Risks:**

"If and to the extent that any of the risks listed in Sub-Clause 17.3 above results in loss or damage to the Works, Goods or Contractor's Documents, the Contractor shall promptly give notice to the Engineer and shall rectify this loss or damage to the extent required by the Engineer."

"If the Contractor suffers delay and/or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Engineer and shall be entitled subject to Sub-Clause 20.1 [*Contractor's Claims*] to:

(a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [*Extension of Time for Completion*], and (b) payment of any such Cost, which shall be included in the Contract Price. In the case of sub-paragraphs (f) and (g) of Sub-Clause 17.3 [*Employer's Risks*], Cost plus, profit shall be payable.

After receiving this further notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [*Determinations*] to agree or determine these matters."

### **2.12.3 Clause 19.1: Force Majeure:**

In this Clause, "Force Majeure" means an exceptional event or circumstance:

- (a) which is beyond a Party's control,
- (b) which such Party could not reasonably have provided against before entering into the Contract,
- (c) which, having arisen, such Party could not reasonably have avoided or overcome, and
- (d) which is not substantially attributable to the other Party.

"Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (a) to (d) above are satisfied:

- (i) war, hostilities (whether war be declared or not), invasion, act of foreign enemies,
- (ii) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war,
- (iii) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel,
- iv) munitions of war, explosive materials, ionising radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and
- (v) *natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.*"

### **2.12.4 Clause 19.4: Consequences of Force Majeure**

"If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [*Notice of Force Majeure*], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 20.1 [*Contractor's Claims*] to:

- (a) an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.4 [*Extension of Time for Completion*], and
- (b) if the event or circumstance is of the kind described in sub-paragraphs (i) to (iv) of Sub-Clause 19.1 [*Definition of Force Majeure*] and, in the case of subparagraphs (ii) to (iv), occurs in the Country, payment of any such Cost, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 18.2 [*Insurance for Works and Contractor's Equipment*].

After receiving this notice, the Engineer shall proceed in accordance with Sub-Clause 3.5 [*Determinations*] to agree or determine these matters."

### **2.13 COVID- 2019 Guidance Memorandum:**

COVID-19 Guidance Memorandum to users of FIDIC Standard Forms of Work Contract states that:

"Firstly, it may be necessary to obtain legal advice as to whether a particular event constitutes a change in the Laws of the Country (including the introduction of new Laws and the repeal or modification of existing Laws) or in the judicial or official governmental interpretation of such Laws. Emergency laws or decrees that are issued right now across the world in different jurisdictions are likely to be treated as a change in Laws, given the broad definition of Laws provided in FIDIC forms. It should also be noted that this definition covers a wide range of legislation as well as regulatory actions from “*any legally constituted public authority*” and therefore can apply to national parliamentary acts through to state-wide action and down to very local levels, such as a municipal order. Users should not be limited to thinking that the word “Laws” refers to legislation only."

## CHAPTER 3: METHODOLOGY

Research is systematic investigation or enquiry where data are collected, analysed and interpreted in some way in an effort to “understand, describe, predict or control an educational or psychological phenomenon or to empower individuals in such contexts” (Martens, 2005). The first phase of the research includes comprehensive literature review in order to support the methodological framework. Various literature on impact of COVID-19 on construction sector was reviewed.

The second phase includes the analysis of impact of COVID-19 based on the data obtained from selected construction projects. Also, questionnaire survey was carried out to find the extent of impact COVID-19 lockdown exerted on construction sector in Nepal based on statistical analysis. In order to achieve the research objectives, contractual claim data from construction projects was found out and the obtained data was analysed and discussed. Quantitative data analysis was performed by using statistical software such as Microsoft Excel.

### **3.1 Research Method/ Strategy:**

There are two types of basic approaches to any research, the quantitative and the qualitative approach. The quantitative approach includes the acquiring of data in quantitative form, which can be subjected to statistical analysis in a systematic way. This study adopted mix design. Basically, case study and quantitative/correlation method was used for this study. Case Study of five ongoing construction projects was done to find the impact of COVID-19 lockdown. Information like basic project details, contract agreement, project type, contract amount, project status with respect to planned completion date and planned budget, etc. were taken into account. Most importantly, claim documents submitted by contractor due to COVID-19 lockdown was considered for this research. Extensive literature review was done to find variables associated with questionnaire and those variables were correlated accordingly and developed into questionnaire. The results obtained from questionnaire was analysed quantitatively and ranking was done accordingly. Qualitative method was also followed since the last two questions were text based questions(qualitative) which were optional for the respondents. They were listed for gaining additional opinion regarding the topic.

### 3.2 Framework of Research:

S.N.	Objectives	Data Collection Method	Required Data
1	To assess the impact on supply-demand trend analysis of material, manpower and equipment due to COVID-19 lockdown.	<ul style="list-style-type: none"> <li>○ Literature Reviews</li> <li>○ Questionnaire survey</li> </ul>	<ul style="list-style-type: none"> <li>○ Variables for questionnaire survey</li> </ul>
2	To assess the cost and time impact of COVID-19 lockdown on construction projects.	<ul style="list-style-type: none"> <li>○ Literature reviews</li> <li>○ Questionnaire survey</li> <li>○ Case Study of Selected Construction Projects.</li> </ul>	<ul style="list-style-type: none"> <li>○ Claim documents associated with EOT &amp;EOC</li> <li>○ Variables for questionnaire survey.</li> </ul>
3	To find the contractual issues and claims associated with COVID-19 lockdown.	<ul style="list-style-type: none"> <li>○ Literature reviews</li> <li>○ Questionnaire survey</li> <li>○ Case Study of Selected Construction Projects.</li> </ul>	<ul style="list-style-type: none"> <li>○ Claim documents and contractual provisions associated with it.</li> <li>○ Provisions in contract clauses associated with claim.</li> </ul>



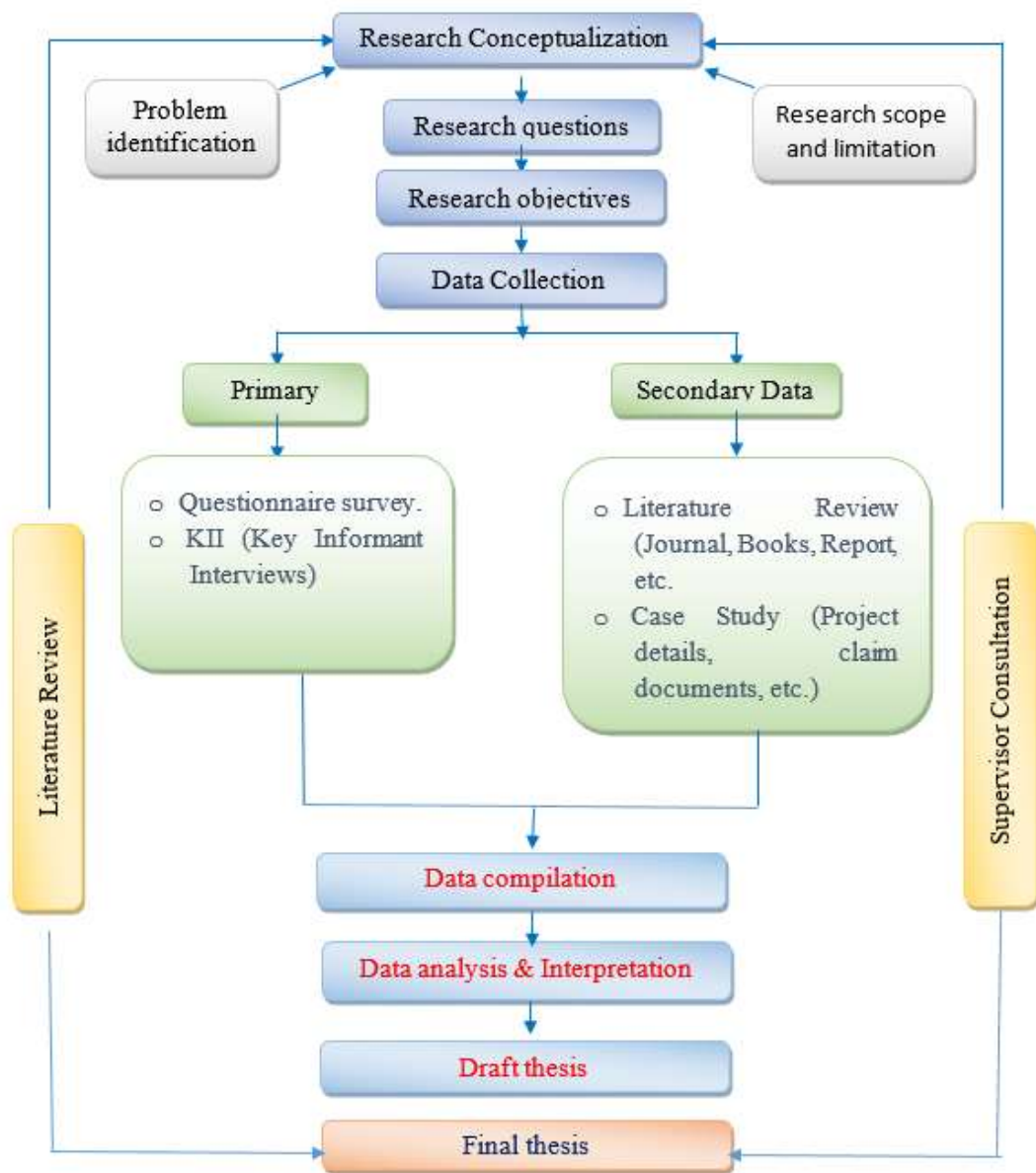


Figure 3-1: Research Methodology Flowchart

### **3.3 Study Area:**

The study covers 5 construction projects impacted by COVID-19.

1. Construction of Gorkha Hospital.
2. Upgrading/Improvement of Birendra Chowk (Udayapur)-Bhiman (Sindhuli) Section of Dharan-Chatara-Gaighat-Katari-Sindhuli-Hetauda Road.
3. Melamchi water supply development board (Package 1) (Head works)
4. Melamchi water supply development board (Package 2) (Tunnel works)
5. Building Construction of Herbs Production and Processing Corporation Limited (HPPCL)

### **3.4 Variables for Questionnaire:**

Based on the objectives, variables were defined for questionnaire which were obtained from published literature, journals, publication of different multinational agencies.

Enough time was given for the respondents to answer the questionnaire.

A five point Likert scale was used to indicate the impact of COVID-19 on construction sector. Based on statements provided, opinion of respondents was perceived as “5” for Strongly agree, “4” for Agree, “3” for Neutral, “2” for disagree and “1” for strongly disagree.

For first objective that is "to assess impact on supply-demand trend analysis", nine statements were provided which were mostly based on the following variables:

- Sudden halt of transportation and aviation industry.
- Availability/Unavailability/Shortage of material and manpower.
- Functioning of Construction Equipment and local industries.

For second objective that is "to assess impact on cost and time of project", eleven statements were provided which were mostly based on the following variables:

- Availability of subcontractors, suppliers and labor.
- Government Guidelines.
- Additional Project Cost.
- Cash flow problem
- Bank issues.
- Stored/Unused materials and equipment,
- Idle equipment and manpower.

- Timing of lockdown.

For third objective that is " to find contractual issues and claim", eight statements were provided which were mostly based on the following variables:

- Government response at policy level.
- Contractual Provisions.
- Contractor's response to COVID-19 lockdown.

Further, to find other impact factors due to COVID-19 lockdown, six statements were provided which were mostly based on the following variables:

- Immediate and long term effects.
- Construction practice/working culture.
- Local people response.
- Functioning of bank.

### 3.5 Questionnaire Design

- ❖ Part A: General Information
- ❖ Part B: Likert Scale Questionnaire

Table 3-3: Likert Scale

Part – B options	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Scale	1	2	3	4	5

- ❖ Part C: Opinion Questions

Opinion Question1: Key recommendations to address COVID-19 or other similar kind of pandemic in the future.

Opinion Question 2: Any additional thing to be added from respondent side.

### 3.6 Study Population:

Participation of the study cover the responsible officials of employers, consultant and contractors working in these 5 projects. Sample Size considered is small because the personnel considered for this sample size are technical officer level or higher like engineer, contract manager and other construction personnel because it is assumed that response obtained from those would give right justification to the given questions.

### 3.6 Sample Size:

Sample size is chosen as per the Slovin's formula  $n = N / (1 + Ne^2)$

Where  $n$  = Number of samples,  $N$  = Total population and  $e$  = Error tolerance (10%)

Here Total population is 46 (Client and Contractor)

$e$  = Error tolerance (10%)

As per the Slovin's formula number of sample  $n = N / (1 + Ne^2)$

$= 46 / (1 + 46 \times 0.10^2)$

Total number of sample is 39 number say 39

Chosen from client = 11

Chosen from contractor = 18

Chosen from consultant = 10

Table 3-4: Sample size for Questionnaire Survey

Organization	Total Population	Sample Size
Employer	12	11
Contractor	23	18
Consultant	11	10
Total	46	39

### 3.7 Pilot Test:

Pilot test was carried out by distributing the developed questionnaires to 5 employees from each client, consultant and contractor of other similar construction projects before distributing and the feedbacks/comments were incorporated. With the help of Google forms and printed copy, the questionnaire was distributed thereafter.

### 3.8 Questionnaire Response Rate:

Detailed questionnaires were designed and distributed to find the impact of COVID-19 lockdown on Nepal's Construction Sector. For this purpose, questionnaires were distributed to major stakeholders (Consultant, Client and Contractor). Considering the time constraint, questionnaires were distributed to all forty-six members although the sample size was only thirty-nine. Thirty-seven responded to the questionnaire. Hence, response rate with respect to sample size was 96%.

Table 3-5: Response Rate for Questionnaire Survey

S.N	Respondent	Questionnaire distributed	Questionnaire Returned	Response Rate wrt Sample Size	Remarks
		No	No	%	
1	Client	12	11	100%	Questionnaire was distributed to all regardless of sample size.
2	Contractor	23	16	89%	
3	Consultant	11	10	100%	
	<b>Total Average</b>	46	<b>37</b>	<b>96%</b>	

### 3.9 Qualitative Data Analysis

The last two question were text based questions which were optional for the respondents. They were listed for gaining additional opinion regarding the topic. Since this question was optional and only eleven respondent answered to this. Obtained answers were carefully examined to identify common themes – topics, ideas and patterns of meaning that come up repeatedly. The theme was compared with the result from quantitative analysis and the final conclusion was generated especially for the recommendation part.

### 3.10 Quantitative Data Analysis:

“Mean Score” method is adopted to find the impact of COVID-19 lockdown on Nepal's construction sector. Likert’s scale of five ordinal measures (1, 2, 3, 4 and 5) of agreement towards each statement was used to calculate the mean score for each factor that is used to determine the relative ranking.

The mean score (MS) for each variable are computed by using the following formula, (Chan & Kumaraswamy, 1996)

$$MS = \frac{\sum (f \times S)}{N}$$

Where:

MS – Mean Score

f– Frequency of responses for each score

N– Total number of responses concerning each factor

Where ‘S’ is score given to each research variable by the respondents and ranges from 1 to 5 when 1 is “Strongly disagree” and 5 is “Strongly agree”.

Mean Score (MS) was obtained separately for client, consultant and contractor. Among the mean scores obtained, with the help of MS- Excel, weighted average for each variables were found out. Then, ranking was done to each variable. Based on the result from questionnaire survey as well as case study, conclusions were drawn out.

## CHAPTER 4: RESULTS AND DISCUSSION

### 4.1 From Case Study:

#### 4.1.1 Project Details

##### 1 Melamchi Water Supply Development Board (Package 1):

Contract Agreement was done between Melamchi Water Supply Development Board and Sino Hydro Corporation Limited, China for the Construction of headwork remaining works. The scope of work includes the supply, installation, Construction, testing and Commissioning with one-year operation and maintenance of headwork of the Melamchi Water Supply Project, Melamchi Diversion Scheme.

##### Project Details:

Type of Client: Public

Project Start Date: 19<sup>th</sup> October, 2019

Planned Completion Date: 11<sup>th</sup> Jan, 2021

Project Duration (Planned) :15 months

Initial Contract Amount: NPR 1,02,81,83,831.76(with VAT)

Project Status: Ahead of the Schedule

##### Impact of COVID on this project:

Contractor has requested for the **Extension of Cost of NPR 2,94,15,715** due to COVID.

(Data as of 2<sup>nd</sup> Aug,2020)

##### 2 Melamchi Water Supply Development Board (Package 2):

Contract Agreement was done between Melamchi Water Supply Development Board and Sino Hydro Corporation Limited for the Construction of tunnel remaining works. The scope of work includes the supply, installation, construction, testing and commissioning with one year operation and maintenance of headwork of the Melamchi Water Supply Project, Melamchi Diversion Scheme.

##### Project Details:

Type of Client: Public

Project Start Date: 6<sup>th</sup> October, 2019

Planned Completion Date: 4<sup>th</sup> October 2020

Project Duration (Planned) :12 months

Contract Amount: NPR 85,01,94,458.98 (with VAT)

Project Status: Ahead of the Schedule

Impact of COVID on this project:

Contractor has requested for the **Extension of Cost of NPR 1,80,71,757** due to **COVID**.

(As of 2<sup>nd</sup> Aug,2020)

Since the data taken for this research is based on real-time data, cost break-down done in table 4-1 was calculated from March 23<sup>rd</sup> 2020 to April 25<sup>th</sup> 2020. Cost breakdown on the basis of Manpower, Materials, Equipment and other factors is tabulated as follows:

Table 4-1: Cost breakdown for Melamchi Project.

S.N.	Description	Amount	%weightage	Remarks
1	Manpower	13,237,201.95	59%	% weightage is calculated with reference to total claim amount
2	Materials	1,761,293.77	8%	
3	Equipment	6,130,942.80	27%	
4	Others	1,351,062.00	6%	
Total		<b>22,480,500.52</b>	100%	

Note: The additional costs caused by the Corona virus COVID 19 is calculated from March 23<sup>rd</sup> 2020 to April 25<sup>th</sup> 2020 by the contractor.

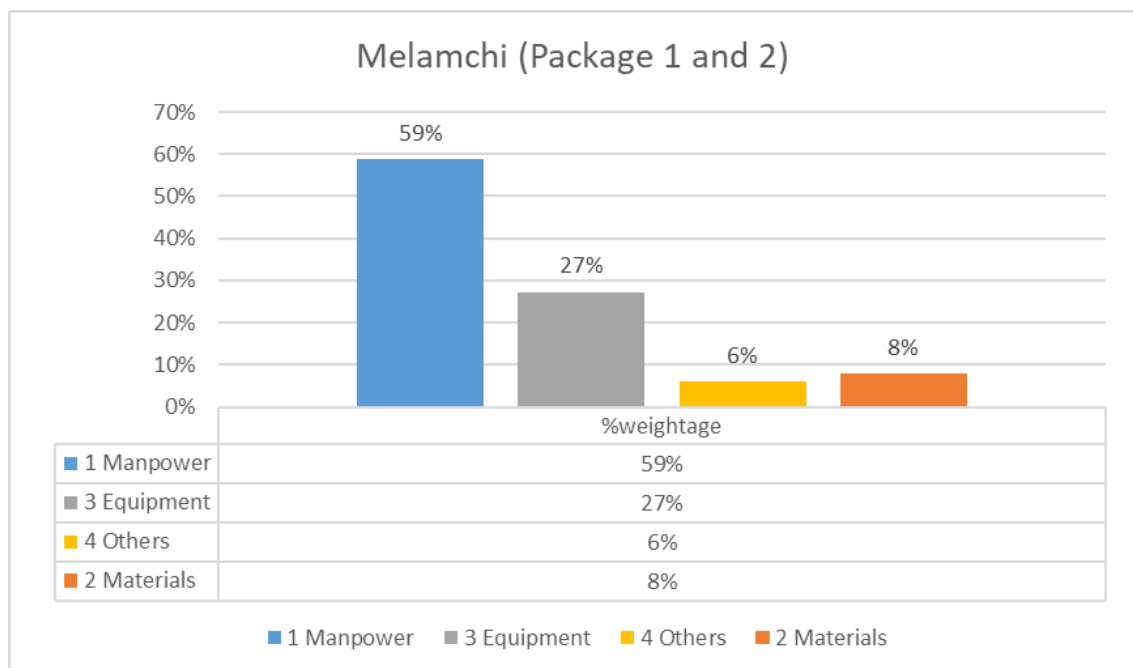


Figure 4-1: Cost breakdown for Melamchi Project.



### 3 Construction of Gorkha Hospital:

Contract Agreement was done between Lumbini Builders Pvt. Ltd, Ministry of Health and Population, Hydroplan Consultants and John Sanday Associates for the construction of Gorkha District Hospital at Gorkha.

#### Project Details:

Type of Client: Public

Project Start Date: 19<sup>th</sup> June, 2019

Planned Completion Date: 20<sup>th</sup> Aug, 2020

Project Duration (Planned) :430 days

Initial Contract Amount: NPR 41,83,09,650.88 (without VAT)

%Progress Planned: 95%

%Progress Achieved: 45%(As of 2<sup>nd</sup> Aug,2020)

Project Status: Behind the Schedule

Planned Expenditure till date :90%

Actual Expenditure till date: 30% (As of 2<sup>nd</sup> Aug,2020)

#### Impact of COVID on this project:

Contractor has requested for **Extension of Time(EOT)** of **135 days** due to COVID-19.

Contractor has requested for **Extension of Cost (EOC)** of **NPR 2,75,49,544.03** due to **COVID-19**.

Cost Breakdown Associated with different factors on this project is as follows:

Table 4-2: Cost breakdown for Gorkha Hospital

S.N.	Description	Amount	%weightage	Remarks
1.	Manpower Cost	32,50,600	12%	% weightage is calculated with reference to total claim amount.
2.	Equipment Cost	37,20,000	14%	
3.	Extended Overhead	1,54,96,138.55	56%	
4.	Material at Site	50,82,805.48	18%	
Total =		2,75,49,544.03	100%	

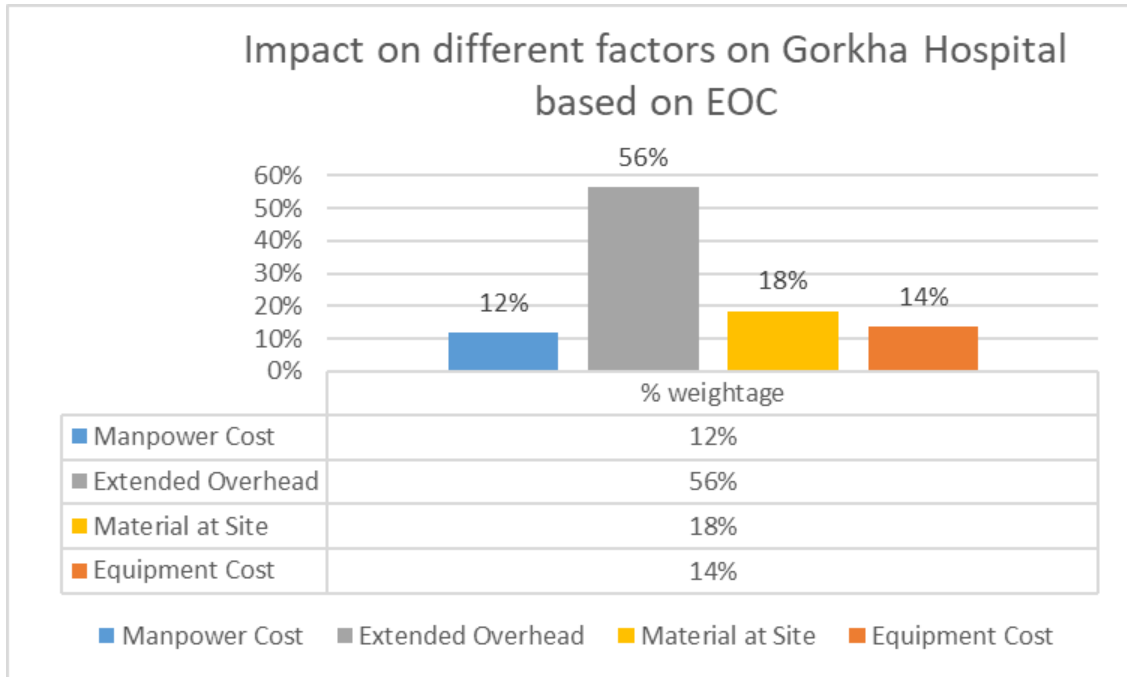


Figure 4-2: Cost breakdown for Gorkha Hospital

#### **4 Upgrading/Improvement of Birendra Chowk (Udayapur)-Bhiman (Sindhuli) Section.**

Contract Agreement was done between Dharan-Chatara-Gaighat-Katari-Sindhuli-Hetauda Road Project, Department of Road and M/S ZIEC-Sharma-Lama JV, Kathmandu for Upgrading/Improvement of Birendra Chowk (Udayapur)-Bhiman (Sindhuli) Section.

##### Project Details:

Type of Client: Public

Project Start Date: 22<sup>nd</sup> November, 2016

Planned Completion Date: 22<sup>nd</sup> November, 2019

Project Duration (Planned) :36 months (195 days)

Initial Contract Amount: NPR 7,36,99,84,218.97 (without VAT)

Project Status: Behind the Schedule (Project has been extended 3 times and revised completion date considering EOT 3 is 27<sup>th</sup> January, 2021)

EOT-1 granted: 195 days

EOT-2 granted: 78 days

EOT-3 granted: 160 days

Impact of COVID on this project:

Contractor has requested for the **Extension of time of 68 days due to COVID.**

EOT Breakdown due to COVID-19 lockdown associated with different factors is as follows:

Table 4-3: Cost breakdown for Road Project.

S.N.	Description	Days
1.	Totally stoppage of work due to COVID-19	27
2.	Remobilization	13
3.	Partial work due to COVID-19	28
Total =		68

## **5 Building Construction of Herbs Production and Processing Corporation Limited (HPPCL)**

Project Details:

Type of Client: Public

Project Start Date: 3<sup>rd</sup> Chaitra, 2076

Planned Completion Date: 1<sup>st</sup> kartik, 2077

Project Duration (Planned) :240 days

Initial Contract Amount: NPR 38500000 (without VAT)

Project Status: Ongoing

Impact of COVID-19 on this project:

Contractor has requested for the **Extension of Cost of NPR 11,31,000 due to COVID.**

Table 4-4: Cost breakdown for HPPCL building.

S.N.	Description	Amount	%weightage	Remarks
1.	Manpower Cost	1,69,650	15%	% weightage is calculated with reference to total claim amount.
2.	Equipment Cost	2,00,000	18%	
3.	Extended Overhead	1,30,000	11%	
4.	Material at Site	6,31,350	56%	
Total =		11,31,000	100%	

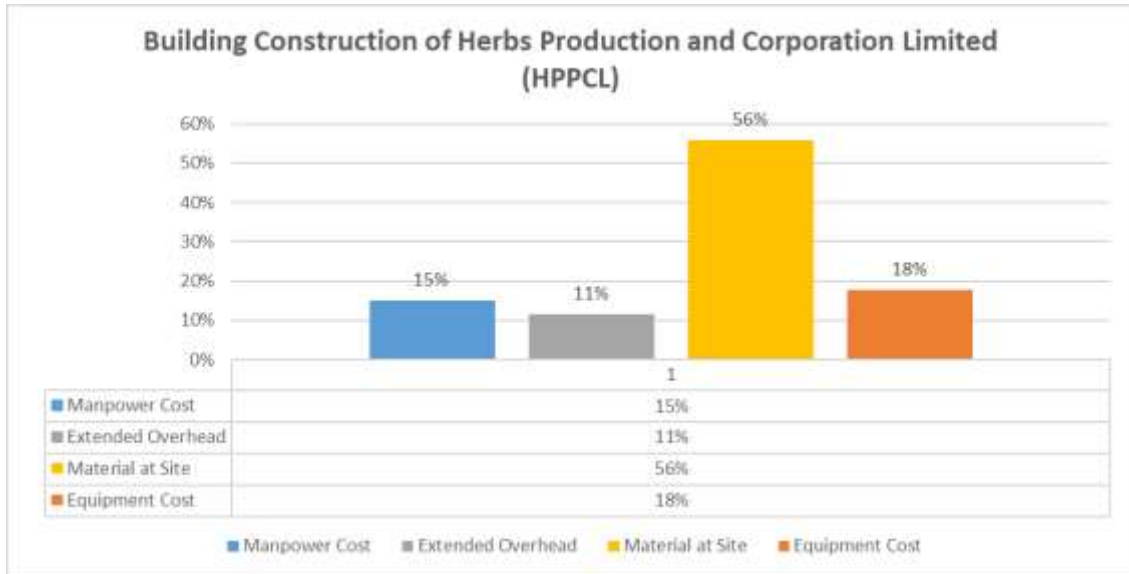


Figure 4-3: Cost breakdown for HPPCL building

#### 4.1.2 Project Wise Variation Percentage in Cost:

Due to COVID-19, percentage variation of each project based on claim amount by contractor with respect to total project cost is tabulated as:

Table 4-5: Project-wise percentage variation in cost.

S.N.	Project Name	Cost Claim due to COVID-19	% Variation (claim due to COVID-19)
1	Construction of Gorkha Hospital	27,549,544.03	7%
2	Melamchi (Package 1) Head works	29,415,715.00	3%
3	Melamchi (Package 2) Tunnel Works	18,071,757.00	2%
4	HPPCL Building Construction	1,131,000.00	3%
5	Upgrading/Improvement of Birendra Chowk(Udayapur)-Bhiman (Sindhuli) Section Road	-	0%

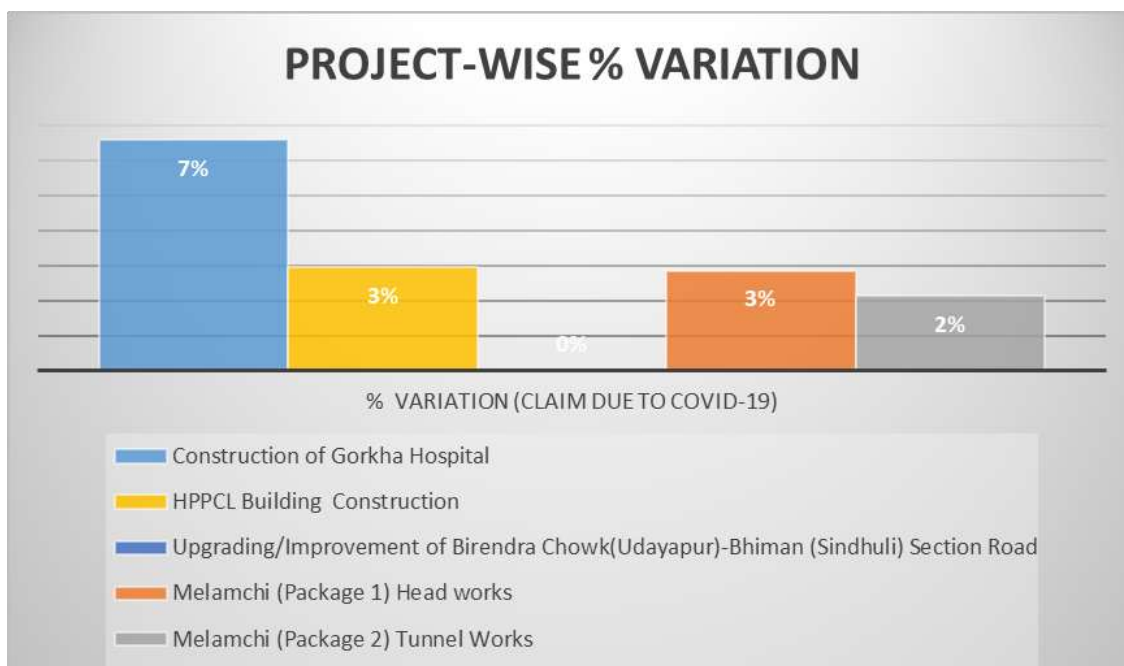


Figure 4-4: Project-Wise Percentage Variation in Cost.

#### 4.1.3 Project Wise Variation Percentage in Material Cost:

Due to COVID-19 lockdown, percentage variation on material cost of each project, based on claim amount by contractor with respect to total claim amount of each project is tabulated as:

Table 4-6: Project-Wise Percentage Variation in Material Cost.

S.N.	Project Name	% Variation due to COVID-19
1	Construction of Gorkha Hospital	18%
2	Melamchi (Package 1 and Package 2)	8%
3	HPPCL Building Construction	56%

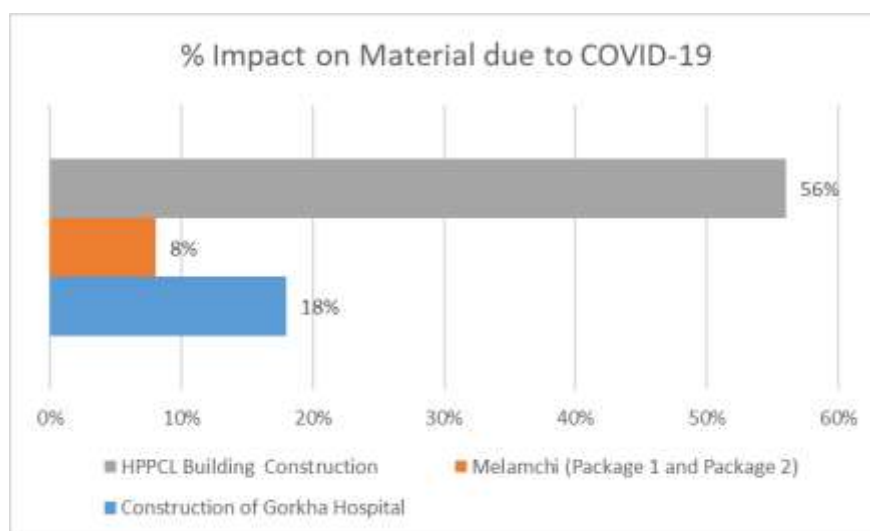


Figure 4-5: Project-Wise Percentage Variation in Material Cost.

#### 4.1.4 Project Wise Variation Percentage in Equipment Cost:

Due to COVID-19 lockdown, percentage variation on equipment cost of each project, based on claim amount provided by contractor with respect to total claim amount of each project is tabulated as:

Table 4-6: Project-wise percentage variation in equipment cost.

S.N.	Project Name	% Variation due to COVID-19
1	Construction of Gorkha Hospital	14%
2	Melamchi (Package 1 and Package 2)	27%
3	HPPCL Building Construction	18%

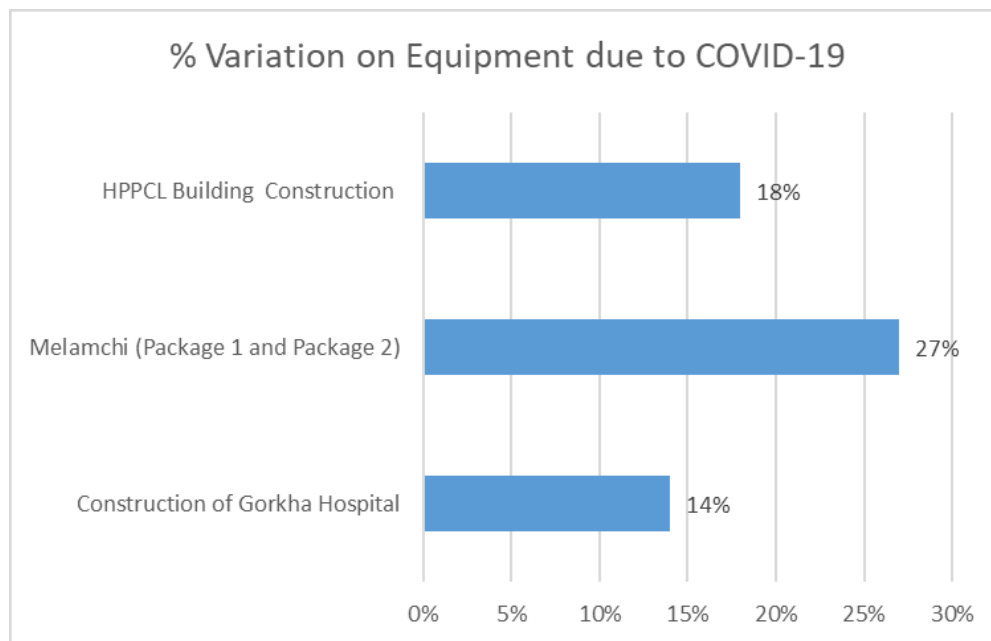


Figure 4-6: Project-Wise Percentage Variation in Equipment Cost.

#### 4.1.5 Project Wise Variation Percentage in Manpower Cost:

Due to COVID-19 lockdown, percentage variation on manpower cost of each project, based on claim amount by contractor with respect to total claim amount of each project is tabulated as:

Table 4-7: Project-Wise Percentage Variation in Manpower Cost.

S.N.	Project Name	% Variation due to COVID-19
1	Construction of Gorkha Hospital	12%
2	Melamchi (Package 1 and Package 2)	59%
3	HPPCL Building Construction	15%

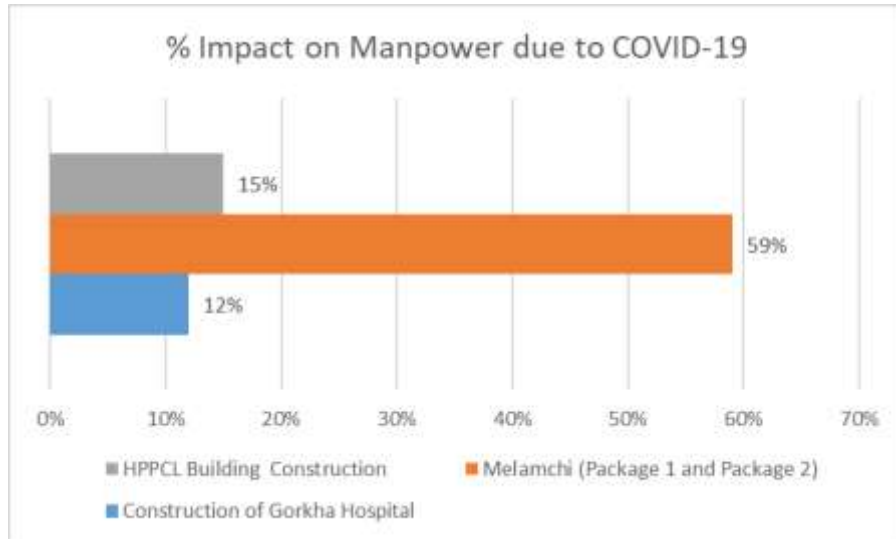


Figure 4-7: Project-Wise Percentage Variation in Manpower Cost.

#### 4.1.6 Project Wise Variation Percentage in Extended Overhead Cost:

Due to COVID-19 lockdown, percentage variation on extended overhead cost of each project, based on claim amount by contractor with respect to total claim amount of each project is tabulated as:

Table 4-8: Project-Wise Percentage Variation in Extended Overhead Cost.

S.N.	Project Name	% Variation due to COVID-19
1	Construction of Gorkha Hospital	56%
2	Melamchi (Package 1 and Package 2)	6%
3	HPPCL Building Construction	18%

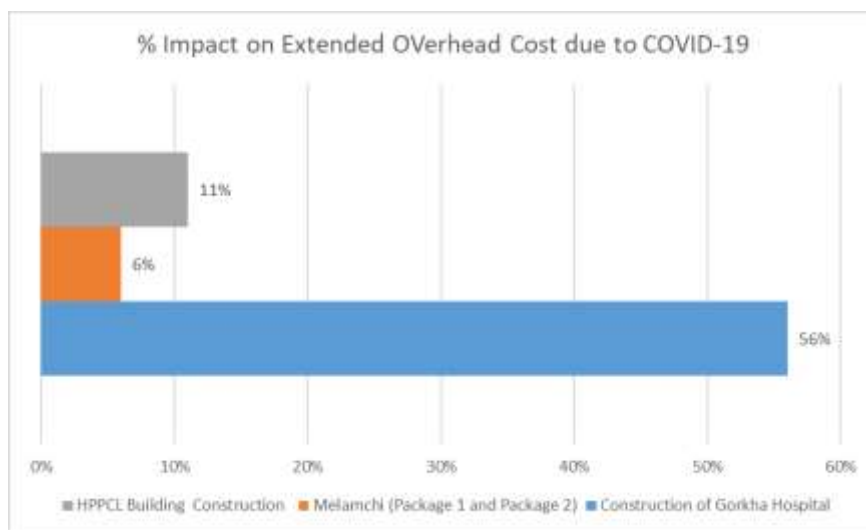


Figure 4-8: Project-Wise Percentage Variation in Extended Overhead Cost.

## 4.2 Results and Discussion from Questionnaire Survey

For Objective 1:

To assess the impact on supply-demand trend analysis of material, manpower and equipment due to COVID-19 lockdown.

Questionnaire survey done to 37 respondents (11 clients, 16 contractors and 10 consultants). Mean Score of client, consultant and contractor was found out separately. Based on the mean score of three parties, weighted average was found out. Based on the weighted average, ranking was done. The top three statements that gives the glimpse of impact on supply-demand trend analysis of material, manpower and equipment due to COVID-19 lockdown are:

1. COVID-19 lockdown caused impact on supply chain disruption. (weighted average=3.81).
2. Since entire transportation and aviation industry was brought to sudden halt, its impact on Construction Sector in Nepal is very prominent. (weighted average=3.54).
3. Material and labor shortage were the main hindrance behind smooth execution of project. (weighted average=3.46).

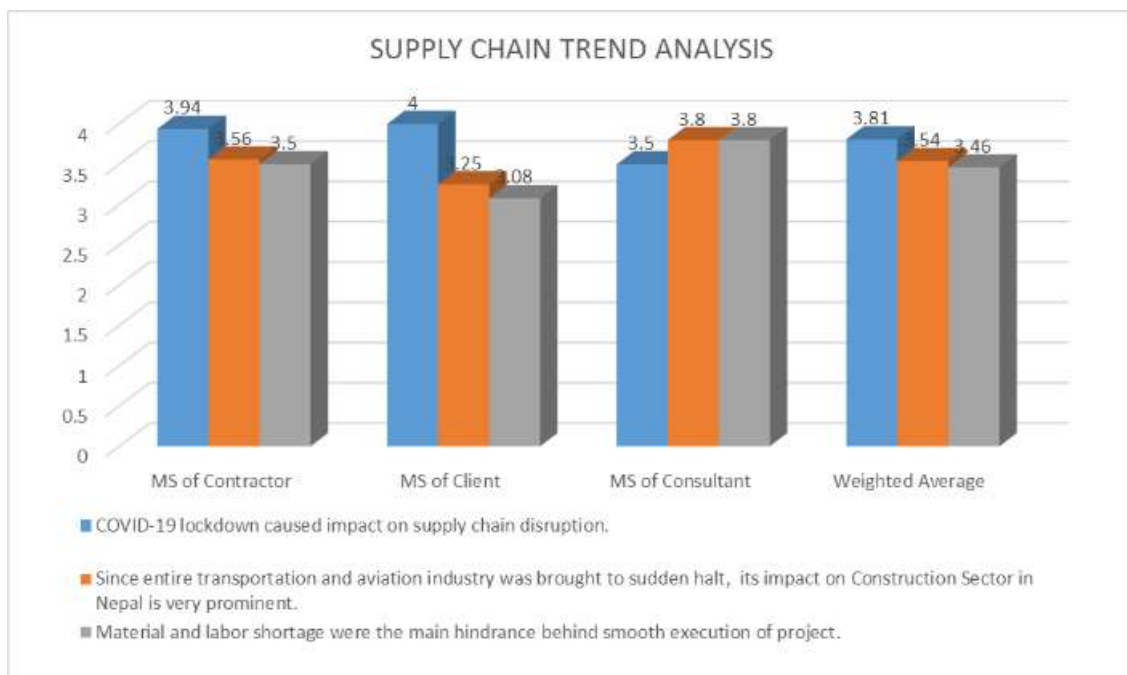


Figure 4-9: Supply Chain Trend Analysis



Table 4-9: Supply Chain Trend Analysis

Rank	Statement	MS of Contractor	MS of Client	MS of Consultant	Weighted Average
1	COVID-19 lockdown caused impact on supply chain disruption.	3.94	4	3.5	3.81
2	Since entire transportation and aviation industry was brought to sudden halt, its impact on Construction Sector in Nepal is very prominent.	3.56	3.25	3.8	3.54
3	Material and labor shortage were the main hindrance behind smooth execution of project.	3.5	3.08	3.8	3.46

Table 4-10: Overall Survey for Supply Chain Trend Analysis

S.N.	Impact of COVID-19 on Construction	MS of Contractor	MS of Client	MS of Consultant	Weighted Average	Rank
	<b>Supply Chain Trend Analysis</b>					
1	Since entire transportation and aviation industry was brought to sudden halt, its impact on Construction Sector in Nepal is very prominent.	3.56	3.25	3.80	3.54	2.00
2	COVID-19 lockdown caused impact on supply chain disruption.	3.94	4.00	3.50	3.81	1.00

3	Material stock was sufficient to execute ongoing construction projects.	2.94	3.00	2.80	2.91	8.00
4	Covid-19 resulted into lots of wastage of stored materials due to delay and disruption.	3.38	2.88	3.10	3.12	7.00
5	Cement industry, crusher industry, brick kiln and other similar local industries were fully functioning doing lock-down.	2.44	2.75	3.00	2.73	9.00
6	Blockage of import of essential construction materials from abroad did cause impediment and hindrances to ongoing construction works.	3.56	2.92	3.90	3.46	4.00
7	Contractors were forced to choose labors from a limited pool due to travel restrictions.	3.88	3.17	3.30	3.45	5.00
8	Material and labor shortage were the main hindrance behind smooth execution of project.	3.50	3.08	3.80	3.46	3.00
9	Fully operating and functioning of equipment was one of problem for continuous execution of project.	3.13	2.83	3.50	3.15	6.00

## Objective 2:

To assess the cost and time impact of COVID-19 lockdown on construction projects.

Questionnaire survey done to 37 respondents (11 clients, 16 contractors and 10 consultant). Mean Score of client, consultant and contractor was found out separately. Based on the mean score of three parties, weighted average was found out. Based on the weighted average, ranking was done. The top three statements that gives the glimpse of impact of cost and time manpower and equipment due to COVID 19 lockdown are:

1. Project cost and time increases due to uncertainty regarding availability of subcontractors/suppliers/labor for any future remobilization. (weighted average=3.78).
2. Labor costs increases because contractors were forced to choose from a limited pool due to travel restrictions. (weighted average=3.67).
3. There was a cash flow problem which ultimately made the construction sector stagnant. (weighted average=3.60).

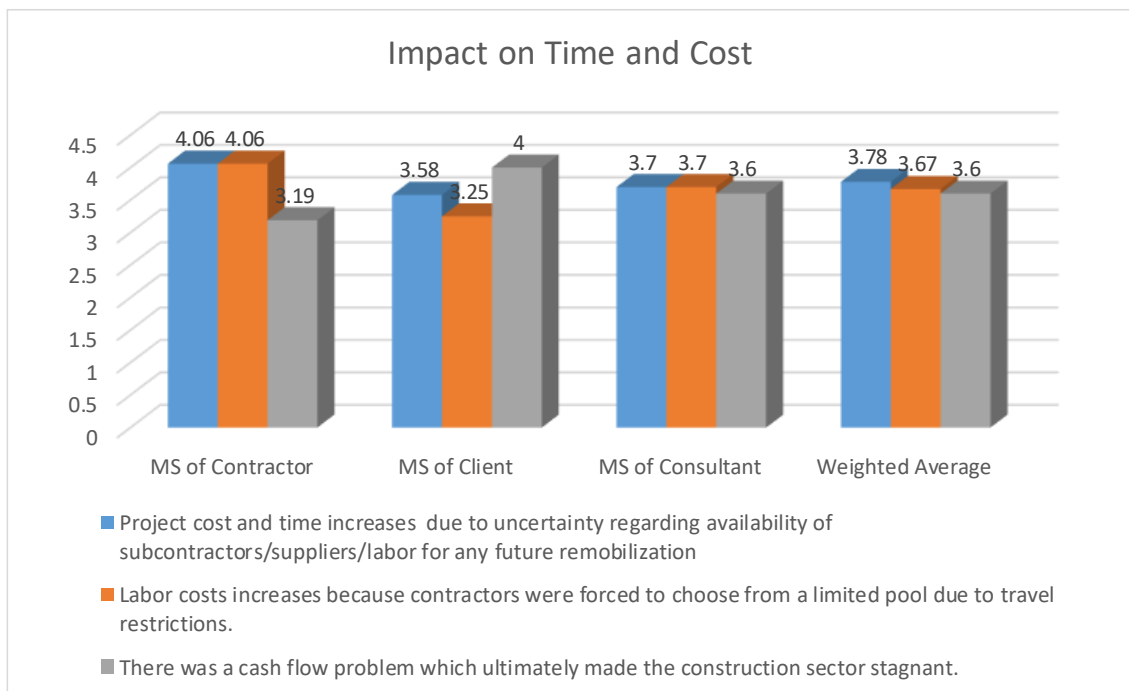


Figure 4-10: Impact on Time and Cost

Table 4-11: Impact on Time and Cost

<b>Rank</b>	<b>Statement</b>	<b>MS of Contractor</b>	<b>MS of Client</b>	<b>MS of Consultant</b>	<b>Weighted Average</b>
1	Project cost and time increases due to uncertainty regarding availability of subcontractors/suppliers/labor for any future remobilization.	4.06	3.58	3.7	3.78
2	Labor costs increases because contractors were forced to choose from a limited pool due to travel restrictions.	4.06	3.25	3.7	3.67
3	There was a cash flow problem which ultimately made the construction sector stagnant.	3.19	4	3.6	3.6

Table 4-12: Overall Survey for Impact On Time and Cost

<b>S.N.</b>	<b>Impact of COVID-19 on Construction</b>	<b>MS of Contractor</b>	<b>MS of Client</b>	<b>MS of Consultant</b>	<b>Weighted Average</b>	<b>Rank</b>
	<b>Supply Chain Trend Analysis</b>					
1	Unexpected increase in the cost of Construction materials was result of COVID-19 lockdown.	3.19	2.50	3.50	3.06	8.00
2	Project cost increase due to damage caused to stored/unused equipment and materials during lockdown period.	3.31	3.42	3.30	3.34	4.00
3	Limited capacity of suppliers during lockdown resulted to increase in project cost.	3.50	2.92	3.40	3.27	5.00

4	Project cost and time increases due to uncertainty regarding availability of subcontractors/suppliers/labor for any future remobilization	4.06	3.58	3.70	3.78	1.00
5	Labor costs increases because contractors were forced to choose from a limited pool due to travel restrictions.	4.06	3.25	3.70	3.67	2.00
6	Project costs become high due to equipment being idle.	3.44	2.67	3.20	3.10	7.00
7	Additional workplace safety guidelines related to pandemic such as social distancing, sanitizers, etc. did cause in increased project cost.	3.38	2.75	2.70	2.94	10.00
8	Due to extended project completion date, project management costs increased.	3.31	2.75	3.10	3.05	9.00
9	COVID-19 lockdown impacts include higher interest payments to the bank by the contractor because of project being delayed.	2.75	2.08	3.10	2.64	11.00
10	There was a cash flow problem which ultimately made the construction sector stagnant.	3.19	4.00	3.60	3.60	3.00
11	Most productive time of construction was occupied by the lockdown.(with consideration of monsoon and Dashain festival)	3.38	2.78	3.30	3.15	6.00

### Objective 3:

To find the contractual issues and claims associated with COVID-19 lockdown.

Questionnaire survey done to 37 respondents (11 clients, 16 contractors and 10 consultant). Mean Score of client, consultant and contractor was found out separately. Based on the mean score of three parties, weighted average was found out. Based on the weighted average, ranking was done. The top three statements that gives the glimpse of contractual issues and claims associated with COVID-19 lockdown are:

1. Contractual disputes are likely to increase due to lockdown. (weighted average=3.89).
2. COVID-19 lockdown would give ample opportunity for contractor to ask for time and cost extension. (weighted average=3.46).
3. COVID-19 lockdown would be an excuse for contractor to cover up their fault (poor planning and management) (weighted average=3.36).

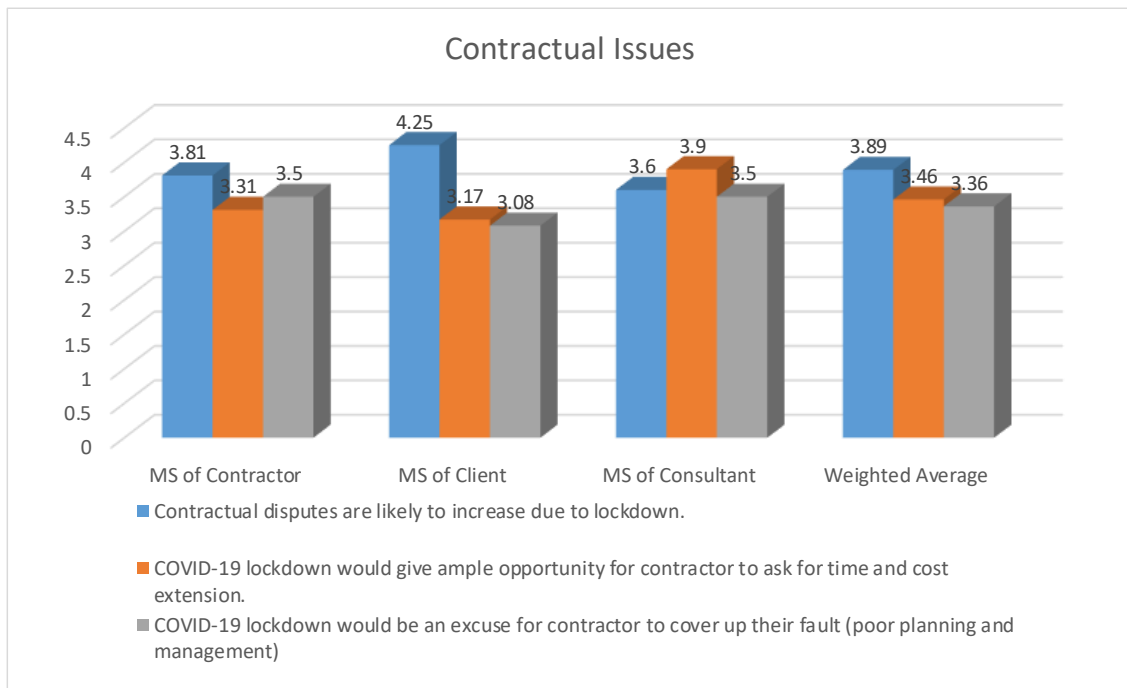


Figure 4-11: Contractual Issues

Table 4-13: Impact on Contractual Issues

Rank	Statement	MS of Contractor	MS of Client	MS of Consultant	Weighted Average
1	Contractual disputes are likely to increase due to lockdown.	3.81	4.25	3.6	3.89
2	COVID-19 lockdown would give ample opportunity for contractor to ask for time and cost extension.	3.31	3.17	3.9	3.46
3	COVID-19 lockdown would be an excuse for contractor to cover up their fault (poor planning and management)	3.5	3.08	3.5	3.36

Table 4-14: Overall Survey for Impact on Contractual Issues

S.N	Impact of COVID-19 on Construction	MS of Contractor	MS of Client	MS of Consultant	Weighted Average	Rank
	<b>Impact on Contractual Issues</b>					
1	Government has addressed at policy level to solve contractual disputes related problem caused by COVID-19.	2.69	2.58	2.50	2.59	8
2	PPMO of Nepal has addressed for impact of COVID-19 or similar kind of pandemic in construction.	3.00	2.42	2.60	2.67	7
3	Existing Condition of Contract provision address force majeure event such as COVID-	3.06	2.75	3.40	3.07	4

	19 which is an Pandemic.					
4	Price escalation provisions in contracts is sufficient to address or compensate the loss borne by contractor due to COVID-19.	2.81	2.67	2.90	2.79	6
5	COVID-19 lockdown would give ample opportunity for contractor to ask for time and cost extension.	3.31	3.17	3.90	3.46	2
6	COVID-19 lockdown would be an excuse for contractor to cover up their fault (poor planning and management)	3.50	3.08	3.50	3.36	3
7	Contractual disputes are likely to increase due to lockdown.	3.81	4.25	3.60	3.89	1
8	Coordination of different contract parties (employer, consultant, engineer, contractor) to sort out contractual disputes related problem was effective.	2.81	2.83	2.90	2.85	5

#### 4.3 Contractual Issues Raised in Claim Document

- Whether COVID-19 is force majeure event?



-Contractor's basis for this claim with regard to claim document is "whether Lockdown ordered by Government of Nepal and restrictions like (travel restriction of labor) imposed by concerned authorities" falls under force majeure event.

- Whether lockdown ordered by the Government of Nepal is change of law?

-Contractor's basis for this claim with regard to claim document is "New health standards were not foreseen at the base date or at the time of signing the agreement. New health protocols establishment and their implementation by Central Government/Local Authorities are considered as changes in laws of country."

- Is the contractor entitled for extension of time?
- Is the contractor entitled for payment of additional cost incurred as a result of delay and disruption as well as additional health measures to be implemented as per Government of Nepal Protocol?

#### **Other Factors:**

Questionnaire survey done to 37 respondents (11 clients, 16 contractors and 10 consultant). Mean Score of client, consultant and contractor was found out separately. Based on the mean score of three parties, weighted average was found out. Based on the weighted average, ranking was done.

The top three statements that gives the glimpse on impact of COVID 19 lockdown besides those mentioned in the objectives are:

1. "COVID-19 lockdown" will have immediate and long term effects on construction projects. (weighted average=3.79).
2. Adopting digital technology for remote working and implementing mechanized means of construction could be the new solution to this type of pandemic. (weighted average=3.34).
3. Construction Practice/ working culture will change in Nepal's Construction Sector after this pandemic. (weighted average=3.15).

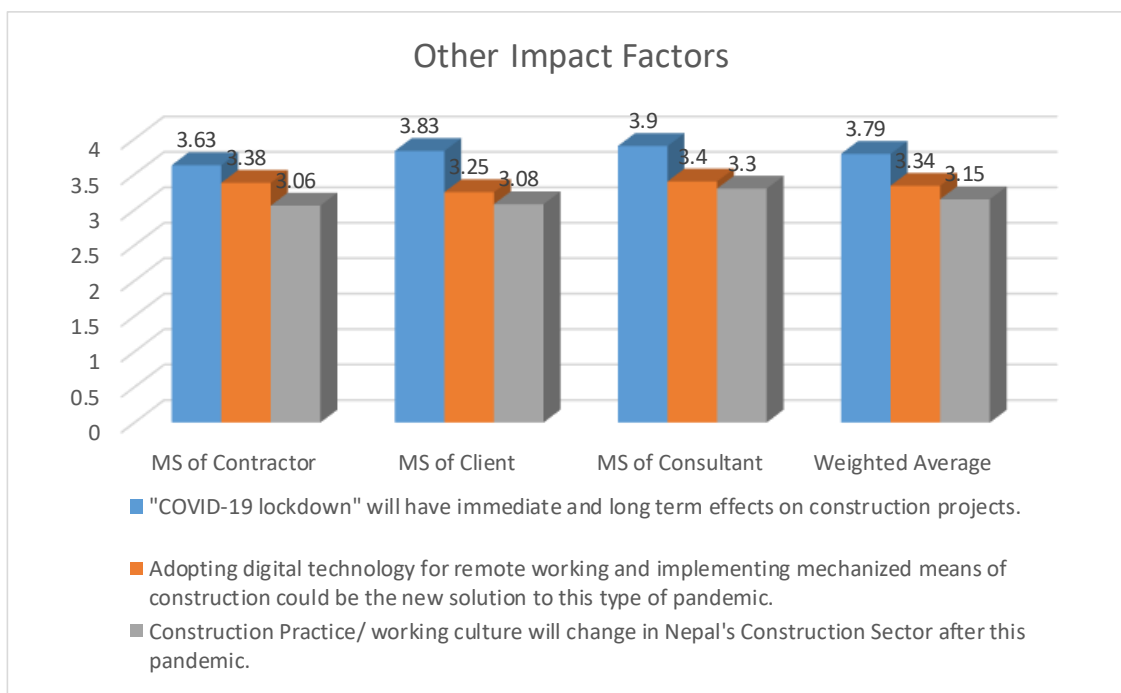


Figure 4-12: Other Impact Factors

Table 4-15: Other Impact Factors

Rank	Statement	MS of Contractor	MS of Client	MS of Consultant	Weighted Average
1	"COVID-19 lockdown" will have immediate and long term effects on construction projects.	3.63	3.83	3.9	3.79
2	Adopting digital technology for remote working and implementing mechanized means of construction could be the new solution to this type of pandemic.	3.38	3.25	3.4	3.34
3	Construction Practice/ working culture will change in Nepal's Construction Sector after this pandemic.	3.06	3.08	3.3	3.15

Table 4-16: Results from Overall Questionnaire Survey

S.N	Impact of COVID-19 on Construction	MS of Contractor	MS of Client	MS of Consultant	Weighted Average	Rank
	<b>Supply Chain Trend Analysis</b>					
1	Since entire transportation and aviation industry was brought to sudden halt, its impact on Construction Sector in Nepal is very prominent.	3.56	3.25	3.80	3.54	2.00
2	COVID-19 lockdown caused impact on supply chain disruption.	3.94	4.00	3.50	3.81	1.00
3	Material stock was sufficient to execute ongoing construction projects.	2.94	3.00	2.80	2.91	8.00
4	Covid-19 resulted into lots of wastage of stored materials due to delay and disruption	3.38	2.88	3.10	3.12	7.00
5	Cement industry, crusher industry, brick kiln and other similar local industries were fully functioning doing lock-down.	2.44	2.75	3.00	2.73	9.00
6	Blockage of import of essential construction materials from abroad did cause impediment and hindrances to ongoing construction works.	3.56	2.92	3.90	3.46	4.00
7	Contractors were forced to choose labors from a	3.88	3.17	3.30	3.45	5.00

	limited pool due to travel restrictions.					
8	Material and labor shortage were the main hindrance behind smooth execution of project.	3.50	3.08	3.80	3.46	3.00
9	Fully operating and functioning of equipment was one of problem for continuous execution of project.	3.13	2.83	3.50	3.15	6.00
	<b>Impact on Cost and Time</b>					
1	Unexpected increase in the cost of Construction materials was result of COVID-19 lockdown.	3.19	2.50	3.50	3.06	8.00
2	Project cost increase due to damage caused to stored/unused equipment and materials during lockdown period.	3.31	3.42	3.30	3.34	4.00
3	Limited capacity of suppliers during lockdown resulted to increase in project cost.	3.50	2.92	3.40	3.27	5.00
4	Project cost and time increases due to uncertainty regarding availability of subcontractors/suppliers /labor for any future remobilization	4.06	3.58	3.70	3.78	1.00
5	Labor costs increases because contractors were forced to choose from a limited pool due to travel restrictions.	4.06	3.25	3.70	3.67	2.00

6	Project costs become high due to equipment being idle.	3.44	2.67	3.20	3.10	7.00
7	Additional workplace safety guidelines related to pandemic such as social distancing, sanitizers, etc. did cause in increased project cost.	3.38	2.75	2.70	2.94	10.00
8	Due to extended project completion date, project management costs increased.	3.31	2.75	3.10	3.05	9.00
9	COVID-19 lockdown impacts include higher interest payments to the bank by the contractor because of project being delayed.	2.75	2.08	3.10	2.64	11.00
10	There was a cash flow problem which ultimately made the construction sector stagnant.	3.19	4.00	3.60	3.60	3.00
11	Most productive time of construction was occupied by the lockdown.(with consideration of monsoon and Dashain festival).	3.38	2.78	3.30	3.15	6.00
	<b>Contractual Issues</b>					
1	Government has addressed at policy level to solve contractual disputes related problem caused by COVID-19.	2.69	2.58	2.50	2.59	8.00

2	PPMO of Nepal has addressed for impact of COVID-19 or similar kind of pandemic in construction.	3.00	2.42	2.60	2.67	7.00
3	Existing Condition of Contract provision address force majeure event such as COVID-19 which is an Pandemic.	3.06	2.75	3.40	3.07	4.00
4	Price escalation provisions in contracts is sufficient to address or compensate the loss borne by contractor due to COVID-19.	2.81	2.67	2.90	2.79	6.00
5	COVID-19 lockdown would give ample opportunity for contractor to ask for time and cost extension.	3.31	3.17	3.90	3.46	2.00
6	COVID-19 lockdown would be an excuse for contractor to cover up their fault (poor planning and management).	3.50	3.08	3.50	3.36	3.00
7	Contractual disputes are likely to increase due to lockdown.	3.81	4.25	3.60	3.89	1.00
8	Coordination of different contract parties (employer, consultant, engineer, contractor) to sort out contractual disputes related problem was effective.	2.81	2.83	2.90	2.85	5.00
	<b>Other Factors</b>	-	-	-	-	

1	On April 21, Government declared that construction site and industries can house and feed workers in their own premises with social distancing and relative isolation which was found to be effective.	3.06	2.75	2.90	2.90	5.00
2	"COVID-19 lockdown" will have immediate and long term effects on construction projects.	3.63	3.83	3.90	3.79	1.00
3	Bank was fully functioning during lockdown period.	3.00	3.17	2.60	2.92	4.00
4	Local people response allow for smooth execution of ongoing projects.	2.44	3.25	2.90	2.86	6.00
5	Construction Practice/ working culture will change in Nepal's Construction Sector after this pandemic.	3.06	3.08	3.30	3.15	3.00
6	Adopting digital technology for remote working and implementing mechanized means of construction could be the new solution to this type of pandemic.	3.38	3.25	3.40	3.34	2.00

## CHAPTER 5: CONCLUSION AND RECOMMENDATIONS:

### 5.1 Conclusion:

Objective 1:

To find the impact on supply-demand trend analysis of material, manpower and equipment due to COVID-19 lockdown.

Based on the case study and questionnaire survey, it can be concluded that

- COVID-19 lockdown caused serious impact on supply chain disruption. Material and labor shortage was the main hindrance for smooth execution of project.
- Since entire transportation and aviation industry was brought to sudden halt, materials and equipment procured from other countries (in case of Melamchi project) could not be entered due to custom clearance. Likewise, HPPCL building which is a steel structure building was hugely affected because of shortage of steel.
- In case of Gorkha hospital, bringing labor from outside the construction territory was prohibited and construction was carried out with limited manpower.

Objective 2:

To assess the cost and time impact of COVID-19 lockdown on construction projects.

Based on the case study and questionnaire survey, it can be concluded that

- COVID-19 lockdown impacted in increase of project cost and time due to uncertainty regarding availability of subcontractors/suppliers/labor.
- Labor costs increases because contractors were forced to choose from a limited pool due to travel restrictions, PCR testing and other Government protocols.
- Impact on time and cost on construction projects however differs with nature and scale of the project. For large scale project like Melamchi, Gorkha hospital, impact on manpower, extended overhead cost and project management cost is prominent whereas in case of HPPCL building highest impact of COVID-19 based on cost is on material. For National pride project like Melamchi, timely completion is not an issue. Project is ahead of schedule. However, contractor had to bear additional cost due to lockdown.



### Objective 3:

To find the contractual issues and claims associated with COVID-19 lockdown.

Based on the case study and questionnaire survey, it can be concluded that

- Due to COVID-19 lockdown, contractual disputes are likely to increase due to lockdown. Time extension clause would not cover up for the additional costs contractor had to bear as a result of COVID-19 lockdown. On the other hand, COVID-19 lockdown would give ample opportunity for contractor to ask for time and cost extension. Further, COVID-19 lockdown would be an excuse for contractor to cover up their fault (poor planning and management).
- Each contract should be carefully analyzed to determine a party's specific entitlement. Some common clauses that should be considered are:
  - Force majeure clause: commonly for time but not for money.
  - EOT (Extension of Time) and EOC (Extension of Cost) clause.
  - Change in law clause: for both time and money but it will require direct impact on the works.

### **5.2 Recommendations:**

1. "How long will the direct/ indirect effect of COVID-19 is going to be continued?" - is uncertain. The Government should prepare guidelines accordingly to deal with situation uniformly.
2. Extension of Time (EOT) claim is more straight forward. Extension of time however does not fully justify for the additional cost burden that the contractor has to bear because of the consequences of COVID-19 lockdown. Hence, Extension of Cost (EOC) claim should be handled carefully.
3. Collaboration and coordination among the contract parties (client, consultant and contractor) is needed. Therefore, each party should put their utmost effort to settle claims early and avoid disputes.
4. Adopting digital technology for remote working and implementing mechanized means of construction could be one of the newest approach to address the construction related issues caused as a result of such pandemic.

5. Capacity enhancement of local industries should be done to produce core raw materials such as cement aggregate and steel components within Nepal.
6. PPMO documents should be revised so that it can address for such type of pandemic condition.

### **5.3 For Future Study:**

- It is recommended for future researchers to study impact of COVID-19 from occupational health and safety aspects.
- The study can also be conducted about finding the impact of supply-demand trend analysis using the transaction details from respective suppliers. Due to time constraint, impact on supply-demand trend analysis was found out from questionnaire survey.
- This research was limited to selected construction projects. Future researcher can conduct similar kind of research through broader perspective.
- Future researchers can also conduct qualitative questionnaire surveys with construction experts and draw conclusions from it.

## REFERENCES

Aceris Law. (2020, April 3). COVID-19 and Construction Disputes: Claims for Time and Money. <https://www.acerislaw.com/covid-19-and-construction-disputes-claims-for-time-and-money/>. Retrieved from <https://www.acerislaw.com/covid-19-and-construction-disputes-claims-for-time-and-money/>

Babbie, E. R. (2010). *The practice of Social Research. 12th Edition*. Belmont, CA: Sage Publications.

Baral, S. (2009, December 23). *Nepalese Construction Industry: Challenges and Opportunities*. Retrieved from <http://santoshbaral.blogspot.com/2009/12/nepalese-construction-industry.html>

Belingheri, M., Paladino, M. E., & Riva, M. A. (2020). COVID-19: Health prevention and control in non-healthcare settings. *Occupational Medicine*, 70(2), 82–83. <https://doi.org/10.1093/occmed/kqaa048>

Central Bureau of Statistics. (2018). *Trading Economics*. Nepal GDP from Construction. Retrieved from <https://tradingeconomics.com/nepal/gdp-from-construction>.

FCAN. (2012). *Construction Industry in Nepal*. Federation of Contractors Association of Nepal.

FIDIC. (2010). *Conditions of Contract for CONSTRUCTION FOR BUILDING AND ENGINEERING WORKS DESIGNED BY THE EMPLOYER* (MDB Harmonised ed.). FIDIC.

FIDIC. (2017). *Condition of Contract for Construction for Building and Engineering Works Designed by Employer*. Geneva, Switzerland.

FIDIC. (2020). *FIDIC COVID-19 GUIDANCE MEMORANDUM TO USERS OF FIDIC STANDARD FORMS OF WORKS CONTRACT*. FIDIC.

Greenberg Traurig, Epstein, R. C., Jensen, D. C., Knaub, Z. D., Russo, S. C., & Mascialino, J. L. (2020a, April 15). *For Developers and Owners: How COVID-19 Is Affecting Construction Projects and Actions You Should Consider*. <https://www.gtlaw.com/en/insights/2020/4/for-developers-and-owners-how-covid19-is-affecting-construction-projects>. Retrieved from <https://www.gtlaw.com/en/insights/2020/4/for-developers-and-owners-how-covid19-is-affecting-construction-projects>.

Hai, D. T. (2019). Assessment of Contractors' Claims on Construction Projects in Vietnam. *The Open Civil Engineering Journal*, 13(1), 218–228. Retrieved from <https://doi.org/10.2174/1874149501913010218>.

Holland & Knight, Chivilo, J. P., Fonte, G. A., & Koger, G. H. (2020, May 26). *A Look at COVID-19 Impacts on the Construction Industry*. Retrieved from <https://www.hklaw.com/en/insights/publications/2020/05/a-look-at-covid19-impacts-on-the-construction-industry>.

Jenny. (2014). Phase #2: Clearly Define Your Research Strategy. Retrieved from: <https://www.mackenziecorp.com/phase-2-clearly-define-research-strategy/>

Jergeas, G. F., & Hartman, F. T. (1994). Contractors' Construction-Claims Avoidance. *Journal of Construction Engineering and Management*, 120(3), 553–560. [https://doi.org/10.1061/\(asce\)0733-9364\(1994\)120:3\(553\)](https://doi.org/10.1061/(asce)0733-9364(1994)120:3(553)).

Kartam, S. (1999). Generic Methodology for Analyzing Delay Claims. *Journal of Construction Engineering and Management*, 125(6), 409–419. [https://doi.org/10.1061/\(asce\)0733-9364\(1999\)125:6\(409\)](https://doi.org/10.1061/(asce)0733-9364(1999)125:6(409)).

Koh, D. (2020). Occupational risks for COVID-19 infection. *Occupational Medicine*, 70(1), 82–83. <https://doi.org/10.1093/occmed/kqaa036>

KPMG. (2020, June). *KPMG International*. Retrieved from <https://assets.kpmg/content/dam/kpmg/sg/pdf/2020/06/Risks-for-construction-Owners.Pdf>.

Kumaraswamy, M. M. (1997). Conflicts, claims and disputes in construction. *Engineering Construction and Architectural Management*, 4(2), 95–111. <https://doi.org/10.1046/j.1365-232x.1997.00087.x>

KUMAR, J., Nandhini, S., & Jeya priya, R. (2017). INVESTIGATION OF SUPPLY CHAIN MANAGEMENT IN CONSTRUCTION COMPANIES. *INVESTIGATION OF SUPPLY CHAIN MANAGEMENT IN CONSTRUCTION COMPANIES*, 4(6), 2769–2774. Retrieved from <https://www.irjet.net/archives/V4/i6/IRJET-V4I6689.pdf>

Labour Act Nepal (2074).

Martens, D. (2005). *Research methods in education and psucology: Integrating Diversity with quantitative and qualitative approaches*. Thousand Oaks; Sage.

Ministry of Health and Population. (2020, August). *COVID-19 Situation Report*. Retrieved from <https://covid19.mohp.gov.np/#/>

Nepal Law Commission. (2020). *Infectious Disease Act, 2020(1964)*. Retrieved from <http://www.lawcommission.gov.np/en/archives/12240>.

ORTBALS, A. L. A. N. J. (2004, October 11). *Hurricane quartet expected to spike cost of home building materials*. Retrieved from [https://archive.ibjonline.com/print\\_home\\_building\\_materials\\_cost.html](https://archive.ibjonline.com/print_home_building_materials_cost.html).

PPMO. (2012 ). *Annual Report of PPMO 2068*. Kathmandu.

Pradhan, T. (2020, July 21). *Government decides to lift the four-month-long coronavirus lockdown, but with conditions*. <https://Kathmandupost.Com/>. <https://kathmandupost.com/national/2020/07/21/government-decides-to-lift-the-four-month-long-coronavirus-lockdown-but-with-conditions>

R.S., A. (2020). INDIA: IMPACT OF COVID-19 ON CONSTRUCTION AND ENGINEERING SECTOR. *INDIA: IMPACT OF COVID-19 ON CONSTRUCTION*

*AND ENGINEERING SECTOR*, 1–15. Retrieved from <https://www.researchgate.net/publication/340966338>.

Semple, C., Hartman, F. T., & Jergeas, G. (1994). Construction Claims and Disputes: Causes and Cost/Time Overruns. *Journal of Construction Engineering and Management*, 120(4), 785–795. [https://doi.org/10.1061/\(asce\)0733-9364\(1994\)120:4\(785\)](https://doi.org/10.1061/(asce)0733-9364(1994)120:4(785)).

Suwal, A. (2016). " DELAYS: CAUSES, EFFECTS AND REMEDIAL MEASURES OF MOTORABLE BRIDGE CONSTRUCTION PROJECTS UNDER POSTALHIGHWAY PROJECTS, DEPARTMENT OF ROADS", MSc. Thesis, Institute of Engineering, Pulchowk Campus. Lalitpur, Nepal.

The Asia Foundation. (2020, May). *THE IMPACT OF COVID-19 LOCKDOWN ON NEPAL'S CONSTRUCTION SECTOR: A RAPID ASSESSMENT*. The Asia Foundation. <https://asiafoundation.org/wp-content/uploads/2020/05/The-Impact-of-Covid-19-Lockdown-on-Nepals-Construction-Sector.pdf>

## **APPENDICES**

**APPENDIX – A**

**Questionnaire**



## QUESTIONNAIRE SURVEY

**Institute of Engineering  
Pulchowk Campus  
Msc. Construction Management**

Questionnaire for finding the "**Impact of COVID-19 lockdown on Nepal's Construction Sector**"

### **Background Information:**

Coronavirus disease 2019 (COVID-19) - now a global pandemic is causing severe impacts in almost all aspects of life in Nepal. In response to the pandemic, nation-wide lockdown was announced on 24 March 2020, and ended on 21 July 2020. Construction industry members including owners, developers, contractors, subcontractors and supply chain vendors have experienced different(varying) degrees of impacts as a result of the COVID-19 pandemic.

The purpose of this survey is to find the impact of COVID-19 lockdown on on-going infrastructure projects in Nepal. The survey is conducted for the partial fulfilment of the requirements for the Degree of MSc. in Construction Management of Institute of Engineering, Tribhuvan University, Nepal. This survey should only take 5-10 minutes to complete. It is assured that all information provided shall be for research purpose only and shall be kept in strictest confidentiality.

Name:

Title:

Years of Experience:  <1 year       1-5 years       6-10 years       >10 years

Agency:

Type of Project:  Public     Private     Mixed

Name of the Project:

Are you/your organization involved in any construction project that is/was impacted by COVID-19 lock down?

Yes

No

Based on your experience and knowledge, please rate the following statements. Rating should be based on the extent of impact exerted on Construction sector in Nepal due to COVID-19.

**1 –No impact/Strongly Disagree**

**2- Disagree**

**3-neutral**

**4-agree**

**5- highest impact/strongly agree**

	<b>STATEMENTS (Impact of COVID-19 lockdown)</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>A.</b>	<b>SUPPLY CHAIN TREND ANALYSIS</b>					
1	Since entire transportation and aviation industry was brought to sudden halt, its impact on Construction Sector in Nepal is very prominent.					
2	COVID-19 lockdown caused impact on supply chain disruption.					
3	Material stock was sufficient to execute ongoing construction projects.					
4	Covid-19 resulted into lots of wastage of stored materials due to delay and disruption					
5	Cement industry, crusher industry, brick kiln and other similar local industries were fully functioning during lockdown.					
6	Blockage of import of essential construction materials from abroad did cause impediment and hindrances to ongoing construction works.					
7	Contractors were forced to choose laborers from a limited pool due to travel restrictions.					
8	Material and labor shortage were the main hindrance behind smooth execution of project.					
9	Fully operating and functioning of equipment was one of the problems for continuous execution of project.					
<b>B.</b>	<b>COST AND TIME OVERRUN</b>					
1	Unexpected increase in the cost of Construction materials was a result of COVID-19 lockdown.					
2	Project cost increase due to damage caused to stored/unused equipment and materials during lockdown period.					
3	Limited capacity of suppliers during lockdown resulted in an increase in project cost.					
4	Project cost and time increases due to uncertainty regarding availability of subcontractors/suppliers/labor for any future remobilization					

5	Labor costs increases because contractors were forced to choose from a limited pool due to travel restrictions.					
6	Project costs become high due to equipment being idle.					
7	Additional workplace safety guidelines related to pandemic such as social distancing, sanitizers, etc. did cause in increased project cost.					
8	Due to extended project completion date, project management costs increased.					
9	COVID-19 lockdown impacts include higher interest payments to the bank by the contractor because of project being delayed.					
10	There was a cash flow problem which ultimately made the construction sector stagnant.					
11	Most productive time of construction was occupied by the lockdown.(with consideration of monsoon and Dashain festival)					
<b>C.</b>	<b>CONTRACTUAL ISSUES</b>					
1	Government has addressed at policy level to solve contractual disputes related problem caused by COVID-19.					
2	PPMO of Nepal has addressed for impact of COVID-19 or similar kind of pandemic in construction.					
3	Existing Condition of Contract provision address force majeure event such as COVID-19 which is an Pandemic.					
4	Price escalation provisions in contracts is sufficient to address or compensate the loss borne by contractor due to COVID-19.					
5	COVID-19 lockdown would give ample opportunity for contractor to ask for time and cost extension.					
6	COVID-19 lockdown would be an excuse for contractor to cover up their fault (poor planning and management)					
7	Contractual disputes are likely to increase due to lockdown.					
8	Coordination of different contract parties (employer, consultant, engineer, contractor) to sort out contractual disputes related problem was effective.					
<b>D.</b>	<b>OTHER FACTORS</b>					
1	On April 21, Government declared that construction site and industries can house and feed workers in their own premises with social distancing and relative isolation which was found to be effective.					

2	"COVID-19 lockdown" will have immediate and long term effects on construction projects.					
3	Bank was fully functioning during lockdown period.					
4	Local people response allow for smooth execution of ongoing projects.					
5	Construction Practice/ working culture will change in Nepal's Construction Sector after this pandemic.					
6	Adopting digital technology for remote working and implementing mechanized means of construction could be the new solution to this type of pandemic.					

**PART E:**

**Opinion Questions 1: (Optional)**

What are your key recommendations for construction sector/construction stakeholders to address COVID or other similar kind of pandemic in the future?

- i....
- ii...
- iii...
- iv...
- v...

**Opinion Questions 2: (Optional)**

Other than the statements and questions mentioned above, is there anything that you think is missing in the questionnaire and you would like to add from your side? If Yes, please answer.....

### **Answers for Opinion Questions 1: (Optional)**


*What are your key recommendations for construction sector/construction stakeholders to address COVID or other similar kind of pandemic in the future?*

1. How long will the direct/ indirect effect of COVID-19 is going to be continued? The Government will have to prepare guidelines to deal with situation uniformly.
2. Broader economic policy with proper check and balance between cost and performance. Work should progress following strict health protocols.
3. Provision of having a contingency plan to counter act against similar pandemic would be helpful for the construction sector.
4. It is necessary to take appropriate steps to reduce anticipated contractual disputes as quickly as possible and restore cash flow into the sector. (Construction industry cannot be categorized as high impact industry due to COVID but it is highest employment generating industries).
5. People should know their contract and follow the provision of contract. Good collaboration should be maintained between contract parties (client, consultant and contractor).
6. Contract parties should put their utmost effort to settle claims early and avoid disputes.
7. FIDIC suggestions: Solutions are not only found within four corners of any contract, impact of Governing law, government's decisions, social responsibilities etc. are also to be considered.
8. EOT claim is more straightforward, cost claim to be properly handled.
9. A rapid survey of on-going contracts to identify which items have been genuinely affected by pandemic. Guidelines for uniform approach needed.
10. Enhance capacity of local industries to produce core raw materials such as cement aggregate and steel components within Nepal (employment would be generated).
11. Gear up the activities in smaller projects that are targeted to local development whether jobless people gathered at local level be materialized.
12. As far as possible, more digital approach towards the work will have to be practiced encouraging work from home. Machine intensive work is to be preferred to labor intensive work.

13. Specific Guidelines for 'new normal' to be developed by the Government because different will be the safety requirements, productivity rate, transportation of people and goods.
14. Collaboration among team members is important.
15. Many people have returned from abroad and lost their job. If they could be attracted to construction industry, which can easily generate employment to them would be an opportunity to enhance capability of the construction industry.
16. It should be taken as an opportunity to work for planning and construction management techniques of projects in such situations.
17. Practice should be done to create remote working environment in construction industry instead of frequent site visit by all stakeholders. Construction sector should use latest technology such as supervision through drone, CCTV monitoring, remote instruction for manpower with use of minimal labours and engineer at site.
18. Good planning with including all type of vulnerability consideration.
19. Allocate safety engineer for each project.
20. Social distancing should be maintained.
21. Human life should be considered important than projection completion date and payment.
22. Change the PPMO documents so that it can address such type of pandemic condition.
23. All stakeholder should understand and aware about Pandemic condition, effect and care for him as well as related coworkers.
24. There should be insurance for everyone engaged in construction for such situations.
25. Type of effect is different in different country and context.

**APPENDIX – B**  
**Letters Circulated by Government**  
**Newspaper Snapshot**  
**Snapshot of Labour Act**

Letters circulated by Government of Nepal on 2nd April, 2020.



नीय उपाप्रधानमन्त्री तथा रक्षामन्त्री श्री ईश्वर पोखरेलज्यूको अध्यक्षतामा बसेको नोभल कोरोना रोकथाम तथा नियन्त्रण उच्चस्तरीय समन्वय समितिको आज मिति २०७६ चैत २० गते को १६ औं बैठकमा देहाय बमोजिम निर्णय गरियो।

१. देहायका प्रावधानहरूको पूर्ण पालना हुने सुनिश्चित गरी विकास निर्माण आयोजनाहरू, दैनिक अत्यावश्यक उपभोगका खाद्यवस्तु उत्पादन गर्ने उद्योगहरू, चिनी तथा चिया उद्योग, पशुपन्छीको दाना उत्पादन गर्ने उद्योगहरू, इटाभट्टाहरू र जनक शिक्षा सामग्री केन्द्र सञ्चालन गर्न दिने।

(क) श्रमिक र अन्य जनशक्तिहरू अनिवार्य रूपमा कार्यस्थलभित्रै रहनुपर्ने, उनीहरूलाई आवास र खानाको व्यवस्था कार्यस्थलभित्रै गरिनुपर्ने, कार्यस्थलबाट बाहिर जान र कार्यस्थलबाहिर रहेका परिवारका सदस्यलगायत अन्य कुनै पनि व्यक्तिहरूसँग सम्पर्कमा आउन नदिने,

(ख) कार्यस्थलमा व्यक्ति व्यक्तिसीध न्यूनतम भौतिक दूरी कायम गर्नुपर्ने,

(ग) स्वास्थ्य तथा जनसंख्या मन्त्रालयले जारी गरेको स्वास्थ्य सम्बन्धी प्रोटोकल पालना गर्ने,

(घ) श्रमिक लगायत कार्यस्थलमा रहने सबैको दैनिक ज्वरो नाप्ने, नियमित स्वास्थ्य जाँच गर्ने, मास्क, सेनिटाइजर तथा साबुन पानीको प्रयोग गर्ने गराउने,

(ङ) एम्बुलेन्स स्ट्याण्ड बाड राख्ने व्यवस्था गर्ने,

(च) यी प्रावधानहरू पालना गर्ने गराउने जिम्मेवारी विकास निर्माण आयोजनाहरूको हकमा आयोजना प्रमुख एवं विभागीय प्रमुखको र निजी क्षेत्रबाट सञ्चालित उद्योगको हकमा उद्योगधनी तथा सञ्चालकको हुने।



(छ) प्रदेश सरकार, स्थानीय प्रशासन र स्थानीय तहले यी प्रावधानहरूको पालना भए नभएको अनुगमन गर्ने।

२. सिजन अनुसार ढक्कालै लगाउनुपर्ने र उठाउनुपर्ने बाली लगाउने र उठाउने कार्य गर्न दिने। यस्तो कार्य गर्दा न्यूनतम भौतिक दूरी कायम गर्ने, मास्क लगाउने, सेनिटाइजर प्रयोग गराउने, नियमित रूपमा साबुन पानीले हात धुने। स्थानीय तह र स्थानीय सुरक्षा निकायले समन्वयात्मक रूपमा यसको अनुगमन गर्ने।

३. राजमार्गहरूमा करिब १०० किलोमिटरको दूरीमा रहेका पेट्रोल पम्पको नजिक पर्ने गरि सवारी साधनको साधारण मर्मत गर्ने बर्कशप खोल्न दिने। स्थानीय सुरक्षा निकायले यसको अनुगमन गर्ने।

४. सम्बन्धित अ-प्राण्य, विभाग, प्रदेश सरकार र स्थानीय तहले बुँदा ५ देखि ३ सम्मका सबै प्रावधानहरूको पालना सुनिश्चित गर्ने र आवश्यक समन्वय गर्न नोडल अफिसरहरू तोक्ने।


५. आवागमन सघर सघ निर्गमनी गरी चेकजाँचमा कडाइ गर्ने।

  
सावब  
  
ईश्वर पोखरेल  
उपाप्रधानमन्त्री





६. तरकारी, फलफूल, खाद्यवस्तु, खनिजसहित दुग्ध, औषधि बिक्री वितरणका कार्यहरूलाई स्वास्थ्य सुरक्षाका आवश्यक प्रबन्धहरू (भीडभाड नार्ने, क्रेता तथा विक्रेताले मास्क र सैनिटाइजरको प्रयोग गर्ने गराउने, बिक्रीस्थलमा फिनेल/डिटोल आदिको प्रयोग गरी सफाई गर्ने) गरी, भौतिक दूरी कायम गरी गराई सेवा प्रवाह गर्ने। यस कार्यका लागि स्थानीय प्रशासनले स्थानीय तहसँग समन्वय गर्ने।
७. सीमानाकामा हुने व्यक्तिहरूको आवागमन रोक्ने। यस अघि संक्रमणको अवधिभित्र नेपाल प्रवेश भइसकेका व्यक्तिहरूको निगरानी तथा स्वास्थ्य परीक्षण गर्ने, क्वारेन्टाइनको व्यवस्थापन गर्ने, संक्रमितको परीक्षण गर्ने, आइसोलेसनको व्यवस्थापन गर्ने तथा औषधि उपचारका कार्यहरूलाई थप प्रभावकारी तुल्याउने कार्यहरूमा प्रदेश सरकार र स्थानीय तहले समन्वयात्मक रूपमा कार्य गर्ने।
८. नेपाली सेनाको तर्फबाट खरिपाटीस्थित नेपाल विद्युत प्राधिकरणको तालिम केन्द्रमा क्वारेन्टाइनमा राख्दाको खर्च र विभिन्न प्रदेशमा औषधि उपकरणहरूको हवाई ढुवानी गर्दा भएको खर्च नियमानुसार कोरोना भाइरस संक्रमण रोकथाम, नियन्त्रण तथा उपचार कोषबाट नेपाली सेनालाई शोधभर्ना गर्ने व्यवस्था मिलाउने।
९. स्थानीय रूपमा स्थापना भएका क्वारेन्टाइनको खाना खर्च तोकिएको मापदण्डका आधारमा सम्बन्धित प्रदेश सरकार तथा स्थानीय तहले स्थापना गरेको कोषबाट व्यहोर्ने।
१०. सर्वसाधारण नागरिकहरूका लागि अत्यावश्यक उपभोग्य सेवा तथा वस्तुहरूको आपूर्तिको व्यवस्था मिलाउने। यसका लागि गृह मन्त्रालयले आवश्यक समन्वय गर्ने।
११. कोभिड-१९ को संक्रमण, रोकथाम तथा नियन्त्रण गर्न आवश्यक पर्ने औषधि तथा उपकरणहरू निजी क्षेत्रबाट प्रतिस्पर्धात्मक रूपमा खरिद गर्ने व्यवस्था स्वास्थ्य तथा जनसंख्या मन्त्रालयले मिलाउने। निर्धारित अवधिभित्र निजी क्षेत्रबाट प्रतिस्पर्धात्मक रूपमा औषधि, उपकरण तथा सामग्री पर्याप्त आपूर्ति हुन नसकेमा सरकार-सरकारबीच (G to G) प्रक्रिया अवलम्बन गरी खरिद गर्ने।
१२. नेपाल भ्रमण गर्न भिसा प्राप्त गरेका विदेशी पर्यटकहरूको कोभिड-१९ को संक्रमणका कारणले भिसा अवधि समाप्त भएकोमा सोही अवधि बराबर हुने गरी नियमानुसार भिसा अवधि थप गर्ने व्यवस्था मिलाउने।
१३. नेपालमा कोभिड-१९ को संक्रमण रोकथाम, नियन्त्रण तथा उपचारका लागि स्थापित "कोरोना भाइरस संक्रमण, नियन्त्रण तथा उपचार कोष" मा उत्साहपूर्वक योगदान गर्नुहुने व्यक्ति, संघ, संस्था तथा विभिन्न निकायहरूलाई धन्यवाद दिदै यस कोषमा थप योगदानका लागि सबैमा आह्वान गर्ने।

  
००६९१५२०  
सायब



  
सा. ईश्वर पोखरेल  
सचिव

Newspaper snapshot regarding notice of lockdown.

Newspaper snapshot regarding notice of lockdown.

Government extends nationwide lockdown until April 15 4/6/20, 17:25

---

**THE KATHMANDU POST**  
(/)

Without Fear or Favour (/)

— 24°C Kathmandu  
Air Quality in Kathmandu: 147 (/airquality)


Monday, April 6, 2020

---

**WHAT'S NEWS:**


- Covid-19 (/national/2020/04/06/poor-quarantine-facilities-could-themselves-become-outbreak-hotspots-doctors-warn)
- Measles outbreak in Dhading (/province-no-3/2020/04/06/measles-outbreak-kills-two-children-and-infects-over-150-in-cheppang-settlements-of-dhading-district)
- Prime Minister Oli (/national/2020/04/06/despite-fiascos-and-rising-covid-19-cases-the-prime-minister-maintains-a-stony-silence)
- Winter crops (/money/2020/04/06/winter-crops-lie-unharvested-in-the-fields-as-the-lockdown-forces-farmers-indoors)
- Budget for anti-Covid-19 measures (/money/2020/04/06/government-to-divert-rs-136-billion-budget-to-anti-covid-19-measures)
- Melamchi Project (/valley/2020/04/06/melamchi-likely-to-face-more-delays-as-workers-leave-the-site)

---



## MAKE SAFE PAYMENTS WITH MOBILE BANKING

NOW ACTIVATE FROM HOME



**fone pay**


(<https://youtu.be/wAigB-B>)

---

**NATIONAL (/NATIONAL)**


## Government extends nationwide lockdown until April 15

Decision follows three more Covid-19 cases, including one local transmission.




**MOST READ FROM NATIONAL**


Test, test, test, says WHO but Nepal has neither the means nor the matter (/national/2020/03/22/test-test-test-says-who-but-nepal-has-neither-the-means-nor-the-matter)



With first case of local transmission, window to prevent a mass outbreak is fast closing, public health experts say (/national/2020/04/04/with-first-case-of-local-transmission-window-to-prevent-a-mass-outbreak-is-fast-closing-public-health-experts-say)



Nepal goes under lockdown for a week starting 6am Tuesday (/national/2020/03/23/nepal-goes-under-lockdown-for-a-week-)



---

<https://kathmandupost.com/national/2020/04/06/government-extends-nationwide-lockdown-until-april-15> Page 1 of 4



NATION

## No International Flights From Mar. 22-30, Long-Route Public Vehicles Barred From Mar. 23: PM Oli



[Home](#) [Nation](#) [World](#) [Sports](#) [Editorial](#) [Interview](#) [Business](#) [Detour](#) [Headlines](#) [Miscellany](#) [Oped](#) [Gorkhapatra](#) [E-paper](#)



Editor

20 Mar, 2020

SHARING: 1 Shares

**By TRN Online, Kathmandu, Mar. 20:** Prime Minister KP Sharma Oli has said that the government has accorded utmost priority to the health of the people.

In his address to the nation delivered Friday, PM Oli highlighted that battle against pandemic of the scale of COVID-19 could be won through support and patience of all.

The PM's address to nation was broadcast live through Radio Nepal and Nepal Television.

The PM said that long-route public vehicles would be halted from Mar. 23 for the time being and international flights would be barred from March 22 to March 31 and that compulsory health check-up of all entering Nepal from border points would be imposed.

Notice was issued by Government of Nepal on 30<sup>th</sup> July, 2020 regarding Extension of Time (EOT) of six months. EOT could be provided for current ongoing contracts which was affected by COVID-19 lockdown. Maximum of six months of EOT could be provided to applicants without adding any extra financial burden to the Government of Nepal.

४. निर्णय हुनुपर्ने व्यहोरा:

नेपाल सरकारबाट घोषणा भएको लकडाउन अवधिभरमा खरीद सम्झौता भएका तथा उक्त अवधि भित्र सम्झौताको म्याद समाप्त भएका तर सम्झौता बमोजिम कार्य सम्पन्न हुन नसकेको अवस्थामा सम्बन्धित आपूर्तिकर्ता, निर्माण व्यवसायी, सेवा प्रदायक वा परामर्शदाताको निवेदनको आधारमा बोलपत्र स्वीकृत गर्ने अधिकारीले नेपाल सरकारलाई थप लागत नपर्ने एवं म्याद थप गरे बापत अन्य कुनै दाबी गर्न नपाउने गरी सम्झौता/करार गराई आर्थिक दायित्व नपर्ने गरी साविकको खरीद सम्झौतामा सम्बन्धित पदाधिकारीले बढीमा ६ महिना म्याद थप गर्न स्वीकृत दिने।

मिति : २०७७/०३/२९

श्री सचिव,  
अर्थ मन्त्रालय ।

खरीद सम्झौताको म्याद थप गर्ने विषयको अर्थ मन्त्रालयको मिति २०७७/३/२९ को प्रस्ताव मं.प.वै.सं. २९/०७७ मिति २०७७/३/२९ को मन्त्रपरिषद्को बैठकमा पेश हुँदा त्यसमा नेपाल सरकार, मन्त्रपरिषद्ले देहायबमोजिम निर्णय गरेकाले सोबमोजिम कार्यान्वयन हुन नेपाल सरकार (कार्यसम्पादन) नियमावली, २०६४ को नियम २९ बमोजिम अनुरोध गरेकोछु—

नेपाल सरकारको निर्णय —

"प्रस्तावमा लेखिएबमोजिम गर्ने ।"

  
(लोकेश्वर शर्मा)  
मुख्यसचिव  
२०७७/३/२९

Notice issued by Government of Nepal on 27<sup>th</sup> April, 2020 stating that: lockdown to be considered as public holiday and the government offices, authorities and industries should provide salary to their workers/employees.

खण्ड ७०) काठमाडौं, वैशाख १५ गते, २०७७ साल (संख्या ३)

## भाग ५

नेपाल सरकार  
गृह मन्त्रालयको  
सूचना

नेपाल सरकारले संक्रामक रोग ऐन, २०२० को दफा २ बमोजिम मिति २०७६।१२।९ र तत्पश्चात विभिन्न मितिमा जारी गरेको आदेश बमोजिम सम्पूर्ण सरकारी कार्यालय, निकाय वा उद्योगले विदा दिएका कर्मचारी वा श्रमिकको हकमा खाइपाई आएको तलब, भत्ता पाउने गरी त्यसरी विदा दिएको अवधिलाई सम्बन्धित कार्यालय प्रमुखले सार्वजनिक विदा कायम गर्ने निर्णय गरेकोले यो सूचना प्रकाशन गरिएको छ ।

आज्ञाले,  
महेश्वर न्यौपाने  
नेपाल सरकारको सचिव ।

Labour Act (2074) states that if there is any potential danger in any ongoing work, then employer is responsible for any kind of hazard or risk caused to worker or employees.

बमोजिम काम बन्द गरका ।

७६. तत्काल खतरा भएमा काम बन्द गर्ने : (१) कुनै काम तत्काल बन्द नगरे त्यस्तो काम गर्ने श्रमिक वा अरु कसैलाई शारीरिक चोटपटक लाग्ने वा खतरा पुग्ने वा निजको स्वास्थ्यमा गम्भीर असर पर्ने वा कुनै उपकरण, वस्तु वा पदार्थको अनपेक्षित क्षति वा हानी नोक्सानी हुने अवस्था भएमा त्यस्तो काममा संलग्न श्रमिकले सोको जानकारी रोजगारदाता वा दफा ७१ बमोजिमको जिम्मेवार व्यक्तिलाई दिनु पर्नेछ ।

(२) उपदफा (१) बमोजिमको जानकारी प्राप्त भएपछि रोजगारदाता वा जिम्मेवार व्यक्तिले सो सम्बन्धमा तत्काल उचित निर्देशन दिनु पर्नेछ ।

(३) उपदफा (१) बमोजिमको जानकारी दिन रोजगारदाता वा जिम्मेवार व्यक्ति तत्काल उपलब्ध नभएमा श्रमिक आफैले त्यस्तो काम बन्द गर्न सक्नेछ ।

(४) उपदफा (३) बमोजिम काम बन्द गरेकोमा त्यसरी काम बन्द गर्ने श्रमिकले सोको जानकारी तत्काल छिटो साधनद्वारा रोजगारदाता तथा जिम्मेवार व्यक्तिलाई दिनु पर्नेछ ।

(५) उपदफा (४) बमोजिमको जानकारी प्राप्त भएपछि रोजगारदाता वा जिम्मेवार व्यक्तिले सो सम्बन्धमा तत्काल जाँचबुझ गरी सोबाट सिर्जित खतरा निवारण वा न्यूनीकरण गर्नु पर्नेछ ।

(६) कुनै काम बन्द गर्नु पर्ने गरी तत्काल कुनै खतरा उत्पन्न भए वा नभएको तथा खतरा निवारण वा न्यूनीकरण गर्न गरिएको व्यवस्था पर्याप्त भए वा नभएको सम्बन्धमा श्रमिक र रोजगारदाताबीच कुनै विवाद भएमा त्यस्तो विवादको छिनोफानोको लागि कुनै पक्षले श्रम कार्यालयमा निवेदन दिन सक्नेछ ।

(७) उपदफा (६) बमोजिम निवेदन परेमा कार्यालयले सो सम्बन्धमा छानविन गरी दुवै पक्षको कुरा सुनी आवश्यक भए प्रमाण समेत बुझी त्यस्तो विवादको छिनोफानो गर्नु पर्नेछ ।

(८) उपदफा (७) बमोजिम कार्यालयले विवाद छिनोफानो गरिदिएको निर्णय अन्तिम हुनेछ र त्यस्तो निर्णय रोजगारदाता तथा श्रमिक दुवै पक्षले मान्नु पर्नेछ ।

(९) यस दफामा अन्यत्र जुनसुकै कुरा लेखिएको भए तापनि रोजगारदातालाई हानी नोक्सानी पुऱ्याउने, दुःख दिने वा रिसइवी साधने उद्देश्यले काम बन्द गर्न पाइने छैन ।

(१०) यस दफा बमोजिम काम बन्द भएको समयमा श्रमिकलाई निजको सेवा शर्तको अधीनमा रही रोजगारदाताले अन्य काममा लगाउन सक्नेछ ।

**APPENDIX – C**  
**Supporting Documents- Claim Documents**

Information about **Upgrading/Improvement of Birendra Chowk (Udayapur)-  
Bhiman (Sindhuli) Section of Dharan-Chatara-Gaighat-Katari-Sindhuli-Hetauda  
Road:**

**EOT LETTER**

**Application of Extension of Time 4 (EoT #4)**

**General**

This Interim Request regarding Extension of Time (EOT #4) for the completion of the work has been prepared and submitted by ZIEC Sharma Lama JV (hereinafter the "JV" or "Contractor"). The Contractor for Improvement of "Birendra Chowk – Bhiman Section (KM 43+800 to KM 178+700), Dharan Gaighat Katari Sindhuli Heatauda Road Project" presently known as a part and section of "Madan Bhadari Highway Project" for purpose of requesting Extension of Time of the Term of the Contract from Department of Roads (hereinafter referred as "Employer").

This interim Extension of Time (EOT #4) has been prepared for delayed events known and occasioned from 1<sup>st</sup> October 2019 to 15<sup>th</sup> June 2020. The Contractor's earlier request for Extension of Time 3 (EoT# 3) was given for arrays of reason known and occasioned up to 30<sup>th</sup> September 2019 as detailed in *Exhibit 1*. The Employer had granted 160 days of Extension of Time in EOT #3 for causes of delay vide letter Ref. No. 172 dated 19<sup>th</sup> November 2019 (2076/08/03). *Exhibit 2*

The Contractor reserves the right to supplement and to revise this interim application namely EOT#4 as appropriate or in the event further delay for which the Contractor is entitled to Extension of Time as per the provisions of Contract.

**Key Contractual Dates**

- a) Contract Agreement Date: 7<sup>th</sup> November 2016
- b) Accepted Contract Amount – NPR. 7,369,984,218.97 (including VAT & PS)
- c) Commencement Date or Start Date: 22<sup>nd</sup> November 2016
- d) Possession of Site: 20<sup>th</sup> November 2016.
- e) Contract Duration – 36 months (1095 days)
- f) Original Time of Completion – 22<sup>nd</sup> November 2019
- g) Milestone #1 - 22<sup>nd</sup> November 2017
- h) Milestone #2 - 22<sup>nd</sup> November 2018
- i) Extension of time (EoT-1) granted: 195 days
- j) Revised Milestone # 1 - 5<sup>th</sup> June 2018
- k) Revised Milestone # 2 – 4<sup>th</sup> June 2019
- l) Revised Completion Date 1 – 3<sup>rd</sup> June 2020
- m) Extension of time (EoT-2) granted: 78 days
- n) Revised Milestone # 2 – 22<sup>nd</sup> January 2020
- o) Revised Completion Date 2 – 20<sup>th</sup> August 2020
- p) Extension of time (EoT-3) granted: 160 days
- q) Revised Milestone # 2 – 28<sup>th</sup> March 2020
- r) Revised Completion Date considering EOT #3 – 27<sup>th</sup> January 2021

**Background of Events**

On 7<sup>th</sup> November 2016, the JV entered into a Contract with Department of Roads to undertake the construction of the road from KM 43+800 to KM 178+700 namely "Birendra Chowk – Bhiman Section (KM 43+800 to KM 178+700), Dharan Gaighat Katari Sindhuli Heatauda Road Project". The main scope of the works are related with construction of road from KM 43+800 to KM 178+700 and work consisted mainly of:



**Claim for EOT of 68 days due to COVID-19 lockdown for**

**Upgrading/Improvement of Birendra Chowk (Udayapur)-Bhiman (Sindhuli) Section of Dharan-Chatara-Gaighat-Katari-Sindhuli-Hetauda Road:**

**EXHIBIT 6**

Events Known and Occasioned from 1st October 2019 to 14th June 2020

	Start Date	Finish Date	Days	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	Jul-20	Aug-20	Sep-20
Delay in Release of houses	1-Oct-19	14-Jun-20	29		—	—	—		—	—					
Delay in Release of Electric poles	1-Oct-19	14-Jun-20	30	—		—	—		—	—					
Delay due to heavy rainfall	25-Feb-20	28-Feb-20	3					—							
	6-Mar-20	7-Mar-20	2					—							
Delay caused due to local disputes	24-Nov-19	14-Jun-20	35		—	—	—		—	—					
Totally stoppage of work due to covid 19	24-Mar-20	19-Apr-20	27						—	—					
No-Mobilization	20-Apr-20	2-May-20	13						—	—					
Partially work due to covid 19	2-May-20	14-Jun-20	28						—	—	—	—	—	—	—
Upcoming Monsoon Season	15-Jun-20	13-Sep-20	90										—	—	—
<b>Total Delay days = 132</b>															

**Claim for EOC due to COVID-19 lock down for Gorkha Hospital.**

<b>Project: - Construction of Gorkha District Hospital</b> <b>Contractor:- Lumbini Builders P. Ltd.</b> <b>Contract No.:- MoHP 001-1 Gorkha</b>		
<b>Total Summary</b>		
S.No.	Description	Amount
1	Manpower Cost	3,250,600.00
2	Equipment Cost	3,720,000.00
3	Extended Overhead	15,496,138.55
4	Material at Site	5,082,805.48
<b>Total=</b>		<b>27,549,544.03</b>



<b>Project: - Construction of Gorkha District Hospital</b> <b>Contractor:- Lumbini Builders P. Ltd.</b> <b>Contract No.:- MoHP 001-1 Gorkha</b>	
<b>Extended Overhead Cost Claim Calculation</b>	
Agreement date	9-May-19
Contract Duration	430
Commencement Date	23-May-19
Original Project Completion Date	26-Jul-20
Delay days due to coronavirus situation	120
Daily Indirect Cost From Tender Breakdown	129,134.49
<b>Total Extended Overhead Cost (Nrs)</b>	<b>15,496,138.55</b>



**Claim for EOC due to COVID-19 lock down for Melamchi (Package 1 and Package 2)**

(Data as of 2<sup>nd</sup> August,2020)

S.N	Item	Amount (NRs)	Package 1	Package 2
1	Amendment of Arbitration Location			
2	Engineer vehicle repair payment	2,079,726.65	2,079,726.65	
3	Installation of air evacuation pipe in Gyalthum BOQ number : 3.1.1.12	71,049,383.60		71,049,383.60
4	Change in Law - Disiel	3,885,469.63		3,885,469.63
5	The payment of the additional item in BOQ (security personnel, health protocols, air conditioner repair costs )	14,099,801.30	14,099,801.30	
6	Sundarijal Camp - Variation	3,930,085.10		3,930,085.10
7	Excavation variation (class III and Class II)		-	-
8	The variation rate for remove the cable from the tunnel	62,166,675.69	-	62,166,675.69
9	Dewatering on Headworks and Tunnle	219,437,012.00	22,016,935.00	197,420,077.00
10	Access walkway from headworks to headworks diversion tunnel inlet (128m length)	3,476,921.68	3,476,921.68	
11	Quotation of Pipes Installation with Welding at Sundarijal- Outlet	8,403,508.00		8,403,508.00
12	The test in the Sundarijal pipe installation	1,854,361.35		1,854,361.35
13	Excess Grouting on Rock Dowel	10,000,000.00	-	10,000,000.00
14	The new rate of cement grouting (variation order)	1,684,714.64	-	1,684,714.64
15	The new rate of cement mortar grouting (variation)	2,102,436.00	-	2,102,436.00
16	Additional costs on channelization for the purpose of Dam excavation due to delay in interface by HM Contractor	886,052.28	886,052.28	-
17	Electric Variation Works	43,112,035.57	43,112,035.57	-
18	Cost Summary due to the Force Marjure of the Corona virus COVID 19	47,487,472.00	29,415,715.00	18,071,757.00
Total		<b>572,058,386.72</b>	<b>151,291,979.51</b>	<b>420,766,407.21</b>

**Claim for EOC due to COVID-19 lock down for Melamchi (Package 1 & Package 2):**

Summary of the Additional Costs Caused by the Corona Virus COVID 19			
S. N	Description	Total Amount	Remark
1	<b>Manpower</b>		
1.1	<b>Chinese Worker</b>		
1.1.1	Salary during waiting at home and isolation	4,013,827.95	
1.1.2	Increased labor costs caused by loss-efficiency during lock d		The Contractor will calcualtion and submit
1.1.3	Idle costs during lock down (reduction of personnel at work surface, interruption and delay in the supply of materials and equipment, etc.)		The Contractor will calcualtion and submit later
1.2	<b>Nepalese Worker</b>		
1.2.1	Nepalese salary (1 salary at home 2 salary during isolation at site 3 salary for the normal construction)	9,223,374.00	
1.3	Work subsidies during lock down (including Chinese and Nepalese worker)		The Contractor will provide the details after the government issue the order
2	<b>Materials</b>		
2.1	The increases cost of purchasing cement, steel and other materials	1,411,776.72	
2.2	Increase in material transportation costs	349,517.05	
2.3	The additional cost caused by the failure to clear the customs clearance of the imported bolts from India (if any)		The Contractor will provide the details after the bills information coming
3	<b>Equipment</b>		
3.1	Cost of renting a vehicle on site	3,905,000.00	
3.2	Site idle equipment	2,225,942.80	
3.3	Additional costs caused by equipment imported from China that cannot be cleared (if any)		The Contractor will provide the details after the bills information coming
3.4	Materials and equipment that have been procured from china cannot be entered due to customs clearance and can only be purchased again from local		The Contractor will provide the details after the bills information coming
4.1	Costs for ticket refunds due to Corona virus COVID 19 for Chinese worker entering Nepal, ticket increases costs, and the cost of health certificate processing and translation required for entry	55,432.00	The information are not cpmpleted, the Contractor will provide later
4.2	Isolation costs incurred for entry Nepal of Chinese employees (including food, housing, daily necessities, etc.)	90,630.00	
4.3	Isolation costs incurred for Nepalese Worker(including food, housing, daily necessities, etc.)		The Contractor will provide the details after the bills information coming
4.4	Due to the Nepal lock down, the cost of Accommodation and food for people who cannot enter the country		The Contractor will provide the details after the bills information coming
4.5	Corona virus COVID 19 prevention materials including domestic procurement (masks, alcohol, protective clothing, hand sanitizer, etc.)		The Contractor already submit in the separate letter MWSP/COM/2020/672
4.6	Explosive protection costs by Army	75,000.00	
4.7	Security costs	1,080,000.00	
4.8	Prevention of spread of corona virus COVID 19, publicity of special measures costs	50,000.00	
Total		22,480,500.51	

Note: The additional costs caused by the Corona virus COVID 19 is calculated from March 23<sup>rd</sup> 2020 to April 25<sup>th</sup> 2020.

## Contractual Issues and Claims Raised by Contractor

### Statement of Claim No. 1

**Corona virus (COVID-19) – Is it a Force Majeure Event under the Contract? As a result of the force majeure event and lock down ordered through decree by Government of Nepal - Is the Contractor entitled to both extension of time and money?**

- Sub Clause 20.1 of CoC which states, *“If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Engineer, describing the event or circumstance giving rise to the claim.”*

#### **C. Compliance with the Notice requirement**

The Contractor has served all the notices on the event within the stipulated time. The Contractor therefore has fulfilled the precedent condition to qualify the claim for extension of time and cost.

#### **D. Relief Sought**

Based on the aforementioned event and the above listed contractual provisions, the Contractor seeks the following relief:

1. Whether the COVID-19 is a Force majeure event under Sub Clause 19.1 of CoC?
2. Whether the lock down order by decree by Government of Nepal is change of law as per provision of the Sub Clause 13.7 of CoC?
3. Is the Contractor entitled for extension of time in accordance with Sub Clause 2.1, 8.4, 8.5, 13.7, 19.1 of CoC?
4. Is the Contractor entitled for the payment of the additional cost incurred as a result of the delay and disruption as well as the additional health measures to be implemented as per Government of Nepal Protocol?

We therefore seek an Engineer determination pursuant to Sub Clause 3.5 of CoC within a reasonable time on the above relief sought.

