FRAMEWORK FOR RESEARCH ON COMMUNICATION IN MULTICULTURAL PROJECTS: THE CASE OF PELJEŠAC BRIDGE

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ABSTRACT
The growing globalisation of construction projects is inflecting a series of challenges related to language, culture, religion, legal and regulatory regulations for construction organisations. The emergence of multicultural teams has highlighted the importance of social skills, trust, cooperation and communication in construction projects. The importance of communication for the success of projects has been highlighted numerous times in existing literature. However, effective communication management in the current multicultural environment remains a challenge for construction project participants. In this study for research on communication in multicultural projects, the case of Peljašac Bridge, which is one of the most important projects in Croatia, is presented. The total value of the project is estimated to be 420 million euros, of which 357 million euros will be covered by the European Union funds. The main contractor, China Road and Bridge Corporation, is a state-owned Chinese firm. According to the proposed framework, a multicultural dimension of this project is required for the research of communication in multicultural teams. The experiences gained in this project will be highly significant for similar future projects.

KEYWORDS
Construction projects, Communication, Multicultural teams, Pelješac Bridge.
1. INTRODUCTION

The construction sector has a significant influence on the world economy and progress of society. In 2020, it accounted for 10.6% of the total gross domestic product (GDP) in the European Union, and employed 6.2% of all employees in more than three million companies (European Construction Industry Federation, 2022). Investments in some large and complex projects (mega projects) with long duration and social importance, exceed a billion dollars (Flyvbjerg, 2014). Due to the globalisation and internationalisation of this business, the cooperation on construction projects between organisations of different national, religious and value backgrounds is increasing. Between these organisations, cooperation, trust and good communication are necessary to deliver construction projects with the required level of quality, time and budget. Therefore, the soft characteristics of project and organisational management are gaining importance.

Communication is the aspect of project management that prevails all others (Emmitt and Gorse, 2007). Without effective communication among participants, the project team would not be able to achieve its goals. Project managers spend most of their time communicating with team members and other stakeholders. Some of the key management components, such as leadership and decision-making, are based on effective communication.

Effective communication is particularly important in a multicultural environment (Ochieng and Price, 2010), which has become increasingly common in projects recently. It creates a dissemination bridge between different stakeholders with different cultural and organisational backgrounds, different levels of expertise, perspectives and interests (Project Management Institute, 2017). Communication management is a necessary competence in project management and a key aid in effective decision-making throughout a project (Mnkandla, 2014). However, effective communication management in the current multicultural environment remains a challenge for construction project participants.

The construction industry has earned a bad reputation in terms of attitudes towards people and cooperation between companies in general. Conflicts, lawsuits, corruption and lack of trust are often mentioned. Culture has been observed to be the most dominant reason for a number of specific problems in construction (Fellows and Seymour, 2002). If we explore the definition of culture, offered by Hofstede, it becomes clear why multicultural projects encounter issues regarding information sharing, understanding and cooperation. Hofstede (2001, p. 11) states that culture is "the collective programming of the mind which distinguishes the members of one group or category of people from another." Therefore, a culture is very difficult to change or adapt, and members of one culture find it strenuous to understand the values and behaviour of members of another culture. However, Ochieng and Price (2010) demonstrated that project manager’s awareness of cultural diversity positively affects communications within multicultural projects.

This study further addresses the issue of communication in multicultural construction projects. After a short literature review on the subject, a framework for research on communication in multicultural projects in the case of Pelješac Bridge is presented. Thus
far, it is one of the most important infrastructure projects in Croatia, delivered in a multicultural collaboration between Croatia and China.

2. COMMUNICATION IN CONSTRUCTION PROJECTS

There are two dimensions of project management: hard and soft. The hard dimension consists of the formal and technical parts of the project, where analytical and problem-solving skills are needed. Hard dimension is, therefore, data-oriented, and involves planning and tracking of project objectives. On the other hand, soft dimension involves people-oriented skills, or emotional intelligence. Soft dimension of project management has wider social and business application. This refers to social functioning of project teams (Pretorius and Zaaiman, 2013). Pretorius and Zaaiman (2013) mention that the hard dimension is the "science" and the soft dimension is the "art" of the project. Communication management is a typical part of the soft dimension of the project. However, the communication plan can also determine its hard dimension. In communication management, it is important to cover both dimensions. This is due to the fact that complex projects usually fail, although they follow all the recommended formal methods (Pretorius and Zaaiman, 2013).

Project communication management refers to all the actions required to create, collect, present, distribute and securely store information between people in the environment of the project (Project Management Institute, 2017). Previous research has indicated that communication, trust and cooperation among the stakeholders strongly influence the project success (Diallo and Thuillier, 2005). Nevertheless, communication research in the construction management field has been scarce in comparison with other project management issues. To understand the complexity of the subject, theoretical and practical contexts are explained in more detail in the following sections.

2.1 Theoretical context

Theoretical considerations coming from social sciences, such as economics, sociology and psychology, also corroborate the importance of communication for project success. There are few original theories in the science of communication (Berger, 1991). Therefore, scientists engaged in theorizing about communication, have borrowed various theories from other sciences, especially the aforementioned sciences. Intrapersonal and interpersonal communications are dominantly explored in the field of psychology; Intra-firm and group communications rely primarily on sociology; and inter-firm communication can be explained with theories coming from the economics.

For example, in economics, principal–agent theory can explain communication risks in construction projects. Two parties are involved in a principal-agent relationship: the principal is the one who hires, and the agent is the one who performs a task on their behalf (Moe, 1984; Jensen and Meckling, 1976; Ross, 1973). Such relationship has several characteristics, including goal conflict, self-interest, and information asymmetry between
the participants (Moe, 1984). Goal conflict and self-interest are terms that explain different positions and desires of relationship parties (Kivisto, 2008). Both principal and agent are led by a desire to maximize their own profit, so they do not always share all the information. This then leads to the information asymmetry problems. Information asymmetry considers that both principal and agent possess some specific information and choose not to share this information with the other party to gain personal benefit (see Akerlof, 1970). According to Kivisto (2008), the characteristics of principal-agent theory, such as goal conflict and information asymmetry, lead to opportunistic behaviours by participants and increased agency costs.

Communications is a relatively new research discipline that developed into an organised research field in the twentieth century. Conversely, its roots go back to the old fields of philosophy and rhetoric (Cobley and Schulz, 2013). Unlike other sciences whose objects of study and boundaries are easy to determine, it is difficult to say “what it is not about” in the science of communication (Cobley and Schulz, 2013, pp. 5). Communication is such a general term that often includes other disciplines and objects of study. The origin of the term "communication" comes from the Latin terms communicare - to share, to be in relation with - and communicatio - sharing, imparting (a gift). Thus, its meaning is related to “change, exchange and goods possessed by a number of people” (Cobley and Schulz, 2013, pp. 1). The meaning of communication and the science that deals with it is extremely extensive and versatile.

Since Aristotel (300 BC), who proposed the first model of mass communication, a multitude of communication models were developed; the Shannon-Weaver model is the most known model (Figure 1). In this model, the sender (information source) is the person who creates the message, selects the channel and sends the message; the encoder is a person or device that converts a message into a signal or binary data; the channel is the medium used to transmit the message; the decoder (receiver) is a device that converts signals or binary data into a message, or a person who translates signals into a message; the recipient (destination) is the person who receives the message; and the noise is a physical disturbance (environmental or human factors) that prevents the message from reaching the recipient in the form in which it was sent. The terminology used in the prior mentioned model will be used in this research, along with the common definition of communication: "Communication is the sharing of meaning to reach a mutual understanding and to gain a response" (Emmitt and Gorse, 2007, p. 3).
Several studies in the field of construction have had a great value for the research of communication and have set the foundations for subsequent work. For example, Higgin and Jessop (1966) were pioneers of communication research in construction industry. The main characteristics of construction projects, such as fragmented teams, multiple locations and portions of work, complexity of projects and relationships between stakeholders, have been highlighted as the main issues in construction communication (Emmitt and Gorse, 2003). Recently, most cited books on communication in construction projects (Emmitt and Gorse, 2003, Dainty et al., 2006, Emmitt and Gorse, 2007) have been published in the beginning of the 21st century, when the research changed from pragmatic paradigm with the aim of increasing productivity on projects, to an interpretivistic and more complex view of the subject (Žerjav and Cerić, 2009). From then, communication is seen as a multifaceted phenomenon between different disciplines and organisational levels, and with different perspectives of interpretation. However, there is still a need to implement all the academic insights about communication to the construction projects.

2.2 Practical context

In construction projects, communication is structured and managed according to the roles of specific project participants. Contractual relationships and project breakdown structures commonly determine formal communication interactions in projects. Nevertheless, this formal aspect is only one part of project communication. The second part includes informal information channels which are extremely difficult to track and investigate. To understand communication in a particular construction project, one must explore its all types and dimensions, which include a multitude of research methods and approaches.

Several types of human communication appear in projects which depend on the number of participants and patterns of communication. Although, we frequently experience communication as an interaction between two people (inter-personal), the most common type of communication in projects is group or team communication; thus, project team meetings are the most common form of communication in projects. However, intra- and inter-firm relations and communications also carry significant weight in the successful implementation of projects.
Interpersonal communication is the interaction between two or more people. It involves the internal cognitive process of transmitting our thoughts, but its main feature involves the existence of the sender and recipient of the message, with the provision that there may be more recipients. It is easy to conclude that because of this, every other type of communication contains interpersonal communication, and it is crucial for achieving the effectiveness of any organisational system (Dainty et al., 2006).

All types of one-on-one communication can be considered interpersonal communication. This includes face-to-face interactions, phone calls, e-mails and letters. Some of them include both verbal and non-verbal communications, while others (such as e-mail and letters) are only verbal. However, in any interactions, there is a possibility of misunderstanding the sent message due to noise in the channel. Therefore, it is very important to understand the communication process, and to always receive feedback, regardless of the medium of transmission of the message.

The members of the project teams usually come from different organisations, having different life experiences, skills and knowledge; these members come to work together in a short period of time. For this reason, effective team communication is not a task easy to achieve. A state in which the team communicates effectively must be carefully formed and developed. It is important to know the stages of team formation (Tuckman, 1965) and the different team roles (Belbin, 2004).

Emmitt and Gorse (2007) proved how successful project teams with a good team atmosphere and project results communicate in certain patterns. In successful teams there is much more socio-emotional communication among the members than that present in the unsuccessful ones. Therefore, a higher share of socio-emotional communication in the team leads to an atmosphere of trust, that allows team members to cover each other's shortcomings, but also take advantage of other's advantages.

Intra-firm or organisational communication involves interactions within the company of each project. This type of communication is very complex due to the large amount of information that needs to be transferred inside and outside the company. It is also about the interactions between professionals, in a particular department, team, or functional department of the company. In contrast, inter-firm communication includes the company's relations with external partners such as suppliers and customers.

The complexity of communication management in construction projects rises from the fact that every type and dimension of communication greatly affects the success of a project (Dainty et al., 2006).

3. MAIN INFORMATION ABOUT PELJEŠAC BRIDGE

The Pelješac Bridge is the first of four phases of a project named “Road connection with Southern Dalmatia”, which will connect the divided territory of the Republic of Croatia,
including the European Union. The project represents a geostrategic move for Croatian government intended to reunite the country, because Croatia’s coast was long divided by the 20 km long ‘Neum corridor’, which belongs to the neighbouring Bosnia and Herzegovina. Other three phases of the project include the construction of its access roads. With 2.4 km in length and complex design solution due to seismic activity, strong wind and unfavourable properties of the seabed at the location, Pelješac bridge is the most challenging phase. Upon completion, it will be the longest bridge in Croatia and the second-longest in Europe.

The first attempt to building the bridge started in 2007. At that instant, a consortium of Croatian companies, such as Viadukt, Konstruktor and Hidroelektra niskogradnja, took on the project. However, in the light of political bickering, corruption affairs and global financial crisis, the government did not provide enough money for the completion of the bridge. The contract for the construction was terminated in 2011 by mutual agreement. Only 3% of the work was done. Nevertheless, the idea of Pelješac bridge continued. In 2013, Croatia entered the European Union and was able to apply for EU funds. In the same year, it was confirmed with a feasibility study that the bridge is the best technical solution for connecting the south of Croatia. The design of the extradosed bridge was selected as the most appropriate (Hrelja Kovačević, 2021). Consortium of Faculty of Civil Engineering Zagreb, Ponting Consulting Engineers and Pipenbaher Consulting Engineers was responsible for the design. Project implementation started in 2016 and it was first planned to be completed in 2022. In 2017 the European Commission decided to co-finance the project. The total value of the project is approximately 420 million euros, of which 357 million euros will be covered by European Union funds. During competition for the construction of the bridge, several complaints had to be dismissed prior to the final selection of the contractor, the consortium of Chinese state-owned firms China Road and Bridge Company (CRBC – consortium leader), CCCC Highway Consultants, CCCC Second Highway Engineering and CCCC Second Harbour Engineering.

The Bosnia and Hercegovina authorities opposed the project, with the claims that the construction of a bridge will block their access to the sea and prevent large ships from entering the port of Neum. Nevertheless, Croatia proved that the bridge does not violate any international laws and the construction started in 2018.

For the Chinese consortium, this is the first project which is funded by the EU. Their offer was lower than the other by half billion HRKs. For China, this project symbolises the positive role Chinese companies can play in building high-quality infrastructure in the EU, as a part of its Belt and Road Initiative, a massive global network of infrastructure and investment projects. However, the EU is reluctant at the Chinese activities in the Balkans with the fear of Chinese companies competitive practices and lower wages (The New York Times, 2018).

The Pelješac bridge is at its final stages of construction. It passed the technical inspection and several minor corrections are in progress. A research framework is presented in the following section, with the goal of investigating the specificities of cooperation and communication in this important Croatian mega infrastructure project.
4. FRAMEWORK FOR RESEARCH

This study presents a developed framework for research on communication in multicultural teams, using the case of Pelješac bridge. The bridge has been selected for analysis because it is one of the most important projects in Croatia thus far, including a multitude of participants with different cultural backgrounds.

According to Allen (2017, p.37), “studying communication involves the examination of a process of human interaction that continues to evolve with technology and development of organisations and groups.” In a project environment, it requires the inclusion of many different information, such as language, culture and history of the participants, their goals, meetings, forms of reporting, project documentation, etc. Therefore, it involves different areas of human sociology, psychology and even economy. To properly evaluate all aspects of project communication in multicultural environment, a subjective approach and qualitative methodology is selected. The selected approach implies that both communication and culture cannot be objectively determined or measured, but only interpreted. The researchers must interpret people’s thoughts, and it can only be done through observing symbols and patterns of behaviour. In doing so, researchers should be directly involved in the environment they observe, as much as they can (Janićijević, 2013). The proposed framework for research encompasses different qualitative research methods organised in 12 consecutive steps (as shown in Figure 2.).
The first step embraces collecting of all available information related to the Pelješac bridge, mainly through published newspaper articles and available project documentation. An important aspect of this research is to comprehend different perceptions of the relationship between Croatian and Chinese project teams. In doing so, not only the perception of directly involved participants are analysed, but also the perception of the public and media. The Pelješac bridge has attracted significant attention from the public in Croatia because of its
unique value for the country’s tourism by connecting its territory. The importance of the bridge, multitude of political scandals and former problems with project execution, as well as a selection of Chinese contractor, have also attracted the attention of the media, both domestic and foreign. Therefore, the aim of this step is to collect all data on the Pelješac bridge that is available online. This step is still in progress, as the project is not finished yet. The result will be an archive, or a historical record of information on the Pelješac bridge, and people’s perceptions during different project stages. Most importantly, this archive can be accessed any time during the research, if new cognitions need to be checked.

The analysis of the archive has already started, and involves a content analysis, which enables the classification and investigation of data collected from different sources. Content analysis includes: registering the main information on the Pelješac bridge available to the public; mapping all the newspaper that carried articles about the Pelješac bridge; analysis of different narratives from different media; and mapping the key participants of the project and their roles.

The content analysis from the previous step enabled the primary definition of the key participants in the project, as well as their roles. The result of this step was a collection of targeted data on participants: their names, roles in project and firms in which they are employed.

For the evaluation and complementation of data collected through internet surfing and content analysis, one of the most important participants are interviewed. The method used in this step was a structured interview with the investor’s lead project manager. The structured interview resulted in the final list of the key participants in the project and their roles.

Researchers then organised the list from the previous step. Diagrams were created to better understand the contractual and non-contractual relationships between the participants. One of which outlined the central inter-firm relationships in the project, and the second one outlined the central inter-personal relationships in the project. Diagrams were organise das networks, containing main participants as nodes, and relationships between them as ties. A visual representation enabled the mapping of key individuals and firms in this project.

Simultaneously, researchers are conducting a comprehensive literature review on communication and multiculturalism in project environments. Literature review includes published scientific literature and international project management standards. The aim of this step is to understand the most important aspects of communication management and the management of multicultural teams in construction projects.

Guided by the literature review and collected data on the Pelješac bridge, the next step was designing semi-structured interview guide. Interviews are widely used in communication research to gain an understanding of cultural, sociological, psychological, linguistic and behavioural aspects (Croucher and Cronn-Mills, 2019). A semi-structured interview was selected because it is the most appropriate tool to accomplish the research goals. First, formal questions on communication are asked to gain knowledge on the main research topic.
Nevertheless, the conversation continues in a more informal way to enable the researchers to comprehend the participant’s patterns of behaviour, their thoughts, feelings and the meaning they attach to some symbols or situations. The most important aspect of this method involves offering participants a chance to openly express their opinions on communication, interactions with other participants, collaboration, trust and project success. Interview questions are a mix of close- and open-ended questions, with the ability to change and adapt to different participants.

After defining the semi-structured interview guide, the first interviews were conducted with Croatian and Chinese project managers to explore inter-firm and inter-personal relationships in a project. Project managers are the most important participants for project communication. They control the majority of information and create a bridge between investors and contractors in construction projects. Their knowledge on relationships in a project enables the processes and results to be of great value for accomplishing the research goals.

After every interview, the interview guide must be revised and adapted to the new situation, or in lined with the new acquired knowledge. The next step is applying semi-structured interviews with key participants focusing on communication in the project. All the interviews are conducted in mutually agreed-upon locations, including the construction site. Agreeing upon a location for an interview makes participants feel more comfortable about the entire interview process (Patton, 1990). Additionally, special attention is provided to the flexibility of questions, to enable the interviewer to flow with the conversation. If something is important to the participant, the interviewer can spend more time on the subject (Croucher and Cronn-Mills, 2019).

The next step includes the analysis of semi-structured interviews and presentation of findings. Interview data will create a mix of responses and will require careful analysis. Qualitative content analysis will be applied in this step. Conducting interviews with two interviewers will assure the reliability of the presented findings.

The last step of research will be structuring the lessons learned and future research ideas. Capturing the lessons learned is an extremely important part of every project. The goal of the lessons learned is to prepare the workers for similar future projects, identify project management process improvements and learn from mistakes and successes. These lessons will also provide a guide on possible future research ideas.

5. CONCLUSIONS

Communication, cooperation and trust are among the most important aspects of project management. Without effective communication between the participants, the project team would not be able to achieve its goals. In construction projects, communication issues are very common and can affect project goals in a negative way. Increasing globalisation and internationalisation of business has been challenging for the construction industry because
it brings multiculturalism to construction sites. A relatively new project management challenge includes the management of multicultural communication.

This study provides a framework for research on communication in multicultural construction project teams. The most important infrastructure project in Croatia, the Pelješac bridge, has been selected as the case study. A brief introduction into the project history and participants is provided in this study. The most important aspects of project communication management are explained in the literature review, aiming to provide an understanding of the main aspects that must be studied.

The framework presented in this study shows a comprehensive use of different methods for communication research in multicultural teams. It is demonstrated that the best approach for studying communication is subjective and interpretative, with the use of qualitative methods. While investigating project communication, researchers must collect different data, including participants’ language, culture, history and goals, as well as the information about project meetings, forms of reporting and project documentation. Thus, they must explore different areas of human sociology, psychology and economy, and try to directly get involved in the environment they observe. Such research provides numerous challenges, but offers potential for comprehensively capturing lessons learned, which is highly significant for similar future projects.

Acknowledgments

We would like to thank the Pelješac bridge project team for providing useful information for our research. Particularly, Hrvatske Ceste and Goran Legac, who have been extremely helpful with their insights on the subject in question. Furthermore, we would like to extend our sincere gratitude to the Chinese contractor China Road and Bridge Company, and the project manager Zhang Dong for their great interest and help in this study.

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