



## Analysis Study of Change Contract Order (CCO) Management on Construction Project Implementation Performance in Central Lombok Regency

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### ABSTRACT

In construction projects, both in the public and private sectors, the occurrence of risks, such as Contract Change Orders (CCOs), is common, posing challenges to project implementation. CCOs, reflecting uncertainties in project execution, can manifest at any stage of the project, from inception to completion. Within the construction projects undertaken by the Central Lombok PUPR Office, serving as the project owner, organizer, or government project stakeholder, CCOs frequently occur, indicating a significant area of concern. This study aims to identify the primary causal factors and influences of CCOs through the utilization of questionnaire surveys, bolstered by statistical analysis employing SPSS for Windows. Our findings reveal that the predominant causal factor contributing to CCOs is the 'increasing volume according to field needs,' representing 6.61% of the total factors identified. Furthermore, the influence of CCOs on project performance is notably impacted by 'increasing daily production,' accounting for 17.4% of the total influence observed. This research not only sheds light on the specific factors driving CCOs but also underscores their implications for the successful execution of construction projects in Central Lombok Regency. By understanding these dynamics, stakeholders can implement proactive measures to mitigate risks, enhance project management practices, and ultimately improve project outcomes.

**Keywords:** Construction project, Contract Change Order, Performance.

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### INTRODUCTION

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In construction projects, one of the risks that often arises is the procurement of less work or a Contract Change Order (CCO) (Abduh et al., 2023; Margareta et al., 2016; Meng et al., 2020; Sherratt & Farrell, 2022). According to Imbeah et al. (2009), risk and uncertainty can cause construction projects to fail to achieve predetermined goals.

Contract Change Order (CCO) is the risk of uncertainty in the implementation of construction projects (Khalim et al., 2021; Marpaung et al., 2017; Onkar & Bhirud, 2015; Pontan et al., 2024). CCO is defined as a change in writing between the Commitment Officer (KDP) and

the Provider/Associate/Contractor to change the conditions of the initial contract document, by adding or subtracting work, changing the technical specifications of the work according to field requirements or changing the execution schedule (Hsieh et al., 2004; Osuizugbo & Ojelabi, 2020; Rachid et al., 2019; Widiaputra & Arumsari, 2021; Wijaya et al., 2023).

In the implementation of construction project work in Central Lombok Regency, there is often a Contract Change Order, CCO can occur at any time starting from the beginning, middle, to the end of construction work (Chernyshev et al., 2022; Fauziah & Sandaya Karhab, 2019; Sciences et al., 2019; Widhiawati et al., 2016). CCO is carried out so that a project can be completed with the aim of meeting the wishes and expectations of service users. However, if there is a lot of CCO, it will be detrimental to the efficiency of the implementation of construction projects (Kuswandari et al., 2018; Miralda et al., 2023; Sonmez et al., 2022; Sutra et al., 2022; Yuliana, 2021).

Therefore, efforts or strategies are needed to minimize the causes and impacts of CCO, namely, the most effective and targeted CCO management must be implemented in order to achieve the goals of a predetermined construction project.

Therefore, the author is interested in further identifying what are the causal factors and the impact of CCO on the implementation of construction project work and what strategies must be carried out for contract change order management on the causes of CCO so that it has an impact or influence on the performance of construction project implementation in Central Lombok district.

## **RESEARCH METHODS**

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This study adopts a quantitative approach based on the philosophy of positivism, as explained by Sugiyono (2017). This method is used to examine a specific population or sample in the context of the implementation of a construction project. Data collection was carried out through questionnaires distributed to respondents who are experts in the field of construction project implementation, including contractors, consultants, and project owners. The questionnaire is designed to explore the causal and influence factors of Contract Change Order (CCO) in construction projects.

Research data sources consist of primary data and secondary data. Primary data were obtained through questionnaires that included questions related to CCO cause and influence factors. In contrast, secondary data included literature studies from journals and previous research and interviews with relevant officials at the PUPR Office. The object of research is the implementation of construction projects in Central Lombok Regency.

The study population includes experts and practitioners involved in the implementation of construction projects in Central Lombok District. The sample is selected purposively according to certain criteria to ensure a relevant population representation.

Data collection techniques involve using questionnaires using the Guttman scale to sort out relevant variables and the Likert scale to measure the frequency of occurrence of CCO causal and influence factor variables over the project's life. Data analysis is performed using Excel software for the initial processing of data and SPSS for validity and reliability analysis. Validity tests are performed using Pearson correlations to ensure the questionnaire can measure well-measured objects. In contrast, reliability tests use the Cronbach Alpha reliability coefficient to assess the consistency of measurement instruments. The results of the data analysis are then presented in tables to provide a clearer understanding of the causal factors and influence of CCO in the implementation of construction projects in Central Lombok District.

## **RESULTS AND DISCUSSION**

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### **Validity Test Results**

To test whether the variable used is valid or not with the validity test, Pearson compares the calculated  $r$  value with the table  $r$ . If the value of the  $r$  count is more than the  $r$  table, then it is declared 'valid', and if the value of the  $r$  count is less than the  $r$  table, then it is declared 'invalid'. Next, how to find the  $r$  value of the table with  $N = 30$  at 5% significance in the distribution of the  $r$  value of the significance table, the table  $r$  value of 0.361 is obtained.

From the Reliability test results, it is known that Cronbach's Alpha coefficient of the CCO factor variable is  $0.926 > 0.6$  and Cronbach's Alpha coefficient of CCO influence is  $0.825 > 0.6$ , so it is declared 'Reliable' because the variable coefficient is more than 0.6.

### **Dominant Factors Causing CCO**

Based on the table of research results variable A6, 'Increasing the Volume of Work according to Needs in the Field' is the causative factor that has the largest percentage and results in the occurrence of CCO in construction projects in Central Lombok Regency, with a percentage of 6.61%, with a mean value (average) to the total assessment score from respondents of 3.07 and a standard deviation value of 1.23.

The rare causative factor is the 'Too Little Overtime Amount' factor, with a percentage of 2.73%, a mean value (average) of the total assessment score of respondents of 1.58, and a standard deviation value of 0.77.

### **CCO Dominant Influence**

Based on the results of the analysis of the effect of CCO on construction projects, then calculated the percentage of each variable and the calculation results carried out by the researcher, it is known that the variable A4 'Daily Production Addition' is the influence that has the largest and largest percentage, with a percentage of 17.4% of the total assessment score of respondents, the mean value of 3.46 and the standard deviation value of 1.035. Meanwhile, the

slight effect is the A9 variable 'Reducing the Performance of the Implementing Contractor' by a percentage of 11.7%,

### **Interview Results**

Based on interviews with several interviewees, it is known that:

1. To anticipate the factors causing dominant CCO, namely 'increasing the volume of work according to needs in the field,' among others:
  - a. Consultants must carry out planning that is more detailed and adjusted to conditions in the field.
  - b. Planning and design must be more accurate so that what is needed in the field is in accordance with the planning.
  - c. Measurement in preparing planning documents should use tools with the latest technology to be more accurate.
  - d. The contractor should also take measurements in accordance with the target and budget so that there are no errors in project implementation.
  - e. Reduce the use of typical images or data (templates)
  - f. Budgeting for the preparation of planning documents is adjusted to field conditions.
2. To counter the dominant CCO's influence on Daily Production Additions,
  - a. Contractor at the beginning of the implementation
  - b. The project performs labor efficiency before the addition of daily production.
  - c. Material adjustment to the project location in the sense of using materials near or existing at the project implementation site.
  - d. Increase working hours and intensify project supervision.
  - e. Addition of manpower and work tools
  - f. Expansion of the work area: without expansion of the work area, there will be a buildup of labor at one point, thus hampering daily production.
3. The direct impact of the dominant causal factor variable 'Increase in Work Volume according to Field Needs' with the dominant CCO influence of 'Daily Production Addition' includes:
  - a. With the increase in work volume, the work area, workforce, and work tools will automatically increase.
  - b. Because of the volume estimation error, there must be a change in the volume estimate, whether it is an increase or decrease in volume, of course, it will cause a change in the contract value (the contract value may increase or decrease)
  - c. Both require a fairly long administrative process and take a long time.

### **CONCLUSION**

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The research findings reveal significant insights regarding the causative factors and effects of contract change orders (CCOs) on construction projects. Firstly, among the 27 relevant causal

factor variables, the primary driver of CCOs is identified as variable A6, denoting an 'Increase in Work Volume according to Field Needs', comprising 6.61% of the total assessment score from respondents, with a mean value of 3.07 and a standard deviation of 1.23. Conversely, the least prevalent causative factor is 'Too Little Overtime Amount', constituting 2.73% of the total assessment score, with a mean value of 1.58 and a standard deviation of 0.77. Secondly, among the 10 variables assessing the impact of CCOs on construction projects, variable A4, indicating 'Daily Production Addition', emerges as the most influential, representing 17.4% of the total assessment score, with a mean value of 3.46 and a standard deviation of 1.035. Conversely, variable A9, signifying 'Reducing the Performance of the Implementing Contractor', exhibits a relatively minor impact, accounting for 11.7% of the total assessment score. These findings underscore the significance of proactive management strategies to mitigate the adverse effects of CCOs and enhance project performance.

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