

Research Paper

Study of The Pandemic Impact of Covid-19 on Road Project Performance in South Sulawesi Province

Hasrisal¹, M.A. Abdurrahman², M.I. Ramli³

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ABSTRACT

The road is a means of circulation space which is made to facilitate transportation by land. Roads have existed since ancient human times and were used to move places and be passed to transport life's equipment, in human development only know roads made of soil that can only be passed on foot or using livestock such as horses, cows or cattle. buffalo. The impact of the spread of Covid-19 has resulted in certain conditions so that efforts to overcome them need to be carried out, one of which is through large-scale social restrictions (PSBB). Based on these considerations, President Joko Widodo has issued Government Regulation (PP) Number 21 of 2020 concerning Large-Scale Social Restrictions in the Context of Accelerating the handling of Covid-19 which was signed on March 31, 2020. Covid-19 pandemic, the performance was measured from the time during the COVID-19 pandemic and after the Covid-19 pandemic with worker productivity and the distance between workers in the field, the level of productivity in projects during the Covid-19 pandemic was 1,284 m³, the distance between workers was 0.894 m, project performance as measured by cost performance during the covid-19 pandemic and after the Covid-19 pandemic - 19 with the BCWSN method until week 11 the realization of the work was 45.72% the cost was Rp. 34,606,561.52. Projects after the Covid-19 pandemic realized 58.61% of work at a cost of Rp. 43,100,392,05, Project performance as measured by work safety performance during the COVID-19 pandemic and the post-Covid-19 pandemic, distributing questionnaires in letter Number: 02 / IN / M / 2020 issued by PUPR with a high index level, namely Provision of Health Facilities in the Field of 4.635 standard deviation of 0.593



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1. Introduction

The road is a means of circulation space which is made to facilitate transportation by land. Roads have existed since ancient human times and were used to move places and be passed to transport life's equipment, in human development only know roads made of soil that

can only be passed on foot or using livestock such as horses, cows or cattle. buffalo. The SARS-COV-2 virus is a corona virus, a new type that causes an epidemic, which was initially reported for the first time in Wuhan, China on December 31, 2019. Analysis of isolates from the respiratory tract of this patient showed the discovery of a new type of corona virus. On February 11, 2020,

¹ Department of Civil Engineering, Faculty of Engineering, Hasanuddin University, Makassar 90245, INDONESIA, hasrisal19d@student.unhas.ac.id

² Department of Civil Engineering, Faculty of Engineering, Hasanuddin University, Makassar 90245, INDONESIA

³ Department of Civil Engineering, Faculty of Engineering, Hasanuddin University, Makassar 90245, INDONESIA

WHO named the disease Corona virus disease 2019 (Covid-19) (Indonesian Lung Doctors Association, 2020) WHO declared this disease a Public Health Emergency of International Concern (PHEIC) on January 30, 2020. The impact of the Covid-19 pandemic on the worsening of the financial system as indicated by a decrease in various domestic economic activities so that it needs to be jointly mitigated by the Government and the Financial System Stability Committee (KSSK) to take anticipatory actions (forward) in order to maintain financial sector stability. Based on these considerations, the Government of the Republic of Indonesia has stipulated Government Regulation in Lieu of Law (Perpu) Number 1 of 2020 concerning State Finance Policy and Financial System Stability for handling the Covid-19 Pandemic and/or in the context of Facing Threats that endanger the National Economy and/or Financial System Stability signed on March 31, 2020. The governor said this was the lifeblood of the economy in South Sulawesi. "We are indeed pushing for maximum road projects, because these projects will certainly lead to connectivity between regions that can support economic growth." He detailed that the road construction in South Sulawesi would cost more than Rp 400 billion, while for the irrigation project it would cost more than Rp 100 billion. "The last two years, the Road Project has experienced a significant increase compared to 2018, We are indeed maximal to drive the economy, including the work". The protocol applies to all projects in Indonesia, including construction projects organized by the government, local governments, state-owned enterprises, as well as private investment and or joint projects

2. Research Methodology

This research is a type of quantitative descriptive research, namely research that describes the conditions of a particular project with data analysis of one or more variables on two or more different samples or at different times (Sugiyono, 2006). The comparative method used in this study is to determine project performance after the Covid-19 pandemic, which is compared between the types of projects that were before Covid-19 and after the Covid-19 pandemic. The research design is presented in the form of a flow chart as presented in Figure 1.

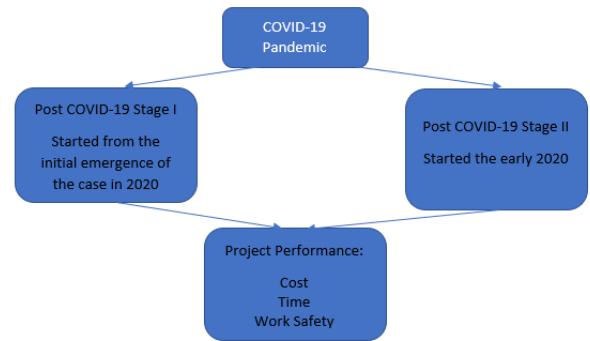


Fig. 1. Conceptual Framework

South Sulawesi as a sample project during the Covid-19 pandemic, namely the Latuppa – Bongko – Salulimbung – Pantilang Road project, Fly Over – Sultan Hasanuddin Airport Access, Road Construction for the Rantepao - Sa'dan - Section. Batusitanduk in Luwu, Improvement / Reconstruction of the Paleteang - Malaga - Kabere Section in Kab. Enrekang, Preservation of Sinjai - Watampone - Tarumpakkae and Maros - Watampone roads and sample projects that were in the post-Covid-19 pandemic period, namely the Bua - Rantepao Road Construction Project, Maros - Watampone Road, Parepare - Toraja Road, Siwa - Pare Road – Barru – Maros – Makassar and Jalan Takalar – Sungguminasa. The data collection and analysis process will be carried out in 2021 with an estimated 2 (two) months.

Data collection was carried out by collecting primary data and secondary data on both projects that were during the Covid-19 pandemic and those in the post-covid-19 pandemic. Primary data was obtained through direct interviews with all workers, both supervisory consultants to implementing contractors and labor workers. Secondary data is obtained by submitting a data request to the project and collecting data in the field Questionnaire, The questionnaire distributed to respondents in this case to all project implementation devices with the type of question based on letter Number: 02 / IN / M / 2020 issued by the Minister of Public Works and Public Housing (PUPR) regarding the Protocol to Prevent the Spread of Corona Virus Disease 2019 in the implementation of construction services, namely in the form of providing health facilities in the field, implementing COVID-19 prevention in the field, implementing verification of offline qualifications and safety in the protection of occupational health, each question has 4 to 6 sub-questions with numbers in the answer scale which have the meaning as following:

- 1 : Strongly Disagree
- 2 : Don't agree
- 3 : Disagree
- 4 : Agree
- 5 : Strongly agree

3. Results and Discussion

Data were obtained from several projects located in South Sulawesi Province, as for the list of sample projects reviewed in table 3.1, namely the table of sample list of road infrastructure projects in the province of South Sulawesi. The project data displayed in this chapter is that two projects will be compared between the Latuppa - Bongko - Salulimbung - Pantilang Road Development Project, South Sulawesi Province which was during the Covid-19 pandemic and the Bua - Rantepao Road Development Project, Sulawesi Province. South, which is in the post-Covid-19 pandemic. Observations were made directly on several work items in the field.

The data obtained is then analyzed to determine the duration and cost required to complete several work items due to the impact of this pandemic and compared with the duration, costs required to complete several work items after the pandemic period and how much occupational health and safety (K3) which is obtained from the results of the questionnaire which is distributed to several implementing devices in a project. The questionnaire distributed refers to letter Number: 02 / IN / M / 2020 issued by the Minister of Public Works and Public Housing (PUPR) regarding the Protocol to Prevent the Spread of Corona Virus Disease 2019 (Covid-19) in the Implementation of Construction Services.

In estimating the time required to complete a work item, it is important to know the amount of work and energy required to complete the work. Therefore, as a basis for planning an implementation method is used to calculate the time needed to complete work items, especially projects in South Sulawesi Province which are during the Covid-19 pandemic and those in the post-Covid-19 pandemic.

Table 1. Volume and Time Schedule.

Job description	Volume	Time
Excavations for Drainage Ditches and Drains	972	87
Couple Stone with Mortar	1.340	51
Soft Rock Excavation	23.715	104
Selected Heap from Excavated Sources	5.700	96
Road Body Preparation	16.500	118

In calculating productivity and implementation time during the Covid-19 pandemic, which is the reference and basis for maintaining health protocols in carrying out a project, especially the Latuppa - Bongko - Salulimbung - Pantilang road segment in South Sulawesi Province, namely the number of workers in a construction project. The analytical data displayed in this analysis calculation is taken from the excavation work item for drainage ditches and waterways, then other work items will be entered into the table recapitulation of the results

of the time schedule analysis on all work items analyzed seeing the resulting inconsistency below 0.10%, the distribution of the questionnaire does not require repetition. The results of the analysis of the Covid-19 Pandemic Period Project for the Construction of the Latuppa – Bongko – Salulimbung – Pantilang Section of South Sulawesi Province were obtained to find out how much productivity is to measure how long it takes to implement the time schedule.

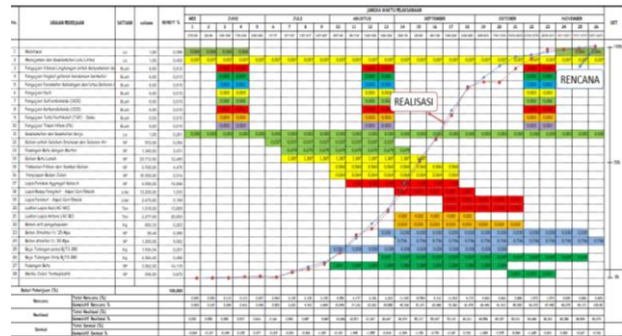


Fig. 2. Time Schedule In Pandemic Covid – 19

The comparison fluctuations between the time performance needed in comparing road projects that were during the Covid-19 pandemic, namely the Bua - Rantepao Package 1 Pantilang Road Development Project, South Sulawesi Province and projects that were in the post-Covid-19 pandemic period, namely in the Latuppa – Bongko – Salulimbung – Pantilang Road Construction project, taking the drainage work as an example, the comparison is as follows picture.

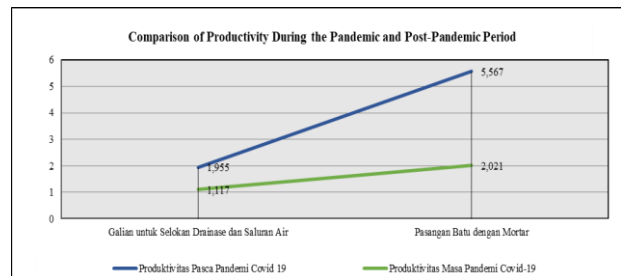


Fig. 3. Comparison of Productivity During the Pandemic and Post-Pandemic Period

From Figure 3, it is found that the greatest worker productivity in the post-Covid-19 pandemic, this is due to the absence of worker restrictions (OH) in the implementation of the Latuppa - Bongko - Salulimbung - Pantilang Road Construction in South Sulawesi Province.

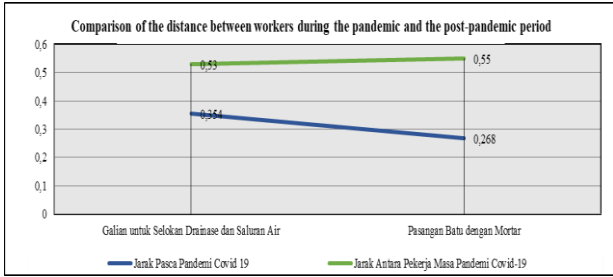


Fig. 4. Comparison of the distance between workers during the pandemic and the post-pandemic period

From Figure 4, the distance between workers is the smallest in the post-Covid-19 pandemic, this is due to the absence of distance restrictions in the implementation of the Bua - Rantepao Road Construction Package 1 Pantilang South Sulawesi Province.

In calculating the costs in the calculations needed to do a work item, it is important to know the amount of work and the energy required to complete the work. Therefore, as a basis for planning, the BCWS (Budgeted Cost for Work Schedule) method is used to calculate the costs compared between the Latuppa - Bongko - Salimbung - Pantilang road construction project in South Sulawesi Province as a sample project during the Covid-19 pandemic. and the Jalan Bua – Rantepao Package 1 Pantilang Road project in South Sulawesi Province as a sample project that was in the post-Covid-19 pandemic.

BCWS is a cost plan based on a schedule which is a cost budget that is allocated based on a work plan that has been prepared against time. The BCWS value is obtained by multiplying the weight of the plan multiplied by the budget value

The Latuppa - Bongko - Salimbung - Pantilang road construction project in South Sulawesi Province as a sample project during the Covid-19 pandemic by taking calculations up to the 11th week and Earthwork and Geosynthetic work items as examples of calculations. $BCWS_{11} = 45.72\% \times Rp. 75,692,391.78$ (Before 10%VAT) = Rp. 34,606,561.52

The construction of Jalan Bua – Rantepao Package 1 Pantilang, South Sulawesi Province as a sample project that was in the post-Covid-19 pandemic period by taking calculations up to the 11th week as well as Earthwork and Geosynthetic work items as examples of calculations. $BCWS_{11} = 58.61\% \times Rp. 73.537.608.00$ (Before 10% VAT) = Rp. 43,100,392.052

The comparison fluctuations between cost performance using the BCWS (Budgeted Cost for Work Schedule) equation where this BCWS is directly proportional to the productivity of activities based on the activity time schedule as shown below

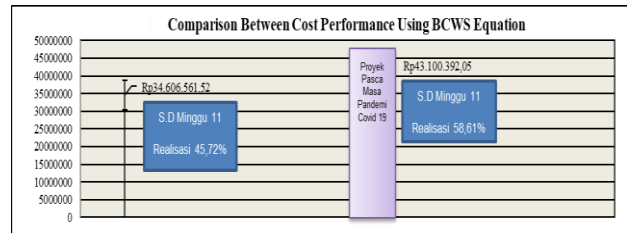


Fig. 5. Comparison Between Cost Performance Using BCWS Equation

From the picture above, we get a comparison between the lowest cost performance during the Covid-19 pandemic, this is because the realization of work at the same time as the project after the Covid-19 pandemic is very different. In a sense, post-Covid-19 pandemic projects are bigger than projects during the Covid-19 pandemic because the realization of work is higher.

3.1 Occupational Health and Safety (K3) Performance

The distribution of questionnaires in this test was carried out on the Latuppa - Bongko - Salimbung - Pantilang road construction project which was during the Covid-19 pandemic and the Bua - Rantepao Road Package 1 Pantilang road project which was in the post-Covid-19 pandemic. Respondents were classified according to age, last education level, position in the project and work experience. These factors are considered to have a considerable influence in the implementation of construction projects.

Classification of Respondents Based on Age in the Latuppa – Bongko – Salimbung – Pantilang road construction project during the Covid-19 pandemic with the age of filling out the questionnaires being grouped into 4, namely 25 years, 26 – 35 years, 36 – 45 years and 45 year

Table 2. Classification of Respondents Based on Age.

Age	N	Percentage (%)
≤ 25 Years	8	14,29%
26 – 35 Years	12	21,43%
36 – 45 Years	24	42,86%
≥ 46 Years	12	21,43%
Total	56	100%

From Table 2, it can be concluded that the Latuppa – Bongko – Salimbung – Pantilang road construction project workers who were during the Covid-19 pandemic aged 25 years were 8 people with a percentage of 14.29%, aged 26-35 years as many as 12 people with a percentage 21.43%, aged 36 - 45 years as many as 24 people with a percentage of 42.86% and aged 46 years as many as 12 people with a percentage of 21.43%.

Classification of respondents based on their latest education in the Bua – Rantepao Road construction project which was in the post-Covid-19 pandemic, namely the group of respondents with the age of filling out the

questionnaire was grouped into 4, SMP, SMA, S1 graduates, S2 graduates. By taking the example of structural pavement work items.

Table 3. Classification of Respondents Based Last Education.

Education	Total	Percentage (%)
SMP	7	12,50%
SMA	11	19,64%
S1	34	60,71%
S2	4	7,14%
Total	56	100%

From Table 3, it can be concluded that the Latuppa – Bongko – Salimbung – Pantilang road construction project workers who were during the Covid-19 pandemic had 7 junior high schools with a percentage of 12.50%, 11 people with high school education with a percentage of 19.64%, S1 education as many as 34 people with a percentage of 60.71% and S2 education as many as 4 people with a percentage of 7.14%.

In the analysis of data measured from Occupational Safety and Health (K3), questionnaire items distributed to all construction workers, especially on road projects in South Sulawesi Province based on letter Number: 02 / IN / M / 2020 issued by the Minister Public Works and Public Housing (PUPR) regarding the Protocol to Prevent the Spread of Corona Virus Disease 2019 (Covid-19) in the Implementation of Construction Services.

The data in this study were taken with examples of structural pavement work items in the Latuppa - Bongko - Salimbung - Pantilang road construction project in South Sulawesi Province which was the sample during the Covid-19 pandemic with a total of 56 respondents and the Bua - Rantepao Road Section Package 1 project. Pantilang of South Sulawesi Province as a sample project that was in the post-Covid-19 pandemic with a total of 68 respondents. Respondents provided answers by filling out a questionnaire that was distributed.

Directly on the Provision of Health Facilities in the Field to review whether the service providers had referred to the letter Number: 02 / IN / M / 2020 issued by the Minister of Public Works and Public Housing (PUPR) regarding the Prevention Protocol. Spread of Corona Virus Disease 2019 (Covid-19) in the Implementation of Construction Services. From the results of the data analysis, it shows that the safety of the workplace in the Latuppa - Bongko - Salimbung - Pantilang road segment in South Sulawesi Province which was sampled during the Covid-19 pandemic with a total of 56 respondents

3.2 Implementation of COVID-19 Prevention in the Field

The data in this study includes 56 respondents who are workers for the Latuppa - Bongko - Salimbung - Pantilang road segment in South Sulawesi Province

during the Covid-19 pandemic which was sampled during the Covid-19 pandemic and project data for Jalan Bua - Rantepao Package. 1 Pantilang of South Sulawesi Province as a sample of projects that were in the post-Covid-19 pandemic included 68 respondents. Implementation of COVID-19 Prevention in the field. From the results of the data analysis, it shows that the Implementation of Covid-19 Prevention in the Field in the Latuppa - Bongko - Salimbung - Pantilang road construction project in South Sulawesi Province during the Covid-19 pandemic which was ranked first, namely Installed posters. (flyers) both digital and physical regarding the appeal/recommendation for the prevention of COVID-19 to be disseminated or installed in strategic places at the project site. with a mean value of 4.561 and a standard deviation of 0.569.

3.3 Implementation of Offline Qualification Evidence

The data in this study includes 56 respondents who are workers for the Latuppa - Bongko - Salimbung - Pantilang road segment in South Sulawesi Province which was sampled during the Covid-19 pandemic and the Bua - Rantepao Road Package 1 Pantilang Road project in South Sulawesi Province as a sample. The sample of projects that were in the post-Covid-19 pandemic included 68 respondents. Implementation of Offline Qualification Verification, namely From the results of the data analysis, it shows that the Implementation of Offline Qualification Verification in the Covid-19 Pandemic Period Project in the Latuppa - Bongko - Salimbung - Pantilang section of the road construction project in South Sulawesi Province which became the project sample during the Covid-19 pandemic period. the first rank is Service Providers using masks and gloves with a mean value of 4.614 and a standard deviation of 0.871.

Occupational Health, The data in this study includes 56 respondents who are workers for the Latuppa - Bongko - Salimbung - Pantilang road segment in South Sulawesi Province which was sampled during the Covid-19 pandemic and the Bua - Rantepao Road Package 1 Pantilang Road project in South Sulawesi Province as a sample. The sample of projects that were in the post-Covid-19 pandemic included 68 respondents. Security in occupational health protection which is part of the K3 Component. From the results of the data analysis, it shows that the protection of the public in the Latuppa – Bongko – Salimbung – Pantilang road segment in South Sulawesi Province as a sample project during the Covid-19 pandemic which is ranked first is Availability of a first aid kit for workers with first aid. the mean value is 4.577 and the standard deviation is 0.987.

4. Conclusion

Based on the description and analysis of the Covid-19 Pandemic Impact Study on Road Project Performance in South Sulawesi Province where this study took as many as ten projects in the South Sulawesi province as a sample project that was during the Covid-19 pandemic, namely the Latuppa - Bongko - Road Section. Salulimbung – Pantilang, Fly Over – Sultan Hasanuddin Airport Access, Construction of the Rantepao - Sa'dan - Batusitanduk Road in Luwu, Improvement / Reconstruction of the Paleteang - Malaga - Kabere Road in Kab. Enrekang, Preservation of Sinjai - Watampone - Tarumpakkae and Maros - Watampone roads and sample projects that were in the post-Covid-19 pandemic period, namely the Bua - Rantepao Road Construction Project, Maros - Watampone Road, Pare-pare - Toraja Road, Siwa - Pare Road – Barru – Maros – Makassar and Jalan Takalar – Sungguminasa for the performance of time, cost and occupational health safety are as follows.

1. Road project performance as measured by time performance during the Covid-19 pandemic and post-Covid-19 pandemic based on worker productivity and the distance between workers in the field, the average productivity level in projects during the Covid-19 pandemic was 1,284 m³ with a distance between workers of 0.894 m. With this level of productivity, workers can complete their work items of 1,284 m³ / day. Meanwhile, with the distance between the workers, workers at the project site have implemented health protocols in road projects that took place during the Covid-19 pandemic. As for the post-Covid-19 pandemic project, there is an increase in productivity, this is influenced by the fact that the distance between workers is no longer limited by the health protocol, as evidenced by the level of worker productivity of 1.793 m³ / day with a distance between workers of 0.25 m. So that the average implementation time of the projects that were sampled during the Covid-19 pandemic was initially 87 days for drainage work items and the post-Covid-19 pandemic period to 65 days, with the number of workers (OH) during the Covid-19 pandemic was 10. 20 workers and the post-pandemic period.
2. Road project performance as measured by cost performance during the covid-19 pandemic and the post-covid-19 pandemic using the BCWSN method based on performance productivity obtained up to week 11 work realization 45.72% at a cost of Rp. 34,606,561.52 while the average post-Covid-19 pandemic project obtained up to week 11 of work

realization was 58.61% with a cost of Rp. 43,100,392.05. Projects after the Covid-19 pandemic are bigger than projects during the Covid-19 pandemic because the realization of work is higher

3. Road project performance as measured by work safety performance during the COVID-19 pandemic and the post-Covid-19 pandemic through distributing questionnaires with reference to letter Number: 02 / IN / M / 2020 issued by the Minister of Public Works and Housing The People (PUPR) regarding the Protocol to Prevent the Spread of Corona Virus Disease 2019 (Covid-19) In the implementation of construction services, based on the distribution of questionnaires to all project equipment in the field for the Covid-19 pandemic project, the index level was the most dominant, namely the Provision of Health Facilities in the Field. of 4.635 with a standard deviation of 0.593. While the post-Covid-19 pandemic with the most dominating index level, namely the Provision of Health Facilities in the Field of 4.657 with a standard deviation of 0.522.

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