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Assessing perceptions of effectiveness of three levels of communication in an international project on the social economy of dried fish in Asia

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Dried Fish Matters

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Executive Summary

This study uses a mixed method approach to examine various factors influencing communication effectiveness in an international project directed by Anthropologists. The project is called “Dried Fish Matters” (DFM) and focuses on the importance of the social economy of dried fish and the social wellbeing of marginalized people in South and South-East Asia. My study can serve as a model to encourage other international research projects to include reflexivity and self-analysis in their work and communication practices.

Communication can take multiple forms and is essential in our personal and professional lives. Communication has been studied in various contexts, including architecture projects; distance education; commercial enterprises; fishery organizations, industries, consumers, marketing companies and decision makers; and medical environments. However, communication within international research teams has been understudied.

I have used three different methods to investigate DFM’s internal and external communications: a general survey, in-depth interviews and participant observation. Internal communications were divided into internal communication within research teams and internal communication within the global project. Both types of internal communications were found to be effective from participants’ perspectives: 84% of the participants answered positively to the general questions. Concerning the external communication addressed to external users, results were much more mixed, with only 47% of the participants answering positively about its effectiveness. Even though the mixed method approach can be an effective methodology for engaging with communication effectiveness, close attention should be given to the definitions of communication and communication effectiveness.

This study highlights some of the influencing factors of communication, including hierarchy, interdisciplinary collaboration, personality traits, social relationships among colleagues, and DFM’s coordination. There is not a single definition of effective communication or a model for how it can be achieved in every case, so it is impossible to make generalizations based on this work. However, my study demonstrates the importance of transparency, open-mindedness and frequent communications in international research projects, which can form the basis of effective communication. Thereby, I demonstrate the importance of communication in research projects, the lack of literature associated with it, and the influencing factors that could be seen as a requirement to have effective communication.

Abstract

Effective communication in research projects can have direct positive impacts on knowledge co-production and the researchers' wellbeing. Examining the factors influencing communication requires in-depth observation and understanding of the researchers' opinions and actions. This study consisted of "researching the researchers"; as part of my thesis research, I observed the interactions of members of an international research project on dried fish in South and South East Asia led by Canadian Anthropologists. The focus was on internal and external communications and revealed that open-mindedness, frequent communication, and transparency are three determinants of effective communication. Moreover, the results show a global agreement on the effectiveness of internal communications, while the results for external communication are more mixed. Studying our own communications by engaging in introspection is something that should be required to produce better outcomes and enhance collaboration in international projects.

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1. Introduction

The digital age has reinforced how important good communications are for research. Indeed, effective communication is essential for a research project to function well. This means that research projects must identify their criteria for research success, achieve the research goals set in the proposal, define how they will be shared, and adapt the project's communication strategy to changes that arise as the project progresses. Since effective communication in international projects is essential and a key factor for achieving good outcomes, studying communication remains fundamental (Axel, 2006; Dedual et al., 2013; Delerue & Sicotte, 2017; Muszyńska, 2018; Toprak & Genc-Kumtepe, 2014). In this 21st century, international collaboration between countries, universities, and individuals is becoming more and more popular and central (Konrad, 2012). With different languages, cultures, and disciplines, comes new ideas, new skills, and new outcomes (Jonasson et al., 2012). To have a global understanding of how communication works, I decided to do research on the different perceptions of effectiveness of three levels of communication in an international project on the social economy of dried fish in Asia.

"Dried Fish Matters (DFM): Mapping the Social Economy of Dried Fish in South and Southeast Asia for Enhanced Wellbeing and Nutrition" is a project funded by a SSHRC Partnership Grant and headed by Professor Derek Johnson at the University of Manitoba. It brings together 30 Co-Investigators, 15 Collaborators, and 20 institutional partners from eight countries to study the historical, social and economic importance of dried fish, the nutrition safety and livelihoods of marginalized people, and urgent threats such as ecological changes and industrial competition. There are fourteen local research teams involved in DFM, located in Bangladesh, Cambodia, Gujarat, Myanmar, Sri Lanka, Thailand, West Bengal, and South India. Additionally, the project established four virtual Working Groups that will operate through online communications channels to coordinate research across different sites. While a majority of the project participants are affiliated with academic institutions, several research teams are directed by non-governmental organizations in the project's research sites. Given the number and diversity of individuals and organizations involved in the project, managing communications across the project teams has presented logistical challenges. Furthermore, restrictions on travel and in-person meetings have required new adaptations within the project.

During this study, I looked at the internal communication within the global project among the fourteen project teams involved; the external communication to external users such as

government officials, academics and civil society actors; and the communication within partner organizations and the fourteen country project teams. This research started after the final Ethics protocol approval the 18th of February 2021, and continued for a duration of six months.

In this thesis, I looked at the theoretical problem of international collaboration and communication among interdisplicinary teams, the practical successes and problems of DFM's communications approach, and what can be improved to produce better outcomes. To have an understanding of the theoretical picture I looked at the current state of research, and I found that a considerable part of the literature looks at fishery organizations, industries, consumers, marketing companies, and decision makers (Zengin et al., 2018), construction projects (S. R. Thomas et al., 1999; Zulch, 2014), distance education (Toprak & Genc-Kumtepe, 2014), commercial enterprises (Santalova et al., 2019), and medicine environment (Konrad, 2012). It appears that no articles are looking, in terms of communication and collaboration, at international projects led by anthropologists in multiple interdisciplinary research teams, studying the fishery sector. This is a very specific and complex project that merits to have some reflections on collaboration and communication. My research aims to understand the different layers of communication within international research projects, and to fill this gap of knowledge in theory and practice.

As mentioned previously, the study has three broad objectives, and will study the communication within the research teams; between research teams and partners; and to external users (academics, government officials and civil society actors). To accomplish these three objectives, the study will identify the communication structure for the three communication levels mentioned, and the effect on research teams, partners, academics, government officials, and civil society actors. Moreover, the thesis will examine the experiences and responses of research teams, partners, academics, government officials, and civil society actors towards these levels. Finally, possible recommendations will be made based on the experiences and advice of relevant actors i.e., research teams, partners, academics, government officials, and civil society actors. My research will answer the following questions:

- How do participants perceive the communication within their research team and what factors influence communication effectiveness?
- How is the general communication perceived within the global project and what makes perceptions vary?

- What are the plans concerning external communication toward external users, and how important is external communication?
- How has COVID-19 been changing and influencing communication within the DFM project?

To begin to address the gap in the scientific literature looking at communication and collaboration in the fishery sector among interdisciplinary and international teams, I will first review the literature by looking at the definition of communication, influencing factors of communication, and the different strategies of communication that exist. I will then describe the methodology used, which is a mixed-method approach with both qualitative and quantitative data. I will present my results by dividing them into the four objectives set at the beginning of the study in which I will respectively describe the survey, the interviews, and participant observation. I will then discuss these results in my discussion and the recommendations based on this research. Lastly, I will draw some conclusions based on everything discussed in my study.

2. Literature review

There is no doubt that communication plays an extremely important role in international projects. However, communication and collaboration among the scientific community, and more specifically the social sciences community, has not been adequately studied. The literature that exists tends to be very partial in its scope, looking at construction projects (S. R. Thomas et al., 1999; Zulch, 2014), distance education (Toprak & Genc-Kumtepe, 2014), commercial enterprises (Santalova et al., 2019), fishery organizations, industries, consumers, marketing companies and decision makers (Zengin et al., 2018), and medical environments (Konrad, 2012). Communication is a very complex concept, and its perception and definition vary depending on which discipline is looking at it. This literature review looks at the various definitions and theories of communication in order to understand its impacts on this changing world.

2.1. Theoretical perspectives on communication

2.1.1. Definitions

Communication consists of various processes including decision making, communication competencies, motivations and identity formation (McGreavy et al., 2015). It also has different definitions and can be classified or divided into different categories or groups. From the Cambridge Dictionary, communication is defined as the act of communicating with people, or simply a message. However, most definitions of communication come from a project management point of view. Communication is in its core a paradigm conceived as a "one-way process passing messages from one point to many others, usually in a vertical, top-down fashion" (Mefalopulos, 2003). It has also been defined as a "professional practice where suitable tools and regulations can be applied in order to improve the utility of the data communicated, and is a social process of interaction between individuals" (Ochieng & Price, 2010). More recently, it has been defined as "the process of acquiring all relevant information, interpreting this information and effectively disseminating to persons who might need it" (Zulch, 2014). It is also important to look at the definition of effective communication that has been drawn as successful when its goals are reached and the intended purpose is accomplished (Muszyńska, 2018), And from a social point of view communication has been defined as a way to achieve some purposes that have been defined at the beginning (Cheng et al., 2008).

2.1.2. Theories and concepts

Tubbs & Moss (2008) have divided communication into four groups. First, *downward communication* defined as a top-down approach which has the power to filter, modify or halt communication. Second, *upward communication* which is considered as a bottom-up approach. Third is *horizontal or lateral communication* intended to be between people from the same hierarchical level to improve and ensure coordination. Lastly, *diagonal communication* is seen between people from different hierarchical level to coordinate or assist one or multiple groups. Barnett & Li (2002) classified communication in three possible categories: intercultural communication; international communication; and cross-cultural communication. Intercultural communication can be defined as an exchange of cultural information between groups of people of different cultures. It will help participants to acquire new knowledge of others and their culture, consolidating their own knowledge of culture (Dumitraşcu-Băldău & Dumitraşcu, 2019). International communication can be seen as the exchange of messages between nation states and organizations (Barnett & Li, 2002). Cross-cultural communication compares the cultural groups, and studies the differences in term of communication's processes. This is a competence related to project leaders who aim to show sensitivity to cultural differences, speaking participants' languages, knowing their culture, and being able to have a social relationship despite the cultural differences (Toprak & Genc-Kumtepe, 2014).

Communication can also be divided into four styles: action-oriented, process-oriented, people-oriented, and ideas-oriented. *Action-oriented* style is characterized by people valuing the final results, the objectives, the performance and productivity, efficiency, advancement, and responsibility for their actions (Popescu et al., 2014). For example, when some people are late in their planning, they will start actioning out instead of re-planning and talking it thought. *Process-oriented* style is illustrated when people define, plan, organize, control, and continually test their own work. This is the kind of people who are going to double check every step of instructions they had. *People-oriented* style is defined as people concerned about their relationships with others, listening to people's needs, always seeking to motivate the others to have good teamwork and communication. They are concerned with understanding and sensitive to others' problems, and strongly guided by personal values. Lastly, *ideas-oriented* style designates people concerned with innovation and creativity at work, constantly pursuing opportunities, that undertake major projects, and feel safe in interdependence (Popescu et al.,

2014). These four styles are often associated with personality traits, cultural background and experiences. This defined how a person can work in a project and what will be his/her strategy. Having different style of communication can often lead to conflicts, so it can be interesting to identify each person's communication style.

Additionally, communication has different strategies, among them: diffusion of innovations theory, groupthink theory, communication accommodation theory and social information processing theory (Parker et al., 2017). For example, "*Diffusion* is a social process that occurs among people in response to learning about an innovation". When individuals or leaders of an organization decided to adopt an innovation such as reducing tobacco use, the system went from allowing people to smoke in public, to making it unacceptable. On the contrary, when leaders of opinion do not accept the innovation, then there will not be any diffusion. Diffusion can be seen as an atypical outcome since most of the innovations will not diffuse (Dearing & Cox, 2018). This is something that has come up for the participants of this study. Indeed, various DFM researchers explained that they were afraid that policy makers would not consider their data and conclusions in the dried fish sector in their country.

Moreover, the concept of *groupthink* is defined as a way of working in teams that will exhibit patterns of ideas without considering the totality of thoughts and options that should be part of their decision-making process. Even though groupthink is often linked to incomplete objectives and failures, it can sometimes lead to positives outcomes such as an increase in the team's performance (Parker et al., 2017). *Communication accommodation theory* (CAT) has attracted multiple projects especially cross-disciplinary and internationals projects. It was designed to predict and explain "the adjustments individuals make to create, maintain, or decrease social distance in interaction" (Soliz & Giles, 2014). It is about people that are adjusting their communication to minimize social differences. For example, a researcher will not talk with the same vocabulary to a peer and to a policy maker. This is also the case within the DFM project, since they plan to do three types of outcomes dissemination depending on the targeted public.

Lastly, *social information processing* (SIP) theory "proposes that attitudes and needs are cognitive products that result from the processing of information about the attitude object and past behaviors in a social context" (Goldman, 2001). It assumes that online communication is the same or better than face-to-face communication even thought it might take more time. However, this affirmation is not correct, as it depends on other factors that may come into play.

For example, in DFM, newcomers to the project do not seem to experience the same quantity and quality of communication as the members who have been involved with the project for longer.

2.2. Influencing factors

Communication became a requirement in the systems of modernity, global capital, neo-liberalism, and multiculturalism (Axel, 2006). There are two types of communication: verbal and non-verbal. Verbal communication is expressed by a person speaking. Non-verbal communication is about body language, gestures, eye contact, tone of voice, etc. Communication arises through a combination of three different components: "information, selection of the utterance of this information, and a selective understanding or misunderstanding of this utterance and its information. […] All this begins from an understanding of communication in terms of action and thus views the process of communication as a successful or unsuccessful transmission of messages, information, or understanding expectations" (Luhmann, 1992). There are multiple influencing factors that can be either barriers or assets in communication. We will be looking at several of them, including culture, language, interdisciplinarity, collaboration, hierarchy, and personality traits.

2.2.1. Culture

Culture is a complex concept in analytical anthropology and has multiple meanings. The Cambridge dictionary defines culture as: "the way of life, especially the general customs and beliefs, of a particular group of people at a particular time". Culture is embedded in the every day life of everyone; it can be found in friendships and romantic relationships (i.e. mutual history, shared experiences, habits, etc), making it unique and differentiated from other relationships. Culture is also embedded in groups and organizations (i.e. dress code, meeting styles, leadership style, etc). Moreover, culture has a direct link to communication since it is created through communication. Indeed, culture can be seen as a residual of social interactions, it is "created, shaped, transmitted, and learned through communication". It is also important to mention that communication can be transmitted and shaped by culture (Kim & Young Y.,1988).

Another way of conceptualizing culture is culture as knowledge. Indeed, people have different understanding of one another in terms of the connection of knowledge and identity, conception of others, and communicative contacts. So, culture is creating knowledge and communication is also creating knowledge, and communication requires an intentionality from participants to learn how to create knowledge together (Koch, 2009). However, there are different ways of thinking about knowledge itself and what we do with it. It can be elevated to a high position sometimes, in expert of knowledge or knowledge keepers. It is essential to know what to do with one's own knowledge, and it is also important to highlight that it is context-specific. Different people within the DFM project have different cultures and cultural backgrounds, and have been interacting together with the goal of creating new knowledge. The outcome and success will be collective rather than individual. This can be seen as intercultural communication, and interculturality should be looked at as an outcome of communication research and not a field in itself.

2.2.2. Language

Barriers to effective communication between scientists, managers and fishers also include language, especially written language; preconceived fears and suspicions (for example, the fear that scientific process to management will lead to fewer or restricted fishing opportunities); and media that do not represent science correctly (Dedual et al., 2013). Language can be defined as a set of practices that are socially embedded, since social interactions (spoken or written, verbal or nonverbal) are all mediated by language. Language is also culturally embedded and can therefore be unequal between people (Ahearn, 2011). For example, in an international project where people are mixed during meetings, it can happen that some participants talk in their native language which can reinforce inequalities in status and unequal social relationships. Moreover, language goes beyond cultural differences since it has the power to "convey nuanced emotions, display or hide judgmental attitudes about others, reinforce or sever social bonds, and talk about language itself" (Ahearn, 2011).

2.2.1. Interdisciplinarity and collaboration

Since 1975, cooperation among scientists, including social scientists, has been increasing considerably. Collaboration can be seen under different terms: multidisciplinary, cross-

disciplinary, interdisciplinary, and trans-disciplinary. Let's have a look at the definition of interdisciplinarity and trans-disciplinarily. On the one hand, interdisciplinarity is of high integration (Gunawardena et al., 2010). Based on their literature review, Aboelela et al (2007) offered this definition of interdisciplinarity: "Interdisciplinary research is any study or group of studies undertaken by scholars from two or more distinct scientific disciplines. The research is based upon a conceptual model that links or integrates theoretical frameworks from those disciplines, uses study design and methodology that is not limited to any one field and requires the use of perspectives and skills of the involved disciplines throughout multiple phases of the research process". On the other hand, trans-disciplinarity consists of complete integration: "Different disciplines work together to create a higher framework of knowledge that is common to all" (Gunawardena et al., 2010).

In this literature review I will be focusing on interdisciplinarity, since it is a pillar in the DFM project. It has been highlighted by Moirano et al (2020) that creativity and interdisciplinary collaboration is a new field of research that is lacking clarity. Interdisciplinarity is now seen as a valuable approach to increase creativity, learning, team performance, and innovation (Moirano et al., 2020). In relation to this finding, academic researchers are more and more often looking at bringing interdisciplinarity into their research (Borge & Bröring, 2017). Indeed, there are more and more demands in applying the knowledge and skills related to interdisciplinarity to knowledge creation and creative solutions. Interdisciplinarity can be divided into three parts: the individual, the collective, and the environmental dimension.

First, the individual dimension: It has been proven that this approach "increases the presence of cognitive functions such as originality, fluency and flexibility creative results, fosters creative self-efficacy and comfort, benefits the learner's acquisition, delves into and application of perspective-taking, dialectical and systematic thinking, higher order thinking, cooperation and collaboration, as well as written and oral communication skills" (Moirano et al., 2020). Moreover, it is also very important for the students since it has the potential of developing and maintaining self-reflection, developing critical thinking, looking at the new ways of knowing, and increase motivation and joy of learning. Strong social relations such as exchange and diverse knowledge can be of great importance in terms of creativity, productivity, and job performance. It can also help to solve conflicts and develop new ideas (Moirano et al., 2020).

Second, the collective dimension: collective creativity collaboration depends on individuals' characteristics such as: "openness, conscientiousness, self-acceptance, hostility, impulsivity, individual independence, unconventionality, risk-taking, personal wide range of interests, a "discovery" orientation and task intrinsic motivation" (Wieth & Francis, 2018). Cooperation between academic departments is often non-existent due to high competition. However, sharing tools, techniques, methods, and knowledge in general among various academic fields has been underlined as a great approach to increase the quality of knowledge production (Wan & Wan, 2020). Diversity is often seen as an important resource in research projects, since it can bring new understandings and knowledge. However, it can also constrain and diminish knowledge production and learning since words can define different things and language can be ambiguous.

To identify how the project is shaped, it is necessary to look at "how the group has originated, what the previous relations between the participants are and who are possible stakeholders" (Akkerman et al., 2006). By having a unique life history related to historical, cultural, institutional, and social experiences, a person can have different voices in a project related to antagonistic positions (Akkerman et al., 2006). Mixing various fields of research can often lead to conflicts and stress. First of all, vocabulary is a common difficulty. This is why it is important to share a common knowledge or ask if something is not clear. However, if the group-size is large, it can be very arduous to find this common vocabulary. By not being aware of which disciplines might be involved in the project, individuals can feel frustrated and that can lead to conflicts. That's the reason why it is essential that every stakeholder should bring the disciplinary differences at existence to have a more open relationship and mindset before starting the project.

Interdisciplinary collaboration has been shown to create equilibrated qualitative results. However, the cost to pay is that it requires more effort and time (Gunawardena et al., 2010). Moreover, interdisciplinarity can also bring conflicts and chaos into a research. Indeed, by being an expert in a specific domain, a researcher might have a constrained knowledge that can restraint his/her ability to solve problems in his/her domain. Even though researchers are educated in interdisciplinarity it does not mean that there will be group cohesion, and they will be able to achieve their goals. Having diversified knowledge often requires extra work and new mechanisms; people involved in this type of research have the obligation to learn from each other, and must have more time to adapt, incorporate, and transfer the new knowledge they just absorbed. Common conflicts include disciplinary differences, sharing only common knowledge,

use of jargon related to a specific field, categorization, bullying, and interpersonal issues (Wieth & Francis, 2018). The Hubbub project aimed at bringing various researchers and stakeholders together, in a collaborative and especially interdisciplinary environment. Stakeholders included collaborators from non-academic backgrounds in public, media, and youth work. By being peer-reviewed, academic researchers' work is visible. On the contrary, the technical staff working on publicity, media, and project management, is often not in view, and is part of the invisible work necessary in research. By being an experimentation, the Hubbub project brought light to both types of work: visible and invisible, which is necessary in an interdisciplinarity collaboration where all the individuals should be seen as equal (Callard et al., 2016).

After looking at the individual and collective dimension, we can discuss the environmental dimension of interdisciplinarity. Indeed, the work context including culture, time and experiences can affect the creativity in a group. Having "encouragement, social support, autonomy, resources or opportunities to present novel ideas", creativity might never be at its potential and can even act as a barrier (Moirano et al., 2020). One of the possible solutions reinforcing collaboration could be the organization of meetings, events, conferences online or in person (Borge & Bröring, 2017). Online technologies have been changing research and collaboration, sometimes increasing creativity but also bringing challenges. Indeed, technologies are positives since they are a new tool of learning and increasing creativity. However, it can be hard to find the limit between private and personal, formal and informal spaces, and it can sometimes be difficult to see the difference between knowledge and information (Moirano et al., 2020). Communication barriers, distrust of knowledge generators, differences in cultural context between knowledge generators and users, and a failure to bridge multiple knowledge systems are all reasons for the "knowledge action-gap".

The co-production of knowledge has been discussed more and more for the past years, especially in the domain of fisheries management, conservation, and governance. Indeed, knowledge co-production allows to support livelihood and communities and it also contributes to nutritional security, which makes it an efficient tool in fisheries. With collaboration and interaction at the center, scientists are forced to discuss and share their knowledge biases which can make science more creative and objective. Co-production is in any case a democratic process that requires time, practice, and skills to be efficient. Unfortunately, there is for now few trainings for knowledge co-production which leaves the researchers on their own for trials and implementation. Moreover, for effective knowledge co-production, power needs to be

shared among all the project's participants, which will allow them to have their own voice, respect and engagement.

It is also important to add that women are still under-represented in the fisheries research sector which can sometimes bring "power imbalances between researchers and knowledge holders or users" (Cooke et al., 2021). Co-production has been examined by the UK National Institute for Health Research (2018) that developed different guiding principles which have been adapted by Cooke et al (2021) (see figure). It is also important that at least one manager is being educated on interdisciplinarity, becoming a facilitator that will have the difficult task of balancing the global knowledge and work (Moirano et al., 2020; Thomas & Mefalopulos, 2009). Different tools already exist to enhance interdisciplinary collaboration such as ice breaker activities, tools reducing dominance, letting all participants have an opinion and a voice, and reframing issues. These tools can be reached by "asking questions; seeking feedback; experimenting; reflecting on progresses and results; discussing errors, problems and mistakes or unexpected outcomes of actions; talking about team goals, processes or outcomes; concluding sessions with short idea presentation to ensure that the content and purpose of the generated ideas are fully understood; recognizing everyone's contribution; and developing a sense of accomplishment" (Moirano et al., 2020).

In their project, Akkerman et al (2006), examined the two-years collaboration of an academic European project on education sciences. The project was defined in seven meetings of three days each regrouping European partners. There were tasked to create a 'matrix' and a 'syllabus' during their meetings on a global consensus. By being from different countries, it can sometimes be hard to have the same point of view, and this was the case in the project for the pedagogy section. The issue was raised again and again by the same partner organization in the collaboration process. At the end, partners were not agreeing and that lead to the non-expression of certain partners passing by a cacophony in meetings. Moreover, the project leader, Carlo, took the lead to change some parts of the syllabus at the last minute, leaving some questions open. Carlo had multiple voices, as a project leader as well as a country partner, and sometimes one voice can take the lead to the end. As the conclusion, the author highlights the fact that each participant should be considered as a person with unique thoughts and knowledge that should be equals to everyone's. This will open the door of shared-understanding and viewpoints.

On the one hand interdisciplinary projects are being promoted more and more. However, on the other hand, they are still an exception due to an increase of specialize projects and "disciplinary fragmentation" (Cairns et al., 2020). In their study looking at collaboration as a tool to "address intersections between the Sustainability Development Goals", Cairns et al (2020) examined scientists with both a natural and social academic background. The research associates of this project needed to understand the problems faced by the scientist's leaders especially the methodological challenge. After the data analysis the researchers were able to draw some conclusion about the success and failures of this project. Among the failures they cite: "a lack of time and money; disciplinary languages and vocabularies making communication difficult; different (often not explicit) epistemologies and ontologies at work; the physical layout of universities acting as a barrier to close collaboration; and cultural differences between departments about what constitutes research".

Interdisciplinary research among the social and natural scholars has been particularly discussed in recent science. Different challenges have been highlighted such as: the funding systems, the peer-review systems undervaluing the interdisciplinary research, academic promotion systems which bring hierarchies in research, having distinct zones of work classified by domain in campuses, and rigid education promoting disciplinary values and perspectives. There is evidence that work between scientists with different backgrounds can often be complicated. This is particularly the case between biologists/ecologists and economists. Even though they share a mathematical and modelling background as well as some population-based model structure, their application of these concepts is completely different and it can be challenging to understand each other. For example, in a project, economists have been seen by ecologists and sociologists as "inflexible" due to their resistance at changing a framework. Ecologists are often looking at small-scale while economists are looking at large-scale, making scientists not in a scale-alignment and making this difficulty complicated to handle. It is now essential that "sociology, philosophy, psychology, education science and so on, have to be part of interdisciplinary collaboration in order to bring other discussions and aspects of science" (MacLeod, 2018). Participatory communication needs to be open and free concerning dialogue. Power relations need to be questioned, such that anyone involved must have their own voice. It is important to act collectively to identify and solve a problem. Participatory communication can be implemented in any project regardless of its size and its localization (Thomas & Mefalopulos, 2009).

One example of participatory communication is the Hubbub project that takes part of an innovative approach where methods are shared, as well as the sources, data and modes of working. Central principles comprise: spaces of interdisciplinarity, experimentation, and collaboration and connectivity. One of the main conclusions highlighted has been about the tensions present in the project, and that tension can sometimes be beneficial for creativity. Moreover, collaboration is a mode of practice that needs to be constantly interrogated, expanded and torqued, that shouldn't be taken for granted. Collaboration can also be seen as a relation of power (Callard et al., 2015). Within the DFM project, collaboration is at the basis of the study. Indeed, researchers have to work together and have meetings regularly in order to create shared outputs.

2.2.2. Hierarchy

Power is an important consideration when studying communication. There are five forms of power: coercive power defined as the power to punish; power to reward; legitimate power, which is related to the educational sector; expert power that is created by education and experience; and lastly, power by admiration or respect from others (Yukl & Falbe, 1991). In their research, Jonasson et al (2012) studied the intercultural organizational setting of a Chinese firm working with Danish employees. The Danish managers agreed that "language difficulties and communication style pose significant challenges to management interaction". Indeed, cultural differences can often be seen as too complicated and opposite which can lead to communication difficulties and trust issues. There is also the problem of equality. In this example, the Danish managers were not considering the Chinese managers as their equals and that resulted in misfortunate events: expatriates were forming an alliance, a clique, making themselves superior and being sometimes disrespectful to the Chinese managers. By ignoring the importance of intercultural communication, the Danish managers chose to blame the cultural differences for communication problems without questioning themselves. Thus, intercultural differences became a convenient excuse, while power relations were being "ethicized" or "culturalized". This is why it is important to be aware of the power relations that exist in communication practices in international corporations, look at the possibility of equal communication between international managers and local employees, and have some kind of cultural and language training to improve intercultural collaboration (Jonasson et al., 2012). It

is important to note that: “the higher the level of control from the top, the weaker the sense of ownership and commitment by the local stakeholders” (Thomas & Mefalopulos, 2009).

2.3. Means and strategies of communication

2.3.1. Means of communication

The means of communication are media that allow information to spread. At the level of a company, these communication tools are useful to inform the customers, the staff, the suppliers or the partners of the company. In the 20th century, new information and communication technologies (NICT) appeared and allowed the creation of many means of communication between human beings. Thus, the Web 2.0 is a network that allows a new forms of interactivity between Internet users. Human beings can now communicate through voice, photos, texts, videos, an image, etc. Depending on the type of relationships, and the distance between people, communication will not have the same form. Indeed, face-to-face communications are going to happen more often in local relationships while the internet is going to be the preferred media for long-distance relationships (Zhang & Lin, 2004), associated with emails (Amit et al., 2013).

From an anthropological point of view, we can talk about the ethnography of communication that has been developed and has its origins in American anthropology. It officially appeared in the publication by Hymes (1962) *The Ethnography of Speaking*. Hymes appeals to an ethnography that is more concerned with aspects of communication neglected by traditional anthropology and linguistics; he claims a “synthesizing discipline which focuses on the patterning of communicative behavior as it constitutes one of the systems of culture, as it functions within the holistic context of culture, and as it relates to patterns in other component systems” (Hymes, 1962). Hymes introduces the concept of communicative competence in which language is seen as a component of socio-cultural communities, as an instrument of communication that is not abstracted from its development and use. Communicative competence goes beyond the knowledge of the linguistic code; it includes social and cultural knowledge:

> “Communicative competence extends to both knowledge and expectation of who may or may not speak in certain settings, when to speak and when to remain silent, to whom one may speak, how one may talk to persons of different statuses and roles, what nonverbal behaviors are appropriate in various contexts, what the routines for turn-

> taking are in conversation, how to ask for and give information, how to request, how to offer or decline assistance or cooperation, how to give commands, how to enforce discipline, and the like – in short, everything involving the use of language and other communicative modalities in particular social settings" (Saville-Troike, 1982).

Around Hymes are grouped researchers such as Gumperz, the co-founder of the ethnography of communication. Gumperz argues that meaning, structure and use of language are socially and culturally relative; he studies how linguistic structures are used by different interacting social groups, and how they become specific repertoires. Intergroup interaction is not his only focus; but it is above all his concept of contextualization cues that interests us, defined as "clusters" of indexical signs that give the utterance its interpretative framework: "signaling mechanisms such as intonation, speech rhythm, and choice among lexical, phonetic, and syntactic options [...] said to affect the expressive quality of a message but not its basic meaning". These cues (verbal and non-verbal) link what is said to the contextual knowledge (which is therefore also a shared cultural knowledge) of the interlocutors; in the same way that they are used as "cues" by the participants to interpret the message, they also make it possible to interpret the utterance for analysis. The methodological consequence of this is that we can see, by studying the reaction to an utterance, whether the interpretative conventions are more or less shared by the interlocutors (Gumperz & Hymes, 1972).

2.3.2. Strategies of communication

Projects are also a complicated notion since a project can be national or international, and can include a large number of stakeholders or only a small number of people. This is why Binder (2007) has divided projects into five categories: *traditional* projects are in a single location and with the same organization; *distributed* projects are in many locations; *international* projects are in many locations across country borders; *virtual* projects are in different organizations and dispersed geographically; and *global* projects are a combination of virtual and international projects, and are the most complicated (Binder, 2007). A virtual team can be defined as one or more of its members working apart from the others and not having much face-to-face interaction on a daily basis. Among virtual teams, geographic dispersion and time, religion, language, and communication are often common barriers (Dube & Marnewick, 2016).

From a corporation’s point of view, the communication strategy is the process that allows to coordinate all the actions in order to reach its communication objectives. Defining a communication strategy allows you to have an overall vision of these actions, to measure their effectiveness and thus to optimize your communication budget. However, differences in background cause problems for some individuals in unusual communication situations, such as job interviews, public debates or discussions. In order for a speaker to be understood by his/her interlocutor, s/he must have a kind of script adapted to each situation, including semantic and lexical options. For two speakers from different backgrounds the main problem is the inability to establish communication flexibility. This could help them to understand each other, even if only partially. This is what Gumperz calls "communicative flexibility" and is exclusively verbal. It comes from the speaker's voluntary intention to be understood. When Gumperz speaks of intention, he is referring to the communicative intention found in specific types of social activities. Pragmatically, Gumperz focuses his work on the study of the elements that come into play in what he calls "conversational cooperation" based essentially on the participation of the interlocutors and the conventions they impose on each other (Gumperz, 1989).

2.4. Methodology of evaluation

Performance can be used to measure a project’s effectiveness. There are three types of performance: individual performance characterized by motivation and comfort of belonging to a team; team performance which is about communication, trust, and team cooperation; and project team performance which is temporary and values good team leadership, project goals and objectives (Dube & Marnewick, 2016). Trust in the other members of a project has been proven to be a key feature for a good communication (Cheng et al., 2008). It also has been proven to be a key factor in successful collaborative projects towards stakeholders (Parker et al., 2017). Compass is one of the first project assessment tools measuring communication effectiveness in construction and engineering project teams. With a bivariate correlation analyses, the authors were able to identify the questions measuring communications effectiveness that were then used to develop a communications score. It weighs the six critical categories of communications, and can be done at the different levels of the hierarchy (table 1). The weights represent the importance of the categories. For example, accuracy is set as the most important categories for measuring communication since its weight is the highest one. Then, thanks to the questionnaire responses, the authors were able to score the responses between 0

to 10. "Weighted category scores are then summed to obtain an overall project communications score." (S. R. Thomas et al., 1999). Unfortunately, there is no explanation concerning the score they gave to each response which makes it complicated to reproduce for another project.

Category (1)	Description (2)	Weight (4)
Accuracy	The accuracy of information received as indicated by the frequency of conflicting instructions, poor communications, and lack of coordination.	2.1
Procedures	The existence, use and effectiveness of formally defined procedures outline scope, methods, etc.	1.9
Barriers	The presence of barriers (interpersonal, accessibility, logistic or other) interfering with communications between supervisors or other groups.	1.8
Understanding	An understanding of information expectations with supervisors and other groups.	1.6
Timeliness	The timeliness of information received, including design and schedule changes.	1.4
Completeness	The amount of relevant information received.	1.2

Table 1: Critical Categories of Communications

One of the possible evaluations of success and failure in interdisciplinarity projects might be to look at emotions created by the collaboration. Frustration, expectation, and anxiety are some emotions that were felt in the Compass project. However, fun and excitement were also mentioned, showing that interdisciplinary projects can be surprisingly interesting in terms of findings and learning. One possible explanation for the 'negative' emotions mentioned above could be that: "interdisciplinarity is inevitably a bit uncomfortable" (S. R. Thomas et al., 1999) and these emotions might be required to have valuable outcomes. Friendships and mutual respect between researchers have been highlighted as essential in collaboration; on the contrary, hierarchies only bring tensions in projects. It is also important to dismantle knowledge hierarchy: whose knowledge is the most valuable? However, this is one of the most difficult tasks to realize.

To conclude, it has been argued that time needs to be expanded?, methods and skills need to be learned, rewards and reassurance need to be given, social relationships need to be built between researchers as well as with the community, and mess is a part of interdisciplinary work and it needs to be accepted (Cairns et al., 2020). It is important to highlight that communication is as

fundamental as health, nutrition, housing, education, and labor for human beings. This is a need that helps people to liberate themselves from oppression. Moreover, each community has been able to developed its own communication strategy within its own cultural, political, economic and historical context (Servaes & Malikhao, 2020). Moreover, objectives in interdisciplinary collaboration are often well achieved depending on the quality of interpersonal relationships such as demonstrating presence, laughing together, and active listening. However, sarcasm, blatant boredom, and power struggles are negatives interactions that can diminish the quality and outcomes of participation (McGreavy et al., 2015).

2.5. Impact of COVID on communication

In his article, Axel (2007) questioned communication in term of technologies and ethnography: How to think about technology? How do we study them ethnographically? What is assumed to be the ideal form of communication? One of the first and easiest answers is to say that face-to-face communication and interactions between people are assumed to be more natural and more efficient. However, interactions can also be online, and virtual communication shouldn't be seen as less effective and less mediated than face-to-face communication, because both are mediated. In the DFM context, one question can be raised in terms of online communication: how people are using the different technologies of online communication such as emails, forms, and chats? And is it efficient? The role of technology itself is creating new contexts, for example small-scale meetings with people all over the world. What new contexts have been created in DFM and with COVID?

Since more than a year, COVID-19 has been disrupting the daily life of everyone worldwide. This has brought some challenges in everyone's personal and professional lives. Researchers are no exception. Confinements, quarantines, curfews, social distancing, and travel restrictions due to the actual pandemic have forced universities, research institutions, and laboratories to work remotely, and rethink their fieldwork strategy. Team members that are usually working simultaneously are not able to do so, which has changed the collaboration dynamic (Sah et al., 2020 ; Termini & Traver, 2020). Some institutions have pushed researchers to start doing virtual fieldwork while others think this would too complicated due to the challenges and disadvantages of virtual communications (Sah et al., 2020). Employees all over the world have been affected by the pandemic. They were either forced to work from home (WFH) or remained

“essential” workers (such as medical personnel), or became unemployed people and dependent on unemployment benefits. Moreover, the pandemic and policy changes will also change the industries, either way fundamentally, or accelerating trends, or favoring novel industries (Kniffin et al., 2021). The COVID-19 pandemic has forced researchers to think outside of their comfort zone in terms of the use of technologies to do fieldwork. This can be seen as an opportunity to learn and understand new methodologies (Sah et al., 2020), and there is a possibility that remote work is going to be the new way of working in collaboration, just as the telephone replaced the telegraph, for example. However, it is important to know that remote work is not the same than Face to Face (FtF) work (Blanchard, 2021).

Communication technologies such as virtual meetings have allowed people to have social interactions even with the current pandemic. Zoom and Teams are the two main platforms that are used in personal and organizational meetings (Dwivedi et al., 2020). Google Hangouts as well as Facebook and WhatsApp are also regularly used. One of the main concerns from researchers has been about the internet connectivity from the interviewees that could limit participation, as well as talking about “sensitive topics or vulnerable participants”. Other researchers think this is good development, with new challenges that will be helpful in the future since technologies in research might increase after the pandemic (Sah et al., 2020). An important point that needs to be considered is ‘Zoom Fatigue,’ where participants are feeling exhausted after several Zoom meetings during the day (Blanchard, 2021). Having virtual meetings necessitates different materials, including a good lighting, a good microphone and computer sound, a high-quality video image, having a personal / professional place to WFH which will avoid any disturbance, and a good internet connection (Dwivedi et al., 2020). Difficulties such as a stable internet connection, meetings room, and efficient equipment can sometimes be lacking, especially in Global South countries, and this needs to be counter-balanced (Richter et al., 2021).

In regular meetings it is often essential to build a connection with the people present in a project. This is even more important these days, since there are no personal interactions. In their workshop Richter et al, decided to start by asking everyone to describe themselves including professional background, expertise, and a fun fact. In addition to the workshop in itself, the leaders were using and coordinating the chat box. Moreover, emails and phones were also used after the workshop to expand the meeting if it was needed. However, one important thing that has been highlighted is that to keep everyone involved, listening and participating, it is very

important to have regular breaks. Indeed, in contrast to face-to-face meetings where you can see if people are getting tired and exhausted, with virtual meetings it is very hard, and almost impossible to see that (Richter et al., 2021). It should also be noted that "humor and sarcasm are much easier to detect from FtF communication than text" (Kniffin et al., 2021). It seems that intragroup formation is a longer process virtually than FtF.

It has been shown that FtF intragroups are more likely to share work problems and understandings while online intragroups are more likely to be formal and planned. Indeed, informal chat discussion or handshakes, have been proven to be essential in physical and mental health (Kniffin et al., 2021). Even though there are chat boxes in Teams or Zoom, it is in any case insufficient to replace a FtF interaction. However, it is important to acknowledge that there are advantages to online communication: the chat box in video meetings allows people to talk to the whole group or specific individuals; breakout rooms with smaller teams can help to enhance engagement from participants; it is possible that every member of a team can edit the same document with Google Docs, for example; and it is possible to record every meeting for those who were not present. In her study, Blanchard (2021), examined that whenever a meeting's participant didn't have their camera on, he/she was feeling excluded. Moreover, for the new members and new groups, membership was something very hard and took a long time to reach.

Social relationships at work remain essential, since there is no possibility to experience them from FtF interactions. Frequent interactions with the same people in a stable environment have been proven fundamental to connect with their jobs and colleagues. A lack of social relationships can reduce commitment to their job, lead to feeling anxious and depressed, make people feel left out of the decision-making process, diminish trust and synergy, and reduce productivity (Dwivedi et al., 2020). Indeed, WFH tends to increase stress and privacy risk, and decision-making is likely to be centralized, which would lead to diminished creativity among employees (Kniffin et al., 2021). Due to the COVID-19 pandemic, these aspects are amplified, which can lead to profound loneliness. Loneliness could be prevented or reduced thanks to the mobile phone since it has the power to fill a social presence and enable rich forms of communication. However, it is important to think about the best ways to communicate. Indeed, in their study Dwivedi et al (2020) found out that employees preferred receiving SMS rather than phone calls because they thought it was less intrusive. Phones are used personally and professionally, and the boundary between the two can be difficult to maintain. One of the

possible solutions would be to create the informal discussions that are supposed to happen in normal situations in virtual meetings. This will help bring more creativity and routine, which could help the participants in their productivity (Termini & Traver, 2020). Breaks, time differences, and repeating the same thing over and over are making virtual capacity-building more difficult and time consuming than the usual capacity-building. So, the commitment required to build this virtual capacity is higher than usual. To ameliorate this aspect, it is fundamental to involve everyone in the decision-making regarding the time schedule (Richter et al., 2021).

New technologies can provide useful and efficient ways of communicating. However, leaders still need to be present in formal and informal meetings to interact with co-workers and be supportive in this complicated time (Dwivedi et al., 2020). Being a successful leader requires being "skilled in a domain to make the right decisions and provide reassurance through a balanced mix of optimism and realism regarding the future" (Kniffin et al., 2021). Feedback has been proven to be fundamental for employees' commitment, and with virtual relationships, the feedback process from leaders might be diminished, which could cause a bigger turnover. In order to compensate the mental challenges that could be encountered from WFH, organizations should provide an assistance or a therapy to employees as well as feedback, support and inspiration through private video calls (Kniffin et al., 2021). It is also important to highlight that young researchers are the next generation of researchers, and that they need all the help and feedback they can have from colleagues and advisors. For PhD students, it is essential that they keep sharing their research. This could be done in online meetings with colleagues and partners. Even though conferences, webinars and workshops were forced to be canceled, it is still possible to find an online solution with the same purpose. Moreover, this could create a much bigger opportunity to share their research. Indeed, since travel is not possible, there are fewer excuses for not being present, and so it is expected that more people will attend (Termini & Traver, 2020). Having virtual workshops has several advantages: it less costly in terms of travel, accommodation, and meeting rooms. It is also time saving in terms of "planning, layovers, environmental adaptation, and jetlag". So, it has even a positive effect on the mental and physical wellbeing. However, when combining virtual meetings with confinement and home office in a pandemic situation, the outcome on your mental and physical wellbeing can be very negative. Virtual technology can also activate some inequalities in terms of accessibility to the technology, skills learning, and language barriers. However, it also has the power to diminish pre-existent inequalities such as cultural, religious, and gender

stereotypes than in face-to-face meetings (i.e. inappropriate clothing) (Richter et al., 2021). For Kniffin et al (2021) this is not the case, the COVID-19 impacts make clear that new challenges have appeared for employees, people need to learn how to work in a new manner, and these challenges will affect some people more than others depending on their “age, race and technicity, gender, and personality”.

3. Methodology

For this thesis, I studied international communication and collaboration within the Dried Fish Matters (DFM) project. This seven-year, $2,492,020 (Canadian Dollars) project was funded by the Social Sciences and Humanities Research Council of Canada (SSHRC). Among the fourteen local research teams, 30 co-investigators, 15 collaborators, and 20 institutional partners from eight countries are involved in the project. Their purpose is to study the historical, social and economic importance of dried fish, the nutrition safety and livelihoods of marginalized people, and urgent threats such as ecological changes and industrial competition. Each team is composed of different co-investigators, collaborators, and partners within four main disciplines: Social Sciences, Anthropology, Economics, and Biology/ Environmental studies. My research sought to understand the emergent patterns of communication within teams and partners and offer possible recommendations based on the experiences and advice of relevant actors, i.e., research teams, partners, academics, government officials, and civil society actors. The study sought to establish: (1) the communication structure for the three communication levels mentioned (i.e., within the research teams; between research teams and partners; and to external users), (2) the effect on research teams, partners, academics, government officials, and civil society actors (3) and the experiences and responses of research teams, partners, academics, government officials, and civil society actors towards these levels.

3.1. Research design

I employed a mixed method research design in three phases: (1) an online survey (n = 32); (2) in-depth interviews (n = 16), and (3) ongoing participant observation. This approach is called a mixed-method approach in the social, behavioral, and health sciences, and is represented by a combination of both quantitative (statistical trends) and qualitative data (personal experiences and stories) (Creswell, 2015).

For the quantitative research, an online survey was conducted, with invitations sent to all the Dried Fish Matter participants through the DFM email list. The survey was done via Microsoft Survey, and consisted of 23 questions that used 5-point Likert scale and choice questions, and took respondents approximately 5 minutes to complete. The survey was answered by 32 respondents, which equals a response rate of (32/89) * 100 = 36%. Survey questions asked participants about their primary organizational affiliation, interpersonal relationships within DFM, social media, communications management, the impact of COVID, and the three levels

of communication studied in the research (i.e. within research teams, within the overall DFM project, and toward external users) (see table 2 for questions in Appendix 9.4). The online survey was active for two months (March and April 2021), and data were analyzed using R Studio. The purpose was to provide general information on the different organizations involved in the general project, on the general perception of the participant of communication, on their satisfaction at the project level, and their perception of communication in the general project.

For the qualitative research, in-depth interviews and participant observation (PO) were conducted. PO was organized in formal and informal virtual meetings. Formal meetings such as the Thematic Working Groups' meetings had already been set up in the DFM project, composed of different members from the various research teams involved in the project. The meetings are in English and are being recorded to post on the DFM YouTube platform. Informal meetings are meetings that are not recorded for the DFM YouTube platform, and the participant observation in those meetings depended on the agreement of participants. For informal PO, I followed 2 research team among the fourteen involved in the project, based on their working language, which needed to be in English or partially in English. During PO, I observed and analyzed participants' communication, their relationships with each other, how they express themselves (tone, etc.), the nature of decision-making, who speaks most, the age and gender of the people who dominate the conversation, language difficulties, discussion around written texts, the quality of their interactions, and defined which tools are the most suitable in an international research project on small-scale fisheries. PO started in February 2021 and lasted for 3 months, until April 2021.

The in-depth interviews took place by videoconferences on Zoom, and consisted of a set of semi-structured questions asking participants about their thoughts, experiences, and knowledge on communication and its effectiveness (see table 3 for questions in Appendix 9.5). When selecting candidates for the interviews, a purposive sampling was applied on individuals who were considered able to make valuable contributions to the study. In order to get rich and varied material, individuals were looked at based on the differences of their backgrounds, gender, age, positions, and experiences. 16 co-investigators, collaborators, partners, and students were interviewed. Most interviews were conducted in April 2021 and lasted approximately one hour. The purpose of the in-depth interviews was to identify the roles and responses of the different participants involved in DFM, explore their thoughts on communication and communication effectiveness, to address possible beneficial changes to the global project and the regional teams.

The qualitative data, generated through participant observation, and in-depth interviews, were transcribed and translated. Data were analyzed through triangulation from interviews, and participant observation. As the amount of data was limited, no software was used to organize and analyze the field data into various emerging themes, so it was done manually.

Concerning the data analysis, the Chi-square correlation analyses to describe associations among variables was used using the software R.

3.2. Limitations of the study

There are several limitations of this study. The first is associated with the challenge of completing fieldwork abroad within a limited timeframe (e.g. 6 months). The second rests on the project being a detailed case study. As a case study, findings will only be applicable to the specific project, although I certainly hope broader lessons can be drawn. Survey questions might have been too general for certain participants, and that could have resulted in an "I don't know" answer that could have biased the results of the survey.

Moreover, my positionality in terms of gender, language, nationality, and age might have affected my interactions with the participants. Indeed, I have the feeling that by being white and European, some interviewees might have closed up particularly to the questions looking at the challenges of working in international projects for Global South researchers and culture playing a role in communication. In addition, women could have been more talkative with me than men. Furthermore, my young age as a researcher might have played a role in the responses of some participants who wanted to give me some advice or didn't answer specific questions.

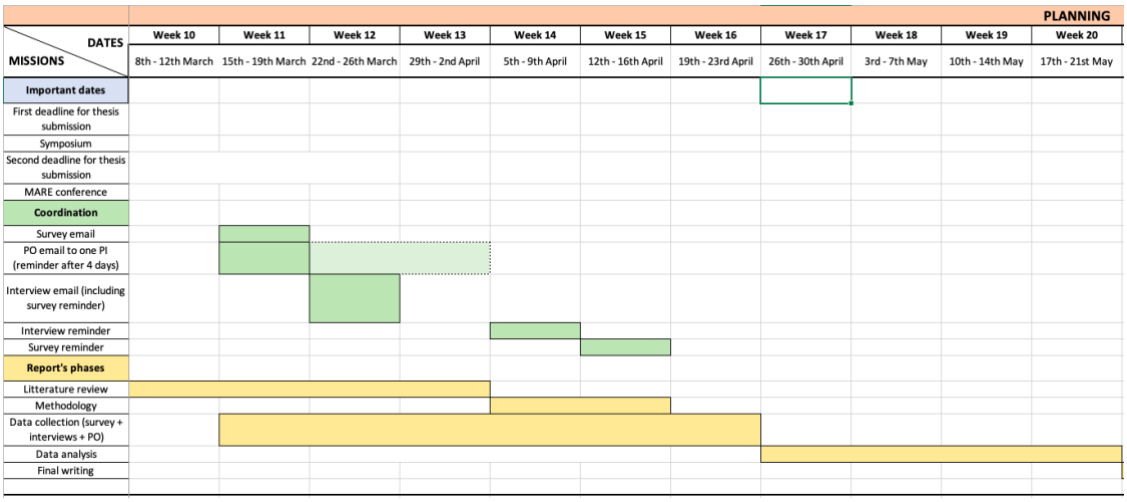
3.3. Ethics

Ethical considerations are fundamental in any research. Every study has obligations to the participants, community and to the discipline. This study is also conscious of ethical questions. My study will follow three core principles of ethics, i.e., respect for person, concern for welfare, and justice (TCPS2, 2020). Objectives and goals of the study were written in three distinct consent forms (i.e., for the online survey, the in-depth interviews, and PO, see in appendices), and briefed at the beginning of every interview. Consent forms were mandatory and had to be signed in order to participate in my research. Furthermore, every participant has been treated fairly and equitably: I started every interview highlighting essential factors including:

permission to video record, confidentiality, and ability to skip questions. Moreover, people were asked the same questions (see table 3 in appendices) with the same tone and without any judgement. Anonymity and confidentiality have been maintained throughout the study. All the field notes, transcripts, and recordings have been kept in a password protected computer and hard drive, and will be deleted after completion of the research. To maintain confidentiality, code names have been used in the write up, and at the end of the study all data will be destroyed. For this study a separate ethics application mentioning all the ethical issues related to the study have been submitted to University of Manitoba Ethics Board for their approval before starting the fieldwork.

3.4. Research timeline

My research started officially after the Ethics Approval on February 18, 2021. However, I had to prepare all the documents necessary for the University of Manitoba Ethics Protocol which took place from December 2020 to the approval date. The research timeline after this approval can be seen in the Gent Chart presented in *figure 1*.



DATES / MISSIONS	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28	Week 29	Week 30
	24th - 28th May	31st - 6th June	7th - 11th June	14th - 18th June	21st - 25th June	28th - 2nd July	5th - 9th July	12th - 26th July	19th - 23rd July	26th - 2nd August
Important dates										
First deadline for thesis submission										
Symposium										
Second deadline for thesis submission										
MARE conference										
Coordination										
Survey email										
PO email to one PI (reminder after 4 days)										
Interview email (including survey reminder)										
Interview reminder										
Survey reminder										
Report's phases										
Litterature review										
Methodology										
Data collection (survey + interviews + PO)										
Data analysis										
Final writing										

Figure 1: Ghent Chart part one and two

4. Results

4.1. How do participants perceive the communication within their research team and what factors influence communication effectiveness? #Objective 1

4.1.1. Survey

Among the different questions asked in the survey, one part was about the communication within each research team. In *figure 2*, we can see the questions asked in the tittle and the different part of the questions on the left of the figure. We can observe that 84% of the participants answered positively concerning their perception of the effectivity of their general communication. There aren't any negative answers concerning these questions, only participants that don't know or that neither agree nor disagree. This could be explained by the different students that don't belong to any research team and that answered the survey, since every question was mandatory, or by new research teams that just started in DFM and that don't have an opinion yet. Concerning the rest of the questions there is a global agreement of effective communication for collective work, building understanding, and building social relationships. However, it is important to notice that for the last question concerning the building of social relationships, there is a low proportion of participants that disagreed with it. This is a bit surprising to me since the majority of the participants have strong social relationships in their research teams (cf, interviews about social relationships).

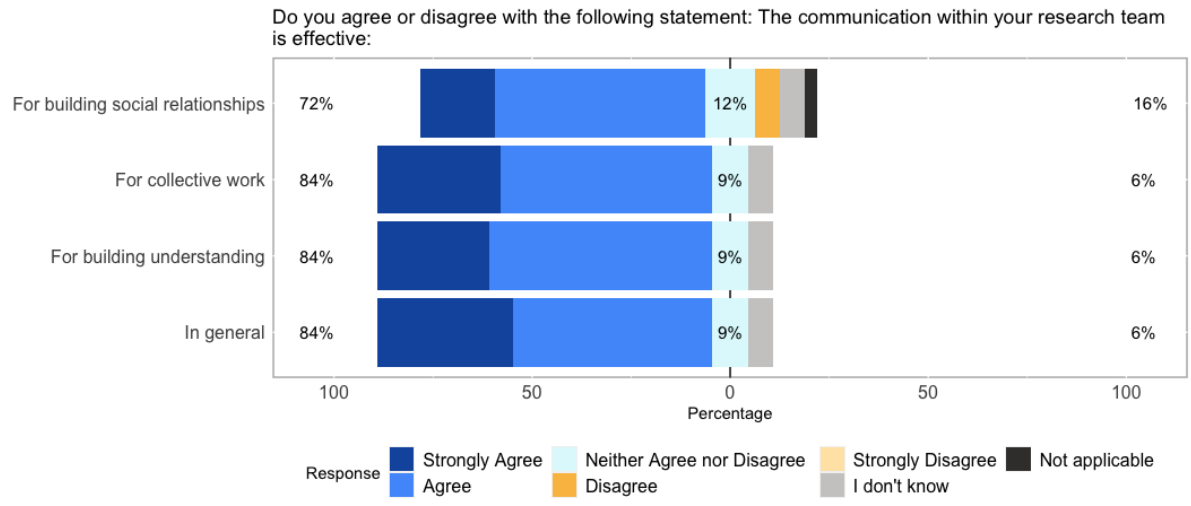


Figure 2: Question in the survey about the perception of effectiveness of the communication in the different teams

If we look at one possible influencing factor in the communication's success of the research teams within DFM, we can see in *figure 3* that 84% of the participants answered positively within the majority of them finding social relationships very important in communication while the rest of the participants (16%) found it moderately important. This could be explained by different aspects such as the age of the participants, their educational background, their personality traits in terms of group work or individualist work, or by their culture. This will be discussed in the next section concerning the interview results.

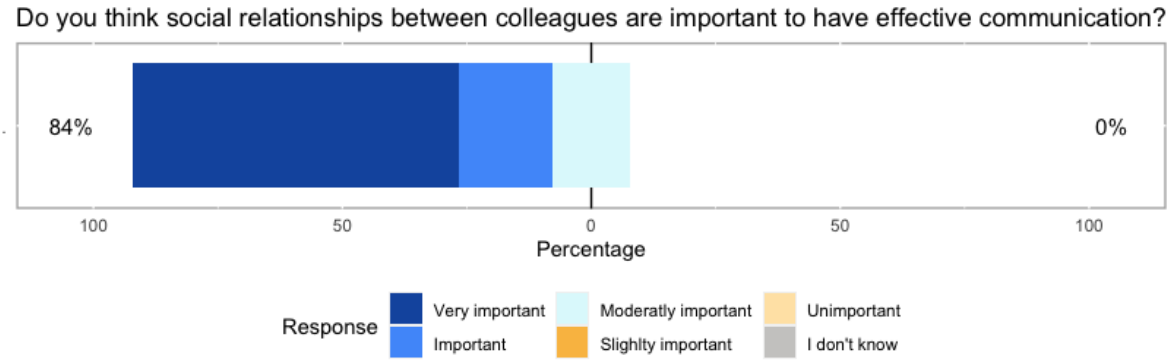


Figure 3: Importance of social relationships between colleagues to have effective communication

4.1.2. Interview

4.1.2.1. Definitions of communication

The first step to look at effective communication in research teams or even in the global DFM project is to look at the perception of the definition of communication and effective communication from the participants' point of view. That's why during the interviews I asked every interviewee to define what is communication and effective communication for them. The answers are not unanimous, and there are strong contrasts between some responses. The most complete definition was given by P12 (every participant was attributed a code name for their confidentiality):

> "Obviously, transmission of information would be a big part of the definition, but I'm reluctant to give a definition that would be too limiting. Communication is broader than just words; communicating sentiment, keeping channels open (having meetings and not

> talking about anything is a form of communication), it's not just the message but the creation of a social bond for example."

From all the definitions of communication, the words that came up the most are: *transmission of information/ sharing/ giving* (in 9 definitions). Then *understand/ effective* (in 6 definitions), then *feedback* (in 2 definitions), *two-way process* (listening and saying in 2 definitions), and *creation of social bonds* (in 2 definitions). Additional answers for this question include P2's definition: "compare your thoughts to other", and P8 as "to let other people know the intention". On another level P7 was almost seeing social relationships as the definition of communication:

> "For me communication is like knowing people. In my case most of the communication I make is long term and sustainable. I would like to keep track of my friends and colleagues. Knowing people beyond the professional relation."

With these definitions we can already see various differences in the perception of the definition of communication among participants. However, shouldn't it be a universal definition in a project? Is it possible to have effective communication in the research teams if the participants disagree on the definition?

If we now have a look at the definitions of effective communication the words that came up the most are: *understand* (in 4 definitions), *correct expression* (in 3 definitions), *and exchange of information* (in 2 definitions). P12 defined it by saying:

> "The question of "effective" might be a little misleading. If you are measuring "effective" you might look at only one thing (the message, the information that is transmitting). We should not ask about effectiveness but more about opportunity to communicate or what are the characteristics of a space or environment in which people are able to communicate (i.e. in absence of communication you can't see the other person, you can't hear the person)."

While the majority of the participants are defining effective communication as an understanding by the other person or group of people, none of them are directly speaking about the opportunity and space of communication. However, I think that by mentioning the need to listen to the others, some participants (a minority) also thought about the opportunity to communicate like

P12. For example, P9 said: “when you are able to both listen and when there is good extent of ideas”, and P14 explained: “So, I think it’s more of a conversation. From the word converse: I tell you something, you tell me something, so it’s back and forth exchange of messages. It should be a conversation.” Again, the definition of effective communication like the definition of communication varies a lot depending on the different interviewees. Not having the same definitions can seriously affect the transmission of information within DFM, and the ability to listen and make space for others to share informative elements.

4.1.2.2. Social relationships

As seen previously social relationships among colleagues is an important aspect in communication, and this can definitely play a role in communication’s success. During the interviews I asked every participant how they would describe their social relationships and if they consider their colleagues as friends. Half of the interviewees, which is 8 people, answered that yes, they consider their colleagues as friends. 4 others explained that it depends on the person considered, and the rest of the participants were considering social relationships as “strictly professional”, or “exciting”, or “with no issue for now”. Among these answers some people told me that by being present since the beginning they were able to meet a big part of the participants in different workshops, such as the Cox Bazar workshop in 2019 that happened before COVID, and that helped them to form a relationship with these people.

It was explained further that newcomers were not contacted in case of problems since they didn’t meet before. P13 explained:

> “In DFM, relationships are a little bit distant. However, earlier we had physical meetings in Bangladesh and Thailand and during these meetings we got to know all the people. I feel friends with the participants even during meetings because of that. We stayed weeks together, we did shopping, we went here and there, we shared everything during these workshops. […] I don’t contact people that I didn’t meet before.”

P3 also described something similar: “People that I have known for a longer time and that I have met in person several times, I tend to have a closer relationship with them.” This is, I think, a problem for newcomers that could feel excluded in the big DFM family. From the Project Director’s perspective there are strong bonds within DFM:

> "Language is part of bonding, but bonding takes place with shared interests and shared passions. We have quite a marvelous group, as the project goes on, I feel that our bonds of sympathy between each other are growing, there is a very strong sense of comradeship in the project. It transcends language. We are forging bonds of friendship and respect despite gender, race, whatever. We also have a shared interest in knowledge creation as academics but also beyond the academic group. There is a commitment to building a better understanding of the world together, that we all share. There is also a commitment to try to make the world a better place. That also influences the bonds that we have."

I do think that there are indeed very strong social bonds between participants within the DFM project and even more among research teams, however there are also big disparities in those bonds depending on the place of the people in the project and especially when they arrived in the project.

4.1.2.3. Hierarchy

Research teams are composed of primary research collaborators that are the co-applicants, and who are supposed to be involved in proposal writing, and who should have a guiding role in the research. There are also collaborators that are more removed from the project or who are not academic, or are from the applied science field. However, co-applicants needed to have an academic affiliation, so within each research team, some kind of hierarchy was designed. The plan was to have one or two co-applicants in each team who would have the roles of team leaders or team coordinators. They would be the ones who control the budget. Although, depending on the nature of the relationship between colleagues it is possible that an advisor could have quite a lot of influence in terms of shaping how a research team works, as the formal leader of the project learns continuously the role of leadership. This could lead to difficulties in communication and trust among the teams.

In order to understand the role of hierarchy in communication within the research teams, I asked participants about their thoughts on hierarchy. Two questions were asked, the first one was about the participants' opinion on the presence of hierarchy in their research team. The second one asked about their thoughts on the link between hierarchy and communication effectiveness.

Concerning the first question, only P2 said to not find any hierarchy in the research team and had no idea about the role of hierarchy in communication effectiveness. P6 explained that: "In the team yes, it's more like a functional hierarchy. In terms of experience and seniority and how we can make things happen. It's mostly from a reporting, monitoring and functional point of view that we have this hierarchy." P11 added some layers, saying that:

> "Decisions making should be a little bit hierarchical. Hierarchy is there, but you can discuss before the decision is taken. […] You need that to send the agenda, push the project forward. You need someone to play that role. What should be discussed, bringing the main points, setting things on track. Otherwise there will be no plans."

Participants even said that hierarchy was needed in any project: "I really appreciate the hierarchy, I need it." The second question was less unanimous, 11 interviewees agreed on the fact that hierarchy is playing a role in communication effectiveness, while 4 people didn't know how to answer. I think it is important to mention that nowadays hierarchy (at least in France) is frequently questioned. Top-down hierarchy is less and less desirable in projects, and bottom-up approaches are preferred. Management still exists, but will revolve more around the notions of leadership and group coordination, in order to instill good collaboration. We can observe that DFM research teams are trying to have that kind of hierarchy. However, it is hard to have the complete picture and know the place of everyone in the teams. Culture might also play an important role in terms of hierarchy; unfortunately, I didn't have time to discuss this aspect of embeddedness of culture and hierarchy during my interviews.

4.1.2.4. Culture

As mentioned previously, culture might play a role in the communication's success. It is possible that the perceptions about the separation between professional and social relationships may be link to cultural background. Among the values transmitted culturally, those concerning the place of the individual and his or her position in relation to the community sometimes differ fundamentally from one country to another, according to a more or less individualistic or collectivist vision. This can relate to the personality traits questions I asked during interviews. One of the questions was about whether participants identified more as individualists or team players. The answers were almost unanimous since 15 out of 16

participants answered either being team players or both. So, is it correct to say that the place of the individual and his or her position in relation to the community can be culturally explained? This might be the case in a regular organization, however, in this specific project including various interdisciplinary researchers I am not sure that this parallel can be made. To find out the researchers' perception of culture in communication, I included this question in my interviews. Among the various answers I collected, P6 explained that "Culture plays a role in communication, before communicating with them we should understand their culture first." P9 added:

> "Also, the age, if you are senior in some cultures people show a lot of respect for the seniors. Challenging professors or challenging Asian people is not easy for us, this is not culturally kind. Even if Asian people are wrong we find so many different ways to tell him that: 'look I don't agree with you.' In other cultures, people can disagree politely. I think it has something do to with personality and something to do with culture as well."

Also, the majority of DFM's participants were internationally involved for work, and so most of them had already been exposed to cultural differences. This is what P12 and P14 tried to explain during the interview, P12: "Maybe there is a role for culture. Most of us are exposed to different cultural background and dealing with collaborators of different countries and culture. However, it's not a very constraining factor", and P14: "I didn't find any cultural differences with colleagues in the field trips. It is because in the institute we have a lot of international relations." So, for those who can see a difference, and where it has a consequence on communication and the understanding of each other, how can these differences be improved to ease participants in their communication? I think, it is impossible to generalize what culture does to communication. There are so many countries involved in this project from three continents (if we included mine). Moreover, I think it is morally and ethically unacceptable to make this kind of generalization. However, P15 made some recommendations:

> "The challenge is again intercultural communication. One participant may be offended by another participant. Maybe clear guidelines on how to communicate could be an opportunity to mitigate or do away with that kind of challenge or difficulties. It has something to do with the leadership and the structure of the project as well. If the project system absorbed feedback from those who are bellow, then it would be an opportunity for big projects to get effective communication".

There is no consensus from participants about the importance of culture in communication, since seven people agreed that culture could have an influence on communication while three people disagreed, and five didn't answer. From my perspective, I do think that depending on the country we wore born into, the cultural aspect of where we come from, and what society projects on us, culture can definitely play a role in communication. However, I have to agree with some of the participants, that having experience in international projects can be really useful to counter-balance differences in communication and keep an open-mind.

4.1.3. Participant observation

During my data collection phase, I tried to attend several informal virtual meetings with different research teams in order to have a comprehensive look at internal communication. The purpose was to analyze the specific comprehension of participants' thoughts, experiences, knowledge on communication and its effectiveness, observe and understand participants' communication, their relationships with each other, and how they express themselves (tone, etc.). On top of that, the aim was also to capture the nature of decision-making, who speaks most, the age and gender of the people who dominate the conversation, language difficulties, discussion around written texts, and the quality of their interactions. Unfortunately, the task of gathering teams to participate in this step was complicated, and I was only able to attend two informal meetings with two different research teams.

Due to the COVID-19, everything was done remotely, and our meetings happened through Zoom. One positive aspect of virtual meetings is that I was able to do my research even remotely, however everything related to body language, facial expressions, interactions, even the tone of voice cannot be taken into consideration because they are tricky and complicated to see and analyze. However, I was able to look at different aspects: for both meetings all videos were on; they both started the meeting with small talk; less than 10 participants were present; in one of the teams both English and the local language were used; and both meetings were short (< 40 minutes). From my perspective, these are all aspects of effective communication. Indeed, having the camera on helps people to connect virtually and can make a statement on the involvement of participants. Starting a meeting with small-talk can make participants more comfortable during the meeting, and that can help people to speak up and be confident about their opinions. On top of that, being a small group (less than 10 participants) can considerably

help introverted people to be more comfortable and speak up, as was mentioned to me during interviews.

I asked participants during the interviews whether they saw themselves as more introverted or extroverted. The results were surprising to me. Only one person considered him/herself extroverted, while 11 participants consider themselves introverted. The rest of them defined themselves as both or mentioned that it can depend on the situation. For the people who answered "depends", they explained to me that in a one-to-one meeting they would be comfortable and more on the extroverted side of their personality, while during big meetings with a lot of people, they would turn into their introverted side. This could really explain why having small groups in informal meetings can help various participants to be at ease. Lastly, by bringing their local language into meetings, it can favor the participants who are less comfortable in English, and that would have some struggle to understand. On top of that, it might also help participants to feel "at home" and not feel the pressure of being in an international project. So, all of these aspects combined can definitely bring a favorable environment for communication and knowledge production.

4.2. How is general communication perceived within the global project and what makes perceptions vary? # Objective 2

4.2.3. Survey

For this second research question about general communication within the global project (which means between research teams, partners, and DFM coordination), I asked about people's thoughts on communication effectiveness. We can see the results in the *figure 4* where we can observe a global agreement from participants about this communication being effective for conducting research activities and workshops, in general, for sharing information, and for conducting meetings and webinars. The highest positive response rate goes to the conduction of meetings and webinars with 88% of positive answers. This can be explained by the various meetings the DFM coordination has been planning since the beginning of the project, as well as all the webinars participants have been invited to by email and during meetings. We can also observe that the general communication rate is the same for positive answers (84%) than the communication within research teams. It is important to mention that there are some negative

responses about the communication effectiveness for conducting meetings and workshops and in general. We can see that the proportion combined with the response “I don’t know” is about 6% for both questions, so it was probable to say that this is case specific.

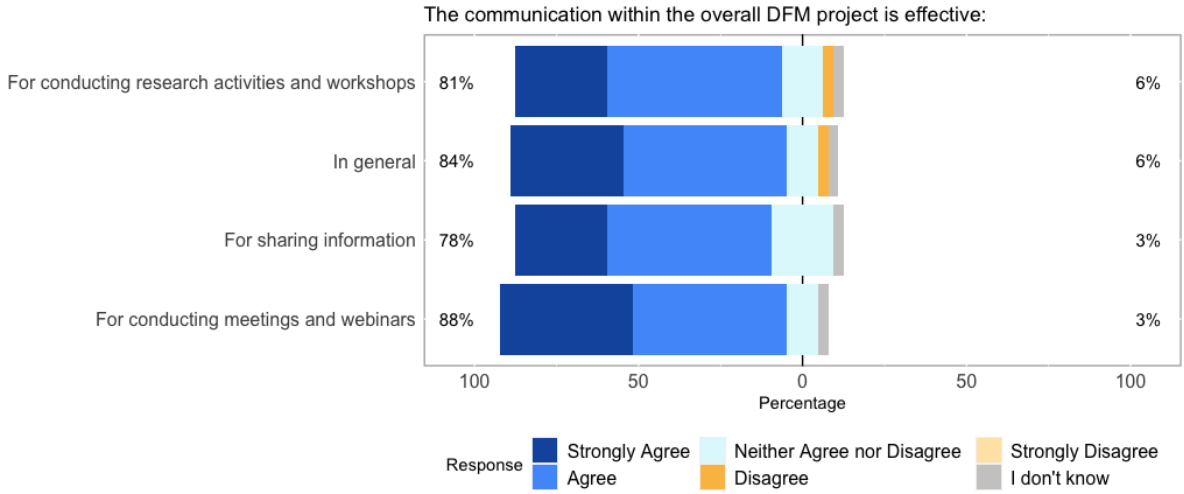


Figure 4: Opinions of effectiveness on different aspects related to general communication within DFM

As shown in *figure 5*, there is a significant correlation between the general communication within the global project and the management and communication difficulties. Indeed, we can observe that 9 participants agreed on the effectiveness of communication within DFM and at the same time rarely found management and communication difficulties. However, we can also observe that 6 participants strongly agreed with the effectiveness of communication within DFM but often found management and communication difficulties. This contrast is peculiar since the obvious conclusion would be that effective communication in the global project is at its highest point when there is no communication and management difficulties, and vice versa. However, the chi-square test is not allowing us to go further on which type of correlation there is and which factor influences the other.

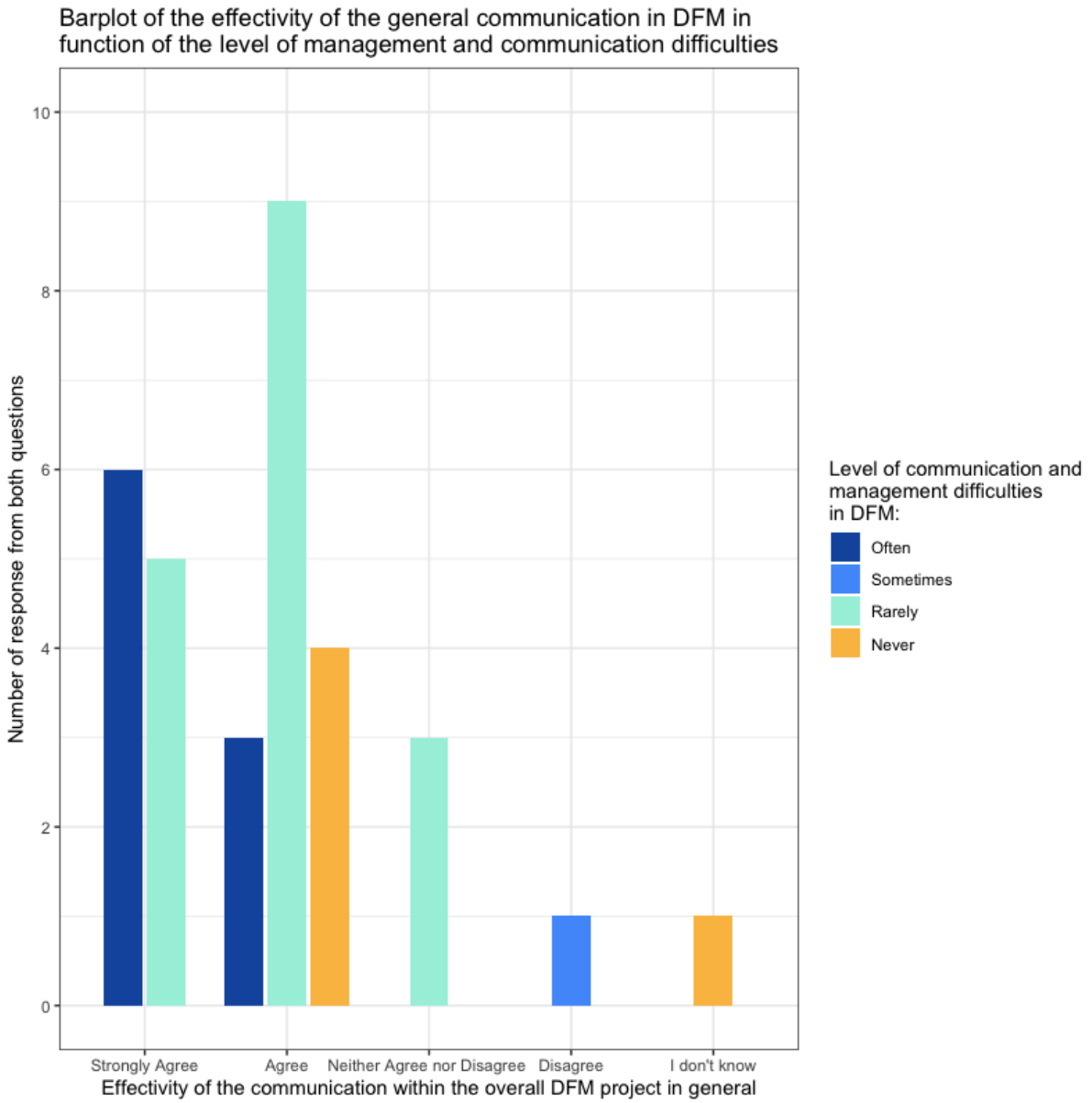


Figure 5: Barplot of the general communication within DFM in function of the communication and management difficulties (n = 16, p=7,24x10-6)

In *figure 6* we can observe a significant correlation between the effectiveness of general communication within DFM and the effectiveness of sharing information. There is an undeniable link between these two factors since we can see that 11 participants agreed on the fact that the general communication within DFM is effective while at the same time strongly agreeing on the effectiveness of the sharing of information. However, we can also observe a large panel (7 people) that didn't know or didn't have an opinion of the effectiveness of sharing information. These answers could be explained by the fact that some people might not have understand the type of information shared I was mentioning. There are multiple types of

information that could be shared such as: the directions of some homework in research teams, explanations about various tools used in the project, information to the various audiences in terms of academic papers, etc. Depending on what people understood of the term "sharing information" they might have answered "I don't know".

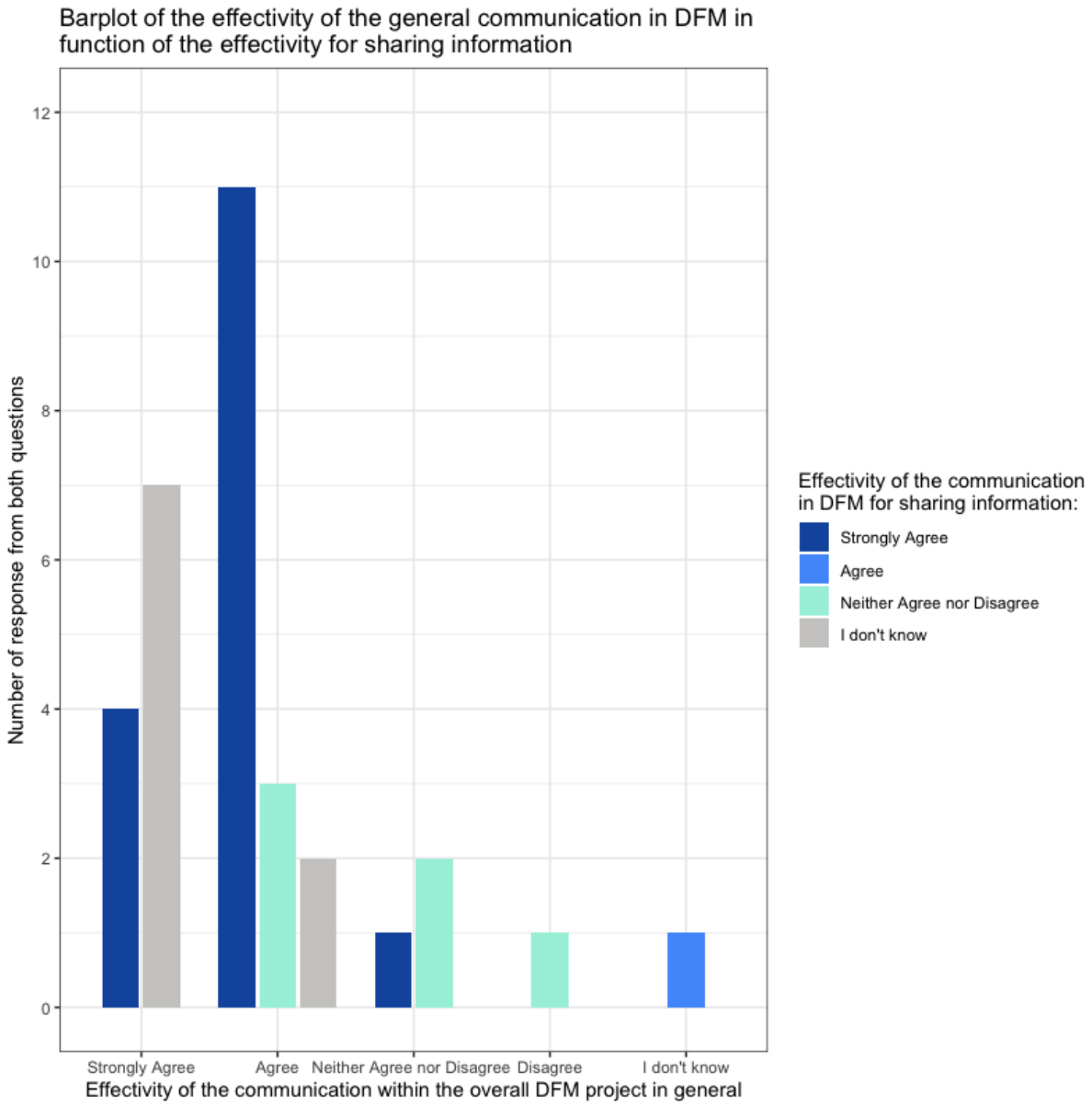


Figure 6: Barplot of the general communication within DFM in function of the effectivity of sharing information (n = 16, p= 9.81e-07)

4.2.2. Interview

4.2.2.1. Interdisciplinarity and collaboration

Since the start of the project in 2015, the DFM project has been drafted as an interdisciplinary project. It reunites Social Scientists, Anthropologists, Economists, and Biologists. Even though participants have mostly the same academic background in their research team, there are also other researchers with a different specialty. On top of that research teams are composed of various researchers who need to work in collaboration. This is why, I decided to take these aspects into account in the list of influencing factors in communication. Indeed, depending on your academic background you might not have the same definition, perspective, or analysis concerning dried fish and everything related to this topic, and that can have a direct impact on how you communicate with others. Moreover, collaboration in DFM varies since they are several types of participants: co-investigators, collaborators, and partners. Partners are often civil society actors, or NGOs, or government actors. During my interviews various people agreed on the fact that government partners could be difficult sometimes depending on your results as explained by P1: "Partners don't see the utility of things sometimes. Government partners are difficult. For the most part we are asking them to do things. If it's an academic partner that's not an issue. Government partners are difficult."

I also asked the question: "What do you think are the main challenges to working on a collaborative project?" during my interviews. I obtained various answers, from coordination, new technologies, transparency, Global South inequalities, to virtual communication due to COVID. I am choosing here to only mention some direct quotations for interdisplicinary and collaboration since the other influencing factors will be described and explained later in this report. From the project director's perspective,

> "Coordination of action is the biggest one. Once you get the project, how do you create that sense of team where people feel motivated to be in the project, do the work and contribute collectively to the project? How do you build a human institution where people work together and feel inspired about participating in the project? I think from a leadership point of view that's the number one challenge."

There are other challenges to work in collaboration with people as explained by P10: “I think it has a lot to do with people that comes from diverse academic backgrounds, experience, language and culture. That’s all major challenges.” Indeed, they were all identified as influencing factors in communication, and everything is linked to one another. For example, P9 argued:

> “When I was in [name of country omitted for confidentiality], most of the international projects required people to be affiliated or partner with established institution in the partners countries. So, what happens is that by doing that partnership, in effect we are kind of re-established the long, inequities, hierarchy that are already existing.”

However, P1 tends to see things differently: “Again, it is very context-specific or project-specific. Every project has its own challenges depending on what the project is trying to achieve, what institutions are involved, the personalities involved, the countries. It’s kind of hard to generalize.” Let’s move on to the personality traits questions and see the links with collaborative projects.

4.2.2.2. Personality traits

My interviews were based on several questions including questions about personality traits and people’s thoughts on personality traits’ importance on communication. Every participant agreed that personality traits are important to communication. Furthermore, people were asked about being more a team player person or an individualist person, about teaching, punctuality, being more introverted or extroverted, empathy, and being more talkative or quiet. By looking at the results of these questions in *figure 7* we can observe that none of the interviewees consider themselves individualists; the majority are more team players, while the rest of them are both. Then for teaching, 12 people said they like teaching, and only one person said they do not. Most of the participants consider themselves punctual, and three of them explained to me that it depends on the situation. Then we can observe that 11 participants are more on the introvert side than the extravert side. However, there are 2 people that answered “both” and two others that answered “depends”. The latter said they could be freer and more on the extroverted side when talking to only one person, and felt shyer and on the introverted side when talking to a group of people. Only one person described themselves as empathetic “to some extent,” while the rest of the participants all considered themselves as being empathetic people. Lastly, 7

interviewees identified as being both talkative and quiet depending on the situation (such as for the question of introvert/extravert).

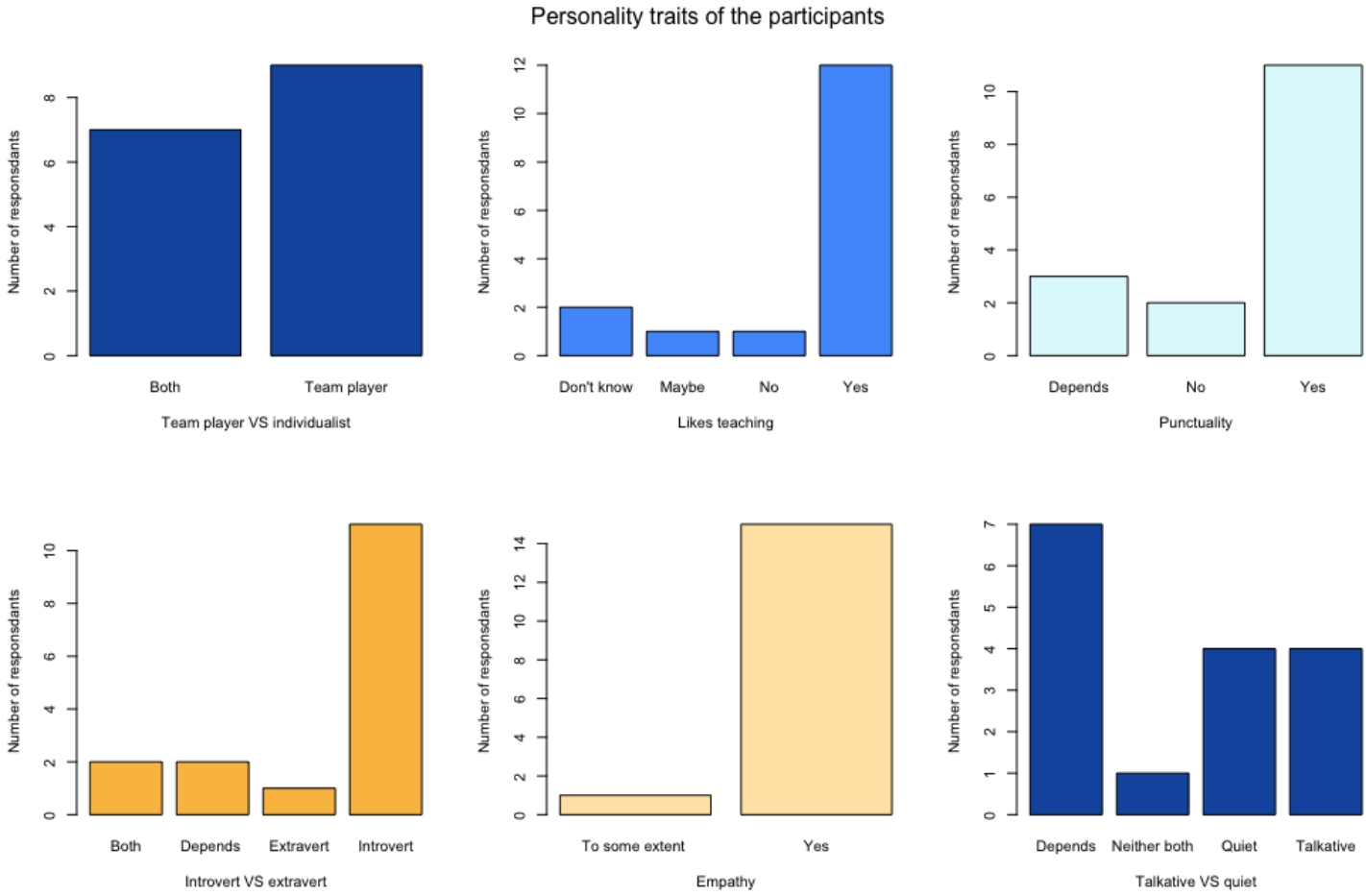


Figure 7: Barplots of the personality traits of the participants

4.2.2.3. Language

Language is essential in every aspects of our lives, and it is even more vital in communication. DFM is led by a project director and a project coordinator who are both Canadians and speak English. They can speak other languages as we will see further but their native language is English. The project is happening in South and South-East Asia where the local languages are not English. However, to be part of the project it is necessary to know how to speak English. So, how important is this? How do participants feel about only speaking in English? Are there differences between participants? Let's have a look at what participants told me. First, 7 interviewees found language to be challenging and difficult, while 7 others found it not to be. So, depending on your level, your background in terms of education, your birth country, your interactions with others, and other factors, you will not see language the same way. In *figures*

8 and 9 looking at challenges associated with language and interaction difficulty within DFM, in function of the number of languages spoken, we can see that the more the languages a person speaks, the less they seem to have challenges associated with language and interaction difficulties within DFM.

Moreover, it is important to mention 14 interviewees obtained a PhD, 8 of them in another continent (mostly in America or Europe), and all these 14 interviewees already worked at some point in an international project. So, they already had an international background, and most of them learned English during their education. Derek Johnson explained:

> "So, the academics we work with for whom English is an additional language, they are very familiar with the dynamics of writing in a non-native language, so in my experience they are comfortable to collaborate in writing. It points to the broader inequalities that exist in the literature, in the science generally. There is a disadvantage to people whose first language is not English. In order to be more successful in publications, often people in that position have to collaborate with non-native speakers. This is one dynamic in the project. This is the easier dynamic; it is one that concerns people that have lots of experience coping with that dynamic. This project is dominated by academics, part of the reason for that is that they are comfortable working in English. We've been less successful at effectively integrating participants from other sectors, and part of the reasons for that lack of equal success is the language issue."

P2 and P3 both found English vital in terms of communication and connections within the project: "We're from different countries and English is the only thing that keeps us connected", "English is the way of people in an international setting most commonly communicate with one another. Especially in a project where you have people from many different countries." However, there are also other participants that feel differently, such as P1: "Unfortunately, we use English as our way to communicate." "Actually, the dynamic would change immediately if it happened to have one researcher that doesn't speak the language", and P15: "Unfortunately, I say unfortunately because we know as well English was used by colonizer, it was imposed to us, it was never a free choice. But apparently it became also a positive thing, in the South East Asia region we can better communicate in English. It's both a good and a bad thing but for the project it's a good thing."

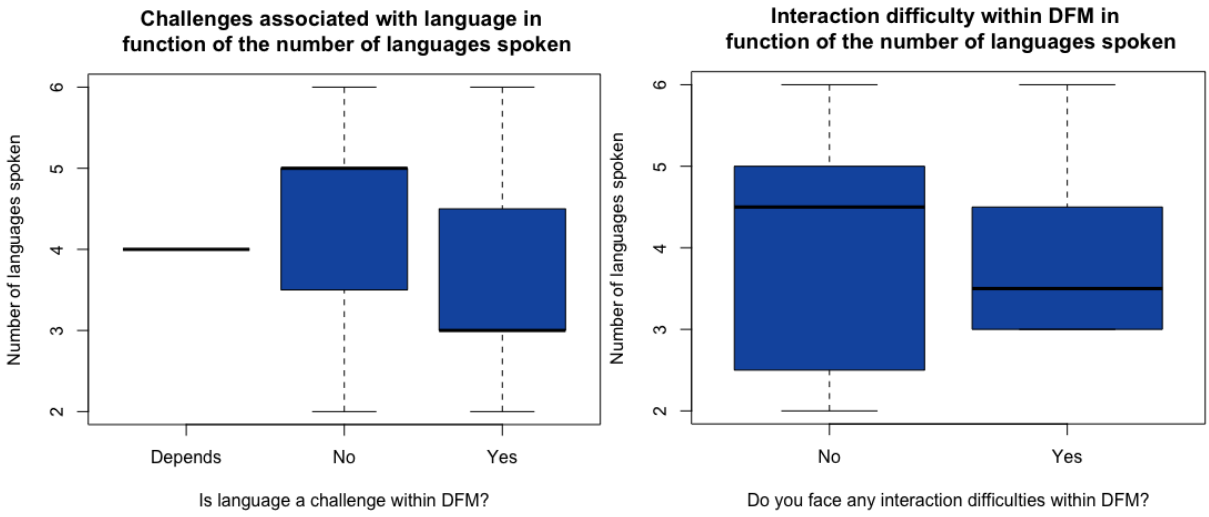


Figure 8: (on the left) - Boxplot of the challenges associated with language in function of the number of languages spoken

Figure 9: (on the right) - Boxplot of the facing of interactions' difficulties within DFM in function of the number of languages spoken

4.2.2.4. Culture

Culture is the whole of knowledge, know-how, traditions, and customs specific to a human group. It is transmitted socially, from generation to generation, and not by genetic inheritance, and conditions individual behavior to a large extent. Culture encompasses very broad aspects of life in society: techniques used, morals, way of life, value system, beliefs, religious rites, organization of the family and village communities, clothing, etc. Here, we will be looking at communication and the place of culture. When asking the question: "Do you think culture plays a role in communication," several participants (5) didn't know how to answer, or didn't want to go on this path, as explained by the project director: "Culture – there is so much going on about it, and there is so much we don't know about how individuals are informed and relate to a cultural context and when you're talking with people who are quite worldly as well, it's very hard." However, six people found that culture can indeed play a role in communication, as argued by P15:

> "The challenge is again intercultural communication. One participant may be offended by another participant. Maybe clear guidelines on how to communicate could be an opportunity to mitigate or do away with that kind of challenge or difficulties. It has

something to do with the leadership and the structure of the project as well. If the project system absorbed feedbacks from those who are bellow then it would be an opportunity for big projects to get effective communication."

P6 and P13 also felt this cultural background in their communication respectively: "Culture plays a role in communication, before communicating with them we should understand their culture first", "Some cultures are talking, they are more forward, they speak a lot, they share things. Whereas in some culture people are silent, and don't express much. I know the cultural impact is there, I feel it." Only three interviewees thought culture wasn't playing a role in communication as detailed by p14: "I didn't find any cultural differences with colleagues in the field trips. It is because in the institute we have a lot of international relations."

4.2.2.5. Social relationships

Social relations are now of crucial importance and are at the heart of all organizations. And for good reason, as they respond to many issues and have a definite impact on the efficiency of an organization. Good communication and actions to meet employees' expectations are therefore essential. Good management of social relations very often improve the working conditions of the people involved. Professional relations at work can sometimes be tense. Conflict at work can arise at any time. Good employee relations are therefore beneficial to everyone. The worst enemy of social relations is the breakdown of dialogue and the emergence of conflicts at work. So, how are social relationships seen within DFM? There is a consensus between participants that social relationships between them were stronger before COVID since they were able to create links between them in the in-person workshops organized by DFM. P12 explained to me during our interview: "Hard to discuss social relationships that are not that social. We have had meetings over Zoom, that sort of interaction (informal conversation) gets lost. This is something I do miss a little bit. I felt much stronger social bonds within other places." Social relationships within research teams is important, as we have seen for the first objective. However, social relationships within the global DFM were less discussed during interviews, and this could be explained by the fact that COVID-19 is preventing all face-to-face communications.

4.2.2.6. Barriers of communication

Multiple barriers of communication have been highlighted by participants that should be taken into consideration for the progress of the project. Among these barriers, lost in translation, time difference, internet connection, social training, accents, and writing skills were all cited by participants. For example, P4 explained: “Lot of messages get lost in translation. Especially when you communicate via emails. Communication in terms of language is not a barrier but understanding the language is kind of tough.” P9 added:

> “There are so many meetings that I commit sometimes, the time difference/ time zone can be difficult. The time zone has become a problem maybe, when it is a morning in Canada, it’s night in here. At night a lot of people have family commitment. It’s a challenge, the time zone. And second challenge it’s like us, sometimes I have 5 meetings and sometimes I can’t keep track of it. I completely miss out, I forget I have a meeting.”

There is also P13 that spoke about accents and writing skills: “The accent of countries is different, sometimes it is difficult to understand the exact meaning or exact words of what people say. Sometimes people also speak very fast. Writing skills need to be improved, progress report, scoping reports. Writing skills are one challenge we face”. Lastly, P3 brought another aspect in terms of communication barriers, which is the social training difficulty that can perhaps happen: “Also, in terms of conceptuality if you had training as a social scientist then you would probably be a lot more confident where the conversation is leading you. Someone with no social training is going to be maybe less comfortable.”

4.2.2.7. Management issues - DFM unclarity

It is quite common to encounter a management problem. Indeed, it is possible to face behaviors from employees that seem inappropriate, unsuitable, annoying or do not allow the achievement of objectives. These behaviors occur regularly, which leads one to believe that there is a management problem. In an international project such as DFM, it can be complicated to tell the project coordinators about the problems the collaborators have encountered. That's why I think my interviews brought transparency to this point. Listening is therefore essential in order to find solutions for the problems that have been identified. Among the few management problems that have been mentioned to me, the length of emails (being too long), the time of meetings,

and the bureaucracy from the University of Manitoba have been mentioned regularly. Indeed, P1 argued:

> "Every time we meet it has to be when Canada wakes up, and people here are late in the evening time. We don't know how to deal with that. It's kind of too bad. That's a real challenge. We should wake up in the middle of the night to talk to people during the day. I never told them. What you can see is that we do, we'll use our time zone. It's a compromise, we wake up early and you stay a little bit late."

And, P4: "Lot of bureaucracy involved with the University of Manitoba. To get through the bureaucracy is very tough, it's back and forth with the money." However, there are also several people who didn't find any management issues, such as P9: "There are concerns about the research work but not the management team, I think DFM central has managed it very well. So far, I think we are in a good shape."

There is also another kind of problem that is linked to the lack of clarity of the methodology of the project, or the budget, or where the project stands. For example, P1 explained: "Again, DFM it's kind of simple in some way, like what we want to get out of the project but the methodology has been a little bit tricky, I don't think anybody gets yet what this value chain is and we don't want to talk about that." As well as P9: "It has been so much of talk and so many meetings and so hard to know exactly where we are. Sometimes it's hard to keep up", and P8:

> "The weird thing about DFM is that nothing is very clear. You think they make budget along the way but I don't really understand what's going to happen. Nothing is very clear about budget. How much money we have for what, what we are supposed to do, do we have enough money to do that, is not very clear. DFM have a lot of people who are brilliant academics, really good ideas, they communicate their ideas very well. Listening to them I learn a lot, but in terms of communicating for management I think it's a bit weak. They're not able to explain the overall picture, what we are supposed to be doing, where are we. In terms of academic thinking and stimulation they are brilliant but in terms of communicating what is supposed to happen, who is going to do what, who is going to be the leader of the output. They probably know very well but they are not clear."

Management and coordination of an international project comprising interdisciplinary teams are something very complicated that necessitates training and experience. However, this type of training is not included in a researcher's education. This is why this study can help everyone at every level in the project to understand participants' thoughts and feelings about communication, influencing factors, what works, and what could be improved within DFM.

4.2.2.8. Global South Challenges

Since DFM is an international project led by researchers from the University of Manitoba in Canada, I asked myself if participants from the Global South were experiencing challenges working in collaboration with Global North countries. Among the 16 interviewees, 6 answered yes, 5 answered no, 4 didn't answer, and 1 person answered: it depends. P1 tried to explain to me their view about this question: P1:

> "The problem with the world is that we use the West as a standard. Everybody needs to write in English, practice things and that in that way. […] It's a bit of privileged and sometimes people forget. We need to pay attention to that. The challenge is there because people from the Global South need to adapt, modify, adjust, to be this kind of standard. […] They can claim that it is a better standard but I think it's that ignorance of the world or their laziness about the world, it is an easy sectoring. This applies for the ethics application, the consent form. […] It's covering their back. This is how we need to do it because the funding comes from Canada. It's a different culture, it's a different way of going about things. Not to say it is not good, of course it's good, but does it need to be this bad? The useful part about this is the TCPS2 training because it is online. […] There are things that they could do to protect the people. It should be part of a training. Researchers in the South, they have different ways of going about things and sometimes it could be better but the standard is set and should not be imposed. The difference is when you make people feel that I want to do better, I want to follow a higher standard because it will reflect a better work as opposed to be imposed and people don't get what nonsense is this. Communication about that is important."

There are also several people that are aware of the differences between Global South and Global North, and the colonial history behind it, but that think DFM is making real efforts to deal with it. For example, P7 and P8 respectively said:

"Discrimination is deeply embedded. Lack of sensitivity when it comes to understanding the different groups' work. Within the Global South it is not uniform. There is a certain assumption that people need to be hand-helped even when it comes to collaboration. Often people recognize these issues, people from the Global North recognize these issues. It seems to have an understanding in the West of what is best for the Global South. It's really difficult to convince them why this is not the right way to do that. It has always been a challenge. This is one of the few initiatives that seems to put a lot of effort coming from the side of the Global North to make a key, an authenticity to the Global South"

"For this one, I don't find any problem. In other research project yes. They have a huge difference in terms of allowances depending on the people from Global South and people from Global North. They don't have it in DFM, which is good."

4.2.2.9. Hierarchy

The hierarchy is based on an authority of competence and not only of status. That is to say, people who occupy positions of responsibility do so because they have proven their know-how and professionalism. The hierarchy then becomes more natural. There are several reasons for inappropriate hierarchical relationships. The first one, to be avoided: a misidentified hierarchy. Within an organization, the roles and status of each person must be defined. If the hierarchy is not clear, the instructions of some may be ignored by others. An unclear hierarchy is an obstacle to the economic development of a company. On the other hand, an implacable and rigid hierarchy will lead employees to distrust authority. Within DFM I have seen that a hierarchy was present in the Global project with the project director and the project coordinator controlling the funding. Also, within each research team, one or two co-investigator(s) who are the team leaders control the funding inside the team. However, I also felt that everyone was open to new ideas and that the hierarchy wasn't imposing things to do, or how to do them on DFM's participants. Out of the 16 interviewees I interviewed, 15 of them felt that there is a hierarchy in the global project and 11 of them thought that it could play a role in communication effectiveness while the rest of them didn't answer, didn't know, or said it depends. There are also various participants (such as P1, P4 P8, P9, and P11) who told me that hierarchy was necessary in an organization because it brings management and coordination with it. For example, P11 argued: "Decisions making should be a little bit hierarchical. Hierarchy is there,

but you can discuss before the decision is taken. You need that to send the agenda, push the project forward. You need someone to play that role. What should be discussed, bringing the main points, setting things on track. Otherwise there will be no plans" and P4: "Some structure is necessary otherwise I feel that it can get to some chaotic situation."

4.2.3. Participant Observation

I attended or watched the recording of 8 formal meetings during my data collection phase. Formal meetings were meetings targeting the global project and the majority of them can be found on the DFM YouTube channel. Online meetings started in June 2020. From August 2020 to December 2020, meetings were happening on average twice a month. Since December 2020 and the creation of the different working groups (WGs), meetings increased since they were hold once a month for each group (3 in total so 3 each months). Since February 2021, meetings have been slow and only the WG1 is still having meetings regularly. From the meetings I saw, a quarter of the people present during these meetings were talking, the rest of them remained quiet or asked some questions in the chat. I also noticed that time was often not respected, and meetings were longer than what they were supposed to be. Moreover, there is on average 1 meeting every month since February 2021, which is good with the majority of the participants. Meetings are between 1h10 minutes and 2h15 minutes with an average of 1h25 minutes. Whatever the length of the meeting, there isn't any break during them. There are often internet connection problems for some participants, people that don't turn off their microphone correctly, and outside noises.

From my observations, it seemed that meetings are going well, and the Project Director really tried to give everyone a voice during meetings. Unfortunately, due to the high number of people present, it was often not possible. This is why a good option could be the breakout rooms. Breakout rooms were tried once during one meeting with a high number of participants. Breakouts rooms were composed of less than 8 people on average, and we were given questions to discuss related to the DFM project. Unfortunately, we were only given 5 – 7 minutes to share opinions on three topics. People seemed to be extremely curious about the other countries, and it was people that didn't speak often that were taking the lead. This is something that should be repeated in future meetings in order to let everyone speak in smaller groups. Indeed, as I discussed before, several participants have confided in me that they were introverted and/or quiet with big groups. It should also be important to respect the schedule and the time of the

meetings since it is often during the evening for some participants, and it was mentioned that it was hard for Global South participants to attend meetings during their evening or night when they are supposed to be with their families.

Another important thing that needs to be highlighted is the fact that the majority of people will not turn their camera on during meetings, being able to see people can make everyone feel included in meetings and helps to focus. During some meetings, there was a sense of confusion, where people can feel lost and don't know where things are going. A written agenda of the meeting could be helpful to keep everyone on track.

4.3. What are the plans concerning communication toward external users, and how important is external communication? #Objective 3

4.3.3. Survey

Among the different questions I asked in the survey, one part was focused on external communication. In *figure 10*, we can see the results of these questions. It is important to notice that a large proportion of people answered "I don't know" or "Neither agree nor disagree" to each of the questions. This could be explained by the fact that we are still in the early stages of the project, and the external communication plan hadn't started, or had just started), or that only some researchers are aware of the plan and directions. However, we can still see that 47% of the participants answered positively about the external communication being effective in general. There is a small part that are disagreeing with this affirmation. The largest part of positive answers (62%) relate to the part of the communication channels used within DFM. This can be explained by the fact that DFM is already being present with its newsletter and its Twitter account and that participants are aware of it. Concerning the rest of the questions, knowledge dissemination and building understanding is much more mitigated, with only 50% and 44% of positive responses and with a small number of negative responses. More explanation will be given in the interview part about external communication.

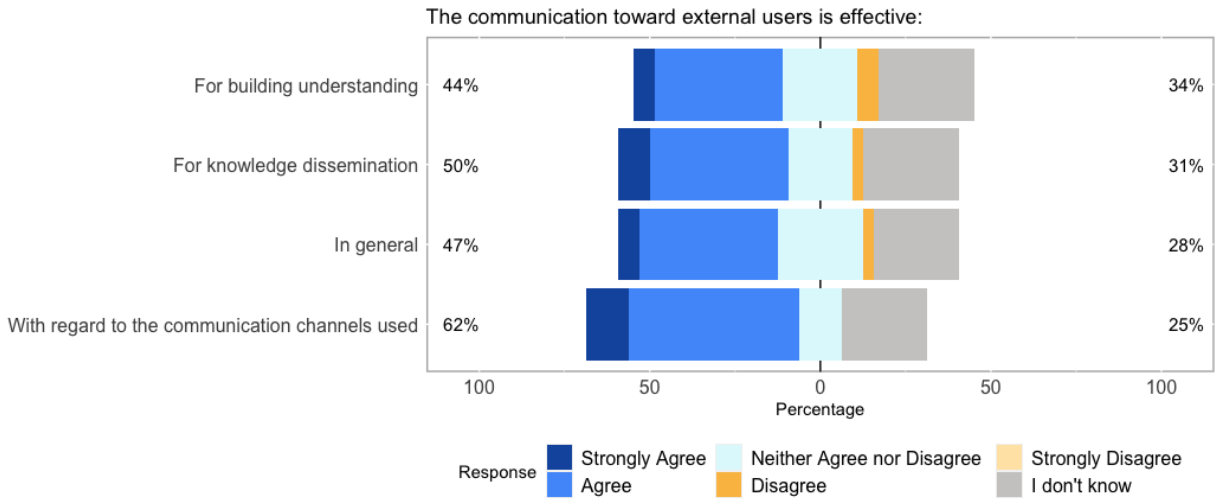


Figure 10: Opinions of effectiveness regarding aspects related of external communication within DFM

A chi-square test has been tested on the correspondent data and a p-value of 0.04872 has been found, which means that the test is significative and that there is a correlation between the communication toward external users regarding communication channels and the communication within research teams for building understanding. This is illustrated by *figure 11*, where we can see that 12 participants agreed that the communication within their research team is effective for building understanding and strongly agreed that communication towards external users is effective with regards to the communication channels used.

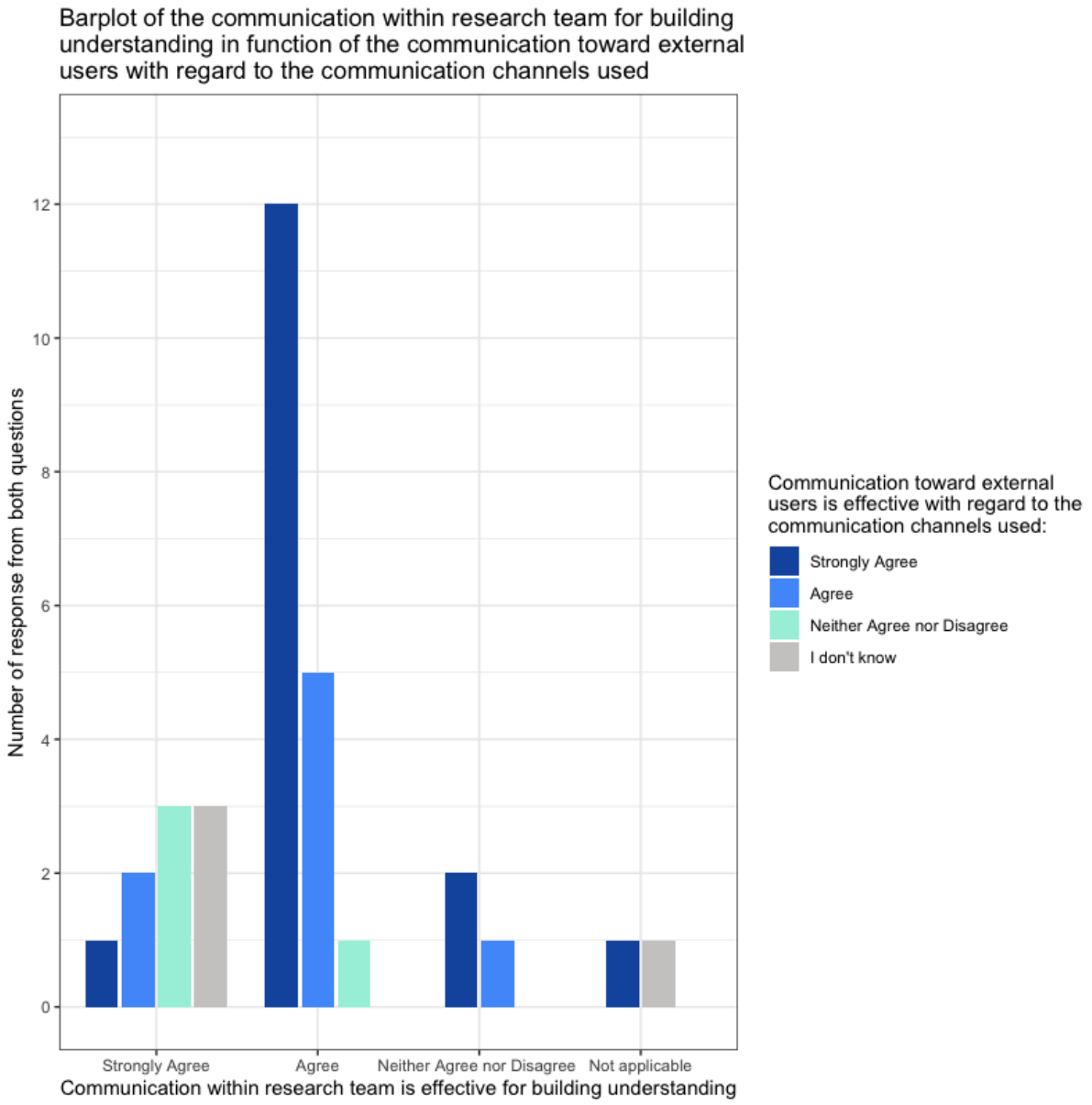


Figure 11: Barplot of the communication within research teams for building understanding in function of the communication toward external users with regard to the communication channels used (n=16, p= 0.04872)

4.3.4. Interview

4.3.4.1. Outcomes dissemination

External communication has been thought about before the starting date of the project. The project director and the project coordinator, with the help of other researchers, decided on a plan when they wrote the project proposal, as this step was mandatory. Prof. Derek Johnson,

the project director, explained to me during the interview the original plan for external communication:

> "There is a general but also fairly specific plan in terms of outputs that are laid out in the proposal. Since the beginning, we've had a communication plan. Broadly the plan aimed to speak to academic audiences, policy audiences, and a public audience. There are some specific ideas for what we want to publish academically. That is evolving as the project goes on. In terms of the policy side, the project anticipates writing outputs that would be targeted toward a government audience or a civil society audience in the form of policy briefs, recommendations that come out from the project research. For the broader public: there are a number of different outputs, there is the literature database which made publicly accessible through Zotero. In the longer term, we want to have a visual platform for sharing, the visualization sub-WG has started to work on that. I'm hoping that they would be laying the foundations for that longer-term aspiration to have a larger visualization platform, to share the knowledge we generate visually in terms of texts and videos. There also would be numerous non-peer-reviewed documents from the scoping research. All of those reports would go to an internal process of editing and then would go public".

Among the participants, it seems that the majority understood this plan and are going to follow it completely or by adding other type of supports. P7 for example told me about his external communication plan: "We are planning to write and publish in international journals. We have a plan to produce a popular article, and booklet distributed to locals and stakeholders [...] It's going pretty well." P16 was also in accordance with DFM's plan:

> "We will be providing reports and academic papers. We are planning to make some documenting to the general public especially about the importance of dried fish as livelihoods, the pollution they? are making and quality measures. Dried fish processors, traders, everyone in the value chain. We are planning to do some documentaries and provide it to the communities. With the big guys (government institutes): policy day and stakeholders meeting discussion. We do not have much provision for the dried fish sector in the fisheries policy, we want to make some space in these documents. Make a policy brief in both languages and disseminate it."

While the majority of the participants are agreeing on a plan that has already been discussed, some of them are not feeling the same, and some discussion might be necessary for everyone to have a clear vision on the future and external communication. P8 and P9 respectively illustrate this unclarity: “We don’t even know if we can have a research project or whether we can do the project ourselves. We don’t know what we can do”, “There is a plan but I am not very aware of it, I don’t know the detailed planning. I didn’t really get into that phase”. There is also another difficulty for this external communication, as explained by P13:

> “The politicians have the powers over everything, over the research findings. They do not consider our policy brief, our research findings. By doing some documentaries about dried fish and the pollution caused, we are expecting some challenges, we have to be very careful and handle it very carefully without hurting the dried fish processors, without damaging the industry. Not to harm anyone in the industry.”

This is something that came up several time during my interviews. There is an emphasis among participants from various countries on politicians and the whole government policy sector that could reject the findings or dissolve the results or make the situation worse than it already is. Various researchers told me they need to be very careful about their writing.

On another level, concerning external communication to the general public, various participants talked about social media and its importance nowadays. Indeed, there are more and more people joining social media, especially the young public. In order to make dried fish more visually appealing, it might be interesting to bring this new component of social media. Depending on the country and sector of the public being targeted, you will not use the same social media for dissemination. Among the most used ones, Facebook came up quite often in my interviews. Instagram, which is more visually oriented, could be used to share some facts and the pictures of dried fish. However, Instagram wasn’t really mentioned by the participants. YouTube also came up several times, however you need some time to produce videos and it requires much more effort. TikTok, a newer social media platform, is very popular among youth. However, it is important to look at the most used media depending on the country where you want to disseminate the findings. Participants had the following to say about social media: P3 explained that “social media is a good way to make people aware that you have outcomes to share.” However, P5 argued: “In my country the challenge is language. Whatever we produce we need

to translate it in the local language. The good thing is now more and more people are using Facebook and Messenger so reaching them is becoming easier than in the past." P15 added:

"I think the public is now more visually involved. Data visualization would be very crucial I guess to communicate the findings, also texts. The highlight should be more on visual communication. It could be academically oriented (bars, graphs charts) or it could be more popularly oriented (YouTube videos or TikTok). It also depends on the target audience, in many public communications you frame your message based on the target audience."

The last words were directed at Prof. Derek Johnson: "Going forward in the project, we are in a pretty good shape in terms of our internal communication, but we could put probably more emphasis in the external communication."

4.3.4.1. DFM importance

In this report, I have been discussing what is DFM and how it works; in this section, I want to focus on what is being studied, why it is important, and how can this influence the participants' motivation, level of satisfaction with the project, and communication with others. First of all, I think it is important to mention that DFM rests on a large literature review based on all the countries involved in the project. What has been found out is that dried fish is essential for a big part of the world population, especially the vulnerable ones, in terms of culture, nutrition, and economy. Even tough dried fish is vital for these populations, a lot of gaps exist, since the majority of the research looking into fisheries are based on fishers, but dried fish value chains include other actors: traders, processors, etc. Moreover, several threats are becoming urgent including ecological changes, industrial competition, and problems such as contamination and labor exploitation. In our interview the project director explained:

> "The major contribution of DFM will be to expand the body of knowledge and understanding about an aspect of human life that is very important in Asia and globally. The evocation of the importance of dried fish from a culinary cultural and even poetic perspective is going to be a major area of contribution. And also, just laying out a new vision of the place of dried fish in the world of knowledge, and the world of research, changing the shape of that knowledge, and the discourse around dried fish."

Of course, all participants of this project are happy to work within DFM and find the topic of dried fish very important to work on. P1 mentioned: “The topic, it’s a such a good opportunity to look at things, because we never look at the post-harvest. It’s also nice to have the 6 countries comparison.” Moreover, P3 reflected on desired outcomes: “My first wish, some positive change on the work conditions that some people experience. The other thing would have to do with how to enhance the benefit that people get from making the fish project by eating something that is likely to poison them [due to contamination, for example]. If what we do somehow contributes to improvement there.” Indeed, it is such an important topic where various people are being exploited every day, and that could maybe change a little bit thanks to the DFM project. It is important to mention participants’ motivation to work within DFM because it can directly relate to their communication practices within the project and also their motivation to be more introspective to enhance collaboration and outcomes.

4.3.5. Participant Observation

Among the meetings I attended, two of them were directly directed to the external communication of DFM. On the occasion of the MARE Conference, an interdisciplinary social science organization looking at the use and management of marine resources, DFM presented three panels taking the form of roundtables focusing on the general themes of ideas, methods, and findings. The MARE conference aims to provide a stimulating intellectual climate for academics and policymakers working on topics related to coasts and seas. The two informal meetings attended had the aim of focusing on the visual aspect of dried fish. Indeed, it had been discussed previously that visual materials (maybe in the form of a video or pictures, or an intercative blog) should be made for the MARE conference, and maybe targeted to the general public afterwards. During the meetings, most of the cameras were turned off, and the discussion between members could be sometimes erratic. Moreover, it was very often the same participants that were taking the lead and several people were only present to listen. Both meetings went on for about 1 hour as planned, and at each meeting, clear tasks or action items were assigned for the next meeting.

4.4. How has COVID-19 been changing and influencing communication within the DFM project? #Every objective

4.4.3. Survey

COVID-19 has changed a lot of things in our professional and daily lives worldwide. Since it was the case everywhere and with every profession, I asked myself how DFM's participants have experienced this situation. That's why during my survey I asked if COVID changed: the work productivity related to DFM, the quality of participation in meetings and activities, the overall level of engagement with DFM, and the frequency of participation in meetings and activities. The results are visible in *figure 12*, where we can observe that for the majority of the participants, every sub-question has been positively influenced by COVID. It is particularly visible for the frequency of participation in DFM meetings and activities which is kind of evident since everything is online it is much easier for the participants to join than if it was in person (this will require travelling and could be complicated and less frequent). However, we can also see that several participants (less than 38% since the percentage includes the "I don't know" answer) found that their productivity and participation is somewhat worse than before COVID. It is almost a balance answer for these questions.

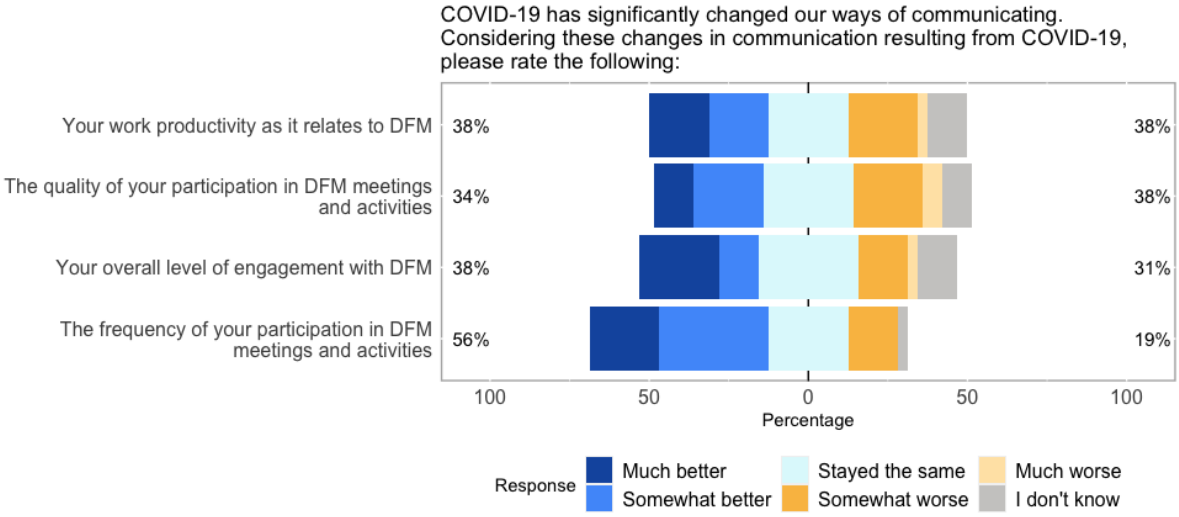


Figure 12: Opinions of changes related to work productivity, quality of participation, overall engagement, and frequency of participation since COVID-19

4.4.4. Interview

4.4.4.3. COVID

The world of work has been deeply affected by the global Coronavirus pandemic. In addition to the global public health issues, the economic and social disruption threaten the livelihoods and long-term well-being of millions of people. Since the beginning of the crisis, the explosion of telework has put weak links (knowledge, weak relationships) at a distance and created disparate work worlds. While face-to-face work remains the rule for many "essential" jobs, some sectors have been forced to close. In the face-to-face environment, social time is reduced or even eliminated. The period we are all living confines us to the intimate, with sometimes an overflow of strong links (our intimate, family or friendly links, intense and frequent links). Ultimately, in terms of links, it is the ordinary sociability of weak links in common public spaces that we have lost with the health crisis. In particular, people working from home have seen their social contacts reduced to the essentials, developed a sense of isolation, demotivation, stress and even anxiety, feeling "disconnected" from the outside world.

Although remote work is a major tool in the fight against the spread of COVID-19 and its variants, this alternative work mode is not suitable for everyone. Some collaborators do not have a suitable work environment at home, have difficulty concentrating or simply cannot tolerate remote meetings. DFM is not an exception in this crisis and since 7 countries, including Canada, are involved within DFM they were not spared in social distancing and telework. Since the beginning of COVID, every participant within DFM has been working remotely, and the scoping phase has been delayed for the majority of the countries working within DFM. Meetings are done on Zoom except for some countries that were able to still meet in person for their informal meetings inside their research team. Amongst the participants interviewed there is consensus that COVID has brought another challenge, and the biggest one. P4 for example explained: “I am more a people person, I like to meet people and speak. COVID has also made me very anxious about how things are getting communicated.” As well as P6 and P9 respectively: “One challenge is that we face this COVID-19, it is the biggest challenge for this project at this moment”, “The way DFM was planned at the beginning, COVID has created and amplified our challenges.” However, the project director, Derek Johnson, also sees some positive aspects of COVID:

> "I would also mention that prior to covid, I felt there was more of a gap between me and the participants in the project. Part of that was just my intimidation at using long distance communication technologies even using the phone. I felt that those technologies posed a barrier. It was not because I couldn't use them but because I had this idea that the technologies themselves created a sort of distance between me and the participants. But the whole Covid experience has completely eased that concern. Now, I have very little hesitation to do a Zoom meeting or a chat. That was one problem that was much stronger before in the project and that really eased."

4.4.4.4. Virtual communication

Virtual communications have been the only way of communicating since COVID in this international project. This includes: exchanging emails, Zoom meetings, phone calls, and group messages (on WhatsApp for example). However, how has this switch from face-to-face meetings to online meetings been experienced? When asking the question "What has been your experience related to COVID and how has it been impacting the communication flow?" during my interviews, almost every participant told me about the difference between FtF meetings and online meetings. From the participants' perspective online communications are much faster, and more regular; however, there are numerous negative points that have been raised concerning online communications. Participants have told me that it was invading their privacy, less relationships are developing, concentration is difficult, eye to eye contact isn't possible, you loose your train of thought during meetings, and people speak less. P3 argued: "Because of the virtual nature of the interaction I haven't really sort of developed some of those relationships." P8 developed on the idea of concentration:

> "I attend DFM meetings more often. Before in face-to-face I hardly met anybody. Now it's online so I kind of have more opportunity to attend to meetings. However, I don't like this online format of meetings, it's very difficult to concentrate. With the time difference and all of that it's a weird time and it's not the best time. When we have a clear goal on what we want to do with the meeting it is fine but if not, it becomes quite a chaos, and it's very difficult to concentrate if it's not clear."

P10 in turn told me about the positive aspects of FtF meetings: “Talk face-to-face it’s always a bit easier. In email for example sometimes tone can get a little bit lost, people can be offended even it was not a harsh critique” and P15 explained their thoughts about being quiet in meetings:

> “There are some working groups meetings because of the number of people and the fact I don’t know them all, so even if I have an opinion I reserve it to myself unless my name is called. There’s that kind of a limitation, if we were doing it FtF we could speak at the same time 2-3 people but with Zoom you have to wait and somebody has to raise hand and probably lost the train of thought. Most of the time I feel that way. I choose to be passive and to listen.”

4.4.4.5. New technologies

New technologies have been developed a lot in the project, especially with the development of online communications. Among the technologies that are used within the project there are: the Zotero library, the Wiki Page, the application Zoom, the software Atlas.ti, the One Drive, DFM’s website, the YouTube Channel, and emails. Zotero is the main tool for collecting, cataloguing, sharing, citing, and publishing resources connected with the dried fish economy. The library includes over 3000 publications related to dried fish. The Wiki Page has been created recently (around February 2021) and is designed to support the open sharing of drafts and discussion. Zoom is the application that is used for every meeting happening within DFM. Atlas.ti has not been used yet, as the DFM’s coordination team is waiting for the authorization from the University of Manitoba, but it will be used to do Qualitative Data Analysis / coding within DFM. The DFM’s One Drive is the space where you can find various documents mostly related to the official documentation necessary for every country. DFM’s website is open for the general public, and introduces the DFM project, the teams, some findings and results, various pictures related to dried fish, and the newsletter. The YouTube channel has been set up especially within the project to find the recorded meetings that happened since the beginning of the project. Lastly, emails have been at the center of the DFM project and helps the coordination team to send progress reports, results, meetings, explanations about online tools, etc. As we can notice, there are numerous and various online tools that have been provided for the researchers among the DFM project. However, it can sometimes be difficult to find the right information among all these tools. Moreover, since the participations are form various backgrounds, countries, and age, online tools and online communication might be new for some

of them. On the one hand, P1 and P9 explained to me respectively: “Personally speaking, I get tired of going in another platform and not getting the information, I just want simple stuff. Send it to me via email and I’ll talk to you. It has to be something I’m familiar with”, “Also, this type of com is new to us like the zoom etc, we are not technology academics, we are very lecture based, and non-digital. Sometimes we face that kind of challenge.” On the other hand, P13 understood completely how to use these tools: “I understood directly how to use the platform, they send emails clearly explaining the steps, they give one session for wiki-page on how to use it, well explained. And they send recordings to this zoom meeting and send an email with the instructions separately.” Dr. Eric Thrift, the project coordinator, commented to me during our interview that he was aware of a possible difficulty for certain people to be frustrated:

> “I think a lot of people are finding things challenging because they are not used to it. For some people it is intuitive but we found out that for some people when they didn’t work with it before there was a frustration and a barrier in the utilization of the tools. So, we wanted to make things more accessible. I do recognize this as a problem, including the interview guide and the ethics approvals”.

5. Discussion

5.1. "Communication", " effective communications", and “international collaboration"

How people define communication has a direct influence on communication in projects. Indeed, researchers need to be on the same page concerning this definition to work in the same direction. Mefalopulos (2003) saw communication as a top-down process for passing a message to others; this is called downward communication (Tubbs & Moss, 2008). Top-down communication is now being discussed in various projects as an old-fashion method that needs to include everyone at every level. In the DFM project, participants have agreed that communication is a two-way process that enables the messenger to convey the message to the recipient. Moreover, everyone from the project has a role in DFM’s communication and has a voice in meetings and in the achievement of the goals.

Tubbs & Moss (2008) have classified communication into four groups: downward communication, upward communication, horizontal or lateral communication, and diagonal communication. By listening to everyone’s voices in the project, and taking it into account for decision-making, DFM tends to have horizontal or lateral communication, in addition to downward communication since it is still the project leader and the project coordinator that will have the last word and that will take the final decisions. Furthermore, in order to be successful on how to communicate, goals need to be reached and the intended purpose accomplished (Muszyńska, 2018). This is what DFM is trying to do in meetings and webinars by including everyone and ask for everyone’s opinion. However, as we have seen in the results, most participants tend to be on the introverted side, and explained that this was directly influencing their participation in meetings. Personality traits have a direct influence on a person’s work in a project, and his/her strategy (Popescu et al., 2014). In their article Popescu et al (2014) explained that communication could be divided into four styles: process-oriented, people-oriented, ideas-oriented, and action-oriented depending on personality traits, experiences, and cultural background. By looking at DFM form the inside, I was able to have a complete picture of DFM’s styles of communication. Since the project director is always planning and organizing, trying to bring creativity (i.e. visualization group), taking everyone’s ideas into account, meeting with participants very regularly, and re-planning actions if needed (i.e. COVID), the project is making use of the four styles of communication.

As said previously, in order to have effective communication, it is important to have the same definition of communication. From my analysis of theory and practice, I can say that (since communication can be verbal and non-verbal), it is important to take non-verbal communication into account, as body language is something essential and we are all expressing ourselves through it, sometimes without knowing. Second, communication is happening every hour of every day, in both our personal and professional lives; often it allows us to transmit information to a person or a group of people, but communication is mostly a two-way process where one person is speaking and the other is listening alternatively. Lastly, communication is also about the creation of bonds with people; it allows us to speak about our feelings, our sentiments, and that can reinforce or deteriorate our relationships with others.

From the literature seen in the literature review at the beginning of this report, we can see that all of the definitions are only mentioning the message, not the form and the content of it. During my interviews, everyone except one participant talked about messages and transmission, while P12 told me about a broader definition looking at sentiment and social bonds. The same work can be done for the definition of effective communication. P12 opened my eyes about this definition by telling me about the opportunity to communicate. How are we supposed to measure communication, if everyone doesn't have the same opportunity to communicate? When I began this study, I wanted to have some kind of tool to be able to measure the effectiveness of communication in DFM. However, I came to the conclusion that it is case-specific and dependent on the individual. It could be possible to measure the participants' communication effectiveness using various criteria and by asking various people their thoughts on a particular person's communication. However, the result could be biased, since people don't often have the same opinion, especially of other people, and this could affect the project negatively if some of the participants disagree, or take it the wrong way. In the end, effective communication could be defined as the success of transmitting information to a person or a group of people, in addition to the comprehension of the targeted people. This is only possible if there is an opportunity to communicate. Effective communication is also about not deteriorating relationships, being clear when speaking, and being a good listener when listening to others.

Intercultural communication is defined as an exchange of cultural information between groups of people of different cultures (Dumitraşcu-Bălău & Dumitraşcu, 2019) while international communication can be seen as the exchange of messages between nation states and

organizations (Barnett & Li, 2002). International collaboration comes between these two definitions, since multiple cultural information from various people with different cultures, as well as the exchange of information from different organizations, are priorities in international collaboration. DFM's international collaboration has been discussed as a priority in the aim of the project. Let's take the example of the visualization group that has been set up in the past months to create visual outcomes showing the importance of dried fish in South and South-East Asia by working with different organizations form various countries involved in DFM. This first outcome, presented during the MARE conference in June 2021, was successful in showing the cross-cultural knowledge that exists within DFM and their international collaborators. They also have plans to create an e-book for the general public with various visuals. DFM is a good example of international collaboration, since it brings 14 research teams from 7 different countries (including Canada) together. With the creation of the three different workings groups as well as the student and visualization groups, DFM mixed various researchers from different research teams together. International collaboration is bringing different cultures together from different countries and sometimes different continents, and it is also bringing different organizations, or research teams, to work together. It is not easy, and there are a lot of influencing factors as we have seen in the results section, but it is essential to communicate efficiently to be able to succeed in international collaboration.

5.2. Interdisciplinarity and communication in international research projects

As seen previously, DFM is following different theoretical concepts concerning communication even thought there were not known and not discussed before the beginning of the project. Communication in international research, especially involving anthropologists and social scientists, is something that has been understudied. By "observing the observers" (the researchers who are usually the ones observing others), my work can help show how international projects involving social scientists are communicating and working together. DFM is led by Prof. Derek Johnson and coordinated by Dr. Eric Thrift, both of them Canadian Anthropologists. From my observation, I saw that in many meetings, a small fraction of participants would speak while a majority of them would remain quiet or write in the chat. Of the researchers speaking in meetings, there were no differences concerning the age and gender of the speakers. Their voices were listened to and considered for future work, which highlight the horizontal / lateral communication that is present in DFM. However, concerning final words, funding, and keeping everyone updated, the communication follows a more downward style. A

consequence of that is that the project director's voice is perceived as being more valuable and taken more seriously than the other voices. A parallel can be drawn concerning each research team, since it is the team leaders that are given the funding for their local research.

By looking at the results about the general communication in the project, we have seen that 84% of the participants from the survey were satisfied or very satisfied about the effectiveness of the general communication. Moreover, there was also a global agreement that communication was effective for collective work, building understanding, and building social relationships. On top that, 84% of the participants also thought that communication within their research teams was effective or very effective. These results highlight the effectiveness of communication within DFM and show that the concepts that are used within the project are being helpful for the majority of the participants. However, it is important to ask ourselves if it is the concepts that are making communication work, or if it something broader. Indeed, various influencing factors are playing a direct role on communication. The project director explained to me during our interview that DFM wasn't the first international project he was leading. We talked about the first one that was more difficult for him because he was younger, with less experience, and the conclusion was to learn from past mistakes. Communication is something complex that wasn't talked about very much in the project, but it has been working. From my perspective, they have found a balance where a majority of participants seem happy about the project and its progress to date.

5.3. Internal project dynamics and self-reflection

At the beginning of my research, I thought I would be able (thanks to the literature and my observation) to create a method for evaluating effective communication within research projects. In his book, Binder (2007) created a sort of evaluation method allowing comparison among projects and recommending best practices to follow and risk management plans depending on the result. The criteria for this method are: the number of distant locations, the number of different organizations, country cultures, different languages, and time zones. Following this method, DFM can be classified as a complex project, however are these criteria enough to measure a project and the communication effectiveness associated with it?

After reading all of this literature about communication, international projects, management, and so on, I realized that depending on what you read, the area of research (such as

communication, or management, or social sciences, etc.), you find the same methods and arguments. Moreover, when discussing with every participant of my project, I thought that the generalization of one method of evaluation wouldn't be correct or even possible. International projects, and virtual projects, have more than five criteria for evaluation (or as I called them, influencing factors). In the results we have seen that definitions, social relationships, hierarchy, culture, collaboration, personality traits, language, management issues, Global South challenges, and time zones were all influencing factors of communication within the global project and within research teams. With all of these factors, it is impossible to have a sort of generalization on communication effectiveness. However, it is important that researchers have a look at their own communication within their teams and projects.

To my knowledge, there isn't any training for researchers on communication to help them as project director, project coordinator, or just a colleague or member of the project to ensure effective communication in the study. The government of Canada has implemented an Ethical Conduct for Research Involving Humans called TCPS 2. It can be seen as a little training that will help researchers in the social sciences to ensure the ethical conduct of research and navigate between the two main goals of providing the necessary protection of participants and serving the legitimate requirements of research. So, researchers are getting various recommendations concerning the participants' protection and communication for their study. However, they are not learning anything concerning communication within their study, and how can it be the most effective to have better outcomes. Along the same lines, there doesn't seem to be a lot of training about knowledge co-production, which leaves the researchers on their own for trials and implementation (Cooke et al., 2021). Since, training on communication and knowledge co-production is something difficult to obtain, I hope that my study can help researchers to be more introspective in their work. By looking at both the survey and interviews, researchers can get an idea of the kids of questions they should reflect on. However, in order for it to work, it is important that researchers do this introspection voluntarily, and that they are not forced to examine their communication.

5.4. Research contributions

Previous research has looked at communication and how workers communicate between themselves. However, from the literature I read, there isn't any article looking at the communication among social scientists in an international and interdisciplinary project. The

Hubbub project brought light to both visible and invisible work within a corporation including collaborators from non-academic background in public, media, and youth work and researchers. There main conclusion was the necessity for all individuals to be equal to have an effective interdisciplinarity collaboration (Callard et al., 2016). This is what Akkerman et al (2006) highlighted as well in their conclusion: the fact that each participant should be considered as a person with unique thoughts and knowledge that should be equal to everyone's.

Moreover, having "encouragement, social support, autonomy, resources or opportunities to present novel ideas" (Moirano et al., 2020) are all necessary points that can create more creativity and fluidity in work. And, if some of these points aren't in place it can even act as a barrier in communication. Feedback is also something important in communication since communication won't be effective if there are misunderstandings (Zulch, 2014). One of the possible solutions for reinforcing collaboration and communication could be the organization of meetings, events, and conferences online or not (Borge & Bröring, 2017). Knowledge co-production is one area of research that has been discussed more and more for the past years, especially in the domain of fisheries management, conservation, and governance. Knowledge co-production allows researchers to support livelihood and communities as well as contribute to nutritional security, which makes it an efficient tool in fisheries. In essence, it is what DFM is trying to do.

Knowledge co-production brings scientists together and creates collaboration and interaction at the center, which forces collaborators to discuss and share their knowledge biases and can make science more creative and objective (Cooke et al., 2021). Thus, it is bringing another level of communication in research, communication that needs to be effective and efficient in order to have a good co-production of knowledge. The last point mentioned in the literature is the correlation between the ability of the manager to speak, write, reason and listen and communication's success (Zulch, 2014). All of these articles were not looking at communication directly, but found it during their research. Mine on the contrary is directly looking at communication, what is influencing communication in research projects, what can be change in order to improve this communication, and the participant's opinion about communication and its improvements. My research can be looked at as a guide for researchers of effective communication in research projects.

5.5. Challenges to effective communication

Due to the difficult period in 2020, I was forced to observe the communication in the DFM project through a different lens. Indeed, since the beginning of COVID everything in the project has been done remotely and virtually. This is something that is always done in international projects, however they tend to have in-person meetings as well. For now, these last types of meetings are not possible, and we don't know when it would be possible. Interdisciplinary collaboration can be enhanced throughout various tools such as ice breaker activities, tools reducing dominance, letting all participants have an opinion and a voice, and reframing issues (Moirano et al., 2020). However, how can these tools be implemented in a virtual setting? Would the results be equivalent than in "real life"?

Online technologies have been changing research and collaboration, sometimes increasing creativity but also bringing challenges. Indeed, finding the limit between private and personal, formal and informal spaces, and knowledge and information can be difficult. However, technologies are also a positive tool for learning and increasing creativity (Moirano et al., 2020). It is important to acknowledge that virtual work can also bring other difficulties such as stable internet connection, meetings room, efficient equipment that can sometimes be lacking. These difficulties are even more present in Global South countries, and needs to be counter-balance (Richter et al., 2021). This is something that was said a lot during my interviews with the participants. A stable internet connection, depending on the country, was something difficult to have, and it was affecting comprehension of the meeting or the event. On top that, being in different time zone had direct consequences on the presence of participants in meetings, since most of the time they were happening during their evening, and they tend to be with their family at this time.

Lastly, efficient equipment, especially head-phones, was sometimes missing in participants, and it could be complicated to understand the person without it. In their study, Dwivedi et al (2020), found out that employees would rather receive SMS than phone calls because phone calls were seen as less intrusive. Moreover, by being present in both professional and personal lives, the boundaries concerning phones can be difficult to find. So, the commitment required to build this virtual capacity building is higher than usual. To ameliorate this aspect, it is fundamental to involve everyone in the decision making (Richter et al., 2021). In their articles, the authors created some general classification for online communication: "1) very strong

bandwidth: all partners share their video and audio settings 2) partially problematic bandwidth: partner with problematic bandwidth to turn off video, all turn off audio apart from when they speak 3) problematic bandwidth: all partners turn off video and audio settings with the exception of the current speaker." In the framework of participant observation, I was able to attend general meetings called formal meetings, and some meeting within the research teams called informal meetings. During these meetings, I observed that most of the time the bandwidth is of level 2: partially problematic, and sometimes it is even in level 3: problematic. Not having the camera on tended to affect communication; indeed, the individual's concentration tends to decrease and there are often less interactions between colleagues. However, I have to disagree with the authors concerning turning on the audio settings. Indeed, outside noises, and the audio equipment of the participants can really make the communication difficult in meetings, and asking them to turn their microphone off can resolve this problem. Though, it could be interesting to ask people to turn on their camera in every meeting, and for those who can and want to see the differences between when it's on and off.

The results in *figure 12*, allow us to see the participant's opinion regarding the evolution of different factors since COVID-19. We have seen that for the majority of the participants, COVID does not seem to have negatively impacted their work; in fact, it has increased the frequency of participation in DFM meetings and activities, which can be explained by having everything online. However, we have also seen that around 38% of the participants found that their productivity and participation is somewhat worse than before COVID. Doing teleworking and being on a computer all day, can have some negative consequence on the participation, productivity, motivation, and efficiency of the participants.

5.6. Research significance

As discussed previously, previous communication studies have been done in different fields or other contexts, but have not focused on social science research projects. Studying and observing those who generally are studying and observing others is a new aspect of communication studies. My project aimed to understand the different layers of communication and communication effectiveness in this interdisciplinary and international project directed by Anthropologists. With the three different methodologies used, and the involvement of various participants, I was able to comprehend DFM's communication and have a sense of its effectiveness. My study can be seen as a case study, and can be reproduced by other researchers

or students that would like to study communication within research teams internationally or not. I do think that by taking DFM as an example, we can draw parallels with other projects.

My research fills this gap of knowledge that I described above, and is significant because of its newness and magnitude. However, it is important to mention that there are a few things that could be improved. For example, the number of participants in each methodology that could be higher, as well as a standardization of certain questions that could help to compare results and have a deeper discussion.

Concerning DFM and why my study is significant for them, I think that the project director, and the project coordinator wanted to have a look at their colleagues' thoughts about the communication within DFM, and what could be improved in order to enhance further collaboration, and better co-production of knowledge. My study can be a first step for them, and can be reiterated in the middle of it, when they are going to have more results and start thinking about other outcomes they can create. This project can really help DFM to understand what is already working in their project, and what can be improved in order to have better outcomes and collaboration.

5.7. Relevance and lessons for marine sciences

Interdisciplinary research among the social and natural scholars has been particularly discussed in recent science. Different challenges have been highlighted such as: the funding systems; the peer-review systems undervaluing interdisciplinary research; academic promotion systems which bring hierarchies in research; having distinct zones of work classified by domain in campuses; and rigid education promoting disciplinary values and perspectives (Cairns et al., 2020). Funding agencies are demanding more and more requirements including international collaboration with various partnerships, knowledge mobilization, and external communication to the general public. With these requirements, interdisciplinary projects are being promoted more and more. However, they are still an exception due to an increase of specialized projects and scientists with multiple educational backgrounds (Cairns et al., 2020). Research in marine sciences is not an exception; it is still important to find funding organizations, and teams with interdisciplinary backgrounds are often being required to receive the funding. By looking at the communication within an international project composed of interdisciplinarity teams, my research can be applied to other research areas such as the marine science area. A project

director, or a project coordinator could take my questions and my results as a guide for their communication and knowledge mobilization. DFM could be an example of what is working, what is not working, and what could be improved. Moreover, Thomas & Mefalopulos (2009) have concluded that participatory communication could be implemented in any projects including its size and its localization. Participatory communication is something valuable in knowledge production, and being able to have great outcomes at the end of a project is something that every researcher is looking for. It is also important to mention that there isn't only one good answer to the question of how communication can be the most effective in international projects. Responses, recommendations, and communication in general will depend on all the influencing factors we have seen in the results. However, open mindedness, frequent communication, and transparency are all important factors that needs to be followed in order to have an effective communication.

5.8. Recommendations

Various recommendations have been highlighted by participants during our interviews. They are included in the list below, along with my own recommendations based on my observations:

- Having a Zoom free Friday, or Zoom-free after 9 pm
- Having a summary in one place to keep track of everything related to the project, for example in the DFM's website for all the participants, or in the wiki-page
- Sending an analysis every couple of weeks or month in order to keep collaborators from the project aware of the research
- Having one person or a group of people dedicated to communication full-time
- Having someone from DFM central monitoring and assisting the country teams; it could even improve the communication between regional teams and DFM central
- Every research team should have meetings before a big DFM meeting in order to prepare it and be prepared
- Having more training on Zotero, the Wiki page, and everything related to new technologies (or having technical support)
- Have a report every six months related to local research for every research team
- Have more case studies, 1 per country for example, to help every researcher to look at it in their research country and learn from it
- Having an interactive blog in order to given and receive feedback

- Having informal channels of communication like a WhatsApp group, for example

My recommendations related to communication are listed in order of priority below:

- Online meetings should include a break of 5 or 10 minutes during the middle of a meeting. Moreover, it would be helpful to alternate the meeting time: one time during the morning in Canada, one time during the evening in Canada, etc. This would help some research teams to be more present during these meetings. Lastly for online meetings, having more breakout room interactions could help some participants who are feeling insecure speaking in big groups to have a say on some topics.
- Giving more feedback to everyone working within the project: this could be done by having specific meetings with people, or via emails. More feedback can really help researchers, young researchers and students to strengthen their work, and have a boost thanks to encouragements.
- Create an Instagram account for DFM to expand external communication toward the general public. Instagram is in my opinion the best option in terms of communication for the general public, since a lot of young adults have Instagram. Moreover, dried fish can make beautiful pictures, and it could be enhanced through this media with an informative description of the pictures.
- Create a WhatsApp group within research teams and even within the global project. This will allow participants to have informal discussion more often, and this could help to create more social bonds between people.
- Have one place, for example in the DFM's website, for participants to be able to see everything important linked to the project as well as some guidelines for online tools such as the Zotero library, the Wiki page, and the Atlas Ti software.
- As soon as it is possible to organize, it would help strengthen social bonds and interactions between colleagues to do an in-person event in one of the research countries. It could be an opportunity to do some icebreakers and other activities for newcomers or people that were not participating in the previous meetings.
- Create an online survey in the middle of the project to encourage introspection and get participant's thoughts about communication in the project. Questions can be taken out of the survey I launched or new questions could be created.
- Create an online survey at the end of the project that will allow for reflection on the project's communication and could help everyone in future projects.

6. Conclusion

Concerning the first objective about communication within research teams, we have seen that participants do have a general agreement that it is effective or very effective. Moreover, interviews confirmed that the following influencing factors played a role in effective communication: the definition of communication, social relationships among colleagues, hierarchy, and cultural background.

For the second objective about communication within the global project, we have seen that there is also a general agreement on its effectiveness. Furthermore, the factors playing a role in its effectiveness are more numerous, and include: interdisciplinarity and collaboration, personality traits, language, cultural background, social relationships, other barriers of communication, management issues, Global South challenges, and hierarchy. It is important to highlight that the list is not exhaustive, and that depending on the type of project the influencing factors will not be the same. Moreover, influencing factors of the communication within DFM as a whole can also influence the communication within research teams. For example, personality traits will also play a role within research teams. Unfortunately, I had already enough questions both for the survey and the interview, so it wasn't possible for me to discuss the cross-over of multiple influencing factors for research questions one and two.

Concerning the third research question about the external communication and its importance, the results are more mixed, with less than half of the participants thinking that it is effective or very effective, and a high percentage of participants that didn't know what to answer. Even though the project director has a plan for external communication, several participants don't seem to be aware of that plan, and have no idea about what they can do or not. However, external communication toward external users is very important to make policy changes and understand the reality associated with dried fish. Partners could have a role in the dissemination of the results; however, from what I saw in my study, research teams are only communicating with the partners of their research country and this communication doesn't seem to be very frequent. It could be interesting to include every partner in several DFM meetings, and have more communication with the partners even though they are not from the research country.

Lastly, COVID-19 has really shifted the communication within DFM positively and negatively. Positively because DFM is now having more virtual communication than before COVID (with the help of Zoom, mostly). And negatively because there is no possibility to have face-to-face meetings, which has created less bonds between people, and some researchers that joined the project later do not feel as included as those who have been there longer. There are several factors that influence virtual communication, such as having the camera on, being in small groups, having the presence of a facilitator, having a good internet connection, being in a professional space without background noises, and the time zones.

In conclusion, communication is essential in every aspect of our lives, and researchers are not an exception. Observing and studying the Dried Fish Matters project allowed me to have a look at their internal communication, both within research teams and within the global project, as well as their external communication toward external users. After three years since the start of the project, the results show that there is a general agreement from the participants of my research, that communication is effective internally. However, results concerning the external communication's effectiveness are more mixed and this could be explained by the stage of the project, which is still early. After a deep examination of the potential factors influencing communication, I was able to highlight that open-mindedness, frequent communications, and transparency are all key influencing factors that can be seen as requirements for effective communications. DFM is a good example of a complex project that can serve as a model and help other researchers, students, and projects to be introspective about their communication. A generalized method of evaluation of communication effectiveness, or one method of communication, is impossible. Since every project might have different influencing factors depending on their "complexity", it is impossible to make a generalization out of this work. "Researching the researchers" brought a new vision of communication and its understanding, and allowed me to fill a gap in the literature. Lastly, in order for the project to move on and improve their communication for the participants, and for knowledge co-production, it will be necessary to consider some of the recommendations that have been made.

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9. Appendices

9.1. TCPS2 core certificate

PANEL ON RESEARCH ETHICS
Navigating the ethics of human research

TCPS 2: CORE

Certificate of Completion

This document certifies that

Alexia Pigeault

has completed the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics (TCPS 2: CORE)

Date of Issue: **20 September, 2020**

9.2. Ethics protocol approval

University of Manitoba | Research Ethics and Compliance

Human Ethics - Fort Garry
208-194 Dafoe Road
Winnipeg, MB R3T 2N2
T: 204 474 8872
humanethics@umanitoba.ca

PROTOCOL APPROVAL

To: **Fabiana Li**
Alexia Pigeault
Principal Investigators

From: **Andrea Szwajcer, Chair**
Research Ethics Board 2 (REB 2)

Re: **Protocol # J2020:088 (HS24561)**
Assessing perceptions of effectiveness of three levels of communication in the Dried Fish Matter's international project on the social economy of dried fish in South and South East Asia

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Effective: February 18, 2021 **Expiry:** February 18, 2022

Research Ethics Board 2 (REB 2) has reviewed and approved the above research.

REB 2 is constituted and operates in accordance with the current *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans – TCPS 2 (2018)*.

This approval is subject to the following conditions:

i. Approval is granted for the research and purposes described in this application only.

ii. Any changes to this research must be approved by the Human Ethics Office (HEO) before implementation.

iii. Any deviations to the research or adverse events must be reported to the HEO immediately.

iv. This approval is valid for one year only. A Renewal Request Form must be submitted and approved prior to the above expiry date.

v. A Study Closure Form must be submitted to the HEO when the research is complete prior to the above expiry date, or if the research is terminated.

vi. The University of Manitoba (UM) may request to audit your research documentation to confirm compliance with this approved protocol, and with the UM *Ethics of Research Involving Humans* policies and procedures.

Funded Protocols: Email a copy of this Protocol Approval, with the corresponding UM Project Number, to ResearchGrants@umanitoba.ca

9.3. Consent forms

9.3.1. Survey

Appendix 1: Survey Consent Form

Study Title	**Assessing perceptions of effectiveness of three levels of communication in the Dried Fish Matter's international project on the social economy of dried fish in South and South East Asia**
Principal Investigator	Fabiana Li, Associate Professor Department of Anthropology, University of Manitoba Email: Fabiana.Li@umanitoba.ca
Co-Principal Investigator	Alexia Pigeault, Graduate Student The International Master of Science in Marine Biological Resources Email: X@umanitoba.ca (waiting for a sponsored account)
Advisors	Fabiana Li, Associate Professor Department of Anthropology, University of Manitoba Email: Fabiana.Li@umanitoba.ca
Sponsor	SSHRC

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Project Description

The study takes place for the co-PI's Master's thesis from the International Master of Science in Marine Biological Resources (IMBRSea) with whom Manitoba University is a partner. The study is titled "Assessing perceptions of effectiveness of three levels of communication in the Dried Fish Matter's international project on the social economy of dried fish in South and South East Asia." The objectives of the study are to explore the communication within the research teams participating in Dried Fish Matters (DFM), within the global project between research teams and partners, and to external users (academics, government officials, and civil society actors). Firstly, the study will identify the communication structure for the three communication levels mentioned, and the effect on research teams, partners, academics, government officials, and civil society actors. Secondly, your experiences and responses towards these levels will be identified. Finally, possible recommendations based on your experiences and advice will be examined for improvement of communication in the DFM project.

Due to the covid-19 situation, it is not possible to travel to Asia, which is why this study will be done remotely. For the "fieldwork" the co-PI will stay in France and will conduct participant

observation, a general survey, and in-depth interviews with co-investigators, collaborators, students, partner representatives, and government and non-government organizations (GO-NGO) officials. The Dried Fish Matters project is an SSHRC-funded partnership that brings together experts from academia, civil society, and government from multiple countries to look at how value is created in the dried fish economy in South and Southeast Asia.

Procedure, Location, and Time Requirement

The research will use qualitative research methodologies, including surveys and semi-structured interviews. To have a good representation of the communication, the co-PI will ask you to share your experiences on the project design, implementation, and challenges encountered. The data obtained will provide a global understanding of the dynamics and opportunities for effective cross-cultural communication of an international research partnership. Moreover, it will enable the co-PI to look at the functioning of an interdisciplinary collaboration, and highlight challenges that may affect the project's communication. The results of this study can be useful to other research and development projects, helping to promote transparency, effective participation, and self-reflection.

Benefits

The strongest benefits will be collective rather than individual. Direct benefits from this study could move forward the communication in DFM by improving the different communications within the research teams, within the global project between research teams and partners, and to external users. With the results, you should be able to highlight the weak and strong points of your communication and compare these results with the ones of the other teams. Also, your help could play a major role in understanding the place and role of communication in the framework of an international project specialized in small-scale fisheries.

In the long run, as the co-PI intends to draw broader conclusions from her study, there could also be benefits for other research institutes or other international research projects, improving their way of functioning, their communication with the research teams, and between all actors especially GO and NGOs, helping the community of researchers

Risks

The study is concerned with your welfare as well as that of the community. The expected risks of participating in this study are minimal. Participation in this survey is completely anonymous.

Confidentiality

Redaction of the data will also be realized to ensure that identifying information is removed before making direct quotes from it. The co-PI will confidentially show the data and findings to her arm's length advisors that are NOT involved in the DFM project before sharing it with

Fabiana Li, Eric Thrift, or anyone else in the DFM project. It will allow her to have a verification that sensitives information has sufficiently been redacted and to prevent any conflict of interest that could arise.

Participation in this survey is completely anonymous. The results of the survey will be kept on a password-protected file on a password-protected computer. Only the co-PI will have access to the file and the computer. Results of the survey will be kept indefinitely since no personal identification will be in those.

Remuneration

You will not be compensated for participating in this study in any means: financially or as part of the DFM project. There is no expectation to participate, no penalties for declining to participate, and no special rewards for those who "help" by participating.

Withdrawing from the research

Participation in the survey is voluntary, responses will be collected anonymously, and there is no obligation to answer all questions. Anonymous data from the survey can't be traced back to the participants so there is no way to revoke a survey response once it has been submitted.

Dissemination

Data collected through this study will be used in the co-PI's master's thesis which she will submit to Gent University in Belgium (seat of her Master Degree). These data also might be used in different publications. Moreover, general findings in the form of a pamphlet and/or via a presentation will be shared with you and all participants in DFM via email between August 2021 and October 2021. The data presented in all outputs of the project will be presented in such a way as to preserve the confidentiality of all research participants.

Consent

Your answer to this survey indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

This research has been approved by the Research Ethics Board at the University of Manitoba, Fort Garry campus. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Officer at 204-474-7122 or HumanEthics@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

By completing this survey, I acknowledge that I have read and consent to the above.

9.3.2. Participant observation

Appendix 4: Participant Observation Consent Form

Study Title	**Assessing perceptions of effectiveness of three levels of communication in the Dried Fish Matter's international project on the social economy of dried fish in South and South East Asia**
Principal Investigator	Fabiana Li, Associate Professor Department of Anthropology, University of Manitoba Email: Fabiana.Li@umanitoba.ca
Co-Principal Investigator	Alexia Pigeault, Graduate Student The International Master of Science in Marine Biological Resources Email: X@umanitoba.ca (waiting for a sponsored account)
Advisors	Fabiana Li, Associate Professor Department of Anthropology, University of Manitoba Email: Fabiana.Li@umanitoba.ca
Sponsor	SSHRC

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Project Description

The study takes place for the co-PI's Master's thesis from the International Master of Science in Marine Biological Resources (IMBRSea) with whom Manitoba University is a partner. The study is titled "Assessing perceptions of effectiveness of three levels of communication in the Dried Fish Matter's international project on the social economy of dried fish in South and South East Asia." The objectives of the study are to explore the communication within the research teams participating in Dried Fish Matters (DFM), within the global project between research teams and partners, and to external users (academics, government officials, and civil society actors). Firstly, the study will identify the communication structure for the three communication levels mentioned, and the effect on research teams, partners, academics, government officials, and civil society actors. Secondly, your experiences and responses towards these levels will be identified. Finally, possible recommendations based on your experiences and advice will be examined for improvement of communication in the DFM project.

Due to the covid-19 situation, it is not possible to travel to Asia, which is why this study will be done remotely. For the "fieldwork" the co-PI will stay in France and will conduct participant

observation, a general survey, and in-depth interviews with co-investigators, collaborators, students, partner representatives, and government and non-government organizations (GO-NGO) officials.

Procedure, Location, and Time Requirement

This informed consent form is related to participant observation conducted in the study. The co-PI will observe one research team's activities and community events in formal and informal time when it is possible. Participant observation will be done in virtual meetings involving the Thematic Working Groups that have been set up in the DFM project. Thematic Working Groups are composed of different members from the various research teams involved in the project, their meetings are in English and are being recorded to post on the YouTube DFM platform. Since they involve a separate level of communication between the Research Teams and the central project office, the co-PI believes that participant observation in those meetings will be very useful. Through participant observation, the co-PI want to observe and understand your type of communication, your relationships with each other, what you say in a meeting, how you express yourself (tone, etc.), the nature of decision-making, who speaks most, the age and gender of the people who dominate the conversation, language difficulties, discussion around written texts, the quality of your interactions, and define which tools are the most suitable in an international research project on small-scale fisheries.

Participant observation will take place online when you feel comfortable, and at a suitable time between March and April 2021. The co-PI will be observing you during the entirety of the meetings, except if you express that you would like to withdraw your consent to participate in the study. You can withdraw your consent before the end of the data collection period, which will by April 30, 2021. You will also choose the meetings the co-PI will be attending, and all participants from the meeting will have to sign this consent form. If one or several persons don't want to participate in this part of the study, the co-PI will be careful to not write their sayings in her notes taking. No recorded audios and videos from informal meetings will be collected since the co-PI won't be the host of the meeting, she will only be able to take notes. Data will be saved on a password-protected computer and a password protected hard drive located in France in the co-PI's computer. Data will be kept until the co-PI's thesis defense in August 2021.

Benefits

The strongest benefits will be collective rather than individual. Direct benefits from this study could move forward the communication in DFM by improving the different communications within the research teams, within the global project between research teams and partners, and to external users. With the results, you should be able to highlight the weak and strong points of your communication and compare these results with the ones of the other teams. Also, your help could play a major role in understanding the place and role of communication in the framework of an international project specialized in small-scale fisheries.

In the long run, as the co-PI intends to draw broader conclusions from her study, there could also be benefits for other research institutes or other international research projects, improving their way of functioning, their communication with the research teams, and between all actors especially GO and NGOs, helping the community of researchers.

Risks

The study is concerned with your welfare as well as that of the community. The expected risks of participating in this study are minimal. The majority of the meetings the co-PI will attend will be recorded for sharing on the DFM YouTube channel. However, if the co-PI's participation comes to be in meetings not intended for the DFM YouTube channel, then she anticipates that the study could identify management and communication problems in the Dried Fish Matters project, and she will protect your identity. Given the potential for conflict of interest that could arise if confidentiality was not maintained, the co-PI will confidentially show the data and findings to her arm's length advisors that are NOT involved in the DFM project before sharing it with Fabiana Li, Eric Thrift, or anyone else in the DFM project. It will allow having a verification that sensitive information has sufficiently been redacted.

Recording of formal meetings will already be public in the DFM YouTube Channel. However, since the co-PI will not be the host in informal meetings, there will not be any recording made by the co-PI, she will only be able to take notes of the discussion meeting by being careful of who consented to participate. The study may recommend some tools or actions to improve communication in the project, which could – if implemented – have a direct or indirect impact on your work. In this context, the co-PI invite you to contribute honestly to the understanding of the challenges of communication in the DFM project, to guide the research positively. The co-PI will not publish or share any sensitive findings that could affect your position economically, socially, emotionally, or reputationally. Should the co-PI become aware of any situations where some risk of harm of this type is imaginable, the relevant activity will be postponed or canceled.

Confidentiality

It might be possible to obtain certain information from other online sources, such as your CVs and biographies, or comments from your colleagues. Indeed, all researchers publishing will have for example, an online CV available to anyone. Moreover, during participant observation, it might be possible that different information came across. This study will not record personal information about you that is not already part of the public record, however, if the information is important, then any identifiable indication will be removed completely from the study. Confidentiality will be maintained for all kinds of data (i.e. field notes and transcripts) with the co-PI's advisors (i.e Fabiana Li and Eric Thrift). Code names will be used in field notes, and transcription of meetings; thus no one can identify you. Redaction of the data will also be realized to ensure that identifying information is removed before making direct quotes from it. The co-PI will confidentially show the data and findings to her arm's length advisors that are NOT involved in the DFM project before sharing it with Fabiana Li, Eric Thrift, or anyone else

in the DFM project. It will allow her to have a verification that sensitive information has sufficiently been redacted. All data and transcripts will not be shared with anyone, they will stay on the co-PI's computer and hard drive and will be password protected and deleted at the end of her thesis defense in August 2021.

You will be assigned with an alphanumeric code name and this code name will be used in the transcription, therefore, no one will be able to identify you from the transcription or field notes. Again, the co-PI arm's length advisors that are NOT involved in the DFM project will verify that she has sufficiently redacted sensitive information before sharing it with anyone else.

Remuneration

You will not be compensated for participating in this study in any means: financially or as part of the DFM project. There is no expectation to participate, no penalties for declining to participate, and no special rewards for those who "help" by participating.

Withdrawing from the research

Participation in this research is entirely voluntary. Should you agree to take part in this study, you are free to withdraw your participation at any time during the participant observation's meetings. If you choose to withdraw, any participant observation data concerning you will immediately be destroyed. It will not be possible to withdraw from the study once the data collection period has ended, which will by April 30, 2021.

Dissemination

Data collected through this study will be used in the co-PI's master's thesis which she will submit to Gent University in Belgium (seat of her Master Degree). These data also might be used in different publications. Moreover, general findings in the form of a pamphlet and/or via a presentation will be shared with you and all participants in DFM via email between August 2021 and October 2021. The data presented in all outputs of the project will be presented in such a way as to preserve the confidentiality of all research participants.

Audio and video recordings will be kept until the co-PI's thesis defense in August 2021. This means that the recordings will be deleted by September 2021 at the latest. Transcripts of the meetings will be kept indefinitely since no personal identification will be in those files. Lastly, consent forms will be kept until the co-PI's thesis defense in August 2021. This means that the emails will be deleted by September 2021 at the latest.

Consent

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved

institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.
This research has been approved by the Research Ethics Board at the University of Manitoba, Fort Garry campus. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Officer at 204-474-7122 or HumanEthics@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

If you agree to each of the following, please place a checkmark in the corresponding box. If you do not agree, leave the box blank:

❑ I understand the purpose and nature of this study.

❑ I have been told about the expected risks and benefits of participating.

❑ I understand that participation in this research is voluntary and that I may withdraw my consent to participate at any time without penalty.

❑ I agree to be part of participant observation for this research project.

❑ I agree to be contacted by phone or e-mail if further information is required after the meeting.

❑ I agree to have the findings (which may include quotations) from this project published or presented in a manner that does not reveal my identity.

❑ I give permission to the researcher to take video recordings of me during the meetings, which will be deleted at the end of the thesis defense.

❑ I give permission to the researcher to take audio recordings of me during the meetings, which will be deleted at the end of the thesis defense.

_____	_____	_____
Participant code / pseudonym	Participant's signature	Date

_____	_____	_____
Co-Principal Investigator's	Signature	Date

9.3.3. Interview

Appendix 5: Interview Consent Form

Study Title	**Assessing perceptions of effectiveness of three levels of communication in the Dried Fish Matter's international project on the social economy of dried fish in South and South East Asia**
Principal Investigator	Fabiana Li, Associate Professor Department of Anthropology, University of Manitoba Email: Fabiana.Li@umanitoba.ca
Co-Principal Investigator	Alexia Pigeault, Graduate Student The International Master of Science in Marine Biological Resources Email: X@umanitoba.ca (waiting for a sponsored account)
Advisors	Fabiana Li, Associate Professor Department of Anthropology, University of Manitoba Email: Fabiana.Li@umanitoba.ca
Sponsor	SSHRC

This consent form, a copy of which will be left with you for your records and reference, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

Project Description

The study takes place for the co-PI's Master's thesis from the International Master of Science in Marine Biological Resources (IMBRSea) with whom Manitoba University is a partner. The study is titled "Assessing perceptions of effectiveness of three levels of communication in the Dried Fish Matter's international project on the social economy of dried fish in South and South East Asia." The objectives of the study are to explore the communication within the research teams participating in Dried Fish Matters (DFM), within the global project between research teams and partners, and to external users (academics, government officials, and civil society actors). Firstly, the study will identify the communication structure for the three communication levels mentioned, and the effect on research teams, partners, academics, government officials, and civil society actors. Secondly, your experiences and responses towards these levels will be identified. Finally, possible recommendations based on your experiences and advice will be examined for improvement of communication in the DFM project.

Due to the covid-19 situation, it is not possible to travel to Asia, which is why this study will be done remotely. For the "fieldwork" the co-PI will stay in France and will conduct participant observation, a general survey, and in-depth interviews with co-investigators, collaborators, students, partner representatives, and government and non-government organizations (GO-NGO) officials.

Procedure, Location, and Time Requirement

This consent form is related to the in-depth interviews that the co-PI will do with you. Your responses will help look at the factors affecting positively or negatively the communication in DFM. Interviews will be done remotely via Zoom, Skype, or Teams depending on your preferences. The co-PI will ask different questions related to the general information about DFM; your origin and cultural background; your professional background; your position inside DFM; your thoughts about management inside DFM; Research group/institutions / NGO / GO; social factors; your personality; the covid situation; the general communication; the communication within partner organizations and the six-country project teams; the external communication; and your future perspectives. Given the diversity of topics mentioned above, the co-PI will not be discussing the entirety of it with you, and the choice concerning the topics discussed will be random. During the interviews, and if you agree to it, the discussion will be audio and video recorded. This will allow verifying different information in case of uncertainties.

The interview discussions will take place online when you feel comfortable, and at a suitable time from March 2021 to April 2021 included. The interviews will take 60-90 minutes each. It will be possible to have one interview or multiple ones depending on your preferences. The co-PI will always ask your preferences by email after your signature on this consent form.

The recorded audios and videos will be stored on a password-protected computer and a password protected hard drive located in France in the co-PI computer. Audio and video recordings will be kept until the co-PI thesis defense in August 2021. This means that the recordings will be deleted by September 2021 at the latest. The co-PI believe that each topic mentioned above are relevant in term of communication and that they have a direct or sometimes indirect impact on communication. Overall, in-depths interviews will help to look at the factors playing a role in communication in DFM and more generally in international research projects.

Recording devices

All interviews will be done online via Zoom, Skype, or Teams depending on your preferences. Recording of the interviews will be done through these applications.

Benefits

The strongest benefits will be collective rather than individual. Direct benefits from this study could move forward the communication in DFM by improving the different communications

within the research teams, within the global project between research teams and partners, and to external users. With the results, you should be able to highlight the weak and strong points of your communication and compare these results with the ones of the other teams. Also, your help could play a major role in understanding the place and role of communication in the framework of an international project specialized in small-scale fisheries.

In the long run, as the co-PI intends to draw broader conclusions from her study, there could also be benefits for other research institutes or other international research projects, improving their way of functioning, their communication with the research teams, and between all actors especially GO and NGOs, helping the community of researchers.

Risks

The study is concerned with your welfare as well as that of the community. The expected risks of participating in this study are minimal. Although the co-PI anticipates that the study could identify management and communication problems in the Dried Fish Matters project, the co-PI will not share your identity with anyone, including with her project advisors given the potential for conflict of interest that could arise if confidentiality was not maintained. This study will be completely confidential (see the part on anonymity). The co-PI will confidentially show the data and findings to her arm's length advisors that are NOT involved in the DFM project before sharing it with Fabiana Li, Eric Thrift, or anyone else in the DFM project. It will allow having a verification that sensitive information has sufficiently been redacted.

The study may recommend some tools or actions to improve communication in the project, which could – if implemented – have a direct or indirect impact on your work. In this context, the co-PI invites you to contribute honestly to the understanding of the challenges of communication in the DFM project, to guide the research positively. The co-PI will not publish or share any sensitive findings that could affect your position socially, emotionally, or reputationally. Should she become aware of any situations where some risk of harm of this type is imaginable, the relevant activity will be postponed or canceled.

Confidentiality

Confidentiality will be maintained for all kinds of data i.e. field notes, questionnaires, audio files, video files, communication with the co-PI's advisors (i.e Fabiana Li and Eric Thrift), and transcription of the interviews. Code names will be used in field notes, and transcription of interviews; thus no one can identify you. Redaction of the data will also be realized to ensure that identifying information is removed before making direct quotes from it. The co-PI will confidentially show the data and findings to her arm's length advisors that are NOT involved in the DFM project before sharing it with Fabiana Li, Eric Thrift, or anyone else in the DFM project. It will allow her to have a verification that sensitive information has sufficiently been redacted. Recorded of the interviews including audio and video will not be shared with anyone,

they will stay on the co-PI's computer and hard drive and will be password protected and deleted at the end of her thesis defense in August 2021.

You will be assigned with an alphanumeric code name and this code name will be used in the transcription, therefore, no one will be able to identify you from the transcription or field notes. Again, the co-PI arm's length advisors that are NOT involved in the DFM project will verify that she has sufficiently redacted sensitive information before sharing it with anyone else. Transcriptions of the interviews and recorded interviews will be stored in a password secured file on the co-PI's computer and hard drive only. All recorded interviews will be destroyed after the defense of the co-PI's thesis in August 2021.

Remuneration

You will not be compensated for participating in this study in any means: financially or as part of the DFM project. There is no expectation to participate, no penalties for declining to participate, and no special rewards for those who "help" by participating.

Withdrawing from the research

Participation in this research is entirely voluntary. Should you agree to take part in this study, you are free to withdraw your participation at any time during the interview. If you choose to withdraw, any interview data or recordings concerning you will immediately be destroyed. It will not be possible to withdraw from the study once the data collection period has ended, which will by April 30, 2021.

Dissemination

Data collected through this study will be used in the co-PI's master's thesis which she will submit to Gent University in Belgium (seat of her Master Degree). These data also might be used in different publications. Moreover, general findings in the form of a pamphlet and/or via a presentation will be shared with you and all participants in DFM via email between August 2021 and October 2021. The data presented in all outputs of the project will be presented in such a way as to preserve the confidentiality of all research participants.

Audio and video recordings will be kept until the co-PI's thesis defense in August 2021. This means that the recordings will be deleted by September 2021 at the latest. Transcripts of the interviews will be kept indefinitely since no personal identification will be in those files. Lastly, consent forms will be kept until the co-PI's thesis defense in August 2021. This means that the emails will be deleted by September 2021 at the latest.

Consent

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the researchers, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time, and /or refrain from answering any questions you prefer to omit, without prejudice or consequence. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation.

The University of Manitoba may look at your research records to see that the research is being done in a safe and proper way.

This research has been approved by the Research Ethics Board at the University of Manitoba, Fort Garry campus. If you have any concerns or complaints about this project you may contact any of the above-named persons or the Human Ethics Officer at 204-474-7122 or HumanEthics@umanitoba.ca. A copy of this consent form has been given to you to keep for your records and reference.

If you agree to each of the following, please place a checkmark in the corresponding box. If you do not agree, leave the box blank:

❑ I understand the purpose and nature of this study.

❑ I have been told about the expected risks and benefits of participating.

❑ I understand that participation in this research is voluntary and that I may withdraw my consent to participate at any time without penalty.

❑ I agree to be interviewed for this research project.

❑ I agree to have the findings (which may include quotations) from this project published or presented in a manner that does not reveal my identity.

❑ I give permission to the researcher to take video recordings of me during the interviews, which will be deleted at the end of the thesis defense.

❑ I give permission to the researcher to take audio recordings of me during the interviews, which will be deleted at the end of the thesis defense.

Please check the following box ONLY if you wish to be identified by name. By default, you will be identified with a pseudonym.

❑ I wish to be identified as: _____

_____	_____	_____
Participant code / pseudonym	Participant's signature	Date

_____	_____
Co-Principal Investigator's Signature	Date

9.4. Table 2: Questions for survey

Questions for Survey
1. How do you identify your primary organizational affiliation? (Type of organization to which you currently belong)
☐ Academic organization – faculty member/researcher
☐ Academic organization – student
☐ Non-governmental organization (NGO)
☐ Government organization or agency
2. What is your gender identity?
☐ Woman
☐ Man
☐ Something else, I identify myself as _____
☐ I prefer not to answer
3. Do you think social relationships between colleagues are important to have an effective communication? Social relationships refer to a shared history of interaction and informal opportunities to deepen a relationship.
☐ Very important
☐ Important
☐ Not important
☐ Unimportant
☐ Very unimportant
☐ I don't know

4. Do you think social media (i.e. Facebook, Twitter, Instagram, etc) are important for communication in international research projects?

- □ Very important
- □ Important
- □ Not important
- □ Unimportant
- □ Very unimportant
- □ I don't know

5. From your perception, how well is managed the communication in general in DFM's project?

- □ Very well
- □ Well
- □ Not well
- □ Unwell
- □ Very unwell
- □ I don't know

6. Did you face management and communication difficulties in DFM?

- □ Always
- □ Often
- □ Sometimes
- □ Rarely
- □ Never
- □ I don't know

7. Has the project's communication changed with COVID-19?

- □ Severely
- □ Moderately
- □ Mildly
- □ Very Mildly
- □ None
- □ I don't know

8. Do you think the communication within your research team is effective?

8.1 In general?

- □ Strongly Agree
- □ Agree
- □ Neither Agree nor Disagree
- □ Disagree
- □ Strongly Disagree

- Not applicable

8.2 For building social relationships? Social relationships refer to a shared history of interaction and informal opportunities to deepen a relationship

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable

8.3 For building understanding?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable

8.4 For collective work?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable

9. Do you think the communication within the overall DFM project is effective?

9.1 In general?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable

9.2 For conducting meetings and webinars?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree

- Strongly Disagree
- Not applicable

9.3 For conducting research activities and workshops?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable

9.4 For sharing information?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable

10. Do you think the communication toward external users (i.e international development practitioners like government officials and civil society actors) is effective?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable
- Not involved in external communication

10.2 For building understanding?

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree
- Not applicable
- Not involved in external communication

10.3 For knowledge dissemination?

- Strongly Agree

• Agree
• Neither Agree nor Disagree
• Disagree
• Strongly Disagree
• Not applicable
• Not involved in external communication
10.4 With regard to the communication channels used (zoom meetings, newsletters, Zotero library, etc)?
□ Strongly Agree
□ Agree
□ Neither Agree nor Disagree
□ Disagree
□ Strongly Disagree
□ Not applicable
□ Not involved in external communication

9.5. Table 3: Questions for interview

Table 3. Questions for interviews
Q1. Can you tell me about your background: Where are you from? Where are you working? Living? And What languages do you speak?
Q2. What is your background in terms of education and current employment?
Q3. What is your role in the project?
Q4. How did you become involved within DFM?
Q5. Do you think there are challenges and difficulties related to language?
Q6. Is there a difference in social relationships between the persons speaking the same native language and those who speak other languages?
Q7. As English is the most used language worldwide, do you think English is sufficient to create bonds between people (since social relationships between people may impact communication effectiveness in projects)?
Q8. How would you describe the social relationships within your research team and within DFM? For example, is it strictly professional relationship or do you consider your colleagues as friends?
Q9. Do you think there are challenges for a scholar from the Global South to work in a multinational project such as DFM?
Q10. Do you think culture plays a role in communication within the DFM project?
Q11. Have you experienced any difficulties or challenges in your interactions in DFM?
Q12. Have you been or are you currently involved in other international projects? (Aside from DFM)
Q13. What do you think are the main challenges to working on a collaborative and international project?
Q14. Do you think there is a hierarchy in your research team or in the project as a whole?
Q15. Do you think hierarchy can play a role in communication effectiveness?
Q16. Have there been any management issues since the beginning of the project that gave you cause for concern?

Q17. Personality traits
a. Do you consider yourself more a good team player or an individualist person?
b. Do you like teaching?
c. Do you consider yourself punctual?
d. Are you more introverted or extroverted?
e. Do you consider yourself empathetic?
f. Are you more talktative or quiet?
Q18. Do you think personality traits are important in communication?
Q19. What has been your experience and how has it been impacting the communication flow?
Q20. Could you define what is communication for you and what is effective communication?
Q21. From your perception and experience, do you think there are differences in accessing information in DFM? If yes, why do they exist?
Q22. How effectively do you think communications are handled within DFM?
Q23. Do you think communications from DFM Central are clear?
Q24. What kind of communication do you have with other partners? What is your team doing to communicate with other partners?
Q25. How do you feel about the number of meetings you have with the other teams and partners?
Q26. How do you plan to communicate your research findings to an external audience?
Q27. What do you think is the best way to communicate your research to external public? Do you think social media would be interesting?
Q28. What do you think of the challenges in your country in terms of dissemination and sharing of the findings of your research?
Q29. Do you think the general public would be interested in the results of DFM's project?
Q30. How could DFM's external communications be most effective?
Q31. What do you hope the research will contribute? What do you think will be the effects of your research findings on the SSF community?
Q32. What opportunities and challenges does a big international project like DFM face in terms of communications?
Q33. Do you have any ideas or suggestions for monitoring and learning exercises that can be incorporated at various stages of the project?
Q34. Based on your experience in DFM so far, what improvements could be made in project communication to increase the effectiveness of project process?
Q35. Are there any lessons from your past experiences that you think this project can learn from?
Q36. Do you like working as part of DFM? And, how do you hope to benefit from your association with DFM?