

Conflict Management in Building Construction Projects: Case Study in Gianyar Regency

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Received: May 14, 2026

Revised: June 25, 2026

Accepted: July 18, 2026

Abstract

Conflict is a common issue in construction projects that leads to project delays, increased costs, losses, decreased productivity, and strained relationships among project stakeholders. The construction sector consistently ranks among the top two to four largest contributors to the local economy of Gianyar from 2020 to 2024. Given these facts, the researchers are interested in analyzing the impactful factors causing conflicts in building construction projects in Gianyar Regency, Bali. Additionally, this study aims to provide recommendations on appropriate conflict modes to prevent conflicts from escalating into legal disputes. Data collection began with a literature review and field observations. The data were then tested using questionnaire method. The sample size was determined using Cochran's sampling size method, resulting in 68 respondents. The data analysis utilizing the Relative Importance Index to identify the impactful factors causing conflicts. Meanwhile, recommendations for conflict modes were formulated based on expert interviews within the framework of the Thomas-Kilmann Conflict Mode Instrument. The study results indicate that the impactful conflict factors, among respondents, include: incomplete contract documents; unapproved claims for additional costs; poor communication among project stakeholders; unclear boundaries between the project site and land owned by indigenous communities; incorrect instructions given to the project field team; and incomplete working drawings and/or technical specifications. The study's conclusions indicate that the recommended conflict modes primarily involve the "collaborating" mode. Only the factors of incorrect instructions given to the project field team and incomplete working drawings and/or technical specifications are recommended to use the "competing" mode.

Keywords: Conflict Management, Relative Importance Index, Thomas-Kilmann Conflict Mode Instrument, Building Construction Projects, Gianyar Regency

Introduction

According to Marzouk et al. (2011), there are four main sources of conflict in construction projects: contracts and specifications, cultural issues, management and organization of project elements, and project conditions. Alazemi & Mohiuddin (2019) note that conflict is one of the common problems in construction projects, leading to project delays, increased costs, losses, decreased productivity, and strained relationships among project stakeholders.

The Project Management Institute (2021), notes that conflicts in projects can arise from differences in stakeholder expectations or priorities, ineffective communication, interactions within the project team, and dynamics of organization and project environment. Gianyar Regency, Bali, has relatively high levels of construction activity. According to the National Statistics Agency of Gianyar Regency (BPS Gianyar) (2025), the construction sector

consistently ranked among the top two to four as largest contributors to the economy of Gianyar from 2020 to 2024.

Preliminary data indicates that the construction sector contributed 11.53 percent to the Regional Gross Domestic Product in 2024. BPS Gianyar also noted that the construction sector's value added increased, driven by ongoing growth in construction activities. These conditions demonstrate that the construction sector plays a vital role in regional development. Considering the involvement of various stakeholders with differing interests, this potentially leading to conflicts during the implementation of construction projects (Nguyen et al., 2020; Irfan et al., 2019; Cakmak, 2022; Mok et al., 2015).

Furthermore, the strong sociocultural characteristics of Gianyar's community, the presence of customary villages and indigenous communities, land-use regulations, and the interests of the tourism sector, make the construction project environment in Gianyar an interesting topic to discuss. These conditions make Gianyar Regency a relevant location for researching conflict factors in building construction projects.

Several previous studies have examined conflicts in construction projects in Indonesia, including studies in Bali. For example, the study by Jnana et al. (2020) in Badung Regency showed that conflicts affect the success of construction project implementation, primarily due to the high intensity of interactions among stakeholders. However, most previous studies have tended to focus on the impact of conflict on project success, the identification of general conflict factors, or conceptual approaches to conflict resolution, and have not specifically highlighted the impactful factors causing conflict in building construction projects in Gianyar that are directly linked to the conflict modes based on Thomas-Kilmann instrument.

Methods

To identify conflict factors, the researchers conducted a literature review and field observations. A total of 40 conflict factors were identified and subsequently grouped into four categories: contracts and specifications, sociocultural factors, management and organization of project, and project conditions. The identified factors were then tested by incorporating them as statements in the questionnaire. The questionnaire consisted of four main sections corresponding to the number of factor groups. The questionnaire was quantified using a Likert scale with the following descriptions:

Table 1. Likert Scale of Questionnaire

Measurement		Value	Description
Criteria	Code		
Highly Impactful	HI	5	This factor occurs very frequently and/or has a very significant impact on the emergence of conflict
Impactful	I	4	This factor occurs fairly frequent and/or has a significant impact on the emergence of conflicts
Quite Impactful	QI	3	This factor occurs occasionally and/or has a moderate impact on the emergence of conflicts
Less Impactful	LI	2	This factor rarely occurs and/or has a relatively minor impact on the emergence of conflicts
No Effect	NE	1	This factor almost never occur and/or have no impact on the emergence of conflicts

The population in this study consists of all stakeholders (owners, consultants, contractors) actively involved in building construction projects in Gianyar Regency, Bali, during the study period, from February to June 2026. Since the sample frame of the population is not precisely

known, the sampling technique used is purposive sampling with the following criteria: (1) Individuals with at least three years of work experience in the building construction sector; (2) Owners of construction projects; or their authorized representative, or; (3) Individuals appointed as project consultants, or (4) Individuals appointed as project managers, or other positions such as site manager, site engineer. The Cochran method is used only to calculate the minimum sample size, as defined below:

with:

$$n_0 = \frac{Z^2 x p x q}{e^2}$$

n_0 = Sample size

Z = Confidence level

p = Proportion of the population that posses a certain characteristic

$q = 1 - p$

e = Margin of error

Common confidence levels (Z) include: 1.645 for a 90% confidence level, 1.96 for a 95% confidence level, and 2.576 for a 99% confidence level. Therefore, using a 90% confidence level, a 10% margin of error, and a population characteristic (p) of 0.5, the minimum number of respondents required is $67.65 \approx 68$ people. According to Sugiyono (2013), a valid and reliable instrument is a prerequisite for obtaining valid and reliable research results. The validity of the questionnaire instrument in this study was tested using Pearson's Product-Moment correlation technique with the aid of Statistical Product and Service Solutions software (IBM SPSS). Sugiyono explains that, if the calculated r -count is greater than the r -table and is positive, then the item or statement is deemed valid. The questionnaire's reliability was tested using the One-Shot method with the assistance of SPSS software. This method measures, only once, the correlation among the responses of questions in the questionnaire. George and Mallery formulated the standard rule for the reliability test (Cronbach's Alpha) as follows:

Table 2. Rule of Thumb Cronbach's Alpha Interval

Interval	Interpretation
$\alpha \geq 0.9$	Excellent
$\alpha \geq 0.8$	Good
$\alpha \geq 0.7$	Acceptable
$\alpha < 0.7$	Questionable
$\alpha \leq 0.6$	Poor
$\alpha \leq 0.5$	Unacceptable

After passing the validity and reliability tests, the conflict factors were then ranked using a quantitative- descriptive method, namely the Relative Importance Index (RII). According to Akadiri (2011), the Relative Importance Index is a nonparametric statistical technique that converts ordinal qualitative data into quantitative index values (0–1) to rank factors based on their level of importance. Furthermore, the standard rule for RII analysis are as follows:

Table 3. Relative Importance Index Interval and Interpretation

Interval	Impact Level
0,80 – 1,00	High

0,60 – 0,79	High - medium
0,40 – 0,59	Medium
0,20 – 0,39	Medium – low
0,00 – 0,19	Low

For the 40 conflict factors, an RII analysis was conducted for each factor group. From each group contracts and specifications, sociocultural Factors, management and organization of project, and project conditions the factors with the highest RII value were selected as the “impactful factors” causing conflicts in building construction projects, based on respondents’s perceptions. The Project Management Institute (PMI) (2017) explains that when conflicts are managed constructively, they can lead to better solutions, enhance creativity, and improve decision-making. Furthermore, five approaches of PMI have a strong conceptual correspondence with the five conflict modes in the Thomas-Kilmann Conflict Mode Instrument (TKI) (Thomas & Kilmann, 1992).

The TKI instrument categorizes conflict modes based on two main dimensions: assertiveness and cooperativeness. The combination of these two dimensions results in five conflict modes: competing, collaborating, compromising, avoiding, and accommodating. The researchers conducted expert interviews to determine recommended conflict modes appropriate for highly-impactful conflict factors. The expert interviews were within the TKI framework. To ensure this study’s reliability, the researchers applied strict criteria for selecting experts: Individuals with at least 10 years of work experience in the building construction sector. Those holding positions related to decision-making or project management, such as: owner, project manager, site manager, supervising consultant, planning consultant, or similar roles

Result and Discussion

Questionnaire Validity Test

This study included 69 respondents’ data for analysis. The degree of freedom (df) is defined as:

$$df = N - 2, \quad N = \text{Number of respondents}$$

Therefore, the df for this study is 67. Then, using a significance level (α) of 5%, the r-table value can be determined from widely available Pearson Correlation Table, which is ≈ 0.237 . Thus, if the r-count for a conflict factor is greater than 0.237 (r-count > r-table), then that conflict statement, or factor is deemed valid. The following are the results of the validity tests for each factor group:

Table 4. Questionnaire and Validity Test Result

No	Conflict Factor Group	Kode	R 1	R 2	R 3	R 4	R 5	R 6	R 7	R 8	R 9	r count	If Valid
	Contracts and Specifications	CS											
1	The contract documents are incomplete regarding project specifications, notifiable events, and changes to the project plan (Contract documents include: clauses, attachments, and other details)	CS1		-	√	-	-	√	-	√	-	0.640	Yes
2	The terms or language in the contract are difficult to	CS2	-	-	√	√	√	-	-	√	-	0.571	Yes

	understand and open to multiple interpretations												
3	Contract documents are not well-organized	CS3	√	-	-	-	-	√	-	-	-	0.730	Yes
4	Changes to contract clauses that impose greater risk on a specific party	CS4	-	-	-	-	-	√	-	-	-	0.610	Yes
5	The division of duties and authority in the contract is unclear	CS5	-	-	-	-	-	√	√	√	-	0.576	Yes
6	Conflict resolution mechanisms are not specified in the contract	CS6	-	-	-	-	-	-	-	√	-	0.661	Yes
7	Too many additions to the work beyond the scope of the original contract (variation orders)	CS7	√	-	√	√	-	√	-	-	-	0.426	Yes
8	Payment delays that do not comply with the terms of the contract	CS8	-	-	√	√	-	-	-	√	-	0.619	Yes
9	Claims for additional costs are not approved or paid	CS9	-	-	-	-	-	√	-	-	√	0.612	Yes
	Sociocultural	SO											
	Internal Aspect of Project										-		
1	Team members had never worked together on previous projects, so coordination was not smooth	SO1	√	-	-	-	-	-	-	√	-	0.551	Yes
2	Team members were not focused on the assigned work targets	SO2	-	-	-	√	-	-	-	-	√	0.464	Yes
3	There were conflicts of interest among stakeholders	SO3	√	-	-	-	-	-	-	√	-	0.635	Yes
4	Communication among participants was not effective	SO4	√	-	-	√	√	√	-	√	-	0.272	Yes
5	There were differences in expectations among stakeholders regarding the results of the work	SO5	√	-	-	-	-	-	-	√	-	0.613	Yes
	Gianyar Sociocultural Aspect												Yes
6	Unclear boundaries between the project land and community land and/or customary village land	SO6	-	-	-	-	-	-	-	-	√	0.682	Yes
7	Community complaints regarding project activities, such as dust, noise, and the moving of equipment and materials	SO7	-	-	-	-	-	-	-	-	√	0.661	Yes
8	Disruption to the Subak system (the irrigation system for rice fields and farmlands of indigenous communities)	SO8	-	-	-	-	-	-	-	-	√	0.799	Yes
9	The application of awig-awig (customary rules) that affect project implementation	SO9	-	-	-	-	-	-	-	-	√	0.761	Yes

10	The project site is located near a sacred area	SO 10	-	-	-	-	-	-	-	-	√	0.693	Yes
	Management and Organization of Project	MOP											
1	The number of workers on-site does not meet requirements	MOP 1	-	√	-	-	-	-	-	-	√	0.590	Yes
2	The Technical Team provided incorrect technical instructions to the Field Team	MOP 2	-	-	√	-	-	-	√	√	√	0.639	Yes
3	The Project Manager was slow to make important decisions	MOP 3	-	-	-	-	√	-	√	√	-	0.744	Yes
4	The contractor was unable to properly prepare for project requirements	MOP 4	-	-	-	√	-	√	-	-	√	0.611	Yes
5	Poor work scheduling resulted in an uneven distribution of the workload and potentially caused project delays	MOP 5	-	√	√	√	-	-	-	-	√	0.786	Yes
6	Supervision of labor, equipment, and materials on-site is not effective	MOP 6	-	√	-	√	√	-	-	-	-	0.716	Yes
7	The Field Team lacks experience in managing projects	MOP 7	-	√	-	√	-	-	√	√	-	0.738	Yes
8	Important information or reports are not delivered to stakeholders in a timely manner	MOP 8	-	√	-	-	-	-	-	-	√	0.767	Yes
9	Project correspondence and documentation are overly complicated	MOP 9	-	-	√	-	-	-	-	-	√	0.731	Yes
10	Work progress reports do not reflect actual conditions on-site	MOP 10	-	-	-	√	-	-	-	-	√	0.777	Yes
11	The Technical Team is unable to control project costs, leading to cost overruns	MOP 11	-	-	-	√	-	-	-	-	√	0.717	Yes
	Project Conditions	PC											
1	Working drawings and/or technical specifications are incorrect, incomplete, or inadequate	PC1	-	-	-	√	-	√	√	√	-	0.368	Yes
2	Changes in government regulations that affect the project	PC2	-	-	-	-	-	√	-	√	-	0.588	Yes
3	On-site conditions that differ from the initial plan, resulting in project delays	PC3	-	-	-	√	-	√	-	-	-	0.645	Yes
4	Work executions do not conform to technical specifications	PC4	-	√	-	√	-	√	-	√	-	0.485	Yes
5	Changes to the scope of work occur during project implementation	PC5	√	-	√	√	-	√	-	√	-	0.765	Yes
6	Changes to the work schedule occur due to on-site conditions	PC6	√	-	-	-	-	-	-	-	√	0.807	Yes

7	Suboptimal use of equipments on-site	PC7	-	-	√	-	-	-	-	-	√	0.701	Yes
8	Delays in the delivery of materials and equipments	PC8	-	-	-	-	-	-	√	√	-	0.661	Yes
9	Unpredictable weather conditions disrupt work executions	PC9	-	-	-	-	-	-	-	√	√	0.711	Yes
10	Topographic conditions at the project site that are not conducive for work executions	PC10	-	-	-	-	-	-	-	√	√	0.725	Yes

References:

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|---------------------------------|------------------------------------|
| R1 : Alazemi & Mohiuddin (2019) | R6 : Matarneh (2024) |
| R2 : Pranata et al. (2022) | R7 : Susila and Handoyo (2015) |
| R3 : Poerdyatmono (2007) | R8 : Marzouk et al. (2011) |
| R4 : Asah-Kissiedu (2009) | R9 : Results of field observations |
| R5 : Fenn et al. (1997) | |

Questionnaire Reliability Test

The following are the results of the questionnaire's reliability test by factor group:

Table 5. Reliability Test Results

CS		SO		MOP		PC	
Reliability Statistic							
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.778	9	0.821	10	0.900	11	0.851	10

Note that the contracts and specifications factor group received a rating of “acceptable”, the sociocultural factor group received a rating of “good”, the management and organization of project received a rating of “very good”, and the project conditions factor group received a rating of “good”. Thus, the questionnaire can be considered valid and reliable for use.

Relative Importance Index Analysis

Due to space limitations, the results of the RII analysis are presented in summary form. Nevertheless, the calculations show that the RII values for 40 conflict factors are all greater than 0.7. This means that all of them are classified as having at least a “high-medium” level of impact. The following are conflict factors from each factor group with highest RII:

Table 6. Most Impactful Conflict Factors Based on Respondents Perceptions

Code	Statement	RII Value
CS1	The contract documents are incomplete regarding project specifications, notifiable events, and changes to the project plan	0.933
CS9	Claims for additional costs are not approved or paid	0.933
SO4	Communication among participants was not effective	0.887
SO6	Unclear boundaries between the project land and community land and/or customary village land	0.861
MOP2	The Technical Team provided incorrect technical instructions to the Field Team	0.910
PC1	Working drawings and/or technical specifications are incorrect, incomplete, or inadequate	0.928

These findings are consistent with the research by Marzouk et al. (2011), which found that conflict factors generally stem from inadequate or incomplete contracts, or even contradictions among contractual documents. Cost claims are significant sources of conflict after issues related to contracts (Matarneh, 2024). Ineffective communication among project parties, communication breakdowns, and a lack of coordination among teams can escalate into primary source of conflict in construction projects (Asah-Kissiedu 2009; Alazemi & Mohiuddin 2019; Matarneh 2024). Marzouk et al. (2011) and Susila & Handoyo (2015) note that a contractor's lack of experience relates to construction management and practices, as well as a lack of interpersonal skills, can trigger conflicts in construction projects. Asah-Kissiedu (2009) identifies errors or omissions in design and specifications as a significant source of conflict in Ghana. Marzouk et al. (2011) note that inadequate technical planning or specifications, as well as an insufficient definition of scope, can trigger disputes in construction projects. Notably, Matarneh's (2024) research indicates that incomplete technical drawings or specifications are the top source of conflict in Jordan. Among the verified conflict factors related to the social and cultural context of the Gianyar community, the factor of project boundaries that overlap with community land or even land owned by customary village is the conflict factor with the highest impact. This must be managed with appropriate strategies to prevent it from escalating into a dispute.

Experts Interviews Results

Table 7. Interview Results for "The Contract Documents are Incomplete"

Expert Quotes	TKI Mode
Documentation and mutual agreement on each project	Collaborating
In accordance with the agreed-upon contract and addenda	Collaborating
Consultation among relevant parties	Collaborating
Conflicts are anticipated as early as the planning stage through risk identification and alignment of expectations	Collaborating
Coordination and review of contract documents prior to implementation	Collaborating

Experts agree that the “collaborating” mode is recommended for managing this conflict. This is due to the complexity of the contractual issues, the strong interest of all parties in completing the project, and the need for a long-term solution. The collaborating mode is suitable for situations that require addressing the root causes of the problem thoroughly, resulting in a win-win solution for all. However, it typically takes longer to reach an agreement. Experts suggest that the collaborative approach through deliberation, coordination, and review of contract documents; aligning perceptions regarding the contract; and drafting addenda to supplement the contract can be done to manage this conflict factor.

Table 8. Interview Results for “Claims for Additional Costs are Not Approved or Paid”

Expert Quotes	TKI Mode
Negotiations based on evidence and documentation of the work	Compromising
Negotiations to reach a mutually beneficial solution	Collaborating
Verification of the scope of work in collaboration with a third party	Collaborating
Claims must be supported by documentation and approval of changes	Competing
Coordination with the owner to reach a mutual solution	Collaborating

Experts' opinions vary regarding this factor. If the cost claims can still be verified, negotiated, and resolved through a mutual solution, then the appropriate mode is collaboration. Meanwhile, if the timeframe for resolving the conflict is limited and the parties are willing to make concessions, then the appropriate mode is compromising meeting some of the parties'

demands. The “competing” mode to enforce contractual rights is also justified, especially if the validity of the claim is in question. However, experts predominantly recommend the “collaborating” mode regarding this factor.

Table 9. Interview Result for “Communication Among Participants Was Not Effective”

Expert Quotes	TKI Mode
Conduct regular coordination meetings among project stakeholders.	Collaborating
Communicate project information clearly to all stakeholders.	Collaborating
Establish a dedicated communication group to facilitate project coordination.	Collaborating
Resolve issues through discussion and consensus.	Collaborating
Conduct periodic evaluations of communication effectiveness.	Collaborating

Experts predominantly recommend the collaborating mode for addressing conflicts caused by ineffective communication among project stakeholders. This approach emphasizes open communication, continuous coordination, and joint problem-solving to achieve mutually beneficial solutions while minimizing misunderstandings, information delays, and differences in perception during project implementation.

Table 10. Interview Results for “Unclear Boundaries Between the Project Land and Community Land”

Expert Quotes	TKI Mode
Conduct a land boundary survey before the project begins.	Collaborating
Consult with landowners and relevant parties and prepare a jointly agreed-upon land boundary record.	Collaborating
Prepare a written statement or agreement regarding land boundaries.	Collaborating
Involve relevant government agencies, village/traditional authorities, and stakeholders to verify land boundaries.	Collaborating
Verify land titles and seek mutually agreed-upon solutions, including the provision of compensation if necessary.	Compromising

Experts agree that the “collaborating” mode is recommended for managing this conflict factor. This is due to the complexity of land boundary issues. Especially when it comes to customary village lands. This is no longer merely a technical and legal matter, but also a social and cultural one. It is strongly recommended to involve all interested parties in the discussion, such as project stakeholders, local governments and/or the National Land Agency, and the indigenous community or customary village authorities. It is hoped that all parties can verify all documents and facts on the ground in order to formulate a solution that meets everyone’s expectations. It would be ideal if land boundaries could be mutually agreed upon; however, if not, the process can still proceed through a “compromising” approach, with compensation provided if necessary.

Table 11. Interview Results for “The Technical Team Provided Incorrect Technical Instructions to the Field Team”

Expert Quotes	TKI Mode
Coordinate before instructions are carried out	Collaborating
The Technical Team must understand the work methods and technical specifications	Competing
The Technical Team must be more thorough in reviewing project documents	Competing
The Project Manager facilitates technical discussions before work begins	Collaborating

The Technical Team must thoroughly review the work before giving instructions	Competing
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Experts generally recommend the “competing” conflict mode. This is because incorrect technical instructions can lead to quality issues, increased costs, rework, project delays, and even workplace safety hazards. Given the importance and significance of this issue, experts argue that there must be firmness and compliance with technical standards or regulations. The technical team is expected to thoroughly understand technical standards before providing instructions. On the other hand, the “collaborating” conflict mode can be used when the problems have identified and the goal of all parties is to correct the work and prevent further impact. Cooperation among all parties is necessary to develop corrective actions and prevent the error from recurring.

Table 12. Interview Results for “Working Drawings and/or Technical Specifications are Incorrect, Incomplete, or Inadequate”

Expert Quotes	TKI Mode
Complete the working drawings immediately	Competing
The field team coordinates with the technical team regarding the requirements for the working drawings	Collaborating
The drafter immediately prepares detailed shop drawings	Competing
The technical team immediately finalizes the technical aspects required on-site	Competing
Technical coordination with the field team	Collaborating

Experts generally recommend the “competing” conflict mode for this factor. However, both the “collaborating” and “competing” conflict modes can be used depending on the context. For example, if the working drawings or technical specifications are clearly inadequate and a decisive and rapid solution is needed, the technical team must immediately complete them in accordance with the project context and the construction management and process standards in general (competing). If issues can be identified in advance, the field team can submit a request for information (RFI) so that they can be discussed together to review the design, revise the design, and issue revised drawings and specifications (collaborating).

Overall, these findings are consistent with previous studies emphasizing that most construction project conflicts are more effectively addressed through collaborating, particularly those related to contracts, payments, claims, stakeholder communication, and community relations (PMI, 2021; Cakmak & Cakmak, 2014; Jergeas et al., 2000). Only the factors incorrect instructions and inadequate working drawings and technical specifications were recommended by the experts to be managed using the competing conflict mode.

The interview findings also indicate that experts recommend the compromising and competing conflict modes under specific circumstances. This is consistent with Van (2013), who argue that the effectiveness of a conflict management mode depends on the context, including the importance of the issue, the relationship between the parties, power distribution, time constraints, decision consequences, and organizational values. Accordingly, the collaborating mode is preferred when achieving mutually beneficial solutions is the priority, compromising is appropriate when time and resources are limited, and competing is recommended when rapid and decisive action is required, particularly in matters involving safety or the enforcement of contractual and regulatory requirements.

Conclusion

This study investigated 40 conflict factors in building construction projects using questionnaire data from 69 respondents selected through purposive sampling due to the absence of a well-defined sampling frame. Relative Importance Index (RII) analysis indicated that all factors had RII values above 0.70, while the six highest-ranked factors exceeded 0.80 and were identified as the most critical conflict factors. To strengthen the findings, expert interviews were conducted to determine appropriate conflict management strategies. The results indicate that collaborating is the preferred conflict management mode for most critical conflict factors, whereas compromising and competing are recommended under specific conditions. These findings support the Thomas–Kilmann Conflict Mode Instrument, which suggests that the effectiveness of a conflict management mode depends on the context rather than a universally applicable approach. The findings provide practical guidance for stakeholders in selecting appropriate conflict management strategies to improve project performance.

Acknowledgments

I Wayan Galang Wedana, S.T.

The researchers would like to express deepest gratitude to this gentleman, who provided valuable inputs and assistances in completing this paper. In particular, his contributions regarding the research focus, methodology, and data analysis helped ensure that this study was well-directed, reliable, and accountable.

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