



## Factors Caused for Delays and Alternatives in the Denpasar Living World Mall Building Project



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### Abstract

Every construction project is always faced with the possibility of problems in the project. In reality, the implementation of construction projects always experiences obstacles that result in delays in the completion of work, so that the completion time of the work is not in accordance with the work plan that has been set. Delays that occur will cause losses for related parties, especially owners and contractors, because they are generally accompanied by conflicts, demands for time and costs, and deviations in the quality of project completion. Based on the thoughts and problems mentioned above, research was conducted to determine the dominant factor causing delays in the execution time of work on the Denpasar Living World Mall Building Project which may be different from other projects and provide alternatives for handling the delay factor. This research was conducted at the Living World Mall Denpasar. Taking the research location based on consideration of the factor that has the most dominant influence on the delay in the implementation of the Living World Mall Development project based on the results of descriptive analysis is the Labor Factor (X2) with an RI value of 0.89. With the dominant indicator is X2.1, namely the lack of the number of workers. Then followed by the managerial factor (X3) with an RI value of 0.85 and the implementation method factor (X1) with an RI value of 0.81. Alternatives to overcome project delays include: Re-examining the suitability between the volume of work and the number of workers needed proportionally. Recruiting workers according to the skills or competencies that are currently needed in the project through the experience that the workforce has. Maximizing the work progress of the project progress so as not to reach minus deviations in the time schedule. Make a schedule for the arrival of workers to avoid shortages in the number of workers and always evaluate the number of workers to match the load and volume of work being carried out.

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## 1 Introduction

Every construction project is always faced with the possibility of problems occurring on the project, the higher the level of project complexity, the greater the possibility of problems that occur. In reality, the implementation of construction projects always experiences obstacles that result in delays in the completion of work, so that the completion time of the work is not in accordance with the work plan that has been set. Delays that occur will cause losses for related parties, especially owners and contractors, because they are generally accompanied by conflicts, demands for time and costs, and deviations in the quality of project completion. In a previous study conducted by Puspitasari [Pondaag et al. \(2020\)](#), reported that the most dominant factor causing delays in the implementation of the Casa De Viola housing development project was the improper work implementation method with the average score obtained was 3.80. Meanwhile, [Pondaag et al. \(2020\)](#) reported that in the Grand Victorian Kairagi Housing project the main factor causing project delays was the contractor's financial problems with an average score of 3.91 ([Blundell & MaCurdy, 1999](#); [Kamenshchik et al., 2001](#)).

The Denpasar Living World Mall Building Project identified a delay in work as seen from the time schedule, where in the 9th to 12th week there was a minus deviation, which means that the work has setbacks, there is a time delay, so it is necessary to take an action so as not to cause delays. sustainable influence. Based on the thoughts and problems mentioned above, a research was conducted to determine the dominant factor causing delays in the execution time of work on the Denpasar Living World Mall Building Project which may be different from other projects and provide alternatives for handling the delay factor. Based on the description of the background above, the formulation of the problem can be taken as follows:actors causing delays in the implementation of the Denpasar Living World Mall Building project according to GBCI standards?. What alternatives can be done to the delay factor in the implementation of the Denpasar Living World Mall Building project according to GBCI standards?

Based on the background and problem formulation above, this research has the following objectives: To find out the dominant factors causing delays in the implementation of the Denpasar Living World Mall Building project according to the GBCI standard. To find out the right alternative in handling the dominant factors of the Denpasar Living World Mall Building Development project according to the GBCI standard. To achieve the objectives of this study, this research is limited to the following scope: The research was conducted on the implementation of the Denpasar Living World Mall Building Construction project according to GBCI standards. The indicators studied include implementation methods, labor, managerial, materials, equipment, finance, and work environment. Data collection methods using questionnaires, observations, interviews, and document studies, the research sample is employees who are directly involved in the field and the owner ([Ahuja et al., 2009](#); [Ahmed & Arocho, 2021](#)).

## 2 Materials and Methods

### *Research design*

The research design is a research strategy in identifying a problem so as to find answers and solutions to these problems. This research was conducted with a quantitative descriptive design. Descriptive method is a method used to describe or analyze a research result but is not used to make a broader conclusion [3]. The purpose of descriptive research is to produce a description of the treatment being studied. Quantitative research method is a research method that is inductive, objective and scientific in which the data obtained are in the form of numbers or statements that are assessed, and analyzed by statistical analysis ([Simamora & dengan Pemasaran, 2011](#)). From the above understanding, it can be concluded that quantitative descriptive research is a method that aims to make a picture or description of a situation objectively using numbers, starting from data collection, interpretation of the data as well as appearance and results.

### *Research Location and Time*

#### *Research sites*

This research was conducted at the Living World Mall Denpasar. The Denpasar Living World Mall building has a total area of 127,366.13 m<sup>2</sup>, while the area used for research is 109,066.36 m<sup>2</sup>, which is the mall building area only. Taking the research location based on consideration of eligibility requirements for the new building.



Figure 1. Bali Island Map

This research was carried out according to the schedule for writing a thesis on the academic calendar for the 2021/2022 academic year majoring in Civil Engineering, Bali State Polytechnic. The time used by researchers for this research starts from November 2021 to December 2021 for the data collection process. Continued in March 2022 until August 2022 to carry out data processing, compiling research results and conclusions obtained from research that has been carried out and followed by a thesis trial (Eriksson & Westerberg, 2011; Nitithamyong & Skibniewski, 2004).

#### *Identification and Definition of Operational*

The independent variable is the variable that affects or causes the dependent variable to arise. The independent variables in this study are the factors that cause delays in the implementation of the Living World Mall Development as measured by distributing questionnaires. To find out what factors cause delays in the implementation of building construction projects, the factors that cause delays are identified from secondary data, namely literature studies. The following are some indicators of the causes of delays in the Living World Mall Development project: Implementation Methods, Manpower, Managerial, Materials, Equipment, Finance, Work Environment. The dependent variable is a variable that is influenced or caused by the presence of an independent variable. The dependent variable in this study is the first time the implementation of building construction work is measured through secondary data on the weekly progress report on the implementation of the work compiled by PT. Nirmala's work which refers to the time schedule that has been set previously. Second, solutions are compiled based on the dominant factors that cause delays in the execution time of the work (Maran et al., 2022; Tripathi & Bajpai, 2021).

#### *Determination of Data Sources and Types*

Determination of data sources is carried out to obtain information needed in order to achieve research objectives. The types of data used in this study are:

- a. Primary data is obtained from the results of interviews and the results of filling out questionnaires that are usually done by researchers (Umar, 2013).
- b. Secondary data in the form of further processing and presented by primary data collectors or by other people, for example in the form of tables or diagrams (Umar, 2013).

#### *Data collection*

Data collection techniques are a way of obtaining the data needed in research. In this study, using qualitative data collection techniques, including the following: Questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer (Sugiyono, 2013). While the mixed questionnaire is a combination of open and closed questionnaires. The questionnaire or questionnaire used in this study was a closed questionnaire. This questionnaire will later be given to all employees who are directly involved in the Living World Mall Development project. An interview is a conversation conducted by two parties, namely the interviewer (interviewer) who asks questions and the interviewee (interviewee) who provides answers to the questions asked, this

conversation is carried out with a specific purpose (Moleong, 2013). Through this interview, the researcher explores the data, information, and framework of information from the research subject. Observation is a data collection method in which researchers record information as they witnessed during the study (Gulo, 2002). Researchers are in place, to get valid evidence in the report to be submitted. In this study, researchers will be directly on the project to observe the factors that cause delays and to find out which work has been delayed in the implementation of the Living World Mall Building construction project, Denpasar (Al-Momani, 2000; Elawi et al., 2016).

#### *Research Instruments*

The research instrument is a tool used to measure the variables studied. The instruments used in this study are as follows: Questionnaire is an instrument that contains a list of questions or statements filled out by respondents. Before using the questionnaire as a research instrument, it is necessary to test the validity and reliability as a requirement for a questionnaire to be used in this study. Therefore, validity and reliability tests were carried out on the questionnaire that had been designed, namely as follows: Validity test was used to measure whether a questionnaire was valid or not. A questionnaire is said to be valid if the questionnaire is able to reveal something that is measured by the questionnaire (Sudiarsa et al., 2018; Farfán et al., 2020).

#### *Population and Sample*

Population is a generalization area consisting of objects or subjects that have certain quantities and characteristics determined by the author to be studied and then drawn conclusions. The population in this study were all employees of the Living World Mall construction project, with the target population including owners, supervisory consultants, contractors and workers with a minimum education of junior high school graduates or experience in the construction world for at least 3 years. So that the sample can be used to represent the population in the study and draw a conclusion (Simamora & dengan Pemasaran, 2011). The number of samples in this study are as follows: 2 owners, 11 contractors, 9 consultants, 10 workers. So the number of questionnaires that will be distributed is 32 samples in the construction project of the Living World Mall Building, Denpasar.

#### *Data analysis*

Data analysis is a process of processing data into new information so that the characteristics of the data become easier to understand and useful for other similar problems. Descriptive analysis is an analytical technique used to analyze data by describing or describing the data that has been obtained without the intention of making generalizations from the research results.

#### *Research Stages*

In this study, researchers will apply several stages of research. The stages of the research include: Problem identification, formulation of problems obtained from the initial survey and literature study, as well as formulating the objectives, benefits as well as the scope and limitations of the research. Determination of Research Methods, Data Collection, Data Analysis, Results and Discussion, Conclusions and Suggestions, Reporting.

### **3 Results and Discussions**

#### *Project Overview*

This research was conducted on the 4-storey Living World Mall Development project. Living World Mall Denpasar Bali is one of the shopping centers in Denpasar City which is located on Jalan Gatot Subroto Timur, North Denpasar, Bali.

### *Respondent Description*

In this study there is a target population and an affordable population, where the target population is the population that is the target of the study. The target population in this study were all employees of the Living World Mall Development project. Meanwhile, the reachable population is part of the target population that can be reached by researchers. The affordable population in this study consisted of owners, contractors, supervisory consultants and workers with a minimum education of junior high school graduates or more than 3 years of experience in the construction world. The sample that the author took in this study used a saturation sampling technique where there were 32 respondents who could be reached by the author (affordable population). The affordable population is obtained according to the number of employees involved and present directly in the field during the research process according to predetermined criteria.

### *Data analysis*

After the research instrument is said to be valid and reliable, it is possible to distribute questionnaires to obtain research data which will then be analyzed. Data analysis was carried out to obtain answers from the formulation of the problem that had been compiled, before analyzing the data from the questionnaire that had been obtained, a tabulation process was carried out first for each independent variable and continued with data analysis in order to obtain the dominant factor causing construction project delays. It can be concluded that the ranking of the factors causing delays in the Living World Mall Development project, the three largest data were taken, namely: Labor Factor (X2) with an RI value of 0.89, Managerial Factors (X3) with an RI value of 0.85, and the Implementation Method Factor (X1) with an RI value of 0.81. Where the most dominant factor causing delays in the construction project of the Living World Mall is the Labor Factor with a Relative Index calculation value of 0.89.

Based on the calculation of the relative index above, the dominant factor that causes delays is the labor factor. The labor factor is one of the factors that plays an important role in the implementation of a construction project. The number of statements in the workforce factor consists of 5 statements, namely, lack of workforce, lack of workforce expertise, lack of workforce discipline, and communication between workers and foremen, which will be analyzed to determine the magnitude of the impact of each sub factor. From the results of the questionnaire it can be concluded that the most dominant subfactor in the labor factor is the lack of a workforce with a percentage of 90.63% of respondents who answered "very influential". So that in the Living World Mall Development project, what causes delays in implementation time is the lack of a suitable workforce for the ongoing work. The ranking results on the causal factors will be described according to the ranking given, and juxtaposed with the results of interviews obtained by researchers, the results of the analysis will be described as follows:

- a. Ranking 1. Labor Factors With Lack of Quantity Indicators Labor
- b. Ranking 2. Managerial Factors With Communication Indicators between Owners, Planners, and Field Executors
- c. Ranking 3. Implementation Method Factors With No Job Indicators Done With a Good and Correct Method.

### *Alternatives to the Delay Factor*

Based on the results of the analysis of the factors causing delays in the project. In the construction of the Living World Mall, a search for alternative solutions was carried out from the 3 highest ranking factors that affect project delays obtained through interviews with participants who were directly involved in the project:

- a. Ranking 1. Labor Factors With Lack of Quantity Indicators Labor.
- b. Ranking 2. Managerial Factors With Communication Indicators between Owners, Planners and Field Executors
- c. Ranking 3. Implementation Method Factors With No Job Indicators Done With a Good and Correct Method

The analysis above is an alternative solution for the three highest ranking delay factors that affect the implementation time of the Living World Mall Development project. The alternative solution was obtained from interviews

conducted by researchers to 3 participants from representatives of the owner, supervisory consultant, and implementing contractor.

#### *Alternative Solution to Dominant Factors Cause of Delay*

As for the alternative to deal with the dominant factor, for this reason, the researcher provides alternative solutions to the delay factor, which are as follows:

- a. Reviewing the compatibility between the volume of work and the number of workers proportionally based on the volume of work and the coefficient of labor in the analysis of the unit price of work (AHSP).
- b. Recruit workers in accordance with the skills or competencies that are currently needed in the project through the experience that the workforce has.
- c. Maximizing the workforce in 1 type of work to achieve or meet project progress so as not to reach minus deviations in the time schedule.
- d. Make a schedule for the arrival of workers to avoid shortages in the number of workers.

## **4 Conclusion**

Based on the results of data analysis and discussion described in the previous chapter, the following conclusions can be drawn:

- a. The most dominant factor influencing the delay in the implementation of the Living World Mall Development project based on the results of descriptive analysis is the Labor Factor (X2) with an RI value of 0.89. With the dominant indicator is X2.1, namely the lack of the number of workers. Then followed by the managerial factor (X3) with an RI value of 0.85 and the implementation method factor (X1) with an RI value of 0.81.
- b. Alternatives that can be done to overcome the indicator of the lack of a workforce that causes delays in implementation time in the Living World Mall Development project include:
  - a. Re-examine the suitability between the volume of work and the number of workers required proportionally.
  - b. Recruit workers according to their expertise or competence.
  - c. Maximizing the workforce on the progress of the project so as not to reach minus deviations in the time schedule.
  - d. Make a schedule for the arrival of workers and always evaluate the number of workers to match the load and volume of work being carried out

#### *Conflict of interest statement*

The authors declared that they have no competing interests.

#### *Statement of authorship*

The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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