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Strategies for Handling Delays in Building Projects (Private) during the Construction Period in Badung Regency

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Abstract

This study aims to formulate a strategy for handling delays in privately owned building projects during the construction period. Data collection methods include survey methods, interviews and FGDs with sample criteria taken by purposive sampling on privately owned building construction projects in Badung Regency then data analysis used in formulating strategies is SWOT analysis. The priority strategy recommended for the project delay handling strategy is the WT strategy which explains the position of the defensive strategy in minimizing internal weaknesses and external threats so that the contractor as the project manager must be able to minimize the weaknesses resulting from delays in the project and overcome the threats that occur due to delays in project implementation during the construction period. While the recommended alternative strategies are WO, ST and SO strategies.

Keywords: Handling Strategy, Building Project Delay (Private), Construction Period

Introduction

Construction projects in their implementation must have careful planning in terms of implementation schedules that aim to regulate the allocation of limited resources consisting of materials, labor, funding, implementation methods and equipment to achieve project goals with time, cost and quality constraints. The challenge in project implementation is how to plan an effective time schedule and efficient cost planning without reducing quality (Sudarsana, 2008).

Planning for time on construction projects is contained in the form of an "S" curve which explains when a project starts until the completion of a project associated with the Work Breakdown Structure (WBS) or division of activity activities aimed at entering the construction phase of each work activity can be done efficiently (Nyata & Wiguna, 2018). However, in its implementation, there are often problems such as a mismatch between the implementation schedule and the realization in the field which causes delays.

Delay in construction projects is the inaccuracy of completion time in each activity or overall project activity that exceeds the agreed time limit in the contract document or exceeds the date of the project handover report (Islam et al., 2015). Delays harm both the owner as a service user and the contractor as a service provider. From the Service User's point of view, project delays lead to loss of potential revenue from the use of project results, and increased overhead costs related to project management and contract supervision. From the service provider's point of view, delays lead to increased costs due to longer working periods, higher material, labor, and overhead costs (Rachid et al., 2019).

Construction project delays are a global phenomenon that occurs in all construction projects in the world which affects not only the construction industry but also the economy of each country. From the results of research conducted by (Hasib & Hiyam, 2021) in Indonesia stated

that 38% of projects were late and only 47% of projects were completed on schedule, only 15% were completed ahead of schedule.

In research conducted by Sutarja et al. (2020) there were forty hotel projects in Bali in 2015 located in Badung Regency and Denpasar City experiencing delays in completion where, the causes of delays in project completion varied and had a major influence on project implementation. In addition, based on data from research conducted by Dharmayanti et al. (2022) in the implementation of government construction projects in Badung Regency in the 2019-2020 fiscal year there were 31 work packages out of a total of 118 construction project work packages that experienced delays from the set schedule.

Then based on a preliminary survey that has been carried out to support data from previous research, observations were made through direct observation to the field by conducting interviews with several contractors who were carrying out building construction work, especially privately owned building projects in Badung Regency, where based on the results of the interview, it was stated that there were still many private building construction projects that experienced delays in their implementation due to various problems that disrupted the course of project implementation in the field and caused delays in the construction period. Based on the above problems, this research aims to develop a strategy for handling delays in private building projects during the construction period in Badung Regency.

Methods

The population in this study is the party carrying out the work of privately owned building construction projects in 2022-2023 in Badung Regency. The data collection method was carried out by distributing questionnaires to respondents with purposive sampling technique. Based on the implementation of building projects in Badung Regency, 16 building construction projects were selected that were in the implementation stage in 2022-2023 with a total of 64 respondents. Factors causing delays in privately owned building projects are obtained based on previous research and brainstorming in accordance with conditions in the field consisting of 55 factors causing delays in privately owned building projects in Badung Regency. For the measurement of the questionnaire in this study, a Liker scale of 1-5 was used. Questionnaire data is analyzed with Relative Importace Index (RII) and Hierarchical Cluster Analysis which aims to determine the ranking of factors causing delays. From these results, it is then processed again by conducting a Focus Group Discussion (FGD) where information is obtained from the contractor's point of view in managing construction projects. This information and point of view is then used to develop and complete by combining internal (strengths and weaknesses) and external (opportunities and threats) factors carried out to develop a strategy for handling delays in privately owned building projects using the SWOT analysis method.

Results and Discussion

Strategies for Handling Project Delays during the Construction Period

From the results of data collection through the questionnaire method which was then analyzed with Relative Importante Indexes (RII) which aims to rank the results of the dominant factors causing delays (Sustiawan & Husin, 2021) and Hierarchical Cluster Analysis which aims to strengthen the results of the dominant factors where this analysis was carried out with the help of the SPSS program with the Average Linkage process (Nugraha et al., 2021). So that from this process, 11 dominant factors causing delays in privately owned projects in Badung Regency were obtained, including: Changes (drawings and specifications) during the construction period, Change requests for completed work, Delays in decision making from the owner, Frequent additional work, Delays in delivery of project materials to the site, Unfavorable weather conditions, Inaccuracies in material ordering time, Lack of labor

availability in the project, Equipment used is damaged, Unavailability of construction equipment at the project site, Delays in mobilization of equipment to the site.

Based on the results that have been obtained by conducting a questionnaire survey analyzed with RII and Cluster Hierarchy Analysis, then for strategy formulation begins with conducting a Focus Group Discussion (FGD). The purpose of conducting FGDs is to obtain directed information through FGDs so as to identify strategies for SWOT analysis in terms of internal factors (strengths, weaknesses) and external factors (opportunities, threats). Based on the results of FGD discussions where for internal and external factors in terms of weaknesses and threats used are the results of the dominant factors causing delays then for internal and external factors in terms of strengths and opportunities obtained from the results of FGD discussions conducted by parties experienced in the implementation of building construction projects. In identifying IFAS (internal factor analysis strategy) and EFAS (external factor analysis strategy) factors can be seen in Table 1 and Table 2.

Table 1. Classification of IFAS Strength (S) and Weakness (W) Factors in the Causes of Delays in Building Projects (Private) during the Construction Period

Strength (S)	**Result FGD**
Good project financial management	Discussion
Have good connections with suppliers	Discussion
Provide appropriate salaries and benefits to workers	Discussion
Good coordination between project teams	Discussion
Having equipment for workers (PPE) that meets the standards	Discussion
Weakness (W)	Result FGD
delays in delivery of project materials to site	Dominant factor
Inaccurate timing of material orders	Dominant factor
Insufficient labor availability at the project site	Dominant factor
Equipment used is damaged at the project site	Dominant factor
Unavailability of equipment at the project site	Dominant factor
Delay in mobilizing equipment to the site	Dominant factor

Table 2. Classification of EFAS Factors Opportunities (O) and Threats (T) in the Strategy for Handling Delays in Building Projects (Private) during the Construction Period

Opportunity (O)	**Result FGD**
Provide a good reputation and increase the owner's trust	Discussion
Increase project experience	Discussion
Increase contractor connections in project implementation	Discussion
Threat (T)	Result FGD
Changes (drawings and specifications) during the construction period	Dominant factor
Request for changes to the work that has been completed	Dominant factor
Delay in decision-making by the project owner	Dominant factor
Frequent occurrence of additional work	Dominant factor
Unfavorable weather conditions during the construction period	Dominant factor

Identifying IFAS and EFAS based on SWOT analysis for strategies to deal with project delays, then an assessment of weight, rating and score is carried out where the assessment process is carried out directly during the Focus Group Discussion (FGD).

Table 3. Assessment of IFAS Factors Strengths (S) and Weaknesses (W) in the Strategy for Handling Delays in Building Projects (Private) During the Construction Period

Strength (S)	**Weight**	**Rating**	**Score**
Good project financial management	0,089	3,143	0,278
Have good connections with suppliers	0,089	3,429	0,304
Provide appropriate salaries and benefits to workers	0,076	3,143	0,239
Good coordination between project teams	0,076	3,429	0,260
Having equipment for workers (PPE) that meets the standards	0,072	3,000	0,215
	0,401	16,143	1,297
Weakness (W)	**Weight**	**Rating**	**Score**
Delayed delivery of materials to the site	0,105	3,000	0,316
Inaccurate timing of material orders	0,093	2,429	0,225
Insufficient labor availability at the project site	0,105	2,000	0,211
Equipment used is damaged at the project site	0,093	2,286	0,212
Unavailability of equipment at the project site	0,101	2,286	0,231
Delay in mobilizing equipment to the site	0,101	2,143	0,217
Amount	0,599	14,143	1,414
Total	**1,000**		**2,710**
S-W			**-0,117**

Table 4. Assessment of EFAS Factors Opportunities (O) and Threats (T) in the Strategy for Handling Delays in Building Projects (Private) during the Construction Period

Opportunity (O)	**Bobot**	**Rating**	**Skor**
Provide a good reputation and increase the owner's trust	0,127	3,429	0,437
Increase project experience	0,118	3,143	0,370
Increase contractor connections in project implementation	0,118	3,429	0,403
	0,363	10,000	1,210
Threat (T)	**Bobot**	**Rating**	**Skor**
Changes (drawings and specifications) during the construction period	0,127	2,429	0,310
Request for changes to the work that has been completed	0,127	2,000	0,255
Delay in decision-making by the project owner	0,123	2,286	0,280
Frequent occurrence of additional work	0,132	2,286	0,303
Unfavorable weather conditions during the construction period	0,127	2,143	0,273
Amount	0,637	11,143	1,420
Total	**1,000**		**2,630**
O -T			**-0,210**

Based on the results of the calculation of weights, ratings and scores in Table 3 and Table 4 then determining the quadrant coordinate points with the coordinate values (x,y) IFAS and EFAS with the results (-0,117; -0,210) to find out the main strategy in handling delays in

building projects (Private) in Badung Regency, it can be seen in the SWOT Analysis Diagram in Figure 1.

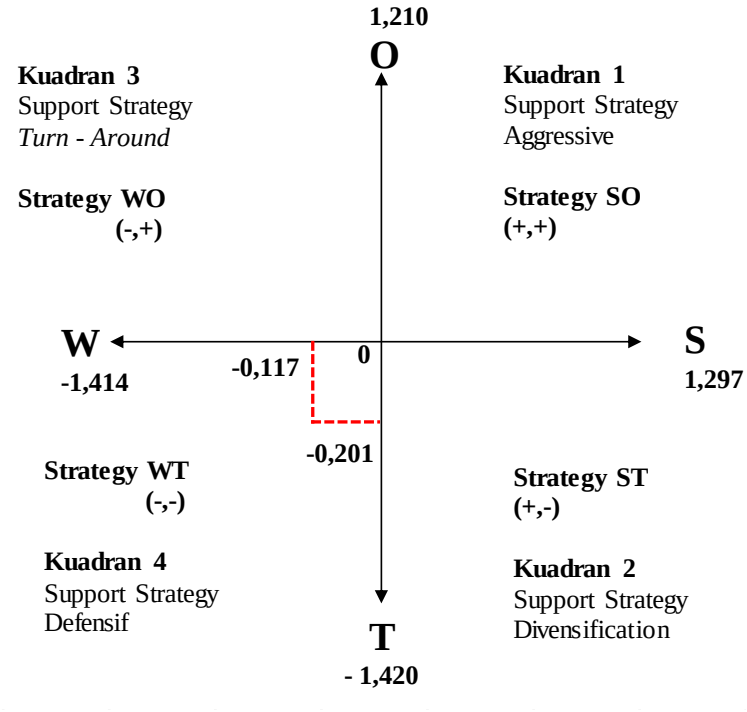

Figure 1. SWOT Analysis Diagram

By paying attention to Figure 1 SWOT Analysis Diagram, it can be seen that the position points to quadrant IV (WT) area which explains the position of defensive or defensive strategies in minimizing internal weaknesses and external threats, which means that the contractor as a project manager must be able to minimize existing weaknesses in project implementation so as to avoid threats in project implementation. Strategies that are diversified strategies mean that the strategies prepared must vary, not just 1 or 2 strategies (Khalim et al., 2021). After knowing the position of the quadrant in the figure, and to further clarify the position of the quadrant that has been analyzed, then proceed with determining the ranking order of alternative strategies that will be applied as a strategy for handling delays. In determining the area in each quadrant, it will be ranked based on the largest area and then sorted by rank, where the quadrant that becomes rank 1 will be a priority strategy in handling project delays, then for strategies with rank 2 to 4 will be an alternative strategy in completing the project delay handling strategy (Murbayani, 2015; Rusli et al., 2019). Based on the picture above, the area in each quadrant can be found in Table 5.

Table 5. Area in Each Quadrant and Strategy Priorities

Quadrant Position Quadrant Area Quadrant Ranking Strategy Priority

Quadrant	Quadrant Position	Quadrant Area	Rank	Strategy Priority
I	1,297 x 1,210	1,569	IV	Aggressive
II	1,297 x (-1,420)	-1,842	III	Densification
III	1,210 x (- 1,414)	-1,711	II	Turn - Around
IV	(-1,414) x (-1,420)	2,007	I	Defensive

From the results of the ranking order of Table 5 quadrant IV has the largest area, so the most important strategy that must be recommended from the strategy of handling delays in private building projects during the construction period in Badung Regency is the WT strategy. While

the recommended alternative strategies based on ranking are WO, ST and SO strategies. Based on the results of the strategy that can be formulated in SWOT analysis as follows:

Priority strategies, namely first, compiling a work plan by identifying the scope, such as calculating material requirements, the number of personnel required, the schedule for each job and making a change plan related to changes in drawings and specifications and calculating additional work that occurs during the construction period. Ervianto (2023) explains that the preparation of work plans is forecasting activities that will be carried out in the future formulating all activities that will be carried out to achieve predetermined goals based on this forecasting which consists of planning procedures, planning work methods, planning standard results, planning budgets and costs, and program planning consisting of work plans along with project implementation schedules.

Second, implementing standard operating procedures (SOPs) for each work to be carried out related to the equipment and facilities of workers in project implementation, such as during unfavorable weather conditions and monitoring and evaluating the implementation of SOPs regularly. According to (Lingard and Rowlinson (2004), concluded that a code of conduct similar to standard operating procedures (SOPs) is part of the project principles consisting of three aspects, namely quality, cost, and time. Work safety is an important part of these three principles. These three principles plus safety are obtained by carrying out a more accurate and detailed planning, scheduling, implementation and control process than the previous process. Standard Operating Procedures (SOPs) are basically made to avoid miscommunication conflicts, and problems in carrying out work. SOPs are also written instructions that describe exactly how workers carry out work. This research intends to identify, analyze, and create a Standard Operating Procedure (SOP) by incorporating work safety elements as part of the Standard Operating Procedure (Integrated). As the work is carried out entirely by the main contractor, the main, staff will be responsible for the application of safe working methods at each stage of the work and must plan in advance for any hazardous activities (Telford, 1995). In other words, all parties must always be oriented towards the implementation of SOPs by integrating work safety and correct procedures in project implementation so as to reduce work accidents and overcome project delays (Naufal et al., 2021; Ramdan et al., 2019).

Alternative strategies, namely first, structured coordination between the project team and the project owner regarding changes to changes (drawings and specifications) during the construction period, changes to work that has been completed and additional work that occurs by making written reports related to instructions on each job that will be in the addendum and given to the project owner and included with documentation during implementation so that the project owner can quickly make decisions. Alaloul et al., (2015) Stating in his research that coordination is one of the determining factors for success in construction projects, and significantly affects their performance. This is in line with research conducted by Wesam Salah Alalou, which explains the most effective coordination, to overcome the dependence between project tasks and the parties involved to improve project performance. Ervianto (2023) explained that coordination is carried out every certain period of time, generally once a week, and can be done frequently depending on the urgency of a project. Coordination is carried out internally and externally where internal coordination is carried out to evaluate the performance of staff and organizations, while external coordination is the process of evaluating the performance of the parties involved in the project, which is generally carried out to resolve personal issues that arise during the implementation of construction projects.

Second, provide work equipment and work equipment in accordance with standards (PPE). The causes of construction project accidents are worker negligence, high-level work, unsafe work facilities, poor site management, repetitive routines, low skill levels, and the wrong

attitude in performing work on site. Companies face challenges in managing work safety systems to minimize work accidents (Ammad et al., 2021). (Azhari & Mustofa, 2023) explained in his research The establishment of a positive work safety culture is implemented to create an environment where the use of PPE and efficient use of work tools are considered the norm that every worker must follow. This involves the active participation of management and the formation of a work safety team that involves workers directly. Rewards and recognition for workers who consistently adhere to the rules of PPE use are also part of the strategy development.

Third, add material suppliers and coordinate efficiently and effectively in placing orders. Various project-specific criteria are involved in the supplier selection process, including price, lead time, rebates, and supplier performance (Safa et al., 2014). Sandyavitri (2008) explained that in adding suppliers to speed up delivery, you must choose a trusted supplier (can be recommended from the reference of the Construction Services Association), tough (has been established for a long time), clear (location and office), has strong management and financial capabilities indicated by evidence of precise and accurate information data. The reputation of the realization of the management process is easy, reasonable, smooth, and in accordance with the purchase contract agreement (order). The price of goods or services is reasonable (competitive/competitive), thus the delivery schedule can be on time and the purchase cost is more economical. The condition of the damaged eastern cross road is predicted to cause congestion, by making early deliveries, delays in implementation time due to congestion on the way can be avoided. The contractor does not need costs in minimizing accelerated ordering.

Fourth, increase the number of workers and increase working hours in accelerating project implementation time. Dharmayanti et al. (2022) in his research explained that in increasing the number of workers, it must be in accordance with the weight of the workers, as well as choosing a competent and professional workforce according to their fields. the key is to focus on maintaining a predictable workflow and thus being able to adjust the available workload to the capacity (working hours) (Shehata & El-Gohary, 2011). In addition, Sumarningsih (2014) in her research explained that the application of overtime working hours is useful for accelerating the project completion schedule or catching up with the schedule, however, it will reduce productivity, which results in an increase in labor costs.

Fifth, carry out routine equipment repairs and increase the amount of equipment that is lacking at the project site, and look for relationships or connections in equipment rental to anticipate delays in equipment arrival. Ervianto (2017) explained the type and capacity of equipment, construction method, year of equipment manufacture, equipment operator capability, project location. Currently, it is still easy to find construction equipment whose year of manufacture is relatively old, this will have an impact on the amount of energy consumption required for equipment operations. In addition, regulatory aspects need to be held, especially to limit the use of equipment that is not more than five years old, considering the high emissions produced by equipment that is more than five years old. This is in line with research conducted by (Sita & Mulyono, 2016) where the selection and utilization of equipment must be in accordance with the needs in terms of type, quantity, capacity, and time available. Similarly, the way it is used must follow operating and maintenance procedures in accordance with the function of each equipment.

Sixth, make timely payments to suppliers and sub-contractors, provide appropriate salaries and benefits to workers so as to increase the trust of project owners. According to Hasanti and Rohman (2023) the financial stability of the contractor is the highest rank at the time of contractor selection. The financial ability to finance projects and proper equipment affects project performance, so that the project runs smoothly, contractors often incur additional costs

due to additions or early design changes. If the contractor does not have a stable financial system, the contractor is likely to fail in a project because it is unable to turn the cash flow of a project. Omopariola et al. (2020) explained that construction companies must carry out cash flow analysis in balancing the contractor's cash flow if there is a delay in payment by the project owner such as making loans at the bank as an effort in project cash flow.

Seventh, coordinate regularly with suppliers and project workers in the field. Ervianto (2023) explained that in the implementation of construction projects, coordination must include all development activities, the implementation of various installed facilities and equipment, coordinating subcontractors, suppliers and labor.

Conclusion

The priority strategy that must be recommended from the strategy for handling project delays is the WT strategy which explains the position of defensive or defensive strategies in minimizing internal weaknesses and external threats which means that the contractor as the project manager must be able to minimize the weaknesses that exist in project implementation so as to avoid threats in project implementation. While the recommended alternative strategies based on ranking are WO, ST and SO strategies. Priority strategies in handling delays in privately owned building projects in Badung Regency can be formulated as follows, first, compiling a work plan by identifying the scope, such as calculating material requirements, the number of personnel required, the schedule for each job and making changes to plans related to changes in drawings and specifications and calculating additional work that occurs during the construction period. second, implementing standard operating procedures (SOPs). Second, apply standard operating procedures (SOP) to each work to be carried out related to the equipment and facilities of workers in project implementation, such as during unfavorable weather conditions and conduct monitoring and evaluation of the implementation of SOPs periodically.

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