

# Identification of communication behavior of internal stakeholders in pre-disaster construction projects: systematic literature review

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**Abstract.** Project management to achieve successful performance is one of the efforts to increase capacity in disaster mitigation. Communication is an important indicator in increasing the success of construction projects. The implication of communication is that there is communication behavior between stakeholders that will influence project development. To find out the extent of research on communication behavior and how communication behavior occurs on construction projects before a disaster occurs is the aim of this research. Through a systematic literature review method using the keyword behavioral communication in project construction in a Google Scholar search and several selection stages. Ultimately 43 articles were reviewed for results and conclusions. From the identification results, it was found that research on communication behavior had not been widely studied and the most relevant topic regarding communication behavior was that the project manager was the actor who would influence the behavior of the project team. The type of communication that is widely researched is interpersonal communication. The potential for future research development is in the form of developing communication assessments at other stakeholder levels to minimize repetition of work on construction projects by paying attention to the variables 1) monitoring, 2) Management, 3) Challenging, and 4) Negotiation.

## 1 Introduction

The geographical location and geological structure cause Indonesia to become an area prone to natural disasters. A series of natural disasters endanger human life, especially destroying physical buildings, requiring redesign and rebuilding. This activity is the latest paradigm for disaster management which has shifted from disaster relief towards hazard mitigation, vulnerability reduction and disaster preparedness. One of the activities relevant to this paradigm is the successful implementation of development projects.

Cost, quality, time and work safety are indicators of the success of construction projects [1]. Project success must be achieved in all management cycles with the hope that the impact of disasters can be reduced to a minimum. Project success is one of the factors that influences stakeholder communication. In other research it is said that communication has the highest impact on activities to determine the quality of reconstruction [2]. On the other hand, communication effectiveness is still a barrier to project success [3]. Effective communication can be realized with 5 (five) main steps, namely stakeholder analysis, communication needs, communication methods, reporting systems and performance reports [4]. These five steps form a communication project system consisting of various communication strategies. Because communication consists of stakeholders as actors who

have different backgrounds, the communication system is also a cultural product [5]. Next, the communication system will process in the form of interactions between the message sender and the message recipient and occur within the communication organization. Every interaction formed will be displayed in the form of communication behavior. Communication behavior and strategies are very significant and positively related to management stakeholders [6]. Therefore, analysis of the communication behavior of stakeholders who play a role at the beginning of the project is very necessary. The stakeholders who play a role at each stage of a construction project change according to the location and type of project. The location of the project will influence project planning by the project manager [7]. However relationships between stakeholders will not be separated from the power, interests and influence of stakeholders [8]. This relationship is an important part in regulating communication behavior to develop communication mechanisms [9]. This initial identification becomes very complex because it starts from identifying stakeholders to the behavior that can arise from the interactions that occur. Thus, the main problem is how behavior often occurs in interactions between stakeholders both interpersonally and multiculturally. To find out the extent of behavior that occurs and the extent of communication of construction project knowledge in disaster mitigation efforts, this research was conducted with the aim of

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identifying communication behavior that can occur in relationships and coordination between stakeholders in construction projects before a disaster.

## 2 Literature review

### 2.1 Success of construction projects in disaster mitigation efforts

Law Number 24 of 2007 provides a new paradigm in disaster management in Indonesia, namely reflecting disaster situations into preventing and reducing disaster risks through hazard mitigation activities. Disaster risk reduction efforts through integrated response planning programs and increasing community capacity [10]. Regional governments as stakeholders in the region have involvement in realizing this paradigm. In previous research it was said that the coordination of the disaster risk control paradigm in construction projects rests with the project manager. A capable project manager is one of the most important factors in project success.

Therefore, project managers must have great ability and knowledge. One of the abilities that a project manager has is the ability to communicate very well with the project team. The project manager must be able to plan and carry out project planning meetings related to the use of funds and project location planning [2]. Pre-project construction planning must be able to find positive relationships and growth in project costs/schedules as well as at advanced stages, namely the pre-tender, pre-construction and during construction planning stages.

Planning during construction can be defined as the production budget, schedule, and other detailed specifications of the steps to be followed and constraints to be adhered to in project implementation [11]. Project success is positively impacted by investment in the definition of requirements and development of technical specifications [11] resulting in the need for effective communication among stakeholders in construction to achieve project objectives [12]. Conditions will run well if the project does not experience changes. However, job changes can occur from the beginning of construction project planning so construction project manager skills are needed in the form of timely and efficient communication as well as flexible leadership with quick decision making [13].

### 2.2 Communication and stakeholder relation

Communication is the discriminative response of an organism to a stimulus. The discrimination contained is the difference in the attitude of the organism towards the stimulant received [14]. In the KBBI, communication is defined as a process of exchanging information between one person and another through a system in the form of symbols, sounds, signs or the same behavior. Communication in science is expressed as the use of skills, media, activities, and dialogue to generate one or more of the personal responses [15] and Thomas *et al.* emphasized the importance of effective communication between teams in a project to increase the success of a construction project [16].

Meanwhile, Rogers believes that linear communication reflects a communication process that influences each other so that it is able to explain in a simple way social phenomena between stakeholders [17]. Humans as actors in construction projects consist of stakeholders who interact with each other, have conflicting demands and interests [18]. There are various differences in attitudes between stakeholders which can give rise to social conflict in internal and external projects [19] and occur throughout the project life cycle starting from planning, tendering, implementation and facility management [20]. Interaction between stakeholders is established through communication [21] with media in the form of letters, reports, faxes, meetings, dialogue, computers or social media [22, 23]. Social ties formed from stakeholder interactions in the form of communication as an indicator of the success of construction projects [24, 25]

### 2.3 Behavioral communication between construction project stakeholders

Behavior is an action that implements knowledge and attitudes that have been formed in humans. This is also related to the norms that apply in society. While Communication is one of the daily activities that is truly related to all human life, sometimes individuals ignore its spread, importance and complexity [26]. Other researchers state that communication behavior is an action or response in the existing communication environment and situation, such as thinking, knowledge and insight, feeling and acting or carrying out actions adopted by a person, family or community in seeking and disseminating information [27], but There are also those who say that communication behavior is all activities aimed at seeking and obtaining information from various sources to disseminate information to any party who needs it.

Communication behavior is basically goal oriented in the sense that a person's behavior is generally motivated by the desire to obtain a certain goal. With this description, communication behavior is related to the nature of stakeholders as part of non-verbal communication media such as being responsible, honest, trustworthy, angry, patient, tolerant, disciplined, true to promises and others who are able to express themselves regarding the information provided in a construction project. In communication theory there are 4 (four) types of communication behavior, namely assertive, aggressive, passive and passive-aggressive behavior. [28]. These four types depend on a person's personality profile [29, 30]. Molwus *et al.* observe that Different strategies should be used to manage and engage stakeholders in different project stages, depending on the existing circumstances [31]. Formal communication has a negative impact on the success of a construction project, giving rise to conflict between project team members, while informal communication and the willingness to communicate have a positive impact on the success of the project because people tend to know each other and trust each other [32].

Task, process and relationship conflicts are used as mediating variables. It was found that task conflict affects relationships positively because project team members suggest different ways to perform certain tasks to achieve





Communication is an important factor in determining project success, but communication is dynamic so that in the construction phase research instruments will also always change [37]. This is a challenge in itself to conduct research on the topic of communication behavior. Stakeholder perspectives on communication also vary. In several articles, the dominant communication competency discussed is the competency of the project manager as project site leader. A project manager must have emotional intelligence, communication knowledge, empathy, mediator, political skills, managing, and directing the project and project team members.

#### 4.2 Research Implications

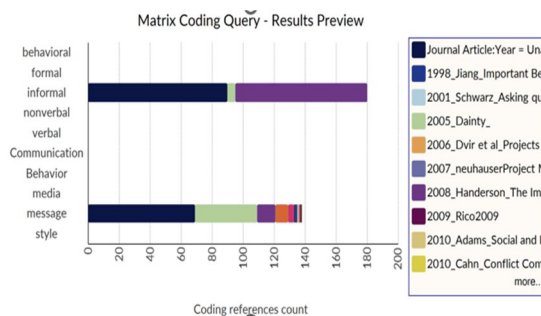
In this chapter, emphasis is placed on inquiry and the willingness to engage in extensive inquiry. From the text search analysis, the most relevant research to develop is the research of Kwofie et al [36] and Lee and Kim [38]. However, if we look at the title of the research, Menata et al [39] have published research 3 (three) times regarding communication behavior from 2015 to 2021. In the initial stage, a literature review was carried out which obtained 4 (four) variables of communication behavior in Integrated Project Implementation (IPD) construction in the Mechanical, Engineering and Architecture (MEA) industry, namely 1) monitoring, 2) Managing, 3) Challenging, and 4) Negotiating. These four communication behaviors have a positive relationship to the effective and innovative implementation of IPD [40]. Next, in the second stage, an online survey was carried out on the IPD project team and collection using the cross-sectional method of manners using two-stage confirmatory factor analysis (CFA), obtained four indicators of communication behavior which are different indicators of the communication process [41]. In the third phase of publication, this research implied that the impact of project managers' communication practices in integrated project delivery (IPD) projects takes into account how time-level information exchange influences time-level outcomes (i.e., goal alignment, decision quality, process commitment, and project quality). Information sharing is considered beneficial, although there is variability in the effects of project management communication behavior.

If the team already exchanges enough information, an assessment of the interactions shows that the project manager's communication practices make it more difficult for them to function as a team. By outlining an integrative model in which project manager and team-level information sharing behavior is modeled simultaneously. The model of organizing et al can be used as a development model for assessing communication behavior. This research is also supported by Lee and Kim, that communication effectiveness not only influences team performance but can build team trust. Senders and recipients of information can share facts, ideas and opinions through visual communication to form the basis of information visualization research in the construction management domain [38].

In research, Manata et al [41] also stated that visual communication is communication by seeing with the

eyes, so it is called a visual perspective. Visual perspective will code the images received with the knowledge they have. The level of reception and distribution of information will be influenced by communication knowledge as well as communication barriers [2]. In their research, Lee and Kim outlined that there are 3 (three) levels of information complexity, namely 1) company management level, 2) project management level, and 3) supervisory level. From these several identifications, communication behavior begins with the project management skills of the project manager. To find out behavior at each stage of the project, the use of Lee's method [38] is very appropriate by investigating at the company management, project management and Superintendent levels. With communication behavior variables, namely 1) monitoring, 2) Managing, 3) Challenging, and 4) Negotiating.

In qualitative analysis with Nvivo using the query coding matrix method, it was found that the type of information that is often used today is messages which are a type of informal communication. The weaknesses of informal messages, especially when using social media, become a new challenge that causes disrupted decision making due to message errors, incomplete information, behavior that tends to be careless and the possibility of information leaks [42].



**Fig 4.** coding matrix with behavior, communication and disaster mitigation classification codes with the NVIVO application.

#### 4.3 Classification of research based on research topics

From this discussion, it is necessary to study more deeply other communication patterns such as formal communication through meetings, both face to face and via video conference. The recapitulation of the review results based on the discussion is also described as follows:

**Table 1.** Summary of Article Results relevant to communication behavior on construction projects.

NO	Researcher	Results
1	Du et al [43]; [44], Chen et al [45];	The use of digital media in project communication uses informal language in coordination between stakeholders
2	Dainty et al [46]	The project manager is the main actor in influencing the behavior of other stakeholders

NO	Researcher	Results
3	Adams and Anantatmula [47]	Social variables influence the behavior of construction project teams
4	Flyvbjerg [48]	The problem of cost overruns in construction projects and lack of benefits is not a mistake but a consequence of communication behavior
5	Kwoifie [36]	Communication consists of functional task communication skills, namely behavior to communicate their domain tasks and psycho-social skills, namely the ability to communicate with the community. The main cultural values such as respect, trust and honor are necessary psychological values. The use of technology plays a role in the effectiveness of communication.
6	Manata [39]; [41]	The project manager's communication behavior in the team can hinder the success of the project. And 4 variables to measure construction project communication behavior are 1) monitoring, 2) managing, 3) challenging, and 4) negotiating.
7	Matahari et al [40]	Communication behavior is identified at stages, monitoring, challenging, managing, and negotiating

#### 4.4 Discussion and recommendations for future research

Communication behavior is a verbal or nonverbal action that is present in a person's behavior and can be observed [49]. The behavior formed will affect the entire project. Previous researchers mostly used project managers, project teams and professional project managers as research subjects. Research involving the project owner and the community who will receive the products resulting from project development needs to be studied so that the design and implementation process does not result in repetitive work. In the assessment explained above, IPD projects are still rarely carried out in Indonesia, research can be developed in a single project.

#### 5 Result and discussion

A literature review of papers regarding communication behavior in the construction industry reveals that communication behavior that often occurs in the field is visual communication and informal communication through messages which can be part of the challenge for successful communication in projects. Then it was also found that the competence of the project manager was the key to successful communication within the project team and was the driver of project success by mastering knowledge of behavioral communication and conflict mediation between teams in the project. And it can be concluded that the type of communication that has been widely researched is interpersonal communication. The

potential for future research development is in the form of developing communication assessments at other stakeholder levels to minimize the occurrence of repetitive work in construction projects by paying attention to the variables 1) monitoring, 2) Managing, 3) Challenging, and 4) Negotiation.

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