

**Research and Development Scientists' Construction of Working Online:
A Phenomenological Study of Virtual Communication
During the COVID 19 Pandemic**

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**FACULTY OF INFORMATION AND COMMUNICATION STUDIES
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**UNIVERSITY OF THE PHILIPPINES
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DOCTOR OF COMMUNICATION PROGRAM

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ONLINE: A PHENOMENOLOGICAL STUDY OF VIRTUAL COMMUNICATION
DURING THE COVID 19 PANDEMIC**

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MARK GUEL B. LACANILAO

Acceptance Page

This dissertation titled “RESEARCH AND DEVELOPMENT SCIENTISTS' CONSTRUCTION OF WORKING ONLINE: A PHENOMENOLOGICAL STUDY OF VIRTUAL COMMUNICATION DURING THE COVID 19 PANDEMIC” is hereby accepted by the Faculty of Information and Communication Studies, U.P. Open University, in partial fulfillment of the requirements for the degree Doctor of Communication (DComm).

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BIOGRAPHICAL SKETCH

Mark Guel B. Lacanilao was born in Nueva Ecija, Philippines. He earned his degree in Bachelor of Science in Biology in 2006 from the Central Luzon State University. In 2017, he completed his Master of Environment and Natural Resources Management at the University of the Philippines-Open University while working with Procter & Gamble.

He has extensive experience in research and development, quality control, quality assurance, and laboratory analyses. As of this writing, he is working at the United Chemicals Company, the R&D wing of Saudi Industrial Detergents Company, Saudi Detergents Powder Factory, and Saudi Aerosols Factory. He also worked at a pharmaceutical company in Qatar for two years, and almost seven years with Procter and Gamble, Saudi Arabia as microbiologist. Prior venturing abroad, he also worked for about 2 years in the food manufacturing company in the Philippines.

In research, he has also done several scientific papers in the Philippines, Saudi Arabia, Qatar with focus on microbial source tracking, marine biodiversity conservation, climate change mitigation, fishery management system and marine protected area restoration.

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"Trust in the Lord with all your heart and lean not on your understanding; in all your ways acknowledge him, and he will make your paths straight"

-Proverbs 3:5-6

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DEDICATION

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ABSTRACT

LACANILAO, MARK GUEL B., University of the Philippines Open University, August 2021, Research and Development Scientists' Construction of Working Online: A Phenomenological Study of Virtual Communication During the COVID 19 Pandemic

Adviser: **Dr. Benjamina Paula G. Flor**

Applying transcendental phenomenology, I explored my experience working in a Research and Development organization and made sense of how scientists could carry out a laboratory-based job yet working from home. Through zoom interviews, the lived experience of Research and Development scientists was reconstructed to discover how working from home is reflected in communication. Making sense of the lived experience of R&D scientists, the concept of communication resiliency emerged. My inquiry revealed that communication resiliency in R&D organizations showed the inclination to adopt new methods of communicating. Resilient communication strategy during the pandemic allows to perceive threats, maintain an acceptable level of operation and to arrive at decisions needed by the R&D scientists through digital technology that enabled the teams to achieve their goals. R&D scientists showcased the boldness and courage to work through obstacles, explore, and learn by imbibing the reality of the new approach to move forward and reach expected outcomes through virtual communication. R&D scientists needed to adapt according to the changing environment regardless of the limitations to ensure that research and development continuously serve its functions. Hence, communication resiliency refers to the collective and assertive efforts to continuously fulfil task, ability to stay connected to other people delivering a common goal and create new opportunities for flexibility and productivity despite the challenges of communicating online.

Keywords: Communication Resiliency, Working from Home, Digital Technology, Online Workspaces, Flexibility and Productivity, Working on Site vs Working Online

CHAPTER I

INTRODUCTION

Rationale and Background of the Research

Research and Development organizations are composed of scientists with various specializations who create new or improved products and processes based on existing goods and technologies (Hall, 2006). Thus, for them to work together, consistent, and effective communication is vital. The Science Council Organization (2021) defined 'scientist' as someone who systematically gathers and uses research and evidence to make hypotheses and test them to gain and share understanding and knowledge.

However, due to the threat of the global pandemic, lockdowns have been enforced to limit physical interactions. It has drastically changed how organizations operate; challenging the practicability of traditional workspaces. Thus, many organizations have adopted virtual communication to continue their operations. What then are the experiences, views, and responses to virtual communication of the members of Research and Development organizations given being the sole means of interaction? Being part of a Research and Development organization stimulated my interest to find out the lived experience that scientists have undergone due to the rapid and sudden change of the workplace set-up from working on-site to working online. Looking at this from a communication perspective, I initially extracted significant descriptions of the phenomena associated with the virtual communication of work from home, work online, and conduct a research online in the context of the pandemic.

I thought of using Phenomenology to understand the lived experience of the R&D scientists. The term 'phenomenology' refers to the intentional analysis of everyday life from the standpoint of the person who is living it and places strong emphasis on people's interpretation of their own subjective experience (Griffin, 2000). Constructed from *phaino*, phenomenon means to bring to light, to place in brightness, to show itself, the totality of what lies before us in the light of day (Heidegger, 1977). I explored transcendental phenomenology in conceptualizing the phenomenon of working online through virtual communication without preconceived notions or biases. I derived the descriptions and themes from qualitative transcendental phenomenological analysis of how R&D scientists shared their stories of delivering task and operation in R&D organizations which I explored in a virtual communication setting.

Husserl's transcendental phenomenology guided the construction of a design for obtaining and collecting data that explicates themes, meanings, and essences of human experience (Moustakas, 1994). Furthermore, the experiences of R&D scientists' shifting towards virtual interaction has changed the way humans and their organizations' function. Those who shall adopt and adjust are given the chance to continue, and possibly even thrive, while those who do not shall stagnate or cease operations or risk the health of their staff. This study worked on the philosophical assumption that communication is the process of creating and understanding the meanings behind the actions that will help in explaining the phenomenon of virtual communication.

Digital technologies are transforming how businesses operate by facilitating tasks that rely intensively on connectivity, information usage, prediction, and collaboration (D'Souza & Williams, 2017). According to Kirkman et al. (2002), there are five challenges

that organizations can expect to encounter in establishing, maintaining, and supporting virtual teams, e.g., building trust, cohesion, team identity, and overcoming isolation. Organizational actors (leaders and members) of virtual teams encounter certain predicaments with respect to interpersonal skills and technical abilities to perform virtually, and in assessing the performance of individuals and teams working in virtual sphere. Therefore, the study aimed to explore the lived experience of R&D scientists as they continue to work online and communicate virtually amidst a global pandemic in performing their activities in the organization. This is in line with a few earlier studies showing evidence that strategic teams work on multiple strategies at the same time and communicate in virtual and face-to-face environments (Weimann, et al., 2010).

I am interested on what is considered the effective way and fruitful communication among R&D scientists of various academic backgrounds and specializations given the limitation of virtual communication and cooperation. Hubert- Johnson (1999) argued that communication competence is knowledge about appropriate and effective communication behaviors, development of a repertoire of skills that encompass both appropriate and effective means of communicating, and motivation to operate in ways that are viewed as both appropriate and effective by interactants. In addition, strategic communication plays a key part in ensuring that people do the right thing instead of only doing things in the right way by carefully managing the internal and external relationship in supporting organizational growth (Zerfass and Huck, 2007).

Moreover, I explored the use of phenomenological tradition as research method in understanding and exploring the grounds of lived experience and consciousness within the group of scientifically inclined actors in the virtual sphere of R&D organizations. Thus,

this can accelerate further understanding of communication practices used, and in what ways to improve communication skills when digital revolution transforms the workplace.

According to Connaughton and Daly (2004), due to diversity and increased of communication barriers, leadership plays a central role in the success of effective virtual teams. However, communication among colleagues and fellow employees are carried out to disseminate and retrieve information timely and efficiently, coordinate and complete job tasks, for decision making and finally to minimize or solve conflicts in the organization (Ayub, et.al., 2014). This involves focus on narratives of documented dialogical semi-structured interviews (open-ended questions) of lived experience of participants who shared their stories and how I put meaning in their shared narratives. This study postulates that communication transpires in organization “resiliently” in which curating and interpreting meanings behind the actions will help in understanding and theorizing virtual communication in an organization.

Being a member of an R&D organization, where I am responsible for developing, innovating, and formulating various products such as pharmaceutical drugs and excipients, personal care, fabric and home care, other various products, it became of prime interest to me to explore the experiences of other R&D scientists during the COVID-19 pandemic given the drastic transition from face-to-face to virtual communication. The involvement of various R&D organizations shall facilitate the collaboration and project delivery to achieve its successful operation. Thus, it is part of organizational communication to come up with specific conclusions and suggestions to solve problems posed by virtual communication, to maximize R&D efficiency and productivity through monitoring, assessing, and challenging the conventional analytical methods. The

knowledge communicated will endure different techniques of shadowing procedures of monitoring and experiments. Furthermore, my involvement in "Technology Transfer," by transferring knowhow and adopting it to the manufacturing capacity into the organizational systems by research collaboration with other international and local research organizations leads to access broader knowledge, perceptions, and notions enabling me to see the observed patterns and trends of R&D organizations using virtual communication.

Through the years, we have conducted forums, conferences and knowledge sharing to people in a transactive way as communication constitutes our R&D organization to arrive at a common goal. Demonstrating means of understanding in building strategies for success represents the actual conversation necessary to constitute the organization; thus, the logical inference that starts on observation to decide will enhance our organizational process elevating to success.

As I have observed, R&D organizations and stakeholders had different ways of understanding, interpreting, reacting, deciding and taking actions when delivering a project or executing activities in the traditional face-to-face communication. However, due to the unprecedented global pandemic, the limitations imposed now to traditional communication led us to working in isolation to deliver projects and execute tasks. Nowadays, scientific information is delivered and responded to virtually. This is what I call a "resilient virtual interactive and transactive science communication," wherein transfer, as well as exchange of information is assumed to take place online. As I have observed in virtual communication, significant negative effects on the quantity and quality of information sharing within the technological functions and problem of ineffective

communication arose that led to project failure. I thought of looking at the process and transformation of communication from a theoretical perspective with the help of my vast experience and network in R&D.

The data gathered in this study are expected to shed light on how communication had transpired, as perceived by the members of R&D, in an almost, if not purely, virtual environment. If proven to have merit, the collected data could serve as reference to more studies that aim to establish the relationships of digital technology, virtual workspaces, and physical isolation in communication strategies and construction of working online. Due to the nature of the study which focused on the importance of the experiences, consciousness and viewpoints of the subjects; banked on the human aspect of working in R&D organizations in a global pandemic where physical isolation became the norm and working remotely was the only alternative. How was the experience of virtual communication be viewed? Has cooperation among the scientists changed? How did the scientists establish the boundaries between home and work? How was the mental health of the workers? The narratives provided by the participants also provided some insights for scientific exploration on various themes and topics. Finally, the results of this study could help the R&D organizations and similar groups in improving productivity, success in their communication, and handling similar circumstances based on the experiences of R&D scientists in the virtual sphere.

Problem Statement

Human relationships draw its power from the proximity of the individuals, but because virtual team members have limited personal interaction this creates a myriad of

issues (Savu, 2019). The connection between the level of communication and performance of teams, be it virtual or traditional, has been proven in the past but less research was done on how the different ways of communication available comparing and contributing to the overall team goal, achievement, trust, comprehension, or effectiveness (Juneja, 2018, Magnus et.al., 2009). R&D innovation pipeline or supply of knowledge that can result in new products and technologies is critically important (McKenna, 2014).

In the study of Souder (1987), 20.5 percent of innovation projects suffered mild disharmony (lack of interaction, lack of communication, too-good friends' syndrome), while 38.7 percent endured states of severe disharmony (lack of appreciation, distrust). Sayu (2019) stated that for a virtual team to be productive, it is important to overcome the cultural differences, communication barriers, power struggles and conflict to build trust, collaboration, and commitment among the individuals. By using the right strategies, tools and processes, organizations can benefit greatly from this new age trend of virtual teams (Prutiano, 2000, Chiru, 2009).

In another study, 90 percent of managers (Grenny, et.al., 2008) believed communication problems influence and cause organizational issues. With respect to project centralization, decision making, information dissemination is expected to have a significant negative effect on the quantity and quality of information sharing within the technological functions, and problem of ineffective communication within these organizations has been recognized (Moenaert, et. al, 1994). The dilemma of disruption or failure in the process of communication permits the identification of barriers, exploration of the true meaning of impoverish communication and the changing aspects that impede communication from the angle of virtual sphere; hence, may potentially increase team

performance by preventing the feeling of isolation and build trust among the members of the organization.

Significance of the Research

In the face of a global pandemic, physical contact and proximity to others have become a health risk and commuting to the workplace is difficult if not outright prohibited due to the enforcement of lockdowns and precautionary measures.

The primary beneficiaries of this study are those members of R&D organizations who might find communicating virtually to be arduous, as communication strategy is imperative in delivering results. Thus, it is important to see how the virtual realm manifested in actions and practices of R&D scientists during the COVID-19 pandemic in relation to communication construction of scientists in R&D organizations. From the personal accounts of the participants, we can theorize new ways for R&D organizations to execute their projects and activities successfully amidst situations involving physical restrictions.

Despite virtual communication advancing now more than ever, it is still not as preferable compared to the conventional face to face method of communication. What makes the latter still very much preferred than the former? What are the perceptions, attitudes, and notions of R&D on the two means of communication? The data from the study is beneficial as it can transform the policies and attitude of R&D organizations towards virtual communication. The new medium of communication brings with it so many things that were never considered before, and by exploring the lived experience of R&D

organizations currently engaged in virtual communication, the study can provide some guidance on how people can effectively communicate in the virtual space, so that in the event that this set-up becomes permanent, progress in the organization will not be hindered.

The information uncovered by this study will help members of R&D organizations of all levels, from management, to execute the adaption and implementation of virtual communication; to the laboratory technician and field workers in order to effectively cooperate, communicate, and share gathered data through virtual communications.

Purpose of Research

The goal of this transcendental phenomenological research was to explore the lived experience of scientists in R&D organizations in virtual interactions and what it means to an organized collective communicative pursuit that transpired. Due to the unprecedented exponential growth in the usage of digital technology and its platforms brought about by the pandemic, there has been an increased adaption of the “virtual workplace.” This research dealt to identify how organizations transformed into virtual workplace; hence, the exploratory study of the lived experience of R&D scientists to theorize new dimension of organizational communication in the construction of working virtually; considering the new normal set-up of communication among members of R&D organizations that disregard their geographical location, a huge factor before the pandemic. This study also aimed to confirm, from the interpretations of the communications of R&D scientists, if they have encountered any adversity.

Understanding this phenomenon will open new avenues to hypothesize new approaches to communication and develop new strategies to make R&D organizations successful in virtual communication.

Exploring the lived experience of scientists in R&D organizations will shed light and enhance communication/interaction if virtual interaction becomes the norm of communication in the workplace. Interviewing individual scientists in the R&D organizations is one way to understand the existing communication barriers, and from that, provides an insight to different forms of virtual communications that affect performance. Semi-structured interviews with focus on the lived experience of participants using virtual communication on the sharing of management information, project execution, the sharing of information to team members, and the strategic direction of the organization on the communication strategy for R&D. This study will provide information considerably valued in the R&D organization for business, industry, and research that requires new and/or different communication skills or new and/or communication strategies to improve team performance albeit the adaption of virtual workplaces. Furthermore, results can contribute to the existing literature on virtual communication across phenomenological tradition. The study could provide new insights on how to effectively communicate virtually despite the physical nature of research and development organizations.

Research Questions

In this work, I studied and explored the experiences of R&D scientists during the COVID 19 pandemic. I was interested in describing the phenomena of virtual communication, work from home, work online, and conduct a research online in the context of the pandemic. The goal of the study was to take on a phenomenological approach to understanding the lived experience of R&D scientists in using virtual communication while doing a very technical, physical job. In general, the study attempted to answer the question: how do R&D scientists construe working online through virtual communication during the COVID 19 pandemic?

Specifically, the study sought answers to the following research questions:

1. How do R&D scientists view virtual communication in the context of working online?
2. How do these views of virtual communication define their actions of working online? and
3. What are the contextual features of the R&D scientists' lived experience in working online during the pandemic?

Research Objectives

In general, the study aimed explain how R&D scientists construe working online through virtual communication during the COVID 19 pandemic.

Specifically, the study aimed to:

1. Describe how R&D scientists view virtual communication in the context of working online;
2. Explain how these views of virtual communication define their actions of working online; and
3. Analyze the contextual features of the R&D scientists' lived experience in working online during the pandemic?

Research Framework

Phenomenological Tradition of Communication. In the phenomenological tradition of communication theory, communication is theorized as experience of self and others through dialogue (Craig, 1999). Phenomenology as a philosophy refers to the intentional analysis of everyday life from the standpoint of the person who is living it and places strong emphasis on people's interpretation of their own subjective experience (Griffin, 2000). In this tradition, an individual's story becomes more important and authoritative because it is one's own direct experience. Phenomenology has extensively been ascribed to Husserl (1913), who stated that humans extract meaning from the world through personal experience that could provide deeper insight into the rich meaning of everyday phenomena.

The lived experience of the various scientists of the R&D organizations of interacting, collaborating, communicating, and cooperating with one another in the virtual space, were used as the primary form of data that were analyzed in this study.

Communication is the essential dialogue through which the world and other people can be directly and consciously experienced and interpreted (Craig, 1999). Phenomenology is about understanding other peoples' experiences, more specifically it is the understanding of phenomena as it appears to and experienced by others (Farrell, 2020). Specifically, for this study, Transcendental Phenomenology was used. With the utilization of this phenomenological tradition, the phenomenon of communicating solely through virtual means explored the experiences of the R&D scientists. The path of "Transcendental Phenomenology", leading to knowledge in the absolute sense, is "necessarily the path of universal self-knowledge—first monadic and then intermonadic" (Husserl, 1977). It is a rational path—knowledge that emerges from a transcendental or pure ego, a being who is exposed to understand what is, just as it is, and to elucidate what is in its own terms (Moustakas, 1994).

It is the scientists of the R&D organizations that communicated virtually among themselves that the data from their experiences, views, and ideas were gathered, organized, analyzed, and interpreted, so that the phenomenon of virtual communication could be understood, and theorize new communication dimensions within the context of R&D and similar organizations. Thus, the data has been observed and analyzed as is without any preconceived notions and assumptions. Communication theorized in this way explains the interplay of identity and difference in authentic human relationships and cultivates communication practices that enable and sustain authentic relationship (Craig, 1999).

Interpretive School of Organizational Communication. Through interpretative and symbolic acts, this research described how people give meaning and acquire information to their experiences at the same time enhancing the sense of who they are as member of the organization of discourse and knowledge within the context grounded in linguistically mediated sense of being-in-the-world. "Making a conversation is an act of creation", as such activity is not just encounter by individuals, but a locus of organizational communication (Taylor & Cohen, 2006). Narratives can selectively distill a complex jumble of otherwise ambiguous and contradictory activities, pronouncement, and impressions into a simplified and relatively coherent portrait (Ashforth and Humphrey, 1997). Furthermore, "Interpretative School" makes use of the inductive approach through structural dimensions of the organizational communication which opens the avenue through the research approach of observations and analysis to build pattern for the sustenance of theories (Poole & McPhee, 2005).

Discourse of Understanding. The research posits into the "Discourse of Understanding" since it critiques the scarcity of an ethos embedded in technical, contributory rationality and measures of effectiveness. Discourse of understanding involves building meaning from extended segments of language, such as novels, news articles, conversations, textbooks, and other everyday materials (Sparks, 2011). According to Sha et al. (1986), a discourse of understanding system worthy of that name should not only deal correctly with what is true or false in the world according to its input text, but should, at the same time, be able to distinguish between more and less important information between what is crucial and what is mere background. The discourse of understanding has been utilized

in this research since it attempted to understand the existing communication experiences, communication strategies and how the scientist adapt into the virtual workplace by their stories, to understand their views and consensus theory of truth and develop an understanding that posits the interpretative reality of organizational communication when it transforms into virtual realm. According to Mumby (1997), discourse of understanding is not a rejection of enlightenment thought *tout court* but instead is an attempt to reclaim reason, truth, and rationality from the hegemony of scientism and technical, instrumental reasoning.

CHAPTER II

REVIEW OF RELATED LITERATURE

Communication is Constitutive of Organization

"There is no organization if there is no communication." Communication is the exchange of knowledge, ideas, experience and opinion among the members of the organization in which any communication occurs is the phenomenon that exists in the identified organization (Jablin & Putnam, 2001). Tompkins (as cited in Jablin and Putnam, 2001) suggested that organization might be viewed as "systems of interacting individuals" that constitute an organization. In this context, it is imperative that participants be actively involved in communicating with the members since it is through communication of information (knowledge sharing), instructions among others are transferred in the organization which may facilitate its overall success. However, communication by shared posts, opinions, and knowledge bind members of an organization in which the interaction with one another ascends into learning, performing, and delivering essential functions that constitute as communication. According to Mackey (2017), when an organization is communicating at different settings and if no longer on a verbal face-to-face basis still require effective communication, collaboration, and feedback. Communicating with emotion, i.e., affective communication, plays an important role in inducing empathy and enhancing human bonding (Fisher & Manstead, 2016). Affective communication, communicating with emotion, during face-to-face communication is critical for social interaction (Takashi, et al., 2020) how much more if it were virtually.

Organizational communication offered via an online system, emails, zoom, text messaging, etc. a priori provide for employees to head and respond back to task as a responsibility. Deetz (2001) typified as a system of data retrieval (reports and results of analysis by employees) and information technologies (online conferencing system, mobile, cloud computing, social media) since information can be treated as fixed truth (objective ontology). Communication within the organization in effect becomes commodities and can be diminished to a transmission/retrieval process. The requirement of an organization to be successful, effective communication is required to foster a good working relationship among employees, which can in turn improve morale and productivity. Communication is functional, a tool to transmit information among employees; thus, organizational communication is a flow of information in the organization. Consequently, communication is reduced to intentional act of altering another's behavior, strategic communication design and supervision/subordinate interaction, oriented around what Deetz (2001) terms as being advocate by a management culture (overall organizational regulation), through their conception of culture as an object to be strategically deployed. The organization is therefore a "container" where the employees are in this container where they "communicate". "People are already in an organization and that is where they communicate" Taylor (1995) described, quoting Smith (1992). Such function encompasses each element on their respective role within the communication continuum, thus "messages are active part of the production of meaning, perceptions, and feelings" (Deetz, 2001).

Variation on Background and Culture on Communication

When culturally diverse individuals communicate in the cultured spaces of the Internet, there is great potential for misunderstanding, miscommunication and mismatch of values and expectations (Macfadyen, et. al., 2004). According to Macnamara (2004), different languages and cultures have different contexts and shared values. Meaning that messages sent from one cultural context to another may be interpreted differently from how it was initially intended, if we are not communicating the messages we intend, then our method of communicating may be efficient, but it is certainly not effective (Leonard, et. al., 2011). Face-to-face communication has complexity in that it invokes the participants' culture and personal awareness while partaking in the exchange of ideas and views (Lyer & Jeyashree, 2017). According to the study of Bordi et al. (2018) that tried to analyze the cultural styles of communication on a digital medium and what it entails, they made two general categorizations called the high context and low context communication styles. High context is characterized by ambiguity, and knowledge of the physical and cultural context of the communication process while low context puts more emphasis on the message itself and is more direct wherein there are glaring differences from the styles such as the amount of verbal output. With "high context" the message is tied within the process of communication rather than the literal message then the need to use words to explain is low. On the other hand, "low context" will convey more information through words therefore resulting in longer messages. The results of the study by Bordi, et. al. (2018) has concluded that cultural difference of high and low context communication styles does carry over the digital medium of communication.

Digital Technology Influence on Communication

The adoption of digital communication has been preferred over the old ways of communication, due to the increasing demand of huge data transmissions made viable through digital mediums (Mohammed, 2016). With the advent of online communication, chatting and sending mails have been greatly influenced. Reproduction of documents were rather difficult and so was mailing them which required the purchase of postage stamps. Telegrams were limited by number of characters and costs. Now, with the Internet and computers simplifying most of the process while sending them to their intended destination almost instantaneously regardless of distance, thereby improving both the time and cost of communication (Adhadaq, 2017). The infrastructure of the creation and trading of products and services are mostly compromised by digitized data, information, knowledge, and communication technologies. Thus, hastening the various process while also improving quality as compared to previous infrastructure. It enabled new methods to "control, coordination, and collaboration on activities" at a lower cost according to the "law of diminishing returns". As digital resources are becoming more normalized, factors such as location, time, and borders are no longer as important thanks to the new "invisible electronic space" (Cascio & Montealegre, 2016). By the data collected from 2017 to 2018 in the U.S. around 36 million workers have occasionally worked from home and around 15 percent of workers have days where they worked at home only. A percentage of the workers who worked remotely at home were given flexibility on their schedules on when they could start or stop working, a trend more common on those working for the private sector (U.S. Labor Statistics, 2019).

Technological Influence on Organizational Communication

In the study of Bordi, et al. (2018) that examined participants using mostly digital communication to perform workshop discussions with one another to relay their opinions, ideas, and experiences on the efficacy of using digital mediums for communication in the workplace, noticed that by using digital communication made relaying messages and information easier increasing the amount of communication among members. Also, it encouraged members to frequently ask one another for information rather than searching for it themselves precisely because it is easier to send an Instant Message or E-mail. Thus, resulting in their inboxes being filled with messages urging them to make and manage multiple email addresses. With the volume of messages being sent out and received, the risk of sending it to the wrong recipient or emails being buried in the sheer amount of other work-related emails increases significantly further enlarging the participants' workload (Bordi, et. al. 2018). According to Eppler (2004) "Information Overload" is when the individual receives so much information resulting in declining their performance, the massive amounts of excess information will confuse the individual affecting their abilities; thus, when information exceeds the processing capacity of the individual, they are susceptible to anxiety, stress, and diminished decision making. There is also the issue of workplace culture. Working remotely through virtual means is limited by their digital mediums of information and communication technology, and on how they learn of the rules and norms of their workplace, newcomers need to expend more effort to read between the lines and notice the nuance in the small details like sending work messages near or past closing times, working on weekends and the like (Kerkeni et al. 2016). Communication in organizational life provides a basis for understanding virtually

every human process which occurs in an organization such as conflict, cooperation, decision making, the use of power and authority, compliance gaining, resistance, morale and cohesion, and the creation and maintenance of relationships (Ayub, et.al., 2014).

Pandemic Influence on Organizational Communication

The largest number of employees being forced to work remotely at home ever recorded to date is during the year 2020 while in the middle of the Corona virus (COVID-19) pandemic; thus, many citizens of various nations (i.e., India) are heavily recommended to stay at home to minimize physical contact with one another; whereas the pandemic affecting the economy drastically the concept of work at home has been popularized (Mahammad & Mahammad, 2020). According to the U.S. Bureau of Labor Statistics, many workers are forced to work remotely due to the adoption of social distancing, closing businesses, and stay-at-home orders; although this was already a rising trend the before the pandemic, now it increased dramatically, and even when the stay-at-home orders are no longer implemented as strictly many had chosen to stay at home (Dey et al., 2020).

In a related study on working at home and job satisfaction by Hashim, et.al. (2020) they found that typically a person having to work more than the office hours will be unsatisfied, people who do not have to endure long hours every day for transit are more satisfied to those who do not for it encourages more time for family, and others like the fact that they can save money from gas or transit fees making them lean towards job satisfaction. Consequently, interactive communication technology allowed information to be transmitted across distances, time zones, and cultures (Braga, 2002). The current

virtual environment paradigm has become prominent and ubiquitous in enabling project teams to transition from operating traditional face-to-face to virtual interactions in the organization (Lalande, 2018).

Virtual Communication across Traditions of Communication Theory

Phenomenological Tradition. The theory used was that of phenomenological due to the study's qualitative nature that relied on the participants' lived experience. Experience is consciousness of an object; it is an intuitive consciousness that makes this object. The object is presented or given in the consciousness of seizing upon this object. In making sense of the object, the person or thinks predicatively (Yee, Sye Foong 2019), the object in this research being the usage of virtual communications in the R&D organization. Smith et al. (2012) believed that understanding a phenomenon or experience involved the researcher attempting to understand the participants who in turn are trying to make sense of their own experiences. In research involving the use of phenomenology, the goal is to be able to describe as accurately as possible the phenomenon, moving away from any pre-established frameworks, while remaining true to the facts (Groenewald, 2004). Intentionality refers to consciousness, to the internal experience of being conscious of something; thus, the act of consciousness and the object of consciousness are intentionally related (Moustakas,1994). According to Littlejohn & Foss (2008), phenomenology is the intuitive process of observing phenomena as they objectively are and assigning meaning to them based on the feelings and perceptions elicited during a life experience. More importantly, researchers must allow the data to arise naturally by itself. "Doing phenomenology" means capturing "rich descriptions of phenomena and their

settings" (Bentz and Shapiro, 1998 and Kensit, 2000 as referenced by Groenewald, 2004). Theories, in this tradition assume that humans are active and interpret what happened around them and, thus experience the world. Conscious experience of self is the central concept of this tradition (Jan, et.al., 2017). This tradition focuses on the analysis of everyday life which explores the possibility of understanding the experience of self and others by means of communication. Phenomenology looks to understand what it is to be and being in this world with experience of the individual and others. Transcendental is called as such because it transcends beyond the everyday towards the pure self where everything is perceived as if it is the first encounter, and is called phenomenological because it transforms the world into phenomena, rationality is knowledge that comes from the transcendental or pure ego of a person that is open to see it as it only is, and determine what it is its own context. The object that appears in consciousness mingles with the object in nature so that a meaning is created, and knowledge is extended. Thus, a relationship exists between what exists in conscious awareness and what exists in the world. What appears in consciousness is an absolute reality while what appears in the world is a product of learning (Moustakas 1994).

CHAPTER III

METHODOLOGY

Philosophical Assumption

Ontology Bounded Relativism. In these trying times of a global pandemic, the ways of the world have changed. The way people interact and communicate have changed, physical or in person cooperation has been limited, and digital or virtual means of communication has been adopted, and some services have been suspended or forced to adapt. In the communication landscape alone, there are already many different changes particularly in the realm of virtual communication, digital technology such as instant messaging and video conferencing are being applied to various organizations much more frequently as compared to before the pandemic. Working remotely instead of a fixed workplace environment has become the norm.

The realities of people have shifted and changed, thus, why should we observe and judge phenomena with the standards of pre-pandemic society. How did society change? How does the new work environment affect the progress of the various projects and activities of the R&D organization? Has science communication improve or does it just make use of whatever digital technology available in order to function? This new reality should be observed with a fresh perspective, free from preconceived notions and biases of previous experiences. Hence, reality should be defined by those who are currently experiencing it, how do they see the world, the organization, and their job. Only by analyzing and interpreting their experiences can this new reality be defined.

Epistemological Rationality. The people who are involved in R&D are the ones whose opinions and perspectives were gathered, analyzed, interpreted, and were considered firsthand accounts. They know of this new virtual reality which they have adopted due to the pandemic; not only are they experiencing reality but are also molding it. Their actions affect and are observed by others who in turn react accordingly, thus, bringing forth a new workplace culture with its own values, norms, and standards.

Therefore, who else is better to be subjects of this study than those who have forged the new norm of communication with their actions? By analyzing and interpreting R&D personnel's lived experience; by deconstructing their tales and exploits in the R&D organization, their new reality unfolded, and they attempted to understand the aspects of their new reality, specifically on how they now communicate, and this lived experience presented an accurate depiction of the new workplace set-up.

Research Design

To further understand the phenomena of virtual communication in R&D organization amidst the COVID 19 pandemic, I will make use of phenomenology or "the experience of self and others in dialogue". Phenomenology as a philosophy refers to the intentional analysis of everyday life from the standpoint of the person who is living it and places strong emphasis on people's interpretation of their own subjective experience (Griffin, 2000). Using phenomenological methods, with transcendental phenomenology as the main approach, it is through the experiences of R&D scientists that enabled me to see the underlying themes and ideas that will lead to further theorizing and developing

new dimension and strategy of communication. I have allowed the data to present itself by "doing phenomenology" or capturing "rich descriptions of phenomena and their settings" (Bentz and Shapiro, 1998 and Kensit, 2000 as referenced by Groenewald, 2004). This transcendental phenomenological research with a specific focus on the stories told by individuals (Polkinghorne, 1995) shall describe, interpret and understand the meaning of their experiences while utilizing virtual communication during COVID 19 pandemic in performing all activities in the R&D organization.

The remote working condition in the R&D organization with very minimal, if no physical contact at all, has forced everyone involved to resort to virtual communication. The spread of the pandemic could only be stopped if social and economic activities are halted. Hence, people were forced into social distancing and isolation. Industries and organizations have adapted to the work from home set-up with the use of various online digital platforms such as "Hangout-Meet, WebEx, Webinars, Zoom Cloud, Telegram, etc." (Kaushik 2020). Inasmuch as they worked remotely via virtual communication, studying the phenomenon was done through listening to their personal narratives. Since the participants do not have the traditional workspace where they can be personally observed working due to the work set-up, this study banked on the participants' integrity; thus, it is noteworthy that the data collected are based on subjective experiences. In addition, thematic analysis was employed to analyze the textual data and dialogical storytelling to identify the common themes. Thematic analysis is a method of identifying, analyzing, organizing, describing, and reporting themes found within a data set (Braun & Clarke, 2006). Thematic analysis provides a highly flexible approach that can be modified for the needs of many studies, providing a rich and detailed, yet complex account of data (Braun

& Clarke, 2006). In addition, Braun and Clarke (2006) suggested that thematic analysis was a useful method for examining the perspectives of different research participants, highlighting similarities and differences, and generating unanticipated insights.

Moreover, I have also used virtual communication and compared their own experiences with the ones I have experienced. Drew (2004) posited bracketing as 'the task of sorting out the qualities that belong to the researcher's experience of the phenomenon. Gearing (2004) explained bracketing as a 'scientific process in which a researcher suspends or holds in abeyance his or her presuppositions, biases, assumptions, theories, or previous experiences to see and describe the phenomenon. Bracketing has the potential to greatly enrich data collection, research findings, and interpretation – to the extent the researcher as instrument, maintains self-awareness as part of an ongoing process (Tufford & Newman, 2012). Therefore, I bracketed my experience throughout the study. Bracketing begins with documenting memos as data collection and analysis progresses to facilitate examination and reflection with the researcher's approaches to the data (Cutcliffe, 2003). Memos can take the form of theoretical notes which explicate the cognitive process of conducting research, methodological notes that explicate the procedural aspects of research, and observational comments that allow the researcher to explore feelings about the research endeavor (Tufford and Newman, 2012). This is done to reduce the risk of contaminating the collected data with the researcher's pre-conceptions or biases.

The various R&D scientists are the individual units of analysis or primary participants in the research. However, I am the instrument of the study who interpreted and searched for patterns and themes associated with communication experiences,

communication strategies, and virtual communication responsiveness in the narratives provided by the participants to see the art of communication of R&D scientists' construction of working virtually in a qualitatively research approach. Using my status as member of the R&D organization, I proceeded on recruiting fellow colleagues in the organization, as well as previous colleagues who were currently working in other R&D organizations to participate in the study. All were done with consent (see Appendix 1). I employed theoretical sampling that gave me a sample pool that is an accurate representation of the people in the R&D organization, their mindset, their processes and procedures, and overall work culture associated with communication experiences and approaches. Theoretical sampling is a selection of participants based on the emerging findings to ensure adequate representation of theoretical concepts (Polit & Beck, 2017). Those who participated in the study as sources of data and accounts were the active members of various R&D organizations. Specifically, those who currently used virtual communication totally or partially from either their physical workplace or remotely in another place, separate from where their traditional laboratory is located. The pool of participants mostly comprised of scientists from various fields working on the projects of their respective R&D organizations. After the preliminary questionnaires and the participant pool were established, I proceeded to the next step of dialogical storytelling. The data is in the form of "narratives". A narrative is understood as a spoken or written text giving an account of an event/action or series of events/actions, chronologically connected" (Creswell, 2007). According to Ollerenshaw & Creswell (2002), narrative studies may focus on a specific context. The context in this study being the varied participants in Research and Development in construction of working virtually. The

narrative as stated by Creswell (2007) is guided by a theoretical perspective. It is the perspectives of the members of R&D; the essence of their lived experience, consciousness and thoughts that shaped their narratives. The narratives were transcribed to identify the respective concepts and categorized through color-coding to group the prevailing themes and sub-themes. A qualitative set of data was selected from the color-coded narratives to make a deeper exploratory process on the lived experience on the participants' virtual communication experiences, which in turn helped to determine the themes on the phenomenon of virtual communication. As the study went deeper, I have seen a significant pattern or trend in the data which reached its saturation that indicated the completeness of the data gathering procedure.

Participant Recruitment

In this study, I used theoretical sampling in dealing with data given by the participants. Theoretical sampling, as defined by Glaser and Strauss (1967) is a way of collecting data and deciding what data to collect based on the theory and categories that emerge from the researcher's data (Qureshi, 2018). This method was preferred since the data collected mostly were narratives. Thus, the study required the samples to be narrowed down to those with specific experiences, namely, experiences of using virtual communication within the R&D organization. The potential participants were asked if they knew anyone with similar profession and field of expertise who would be interested to participate in the study, then narrowed down again to those with specific experiences of using virtual communication within the R&D organization. At the time of participant recruitment, R&D scientists initiated to contact other members of the organization

primarily via email. I also contacted potential participants through social media and other online forums. After the initial contact, I digitally sent a questionnaire (Appendix 2). The answers determined if the potential candidate were to be considered perfect to become one of the subjects of the research. This selection process continued until I gathered enough participants to build dialogical storytelling. This process was repeated until the narratives had reached saturation and no new data appeared.

Data Collection

The collected narratives were recorded and documented, particularly, observations on what methods (e-mail, instant messaging, phone calls, video conferencing, audio recording, etc.) were easier, convenient, and reliable to all those involved in gathering phenomenological data. Google Form Questionnaires (Appendix 2) as preliminary data, and consent forms (Appendix 1) were sent out to the participants in order to accurately determine who were qualified to participate in the study and narrow down participants with similar experiences. Once accepted, a dialogical storytelling followed that allowed an open discussion with the participant to explore various experiences, thoughts, feelings, beliefs, etc. The identities of the participants were made private and replaced with the use of code names to encourage more openness from the participants, as well as to provide more raw and complete data.

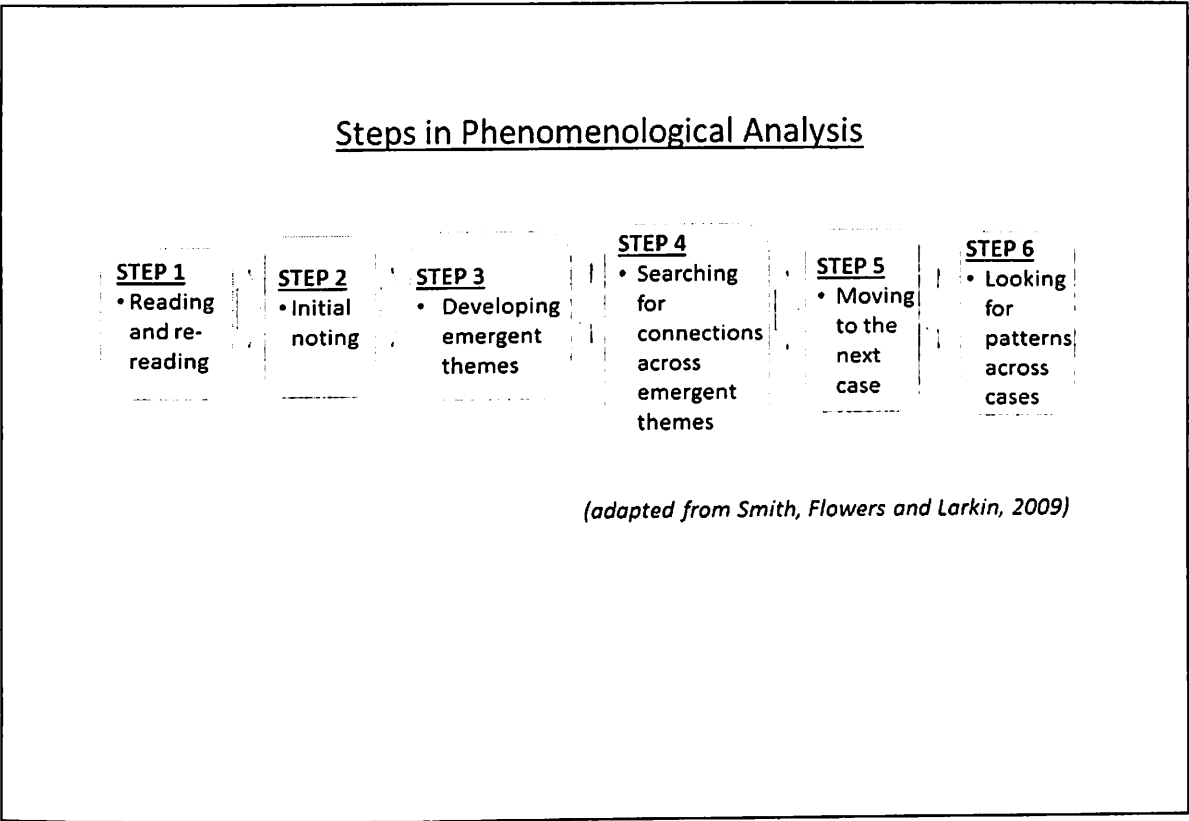
Data Analysis

This transcendental phenomenological study employed dialogical storytelling to capture the R&D scientists' lived experience. This was done to document the lived

experience of the participants in using virtual communication during the pandemic. To start off, I have done "bracketing" where I set aside or suspended my predisposition, and kept an open mind about new ideas, experiences, perceptions of people different from my personal point of view or consciousness. This was done to ensure that the research was focused on the experiences of the participants instead of my personal view (Moustakas, 1994). In the *Epoche*, the everyday understanding, judgments, and knowing were set aside, and phenomena were revisited, freshly, naively, in a wide-open sense, from the vantage point of a pure or transcendental ego (Moustakas, 1994).

After which, the process of horizontalization wherein the dialogical storytelling and gathered experiences were examined for statements took place. Firstly, I employed open coding and reviewed the transcript interview, and then began breaking it up into codes. Initially, all statements had equal value, then statements not related to the topic were removed. Also, the ones that overlapped or repeated were deleted. The ones left were considered to be the "horizons". Horizons are the conscious experience it grounds or was the condition of the phenomenon that gave it distinct character to help better understand experiences (Moustakas, 1994). Secondly, the horizons from lived experience gathered were coded, analyzed, and interpreted. With axial coding, themes were link with different codes and grouped together under an underlying theme. Axial coding related themes to sub-themes and specified the properties and dimensions of a theme and reassembled the data to present an emerging analysis (Charmaz, 2006). Frequently used words and phrases were also grouped together and categorized so that similarities, trends, and patterns would contribute to describing the phenomenon on the newly emerged communication dimension (Figure 1).

Figure 1. Steps in Phenomenological Analysis



An example of general interview storytelling sequence:

I am interested about the stories of your experience regarding the use of virtual communication that transpired in your R&D organization. What we will do is to open your experiences from your stories with regard to the phenomena of virtual communication.

1. Before we start, can you tell me what your role is, your profession, job responsibility in the R&D organization?
2. How did you communicate within the R&D organization and to other external stakeholders during the pandemic?
3. How do you feel about working remotely?

4. What is your view on the physical aspect of communicating?
5. How often was virtual communication used in your workplace before? How about now?
6. How would you describe the quality of virtual communication especially scientific information?
7. How is your experience with virtual communication as compared to physical, face-to-face communication?
8. Based on what you have experienced so far, what would you like to improve in the use of virtual communication in your workplace?
9. What was your experience during the transition to virtual communication in the workplace?
10. What are your thoughts and opinions on the use of virtual communication in the workplace?
11. Assuming that we best the pandemic, what would you prefer to use in the workplace, virtual communication or face-to-face?

Ethical Procedures

Before recruiting the participants, they were first informed of the objectives of the study, how the data were to be gathered from them, and be used. When the participants finally consented, I built a comfortable working relationship with them, so that they could easily share their lived experience and thoughts for the study. It was imperative that I also

obtained permission to record and publish the results, if warranted. Participants were given individual and unique code names instead of using their real names to ensure privacy and anonymity when referring to them and the narratives they had presented. Their personal information were kept hidden, and all participants had been made anonymous to ensure confidentiality. In any case, that their real identities be needed, their consent to the use of their personal information were to be secured first.

CHAPTER IV

RESULTS AND DISCUSSION

I used code names for participants who shared their experiences and personal stories based on: (1) all are R&D scientists who experienced working remotely due to the pandemic; (2) all belonged to R&D organizations with diverse professions and backgrounds; and (3) all have experienced virtual communication and accomplished deliverables and activities in the R&D organization. All data sources were transcribed, categorized, and examined for thematic analysis (Table 1).

Table 1. Participant's profile

	Code Name	Location	Profession	Number of months working online
1	LOC1-LAB-PH	Laguna, Philippines	Chemist	3
2	LOC2-LAB-PH	Zambales, Philippines	Chemist	3
3	OVE3-MAN-SA	Dammam, Saudi Arabia	Statistician	5
4	OVE4-LAB-SA	Jubail, Saudi Arabia	Chemical Engineer	5
5	LOC5-MAN-PH	Laguna, Philippines	Chemical Engineer	4
6	OVE6-LEG-SG	Jurong, Singapore	Patent Chemist/Lawyer	6
7	OVE7-MAN-QR	Doha, Qatar	Microbiologist	4
8	LOC8-LAB-PH	Zambales, Philippines	Geologist	3
9	OVE9-MAN-SA	Dammam, Saudi Arabia	Chemist	4
10	OVE10-MAN-SP	Madrid, Spain	Chemical Engineer	6
11	OVE11-MAN-QR	Doha, Qatar	Microbiologist	4
12	OVE12-LAB-QR	Doha, Qatar	Microbiologist	4
13	OVE13-LAB-SA	Dammam, Saudi Arabia	Chemical Engineer	3
14	OVE14-PHA-SA	Riyadh, Saudi Arabia	Regulatory Scientist	6
15	OVE15-HOS-SA	Khobar, Saudi Arabia	Medical Researcher	3

Views of Virtual Communication in the Context of Working Online

For the members of R&D, what does it mean to communicate virtually? How do they perceive it? How do they interpret virtual communication as their lived experience during the COVID 19 pandemic?

Views and perceptions on virtual communication meant computer-mediated interactions. The emphasis on the use of digital technology and various platforms using the Internet compensated for, or to cope with the lack of face-to-face communication. During the interviews, whenever virtual communication was brought up, digital technologies responsible for the communication (e.g., smartphones, computers) or the platforms used were almost always the ones mentioned first (e.g., Emails, Zoom, Google Hangouts, MS Teams, IM, Google Meets, BlueJeans), while the actual messages came second; hence, R&D is a workplace full of specialized tools and equipment and such virtual communication is treated similarly. R&D scientists gave emphasis on working online and blended communication in which messages were transmitted via a medium to their colleagues and stakeholders. For them, virtual communication happens within a technological medium where they can relay their messages. In other words, participants relate virtual communication to high functioning technology devices that facilitate communication rather than the communication process itself, as well as the actual communication such as what they were trying to say or trying to relay. The communication process was treated like a separate entity delivered through virtual means. In this regard, when they talked about the advantages and disadvantages of virtual communication, their answers focused on the digital technology and platform they were using and how the messages were delivered, rather than how the communication went or how the message was composed. The quality of virtual communication was only considered as good as the digital technology and platform that facilitated the conversation.

R&D scientists giving emphasis on digital technology and Internet was seen useful if it serves only its appropriate purpose as how virtual communication was viewed. For

this to be realized, there should be a clear purpose in using virtual communication. It creates a notion of "real information" about how technology supports scientific information to be communicated which is vital in R&D organization. Given their communicative practices as R&D scientists, in order to perform their duties in a high-quality manner, they needed to use more advanced technology in communicating virtually as evidenced in the following excerpts:

*"For me, I find virtual communication is a way of communicating to someone by in the **absence of a physical or face to face basis**"*

[LOC2-LAB-PH]

*"virtual communication that means, involves participants from **different location using digital technology**, that are available. Right now, there's a lot of communication technology nowadays."*

[OVE3-MAN-SA]

*"....**high technology device** would be considered as virtual communication using **cyberspace**."*

[OVE4-LAB-SA]

*"Because the way I define virtual, means you **communicate to someone using a medium**, something like that."*

[LOC5-MAN-PH]

*"virtual communication is there's **no face to face** involved so there's **no physical**... there's **no physical communication** involved. you just have to... there's a **technology in between you**, there's an*

interface of the technology you have to use, like a platform like Zoom or whatever is that... Microsoft Teams to be able to communicate with a person". [OVE6-LEG-SG]

"I am able to communicate and coordinate with them even without a physical, face-to-face meeting with the use of high technology device, that is virtual communication to me". [OVE12-LAB-QR]

*.."virtual communication is **more efficient** as there is no need to travel to have the meeting. However, it is **less personal than a physical meeting - hand gestures, touching, coffee**". [OVE10-MAN-SP]*

Elucidation of Views and Definition of Actions in Virtual Communication

Virtual Communication During the Transition

I found expounding on the R&D scientists experiences during the transition to virtual workspaces important for two reasons: (1) Because it has been frequently stated that they viewed this stage of using virtual communication particularly difficult, and I believe knowing why this phenomenon is viewed as such important to make future adaptations of virtual communication easier. (2) because during the transition period where their views on virtual communication are the freshest. What is the lived experience of R&D scientists during the transition on using mostly, if not exclusively, virtual communications in the workplace? All the participants who told their stories so far had

declared that the transition period, the period of time where operations had switched from physical or face to face communication to virtual, was difficult. Learning new skills and going out of their comfort zone was hard, and it took time to be familiarized with those determining factors (learning, adaptation, adjustment, challenges, online presence, and technology) for them to adapt with the new norm of communicating virtually. Aside from that, there were a variety of platforms available with different, unfamiliar features. This factor of working remotely with no proper training or orientation, scarce help from any IT personnel, and limited knowledge to virtual platforms hindered their communication. However, R&D scientists exerted effort to learn the new norms of virtual communication in delivering their deliverables and doing their day-to-day activities. The notion behind those actions is for them to expand their horizons, to have more modern, diverse, new knowledge; hence, intrinsically motivating themselves to shift from the pre-pandemic conventions of working. Despite the initial challenges and difficulties they have encountered, when they were able to learn and adjust, working online became easy and manageable.

*"sa simula siguro mark. **Nung simula medyo may problem dun sa mga technical aspect** nung how do we go... yung virtual eh. At yung mga di namin alam paano, how do we go about it, **Kailangan matuto ka gumamit nang zoom.** So yun no **sa simula lang naman pero pag natuto na nasanay na.** So I think wala naming magiging major problem yung virtual...."*

[LOC1-LAB-PH]

"Yes, of course, at first, it's very strange because I'm not used to it. The pandemic is really actually a surprise. But the challenge was really up to me. So I really need to do the necessary adaptation. And I need to get into into learning the technology for virtual communication, which I don't find it very difficult. Being someone with a very high comprehension, professionally, so I find it very easy. It's just only the beginning that is very difficult. But as soon as you keep on doing it, it would always be smooth along the way."

[LOC2-LAB-PH]

"...some of the participants doesn't know how to use the application. The day that I started with Microsoft team, I don't know how to [laughs] application. I don't know which button do I need to push to join the meeting, but later on, it's just... feels like a normal set up you know. it's just, we're doing something like we do in a computer" [OVE3-MAN-SA]

"there's a lot of adjustment because all of us out there, you need to know how to use zoom. There's no proper training or what to prepare you for that. So it's difficult and you just wake up one day na you need to learn everything, you need to adjust".

[LOC5-MAN-PH]

There was a need to study and adapt to the new forms of communication particularly in doing video conferencing. Virtual platforms such as Zoom and MS Teams were the ones typically utilized according to those I interviewed. Video conferencing,

which was the most used communicative virtual function was initially found to be difficult to use especially whenever there was a need to discuss very scientific and technical information and processes that entailed the use of visual aids. Visual aspects such as presentations and screenshare were deemed difficult or cumbersome as compared to the traditional face-to-face communication where it was easier to just present a slideshow or give handouts with the data to the meeting attendees. From the data gathered, R&D scientists were afraid of giving incorrect data or misinterpret the true intent of the message/information that could lead to project failure. On the one hand, R&D scientists were hesitant to provide scientific information virtually because it required more effort, a clearer explanation, concise evidence, and precise justification of the subject matter. On the other hand, R&D scientists demonstrated a "Know-It-All" attitude despite the clear challenges they had encountered. This was illustrated in many instances when they navigated the virtual platforms incorrectly such as in the process of file sharing, difficulty in locating characters, audio muting/unmuting, adjusting camera angles, etc. They tried to hide their unfamiliarity with the virtual platforms, yet it was evident. From the interviews, they expressed their embarrassment and discomfort while presenting to their colleagues and the company's stakeholders.

The other forms of virtual communication such as e-mails, instant messaging, and calls that has been in existence even before the COVID 19 pandemic created little to no problem in its full utilization and adaptation during the pandemic. Media like emails and instant messaging have been used the organization for quite some time unlike virtual communication (video conferencing). This familiarity to emails and IMs helped the full-scale adaption of messaging that was required in working remotely. R&D scientists have

long-been accustomed with some forms of virtual communication such as emails and instant messaging mainly because their core responsibility in the organization is to disseminate information, deal with reports, search various websites for research purposes. Moreover, at the time of the data collection, majority of them were taking up post-graduate studies wherein the primary means of communication is through emails and instant messaging which explained their ease in using the said messaging applications.

"No, I have only some hard times when we started the Microsoft Team and Zoom because it's a new technology. But the phones intercom, extension numbers and then email. So, we are working with that since we... I think since that time I started working." [OVE3-MAN-SA]

"Well, um, actually, it didn't really affect me much. Because from before, we have been already using these tools of communication, whenever like, for example, my manager would go to Bahrain, and I would be trying to send him emails, for example, non-conformance reports, and he would be able to receive it while he's traveling. And he'll be able to respond back which is good".
[OVE4-LAB-SA]

"I am dynamic person. I easily adjusted during the transition. The virtual application/software are easily to understand and implement" [OVE13-LAB-SA]

*"It was a **smooth transition** since I am already skilled and knowledgeable in using the latest softwares and applications."*

[OVE15-HOS-SA]

*"But the **challenge** was really up to me. So, I really need to do the necessary **adaptation**. And I need to get into **learning the technology for virtual communication**, which I don't find it very **difficult**." [LOC2-LAB-PH]*

The data showed that the steps taken by R&D organizations to the impose limitations in physical contacts due to the COVID 19 pandemic to their R&D is worthwhile and have been performed and followed religiously by R&D organizations and personnel. There might have been an initial learning curve in the enforcement of the new normal set-up but when the R&D personnel became more familiarized with the new processes, the operations became smooth again. In fact, testimonies from younger staff members suggested that the transition was easy and some operations became easier than how these were done before the pandemic.

*"Actually, the **technology helped** eh, kumbaga it helped noh. Yun nga dahil yung **mga staff naman namin ay bata so or mga millennial they're easy to adapt sa new norm**."*

[LOC1-LAB-PH]

Internet Can Make or Break Virtual Communication. Digital technologies in terms of the hardware and its auxiliary parts were not a problem. The R&D scientists already had access to the use of digital technology pertaining to virtual communication even before, and some new technologies were provided for by the organization during the pandemic. In reality, however, it does not matter if people have access to device auxiliary of great quality if their current internet connection is unstable or slow. However, if they have stable connection and constant access to the internet, even smartphones can handle light operations. If there are problems with the device's hardware and auxiliary, replacements are not hard to procure. However, if the problem is with the internet connectivity, then there is not a lot one can do. The only option is to either upgrade the existing plans with the Internet Service Provider or change the ISP entirely. Either one requires a lot of time and resources and there's not a lot you can do in the meantime. Thus, having state-of-the-art internet facility is a must in order to function well in the virtual space. It is the very foundation of any virtual communication, and any problem with it can paralyze most, if not all, virtual communications within the organization. Access to the Internet, despite there being some improvements, still encounter technical difficulties. These challenges pertain to signal strength and bandwidth. In my view, R&D members continuously experience technical difficulties in bandwidth and connectivity because some R&D scientists work remotely in a far-flung area where signal is limited. Moreover, they are supported with a low-cost internet service considering their location where telecommunication infrastructures are not yet established.

When internet connectivity was problematic, R&D scientists were forced to have blended communication which is viewed as output oriented, flexible, competent and

easier in communicating technical and scientific topics; thus, interpreted as synchronous task which is appropriate in R&D organization.

*“so far ano naman maayos naman eh. Kumbaga kung before siguro di maayos yung internet, **pero right now medyo okay na yung internet dito sa Pilipinas.** Halos wala namang ano eh, wala nang lag. Maganda na yung quality nung communication... **yung capacity nung internet kailangan mabilis** kasi pag... date hindi kami nag linya dito sa bahay. Ginamit namin ano lang yung broadband, prepaid. Naku sobrang bagal.”* [LOC1-LAB-PH]

*“Yes, sir. The technical problem that I encounter is **the quality of internet.** Yes, that's the only thing. **Because if the quality of internet is very bad, it's a very weak internet connection then definitely you're going to experience a very awful, unfavorable communication** especially when you're using zoom, or when you're using google meet, or you're going to use the Facebook messenger, or anything online... **if you wanted a stronger internet then you have to pay more.** So, I find it minor because you can still fix it. Yeah its fixable, you can always contact the customer service or if you think the internet is very weak then you have to find a very good internet provider.”*
[LOC2-LAB-PH]

*“**The internet connection here is okay. there is no really big issue when you are doing the communication quite stable here...** So, we experience sometimes that we don't have an internet access for*

half day. So we cannot do any of our tasks especially if the documents are located on the shared folder of the company. So, we cannot access this one if there are some issues on the connection." [OVE3-MAN-SA]

"Right now, like most devices will be capable of video calls, but then it **goes down to connectivity**, like, for example, there will be times that signals would get lost... if he is offline, then you're not able to contact him. And then for example, yeah, if his phone is off, or he **doesn't have internet connection**, he will not be able to respond immediately. And the pending problem will wait, we'll have to wait for the response." [OVE4-LAB-SA]

"**You're very much dependent on your internet speed.** That's the lacking part or that's the challenge of using the technology. But if those aspects run smoothly, then I think it's just fine. It's okay... Yeah, I remember one time, sabay sabay yung meeting namin sa company. Im not an IT person, but I believe you have this bandwidth, then it just so happened that on this particular day, almost everyone is using zoom or the BlueJeans, and so nagkaagawan kami sa bandwidth. And yes, ang ending walang talagang nakagamit nang any smooth connection among the users. yeah, because we have different meetings, for example, I have a meeting with outside training provider or meeting from a supplier, then some people here have their own business, so sabay sabay kami during that time and hindi naman kaming pwedeng mag [cough]... naka schedule kaming lahat so yun, di nagkaintindihan

because according to IT, we have this bandwidth nga thats why we need to share. And yun di siya kaya.” [LOC5-MAN-PH]

Internet access delivering connectivity at a wide range is a deciding factor for the efficacy of virtual communication in R&D organization. When the connection is good, one can be as productive, however, on the days when internet connection is bad or a technical problem arises, the connection slows down, most often than not, outright halt in communication.

The internet is an important factor in virtual communications. Without it, virtual communication won't even be possible. The R&D organization must ensure that it provides a stable internet service to its personnel, as well as good support system from the IT for the goals of the organization to be unhampered. The internet is a necessary tool that R&D scientists should utilize and maximize to deliver results. However, the problematic situation to provide the necessary bandwidth and speed is indeed perceived. If this expected bandwidth and speed will materialize the opt to avail of the modernize communication application or device depending on their preferences and needs. This will be a new level in terms of communication within R&D organization though this is already being experienced now yet still a huge number of R&D scientist has limited access to the internet. If the R&D organization addresses the connectivity issues faced by personnel working offsite or at-home, then the productivity of the personnel shall increase.

Not Every Aspect of Communication can be Captured and Replicated.

Communication in the context of R&D is different from a typical day-to-day communication. R&D organizations deal with hard sciences, use specialized equipment and laboratory apparatus, use technical and scientific jargons, and deal with varied and vast amounts of data. The quality of communication is vital in order to deliver the correct information to prevent problems in the entire system of R&D organization.

"...I think, people working in the mines we have a common language, a common mindset. So these data are comprehensive in our field so whenever I communicate it, for example with a geologist, with a mining engineer, data coming from a chemist we easily understand them so that's why it is not difficult for us to communicate that way. But if you're going to... I have to communicate to a laymen or just an ordinary worker so definitely that would be very difficult and I need to explain that face to face."

[LOC2-LAB-PH]

"Yeah, because it's very fast here in Singapore, yeah. Only for simple matters. But if we had to discuss yung mga mahihirap like what I said like technically for a lot of things to discuss with the person, then I would rather if the both of us are here in Singapore, then we would rather meet, meet and talk face to face".

[QVE6-LEG-SG]

For simple matters, virtual communication was enough but when the message to be delivered was more complicated or required more than just words, images, data,

videos, etc., communication became more difficult in virtual communication due to the previously mentioned difficulty and challenges in sharing or presenting such extra visual aids, quantitative calculations, or media over virtual communication.

But not all problems of communication stemmed from the technicality and specialization of the R&D organizations' subject matter is being discussed. There is also a more fundamental problem due to the nature of communication itself. Communication is much more than actual messages being conveyed; body languages, expressions, emotions, gestures, and tone are hard to convey in a virtual space. Whether such things can be conveyed or perceived varies from participant to participant. For some R&D personnel it was enough, while for others, it was lacking due to online presence.

“Facial expression, the emotion is always being considered in virtual communication rather than the audio calls that you can't really see the emotion unlike with the virtual communication it's almost like having the face-to-face meeting.” [LOC2-LAB-PH]

“You can feel it during the meeting if it's especially if it's ongoing discussion or there are some disagreements you can **easily identify the way how the... speak the tone of the language.** And then the... you... It's like a regular meeting because they have the arguments. **So, you know, that the one of the participants are upset because his voice are you know, it's louder than normal.** And then sometimes you also encounter that they are shouting at each other.”

[OVE3-MAN-SA]

*"Yes actually. That is what... that is the part that I wish na meron din sana for virtual. because when you're in actual traditional face to face meeting whenever you say something or for example, you propose something or you answer a certain issue you immediately see the face of the attendees and **see their reaction so you know if they agree without telling... without actually telling if they agree or you could easily read their faces if they are quite confused or something like that.** But with virtual it's like talking to a robot **with no emotion at all.** Or should I say they can **hide the emotion** they can park their emotion in, and you know di sila makapag react right away so you yourself, do mo agad ma-ge-gauge if tama pa ba and sinasabi mo, nakaksakit ka na ba nang someone, or you're crossing the line naba yung ganon. **So that's missing sa virtual, walang ano eh, walang immediate reaction sa virtual eh, unlike sa face to face you can somehow sense the feeling nung nag a-attend'.** [LOC5-MAN-PH]*

From the stories gathered, it is evident that the answers varied from one participant to another. Although, it seemed that being active in video conferencing, (active meaning their cameras were open and their microphones were turned on whenever needed helped alleviate such problems. But there were also instances that some simply turned off their camera and muted their microphones. It was difficult to discern if these people were really participating in which issue of trust accumulated. There was also the fact that the participants were scientists and/or dealing with objective empirical facts and quantitative

calculations; thus, reactions does play a large role in such a setting which deemed necessary. Instead, what they were looking for specifically was engagement, interest, and participation to ensure that everybody understood the subject, were on the same page, and cleared of any misconceptions. Table 2 showed the views of virtual communication as defined by R&D scientists' actions of working online.



Table 2. Views on virtual communication as defined by actions of working online

View	Definition	Action
Difficult transition	• Working online • Virtual platform • Digital device - Easy accessibility - Safety work environment - Save time and resources - Multi-tasking -Convenient -Work from home	• Learning • Adjustment • Adaptation • Challenges • Online presence • Modernized technology
Internet can make or break the communication systems.	• Blended communication • Virtual platform • Digital device - Flexibility - Synchronous task - Professionality - Output oriented - Easier for hard topics - Work from home - Sufficient	• Learning • Adjustment • Adaptation • Online presence
It is perceived that not everything about human communication can be captured and authentically replicated in the virtual medium.	• Online presence • Virtual platform • Digital device	• Issue of trust • Challenges
Gestures, body language, tone of voice, and emotions can be hard to perceive within the virtual medium.	• Online presence • Device auxiliary hardware • Virtual platform • Digital device	• No physical communication • Self-isolation • Less socialization • Health issues
When it comes to conversation regarding scientific, technical, specialized, and complicated matters face to face physical communication is preferred.	• Real information	• Multi-tasking • Convenient • Difficulty in transmitting message

The Contextual Features of the R&D Scientists' in Virtual Communication

Ease of Access and Earlier Forms of Virtual Communication. The use of virtual communication was easily accepted by the participants. I then realized why. A substantial portion of the participants were Overseas Filipino Workers, some were also, despite working in the Philippines, relocated away from their families to another province. Thus, one of the primary methods of keeping in touch with their families was by virtual communication (IM, video conferencing, calls etc.). In a way, it can be inferred that the participants had encountered the use of virtual communication prior to the COVID 19 pandemic. Communicating with people faraway was not a foreign concept to them. Even without the realization stated above, the fact remained that digital technology regarding virtual communication had drastically improved over the years and had been adapted in the various R&D organizations prior to the year 2019. The global pandemic only hastened its full-blown adaption.

Virtual communication is not exactly a foreign concept in the R&D workplace to begin with. It is something that was already adopted albeit in a smaller scale than it is nowadays. The R&D scientists have utilized mobile phones and emails to an extent because of the ease and convenience these digital technologies provide.

“...actually even before the pandemic talagang e-mail driven ang organization nato. So in terms of the flow, it's just like that, parang the bosses will e-mail the boss, and this boss will e-mail the boss din, pababa lang sya nang pababa. So yun sa mga e-mail part we've been there, nang matagal na. yun talaga yung communication means in Del Monte ever since. Example we have different sites, right, so Del Monte

*for example we have here in Cabuyao Laguna where we manufacture "Fit 'n Right" and our laboratories, yung research and development namin; then we have the Mindanao plant nandun yung mga pineapples nang Del Monte; then we have the corporate office at Taguig BGC, then **lahat yan we are communicating**" [LOC5-MAN-PH]*

They have also spent a long time in front of computers where they deal with data and analysis. With the exception on the use of specialized equipment and laboratory apparatus, they have used most of their time in front of a computer, and since the pandemic, it served as the primary tool also for communication. Given the current scenario-- self-isolation and/or limited physical interaction, it is speculative to resort this to unhealthy lifestyle, that led to less social interaction, and mental health concerns due to the no physical communication that they are used to it (prolonged isolation that the participants were not used to).

*"If I am on a work from home mode so almost 8 hours, I'm **in the front of the computer**... maybe around 90% because 10% will be for the break time then I have to eat something like that."*

[LOC1-LAB-PH]

*"In my 8 hours duty 70% is I am actually facing the computer not just because I'm very **dependent with the internet**, Because I use it to do or analyze data. Being a laboratory section head or a chief chemist I no longer... I rarely do the experiments so I already have people down the line do it. These data are being analyzed and were being communicated to the top management and even to the higher ups. So*

that's why I 75% of my job in a 8-hour basis is spent with in front of computers." [LOC2-LAB-PH]

*"Actually, during the lockdown, we are... I am always on the computer, or beside the... our extension, and my telephone is... and my phone is always with me. **Anyone can call you anytime** because it is a **remote working set up**. So, you **do not know what time someone will call you** and made some information or also on my plan. I also use this setup to call someone if I need some verifications related to our daily routine... we have our own computers assigned to us. So individually you have your own computer or laptop and then you have also your phone. The internet connection while we stay... you are in the factory its free. So you have a connection to different Wi Fi port. So it's acceptable to in any points or location inside the factory,"*

[OVE3-MAN-SA]

The R&D scientists have spent a lot of time in front of their computers, as well as in front of other similar pieces of digital technology or 'gadgets'. The COVID 19 pandemic only made the use of digital technology more prevalent; hence, the physical and mental health of R&D scientists are at risk now more than ever.

Virtual Communication Regardless of Distance and Boundaries. Based on the data collected, there were various benefits provided by virtual communication. The most prominent was the capability brought by digital technology to connect people from

different areas, regardless whether it was different floors of the same building or extreme distances such as different countries.

*"I will give the advantage of virtual setup. So virtual **set up meeting everyone can join any location** as long as they have a good internet connection... And then I think it's easier to do the virtual meeting especially if you are dealing with your external suppliers. But at least everyone should be... **you can easily contact them through this kind of communications set up**".*

[OVE3-MAN-SA]

Thus, because the participants no longer needed to be in the same area, it saved valuable time and resources for the R&D organization.

*"...for example, you just need a very quick meeting with your supplier. **You don't need to ask them to be physically present** just to agree on a certain topic, which will just last for like 30 minutes meeting. **it will save time** dun sa part nang tao an pupuntahan, **So no need to travel**. May the time travelled na gagamitin nya magagamit rin nya sa other things na mas may silbi and purpose rather than... for example I'm here in Laguna then you will meet someone from Pampanga just for a 30 minutes meeting. Right dba, parang saying they will travel like 2-3 hours, **so you could have used that to mas valuable na activity**."*

[LOC5-MAN-PH]

*"Virtual communication is **very useful and comfortable** when not possible to have a physical communication. In addition, it helps to be **more efficient as there is no need to travel to have the meeting.**"*

[OVE11-MAN-QR]

Due to technological advancements in the area of virtual communication, communicating could now be done even with a single gadget the scientist owns; hence, within gadgets one typically has on their person in a work environment like a smartphone or even laptops. This makes correspondence or participation in meetings possible remotely as long as there is a stable internet connection.

*"Why not. Because for example, if some of the participants cannot make it on time so, **it will be easier. it will be easy to do the virtual meeting** because even if they are not inside the factory or they are on their way driving their cars, still they can participate on the meeting right in time".* [OVE3-MAN-SA]

*"**Well, usually, they would respond within an hour.** That's the normal protocol, I guess. Like, if it's gonna be like an emergency, I would have to make the call immediately. **So, there will be an immediate response.** But then for like, normal nonconformances, usually, they would be able to do... they will be able to respond within an hour".* [OVE4-LAB-SA]

*"**.....virtual is that there's no there's no boundaries, no boundaries for that. This, like you can talk to anyone anywhere in the***

globe. You can have a conference with anyone, like people don't have to travel or converge in one place to be able to have a conference. It's like, even though they're in the comfort of their own homes, they can have the conference like what happened to us last week. We had a conference with a client and the attendees come... came from different countries. Yeah. So only one platform it Yeah, it's very convenient. yes, that's the advantage of virtual communication." [OVE6-LEG-SG]

"It is good in the sense that we can conduct meetings even if we are not in the same location and transfer of ideas and messages are faster and can be monitored." [OVE14-PHA-SA]

It is not uncommon to have the R&D laboratory in a different place other than the headquarters or the production facilities. So, frequent visits to different departments, or buildings were the norm before. There was also the need to set up the physical space with the needed equipment or tools for meetings and attending to such would mean travelling between different locations to set an appropriate time and place even then there is no guarantee they will appear on time for something may happen during transit. In addition, setting meetings would also need more correspondence between the people involved since the travel time must also be accounted. Worse, the meeting would be delayed due to tardiness of the other members of the team. This issue became worse when one had to meet with people in other cities, or countries with different time zones. In short, planning and conducting meetings before took a lot of time, effort, and resources. But all of these became practically non-existent with the adaption of virtual communication

during the pandemic. For video conferencing, the minimum requirement, as stated by the participants, was a single smart phone that had access to internet, as well as headphones with a microphone. With these simple tools, the R&D scientists were able to participate on meetings on-time anytime, anywhere compared to how meetings were traditionally set-up before the pandemic. Another benefit of virtual communication was the ease of meeting colleagues who were in different countries or time zones. Due to virtual communication and digital technology, there was no longer a need for travel which saved a lot of resources since the R&D scientists just needed to agree on the time and date most convenient to all the attendees. This aspect was seen to be particularly useful to R&D organization as scientists frequently contact other departments and other groups outside the organization including some suppliers, consultants, experts etc. Moreover, simple tasks such as updating, notifying, reporting data, and instructing that are not complex could now be issued and conveniently done through virtual communications that helped saving time and resources.

Improvements as per Suggested by R&D Scientists’. For virtual communication, the most common variable that was asked to improve by the R&D organization was the internet connectivity. Probably, the most important part because without it there will be no actual communication happening. This is due to the fact that no virtual communication could take place without internet connectivity.

*“number 1 is yung ano eh, yung **capacity nung internet**
kailangan mabilis kasi pag... date hindi kami nag linya dito sa bahay.*

*Ginamit namin ano lang yung broadband, prepaid. Naku **sobrang bagal.***" [LOC1-LAB-PH]

"If any time my internet was down, I connected my mobile phone as a router temporarily to supply my work laptop."
[OVE11-MAN-QR]

*"But then again, at the end of the day, I am still after the **quality of the internet because for me, the technology is there.**"*
[LOC5-MAN-PH]

*"They all they have to do is **improve the internet and the communication will be improved. Improve the internet and from the computer and we're done, and it will be improved 10 times better.**"*
[LOC8-LAB-PH]

One may argue, in the aspect of technology that digital devices like computers, smartphones, etc. are just as important as the internet. But unlike the internet, gadgets have many substitutes to choose from. On the one hand, if one has a problem with his/her computer or laptop; he/she could simply look for another device, and still get access Zoom, e-mail, and other video conferencing or messaging apps so as long as the device could connect to the internet. Internet, on the other hand, is more difficult to replace. If one's internet connection had technical problems, it is either the personnel would switch to mobile data or connect to another broadband, which could be relatively slower. Worse is when the problem was from the internet service provider's (ISP) main server, then R&D scientists would have to switch to a new network or ISP altogether.

From the gathered lived experience of R&D scientists with regard to virtual communication during the COVID 19 pandemic, many have had satisfactory internet connectivity. This is due to the fact that they were located along a digital superhighway where transferring and receiving information, data, and knowledge in their places any time were not a problem.

*"So far, I don't have any anything in mind that it has to be improved because I'm very **satisfied with it already.**"*

[OVE3-MAN-SA]

*".....actually it's really it's **efficient enough** for our needs? Yeah, but if anything to improve... I mean, for my needs, **everything is fine.**"*

[OVE6-LEG-SG]

*"Not really, because as I told you now I would **still prefer personal** after the pandemic... **it's helpful digital, virtual communication** using email is actually, is also required. Because sometimes we work from different area, **we can send the information to directly to the other, to different location.**"*

[OVE7-MAN-QR]

But there was one outlier suggestion that caught my eye. It was a suggestion to integrate all virtual communication tools in one interface or program. Since the R&D organization would make use of virtual communication even after the pandemic prevalently. Simplifying, innovating and virtualizing the process of transactions, communications and operations would most likely be the next logical step.

*"I guess, the only thing that I can say, it's maybe we, we can actually have like, like a new... like **one universal app** that we can use like, consistency, I guess. Since, for example, like everything will be there, like all the emails, all the report, the video conferencing, what do you call this is, like, even shift reports, handovers, I guess, like I want it to be like, like a **universal app where you can trace everything, like everything will be there.**" [OVE4-LAB-SA]*

It is interesting to note since the new norm entails using different virtual platforms for different purposes. When video conferencing, R&D scientists use programs and applications like Zoom; in writing e-mails, they use Gmail and use other instant messaging app like WhatsApp for quick messages etc. If there were to be an integrated program or app that encompasses all the needs and purposes of virtual communication in the context of R&D organization, would productivity improve? This part needs more studies in the future.

To some subjects, they considered virtual communication to be only temporary in order to bridge the gap between members of R&D created and disrupted by the COVID 19 pandemic. Some participants still preferred the traditional, physical, face to face methods of communication.

*"...internet is just **only the solution for the dilemma**. But for me having a physical communication like **the face to face is always very relevant** and still I find it still very effective rather than communication through phone calls communication using virtually and also the internet. But the internet is **only the remedy in the absence of physical** or the*

face-to-face meeting or communication.”

[LOC2-LAB-PH]

Although it is a common understanding that there is room for it in the future of communication, nevertheless by no means will it be the only primary method. Many suggested a future of blended communication (combination of face to face and virtual communication).

*“Parang ganun din sya kasi ano eh kumbaga merong **pros and cons pareho**. For example, Gustohin may focus discussion talaga may mga ganun kasing ano eh... mga discussion or topics for example mag strategic planning kayo mga ganon. So usually face to face yan pero yung mga normal meetings I would say baka magiging ano na to normal na virtual noh, kasi maraming benefits din eh so. **Save time, save sa transportation so yun**”.* [LOC1-LAB-PH]

For some, it was the realization of a new form of workplace environment more suitable to them, and their sensibilities or situations because of their multi-tasking and synchronous notion of working.

*“I think it’s... because for **me I prefer to have a lesser contact**, I don’t mind being alone. I don’t mind the interacting only with a few numbers of people. so, it’s okay for me because in the normal set out if you have a meeting most of the time you will have at least three or four participants so during the lockdown, you’re alone and then you are communicating to someone remotely... **I think I prefer this kind of***

setup; I will go back only to physical meeting if it's really urgent Major decision but for the use one set up for a meeting, I would prefer a virtual". [OVE3-MAN-SA]

The Chosen Virtual Platform of R&D Scientists' The preferred platform of choice for video conferencing of R&D scientists were Zoom, Microsoft Teams and Google Meet. As to why these platforms in particular, for one, all of these platforms allowed multiple members to engage in the platform with one host or the one who facilitates or moderates the video conferencing, while the rest are participants. All of them also were able to access functions like screen sharing, group chat functions in order to create and engage as a group etc. In these platforms, for some R&D scientists, it was very useful for job meetings, yet with discussions and brainstorming, it was difficult that two to three people talk at the same time. For the rest, they considered these very comfortable and useful. They said that they could even raise their hands if they wanted to talk and choose emoticons for what they were feeling. For them, it was like simulating physical communication but in a contained virtual platform. There was also the fact that these platforms were free of charge so they could easily integrate and adopt them to the organization with no added costs. However, these online platforms also provided payment options for added functionalities. With exemption to Zoom, Microsoft Teams and Google Meets could also work with other platforms of the same company easily. For example, if the organization adopts the use of email, chances are the people already have Gmail accounts, and these personal accounts, by default, have access to Google meets so there is no need to make another account anymore. In addition, if the employees have used

Google docs before in making files and documents, most likely, they already know how to operate these apps and they can easily share or present it in the meeting. Same goes for Microsoft Teams, if one has and done office work with Microsoft Office or Microsoft 365 before, then that person, most likely, already has a Microsoft account that can be used for Microsoft Teams where files made in before can be easily shared and presented. This platform also supports live editing during a Microsoft Teams video conference. For instant messaging apps, Facebook messenger and Whatsapp were the most mentioned platforms. Both are easily accessible primarily because one can use them immediately so long as one has Facebook account. If colleagues were friends on Facebook, then you no longer need to look hard for their contact information as it such information is shared between platforms (then communication would need not to be as difficult, looking for their contacts would be a breeze). There is also the function of making groups so that scientists can easily message more than one participant. This is a very useful function since R&D organizations have multiple groups with different functions working on one project. All in all, it boils down to three things: (1) accessibility--can anyone make an account easily should they have no existing accounts yet? (2) functionality-- does it serve the needs of the organization? and (3) pricing--how much is the cost of the app, the use or access to certain features? Overall, R&D scientists developed a positive attitude towards virtual communication and applications because it helped them to communicate faster and easier. However, they also mentioned that virtual communications devoid the physical aspect of work they also enjoy doing and these are going for a cup of coffee with colleagues to talk about different things than work, etc.; thus, based on their stories, they expressed the preference towards blended communication in order for them to create a

safe work environment but fun and enjoyable and at the same time, deliver tasks in an effective way during the COVID 19 pandemic.

Rules and Regulations Regarding Virtual Communication. There were no formal or strict rules and conduct regarding virtual communication, although there was a common understanding amongst the R&D scientist that such meetings should be treated with the same importance and professionalism of that of a traditional face-to-face meeting. One should dress appropriately; the background should, the very least, look clean and free of distractions; use polite and or appropriate language; and conduct one's self appropriately as one would do in a physical meeting especially if the cameras are on. R&D scientists could remind that during video conferencing so that the participants would act as they would as if they were in a regular face to face meeting. On messaging platforms like email and instant messaging, it was generally agreed upon to check frequently for any messages and respond on time. Although, some organizations preferred that such messages be stopped once work hours elapsed to stop the personnel from working beyond the stipulated office hours.

*"Wala naman, **di sya written** pero usually yun nga I-norient nalang parang in a form of parang eto yung... **in a form of a meeting** nalang, parang dun sa minutes na lang, eto eto yung proper way natin so proper way of video conferencing so kailangan **dress up properly**, tapos dapat naka **on yung camera** mo, tapos mag **mu-mute ka kung di naman kailangan**" [LOC1-LAB-PH]*

*"Of course, **you need to respect me. the time of someone who are speaking you know, you don't need to butt in. Like a usual meeting you listen then wait for your return to speak. Don't interrupt as much as possible, that's it.**" [OVE3-MAN-SA]*

*"yes, our office, especially the director has sent a circular urging us to **be always available.** Whenever someone calls you, whenever your colleagues calls you or sent you a message on Microsoft Teams, you should **be able to reply as soon as possible.** So as not to affect or delay any work here. So it should be, **if it's within Office Hours,** you should be available to take all calls or emails and all that."*

[OVE6-LEG-SG]

*"Informal rules are to **have the camera on and be decent in the virtual communications.**" [OVE10-MAN-SP]*

Nevertheless, they treated virtual communication with the same sense of professionalism, that is why when things were unclear, vague, or unknown to them, they were bothered by it. Particularly, in virtual communication when there were participants who had their video cameras and audio off, they expressed their concern as they had no clue as to what was happening beyond the black screen. That is why there was a strict adherence to proper etiquette to minimize possible sources of miscommunication and to ensure clarity. There might have been times where the participants did not be fully engage in meeting or conversation thus led incomplete view of the problem or the situation to may lack project critical data or context, therefore, their only option was to ask questions via virtual communication as it was the only method during the COVID 19 pandemic. An e-

mail or two could have been manageable, but there could be more, there were also from different departments, and even a 3rd party or an external organization which made constant correspondence difficult. Such things needlessly increased the workload. At least in a physical environment, one can easily notice and even reprimand such actions, however in virtual communications, one's actions are quite limited such as one can't forcibly open another participant's camera or audio. Various reasons emerged as to why some participants chose not to show their faces or speak up. There were a multitude of reasons, and some were more plausible than the others. One was the environment, especially for the work from home arrangements. Environment has become an issue. The line between the workplace and home has become unclear. During the pandemic, your home suddenly became your workplace also where you live is now where you work. A neutral background was preferred during video conferencing to avoid distractions, but that was not exactly easy to address for some living in cramped spaces. It became unavoidable that there could be things in the background that might seem unsightly or distracting for others; thus, turning off the camera was the more plausible approach. Also, some shared houses with family members or other people who might unintentionally make noise; thus, explains the reason why participants constantly muted their microphones. Another reason mentioned was the poor internet connection and bandwidth awaiting for upgrade. In order to ensure stability of the connection, participants limited their functions to only receiving data and not sending which means turning the video or audio off. The worst-case scenario was when participants did not do their task properly, rather chose to engage in something else other than a meeting; thus, they turned their microphone and camera off. Regardless of whether they had a justifiable reason, a blank black screen was seen to be distracting

amongst the participants and became a source of anxiety to the speaker as one would not never know what the others were doing behind those black screens, unethical or mistrust as to whether they are really participating. That's why whatever rules organization have in virtual communications especially in video conferencing, it is but to ensure that virtual meetings are treated with the same importance and professionalism just like a regular face to face meeting.

Table 3. Emergent themes and sub-themes

Concepts	Themes	Sub- themes
Virtual communication	Digital Technology	Communication efficacy and quality is only as good as the digital technology that facilitates it.
	Internet/Connectivity	Especially internet, without fast and stable internet, the merits of having good device hardware is immediately null and void.
Transition to virtual communication	Difficult	More recent technology particularly video conferencing at a large scale was deemed difficult at first.
	Challenging	Issue of trust because of limited gestures/emotions and online presence.
	Adaptation	It was only difficult at first and becomes easier as time passes and the participants gets more familiar with the technology.
	Adjustment	Working from home arrangement.
	Learning	Learning new skills in delivering their activities in a safety work environment.
Preferences	Blended communication	When it comes to complicated subject matter that cannot be simply explained verbally or through text, and requiring visual aids, they find it easier or less cumbersome to do the meeting the physical way.
	Virtual Communication	Virtual communication is convenient for long distance communication and simple reports and updates.
Rules in virtual workplace	Common sense amongst the participants	It is deemed appropriate to always appear presentable and professional when video conferencing.
		Respectful and use professional language.
		Strict about time management and personal space.

Synthesis of Themes and Sub-themes

Virtual communication is a means to an end. As of this writing of this paper, the world is still battling the global pandemic. Social contact and meeting physically still poses significant risk to one's health, as well as of others. That is why there is now a trend of people working remotely or at home using virtual means of communication. As previously mentioned, virtual communication ensures the continues cooperation and contact between members of the R&D despite physical restrictions.

Communications is key to the success of an R&D project. The R&D organization is comprised of diverse individuals from many different specialized fields; thus, cooperation and clear communication are valued in the organization. During the pandemic, the R&D organization continued to operate and produce results even with restrictions at bay; doing correspondence and fulfilling projects. From the data collected, they looked for ways to continue communication amongst themselves; used the virtual space; bought the needed technology or upgraded what they had in hand just to enable them to communicate and cooperate even remotely. Furthermore, they did not cease operations nor succumb to the restrictions, rather looked for alternatives and adapted the new realities of working in an era of a pandemic. I theorized "communication resiliency" as despite of the challenges R&D scientists is assertive to continuously fulfil task, ability to stay connected to other people delivering a common goal and creates new opportunities for flexibility and prospering, R&D scientist persist through obstacles and generate a mindfulness of constructing the core of persistence and focus.

Communication resiliency is the phenomenon of the adaption of virtual communications to mitigate the effects COVID-19 restrictions to ensure the continued

communication and cooperation between the members of the R&D. After experiencing the pros and cons of virtual communication firsthand, all the participants of the study expressed positive opinions upon the use of virtual means for communication, although the majority had exclaimed that despite virtual communication really helped during the pandemic; hence, R&D scientist would open the avenues to a blended communication given the chance. Nevertheless, even when such notions of displeasure for virtual communication arose, they still expressed their willingness to use virtual communication rather than nothing at all. Even if something is difficult at first, if it ensures the continuation of communication and cooperation for the members of R&D, the scientists stated that they will adopt it and use it in the workplace, rather than shutting down operations.

I chose to call it “communication resiliency” because it seems to be the most appropriate name to describe the current phenomenon in the R&D organization. Resiliency is the ability to recover from difficulties or return to proper form after encountering obstacles, and that is exactly what has happened in the communication process of R&D organizations. Due to physical restrictions, majority of the conventional methods of communication were rendered impossible such as one could not conduct physical meetings or conferences anymore. Transitioning to other methods of communication had been described as difficult but feasible. Once the transition phase was over and done in the R&D organizations, they were back to working on their projects. They were able to get back in shape after a moment of difficulty. Although their form might not be exactly the same as before the global pandemic, what they do still remains the same. It was only their method of communication that was changed to better suit the times.

The cause of problems of the R&D organizations was the aforementioned global pandemic, which has imposed limits and restrictions such as quarantines, travel bans, and restriction to work environments. This made regular meetings or conferences, working together in factories and laboratories, and fieldwork difficult. This disrupted regular operations. Consequently, the only options were to look for alternatives or cease operations. As with the organizations affiliated to my participants, they chose to adopt through the use of virtual communications to circumvent the need for face-to-face meetings. Because there were restrictions on gatherings, the only option was to work remotely; to use a virtual space to meet and to do that, they had to transition to new methods and follow new protocols accordingly.

How did they achieve such a feat? By introducing new digital technologies since the previous methods became no longer feasible. These new technologies I would split into three parts, each part determines the quality and efficacy of virtual communication. The first part is what I would call the "tool". It's the hardware or auxiliary that contains the communication. The window wherein the participants can view the ongoing conversations and interactions in the virtual realm. Examples of this are computers, and smartphones. In short, the physical tools that are used. Second is the "platform". This is the software or program that provides the virtual space in which the communication takes place. Examples of this are video conferencing apps (Zoom, Google hangouts, MS Teams), instant messaging and calls (Facebook Messenger, Viber), and emails (Gmail, Yahoo mail, Outlook). Any of these are the virtual spaces where the communication can take place based on the functionalities the said apps offer. In addition, within this virtual space, there is a subpart of the platform which I call the "avatar". The avatar is the virtual

representation of the participant. It is the proxy to which the participants appear to be communicating and interacting with others using their respective avatars. The avatar comes in different forms, varying in complexity. For example, in the case of emails and instant messaging, it only consists of an image and a name, while in video conferencing, your avatar can be the participants' likeness as captured by a webcam in real time. The third and the most important one is the "internet". The internet is the most important part of virtual communication. Without it, the other two would be rendered useless. If a personal computer is unavailable, one could still use alternatives. Perhaps, he/she has a spare laptop, and even smartphones which are capable of videoconferencing to some extent. If Zoom is out for the day due to server issues or maintenance, one could still use other platforms like Google Hangout, MS Teams. However, if one has slow or no internet at all, the previous parts will be rendered useless. There are very few solutions to internet problems. It is either to apply for a faster and better service provider or upgrade the existing service plan; both takes time and resources. There are really no alternatives to the internet. It will make or break virtual communication endeavors. The internet is akin to air, it is the medium in which the message travels. A person may have the vocal cords needed to make sound vibrations and someone has ears to receive the message. However, if there is no air--the medium that carries the message, all efforts shall be futile.

As for adopting all these parts to work in the R&D organization to transition to virtual communication, the tools were not so hard to acquire. Computers are already prevalent in many workplaces, although the participants said they had to acquire more peripherals like webcams and mics nonetheless, these were not difficult to set-up; smartphones are also widely available to the general public; the internet is already

commonplace in most households. Even if they had to get a new or upgraded internet service that will cost time and resources, it is still the better alternative rather than ceasing the operations entirely. The problem lies in the platform part. Not that there is any problem with the platform itself, but it is the difficulty when the participants are just starting out with it, as well as the distaste to the current state of virtual avatars. At the start, it was rather difficult. Technology such as emails and messaging were already used, but never to this larger scale brought by the pandemic. However, this is not much of a problem compared to the usage of video conferencing. The same with emails and instant messaging, video conferencing is not exactly a foreign concept to the R&D workplace. However, because it became the only way to conduct meetings and conferences during the pandemic. Video conferencing had to cater to more participants which was not anticipated since video conferencing before were only limited to personal matters. It was not enough to use it just for a quick status report or update. They had to learn how to utilize more features like screen sharing, group video calls, muting, and roles or admin privileges. This aspect made it difficult especially to people who were not tech-savvy. Nonetheless, once they went over that steep learning curve, it became relatively easy especially to the younger generation who were more acquainted with the recent technological advancements. As theorized, R&D hit a roadblock but they were able to adopt. The organization may not be the same as it was before, but they were able to function and operate as usual. Their communication became resilient as it was driven by the necessity for the organization to continue the constant stream of information and cooperation.

But there is a problem that is already out of the hands of R&D scientists. This one problem is with regard to virtual avatars that is something that can only be solved by time

and the advancement of related technology. Virtual avatars, in its current state, was described as rather lacking by majority of the participants while the remaining described it only as sufficient or showed indifference towards it. With today's avatars, it is rather challenging to show subtle emotions and body language present in face-to-face communication. It is rather hard to gauge the interest, engagement, and emotions of the participants. Although it did not become detrimental to the operations and progress, it was an issue that many participants expressed discontent with, and as a flaw in an otherwise good adaptation of the R&D organization to the current predicament.

The management approach to virtual communication also contributed to the resilience of the new system. Unlike the traditional workplace where everyone was gathered within close proximity to one another in a building, factory or compound, virtual workplaces were much harder to regulate and facilitate without being intrusive or breaching personal boundaries of their employees. Thus, they let them self-regulate and granted them some autonomy and only intervened when needed, and so far, it worked for them. This self-autonomy contributed as to why communication could be resilient in this set-up. There was no need to strictly adhere to the standard imposed by the management. One could use whatever tools he had on hand to participate in the virtual workspace whether it be a desktop PCs, phones or whatever suitable or applicable technology that was available during the pandemic as long as the scientists could consistently communicate, on time, and produce results. Also, on how they carried themselves on said meeting, they didn't explicitly dictate on how their employees should present themselves, rather trusted them to act in a way that suited their work environment and practices, making it a more comfortable and professional workplace environment.

This made the system more flexible and accommodating by letting the participants work as they pleased without worrying about intrusive policies that come with trying to regulate or standardize home-based workplaces. In turn, there was a workplace-wide understanding that they should, at the very least, appear presentable and use polite language as one would do in face-to-face communication; that is not because one is allowed to work at home, in a relatively more relaxed environment, gives him an excuse to be sloppy during working hours. To ensure communication resiliency, how the R&D scientists are managed is a determining factor for success; and the trends lean on giving them sufficient freedom when it comes to their preferred hardware and what platforms they will use as an organization, but that does not mean management should be hands-off. There shall be times when management or HR will have to intervene. For example, if there is an instance of an employee working, sending emails, or partaking in videocalls way past working hours which disturbs those who are resting or taking their off-hours for personal matters, HR must intervene and send a memo that there shall be no work-related communication after work hours.

Another aspect contributing to communication resiliency is the future after the pandemic. With virtual communication being the sole means in which members of R&D could communicate with each other this pandemic, they have experienced both the pros and cons of using virtual communication and should be familiar enough with it. But even then, they have professed a preference of using the typical physical workplace rather than virtual workplaces. Nonetheless, does this mean that the transition and new methods of using virtual communication for naught? Not in the slightest. Virtual communication does not achieve resilience by replacing the previous norms and practices of physical

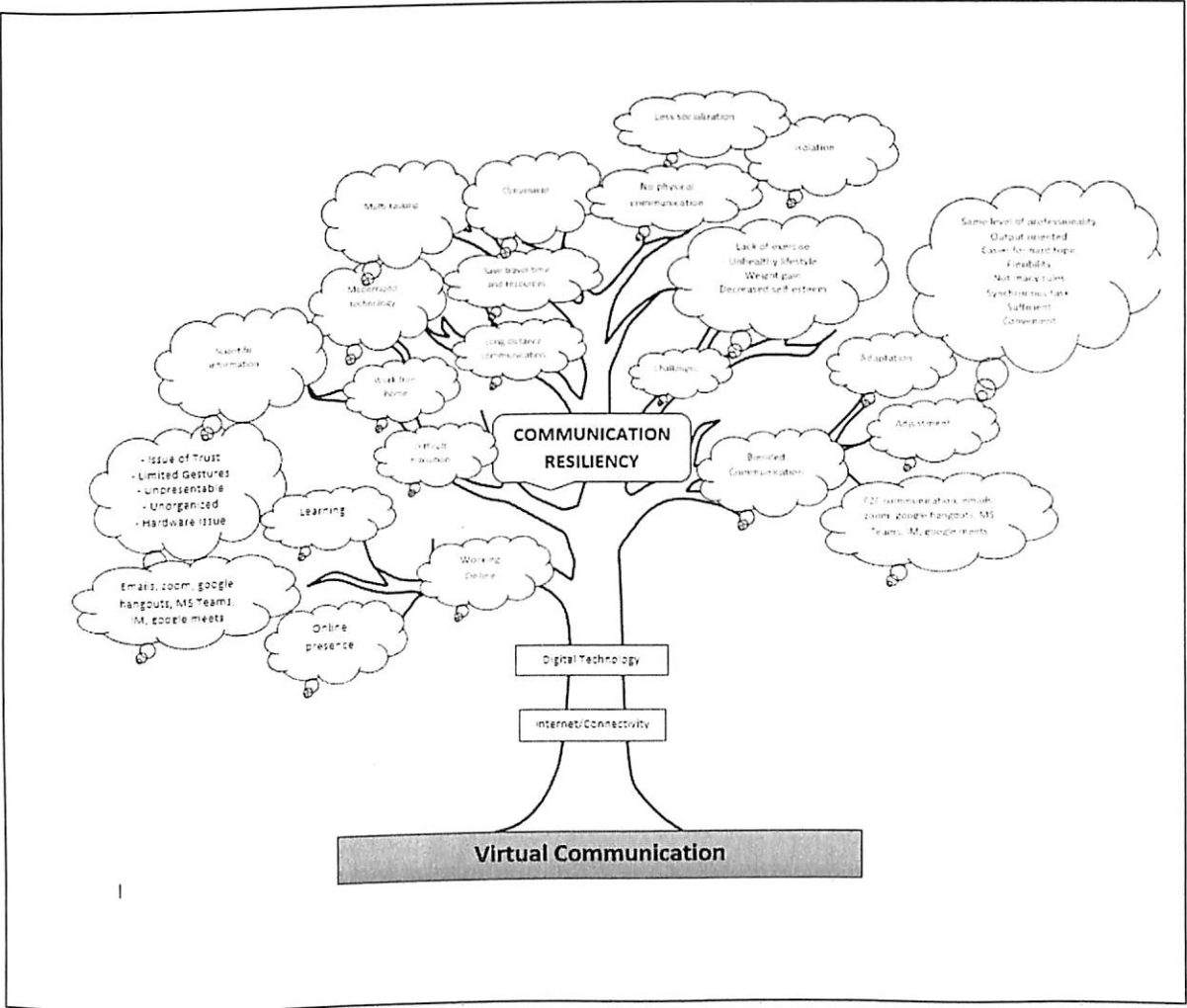
workplace communication, but instead by adding to it. By providing more options and variety to the means of communication, communication cannot be easily hindered when the sole means has become unavailable for there are now alternatives. The members of R&D have proposed that in the future operations, they would integrate more of virtual communication alongside physical workplaces.

Even after the pandemic, they would still own all the hardware and peripherals they have bought; they also gained the skills and experience in using virtual communications. It would be a waste not using what they have acquired during the times of the global pandemic. The advantages of virtual communication will enable the R&D organization to do more whilst also saving time and resources, and setbacks such as not being clear during video conferencing, difficulty in sharing materials, or the difficulty of discussing complicated technical matters can be offset by doing a physical face-to-face meeting. Now, they can communicate despite the distance between them, as well as with faster communication between different departments, and save the time and resources wasted by meeting with 3rd party organizations for simple matters. By blending both physical and virtual types of communication in R&D organization, members would be ready if anything like the 2020 global pandemic would happen again. They would no longer have as much difficulty dealing with such problems anymore. The R&D organization has become stronger and resilient by enduring the adversity by the pandemic and shall be more well-equipped when challenged by future roadblocks.

Virtual communication is an approach and a strategy used during the pandemic to arrive at decisions needed by R&D scientists through digital technology that enabled effective teams to achieve their goals. Through this phenomenon of virtual communication

during the pandemic, it can be theorized that R&D scientists collectively improved and looked for options to work resiliently to continue the operation. It is exemplified “Communication Resiliency” in R&D organizations by showing the willingness to adopt new methods, and how that decision affects each member and the organization. R&D scientists offers the audacity and fortitude to work through obstacles, explore and learn by imbibing the reality of a new approach to move forward and reach expected outcomes.

Figure 2. Virtual communication tree



CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

SUMMARY

As early as January 2020, the COVID 19 pandemic had spread across the globe unprecedentedly. Close contact with other people became a health risk, hence lockdowns were implemented, rigid safety measures were enforced and borders were closed. Research and Development organizations and their scientists were also affected by the pandemic. Organizational meetings became very difficult to organize, and in worst cases, it wouldn't be feasible due to imposed lockdowns, and the risk of physical gatherings.

Amidst the pandemic, the R&D organization remained functional and was able to adopt its policies to the so called "new normal". They utilized technology at hand and engaged with virtual communications to replace physical communication. I took interest to this phenomenon because I too am currently a part of a Research and Development organization this COVID 19 pandemic, and I wanted to see and capitalize how people in my situation have responded and reacted to the current ongoing phenomena.

Because of the nature of this research-- tackling how to make meaning out of a phenomenon that was never encountered before, it is important to conduct a qualitative research with the use of lived experience of the people involved. According to Groenewald (2004), "describe as accurately as possible the phenomenon, moving away from any pre-established frameworks, suspends own experiences whilst remaining true to the facts". This study gathered data from R&D scientists who were active within an

R&D organization and currently working remotely utilizing virtual means of communication during the pandemic. These participants were interviewed and asked to tell their stories, which were then recorded to be reviewed and transcribed. Transcribing the interviews helped me understand and identify patterns to be categorized into themes and be analyzed and interpreted. This was done so that we could find similarities, differences and possible unanticipated insights (Braun and Clarke 2006). Phenomenology tradition of communication is to observe phenomena objectively and give it meaning based on the perceptions who are experiencing it in their life (Littlejohn & Foss, 2008).

Virtual communication was defined by the R&D scientists as 'digital technology connected to the internet that allows people to communicate and work together remotely despite vast distances from each other'. There was an emphasis on the tools available to send a message rather than emulating the environment of that of physical face to face communication; there was a medium between the participants. But with the influx of new digital technology and tools, R&D scientists had to adapt with the new means of communication. However, virtual communication can only be feasible with a stable internet connectivity and network infrastructure managed by a competent IT department. It is because internet and connectivity problems can halt all communication between participants if not immediately addressed. Having a secured and fast internet connection is key to successful operations within the virtual realm. Once it works, communication will be fast and responses will be instantaneous or within acceptable margins depending on the virtual platforms used.

The transition period was described as hard by the participants due to unfamiliarity with the virtual platforms especially with video conferencing. However, messaging utilizing

emails and instant messaging apps was easier to implement due to its prior integration despite in a smaller scale before to the COVID 19 pandemic. When the changes were implemented, and routines were established; when the R&D scientists gained more experience with the new medium of communication, the perception has changed towards virtual communication, which was then seen easy and manageable. R&D scientists had adjusted their routinary activities adapting the virtual means of communication. I can say that "*Communication Resiliency*" is the ability to recover, adapt or grow in response to threat or challenge. The COVID 19 pandemic is a challenge to R&D organization and all its members. R&D scientists needed to adapt according to changing circumstances; therefore, R&D scientists' communication resiliency has been theorized in this study.

Virtual communication was also seen convenient in the sense that R&D scientists were already using and constantly in front of computers or technology that were capable of using virtual communication. They spend majority of their time working with computers, and virtual communication was simply an added function that they performed with computers during the pandemic. Even then, virtual communication for the majority of the participants was already considered as an alternative or temporary measure which was strengthened and further utilized due to the restrictions of the COVID 19 pandemic **not** as the new de facto way to communicate in the R&D organization. Although, the fact remained that discussing difficult or complex topics such as scientific and technical terminologies where they deemed virtual communication as difficult or cumbersome especially when they needed to present visual aids or multimedia presentations. There was also the difficulty in discerning emotions of the participants, as well as engaging them in conversations due to the limiting nature of virtual communication. Not every part of the

conversation such as gestures, emotions or body language were captured and replicated in the virtual sphere. Thus, they needed to put more effort to be clear, and to ensure that they were understood. Trust also became vital in terms of video conferencing during virtual meetings. Some did not open their cameras resulting to doubt whether the participants were using the organization's time to do other errands and they just simply logged in, while some just had this distaste of the disconnect and the artificiality of virtual communications.

CONCLUSIONS

“Communication Resiliency” is the most appropriate term to describe the R&D organization during the global pandemic. Virtual communication was the approach and the strategy used during the pandemic to arrive at decisions needed by the R&D scientists through digital technology that enabled the teams to achieve their goals. Through this phenomenon of virtual communication during the pandemic, it can be theorized that the R&D scientists collectively improved and looked for options to work resiliently to continue the operation.

Views of Virtual Communication

The R&D scientists view virtual communication as a viable and effective option now that online workplaces are more prevalent. To them it is a tool that enables them to work without having to worry about geographical boundaries, a tool that saves them time and resources that would otherwise be used to set up a physical meeting or conference.

Albeit it also comes with its own pros and cons. Virtual communication is not viewed as a replacement for traditional physical means of communication but instead as an alternative, an option that is proven to work or as a supplement to increase communication and efficiency in the workplace.

As of the writing of this paper the participants of the study mainly used virtual communications, but it was because of circumstances with the global pandemic limiting their options severely. Although they have described it as sufficient it is not their preferred primary method of communication. Overall, the participants of this study have voiced their preferences. Majority have stated that they preferred blended communication which is the combination of traditional face to face and virtual communication to deliver scientific and technical messages in an understandable way to prevent misinformation that may lead to project failure. Also, virtual communication comes with advantages. With virtual communication, boundaries and wide physical distances between R&D scientists is no longer be a factor. It also saves time and resources since travelling and setting-up a meeting place is not an issue anymore compared to the conventional work processes involving meetings. Moreover, updating, reporting, gathering and sending data, and other tasks that used to cover a substantial amount of communication becomes more bearable with virtual communication. Thus, application of virtual means help R&D scientists save time and resources, and even enable them to work distances away from their main offices and, labs, and other affiliated departments or organizations. There is significant room for virtual communication alongside traditional physical communication in the R&D organization.

This study showed that the R&D scientists views that virtual communication is plausible in the R&D organization by exploring stories from the lived experience of R&D scientists and the potential of storytelling to mediate meanings to expand virtual communication in the entire organization.

Definition of Actions in Virtual Communication

There are not much rules enforced in virtual communication. For the participants, it was a common practice amongst different organizations that engaging with virtual communications shall be given the same importance and professional attitudes as one would towards a face-to-face meeting that defined them as an organization. Being in a remote or even being home-based does not excuse someone to be sloppy in presenting one's self in the virtual realm. Virtual communication storytelling of their lived experience had introduced my participants to themselves and opened their world view of reality.

Virtual communication will not be removed once the world goes back to how it was before or when physical restrictions are lifted. R&D scientists think that it could be incorporated with physical communication that may lead to a blended communication. Virtual communication can be used for updates, sending data and results, and follow up reports etc. However, when it comes to more technical and specialized talks in regard to R&D, the scientists believe that it is best done with face-to-face in a physical space. Some technologies such as emails, instant messaging, and cellular calls were already incorporated within some R&D organizations standard operations even before the pandemic. The stories from the lived experience of the participants have helped me obtain

a deeper understanding and appreciation of virtual communication. On the other hand, my participants have introduced themselves through their lived experience as they talk about the R&D organization in delivering their activities using virtual communication.

Contextual Features

The Internet is seen as an important factor that determines the efficacy and even viability of virtual communication. Hardware and its auxiliary on the other hand can be more flexible on what could be used as even mobile smartphones can be sufficient in some cases. Internet can make or break the communication systems. It is perceived that not everything about human communication can be captured and authentically replicated in the virtual medium. Gestures, body language, tone of voice, and emotions can be hard to perceive within the virtual medium. When it comes to conversation regarding scientific, technical, specialized, and complicated matters face to face physical communication is preferred.

This study provides insights on the lived experience of R&D scientists on how they performed virtual communication amidst the COVID 19 pandemic of working from home arrangement. Their perceptions, views, and notions can be used to guide further development and adaptation of virtual communication moving forward when traditional face-to-face communication is not feasible anymore. By listening to the stories of these R&D scientists, we can narrow down what needs to be done to further improving the adaption of virtual communication, remote-working, and making home-based and workplaces more suitable and convenient. It can also help in developing platforms by

providing anecdotes on what the R&D scientists want or look for in their virtual media. Furthermore, by detailing the grievances of the R&D participants, we can create R&D Do's and Don'ts in engaging with virtual communication to current and future participants. This study should contribute to the further implementation of virtual communication alongside physical communication, further improving the capabilities of the R&D organization. Moreover, in a theoretical perspective, contribution pertaining to *Ethos* framework of creation of a dynamic story, I see myself creating meaning from the told stories of R&D scientists. Also, I realized that constructing meanings together with my participants constructed knowledge in Research and Development organization is vital. This research is very useful in the creation of pedagogical methodology using R&D scientists' storytelling in broadening the understanding in science communication.

This study demonstrates that R&D scientists are resilient in adapting this new normal despite of the challenges of virtual communication. Hence, they robustly continue the operation and deliver the needs of the organization and the society. Communication resiliency in R&D organizations showed the inclination to adopt new method of communication. R&D scientists showcased the boldness and courage to work through obstacles, explore and learn by imbibing the reality of the new approach to move forward and reach expected outcomes. R&D scientists needed to adapt according to the changing environment; therefore, R&D scientists' communication resiliency has been theorized in this study.

RECOMMENDATIONS

Practical use

- Better Internet service provider with good bandwidth and stable connectivity; hence, paired with modern technology devices that can facilitate virtual communication effectively.
- More secure virtual communication platform in terms of data sharing and retrieving information such as confidential know how's, formulas, and laboratory results.
- Developing a universal application or virtual platform that can cater to various scientific information and needs.

Policy making

- Institutionalizing scientific knowledge management system in creating a sustained knowledge of their lived experience that promotes a more resilient environment in R&D organization.
- To augment opportunities of virtual communication on how to facilitate decision making processes in virtual teams.

Contribution to the body of knowledge

- Exploring phenomenology on other communicative practices in the organization.
- Exploring R&D scientists' stories on other traditions of communication theory.

- Encouraging the R&D scientists to create a pedagogical approach of storytelling in which opens the avenue of science communication.
- Developing a pedagogical approach in reading emotions and gestures in virtual communication.

Further possible studies

- Using storytelling as a medium in science communication in virtual environment.
- Scientific knowledge management in virtually mediated community of practice.
- Are there any communication problems in a multicultural and generational virtual workplace?
- Does the adaptation of virtual communication affect the speed or progress of R&D projects?
- The possibility and efficacy of a single virtual communication platform that shall cater to and centralize all communication needs.

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LIST OF APPENDIX

APPENDIX 1

SUBJECT INFORMATION AND CONSENT FORM

RESEARCH TITLE: Research and Development Scientists' Construction of Working Online:
A Phenomenological Study of Virtual Communication During the COVID 19 Pandemic

INTRODUCTION

This research focuses on the experiences of R&D scientists working in Research and development organizations on how they continue to communicate with fellow colleagues and management by using virtual means of communication during the global pandemic.

NATURE OF PARTICIPATION

As a participant you will be interviewed and asked about your experiences on the topic of communication practices you are using at the workplace. Your experience will then be used as data to be analyzed for the study. The participants will remain anonymous only revealing information such as job or station if needed to explain phenomena or establish context but personal information pertaining to the participants' identity will remain private.

BENEFITS

No direct benefits but the study is a step taken to understand virtual communication of the R&D organization. The findings we hope will benefit everyone in learning new methods of communication.

RISKS

There is not any risk to the participant's organization or the participants in the study.

INFORMED CONSENT

I _____ consent to the recording and use of the experiences and views I will share to the researcher. That my identity will be protected and not be associated to any data and results that will come out of the study. I know that I may refuse to answer any question and can discontinue participation any time.

Researcher:

Participant:

Date: _____

APPENDIX 2

PRELIMINARY DATA FORM

1. I will participate and consent to the collection and use of the data gathered from me to be used in the study. ☐ YES ☐ NO
2. Name: _____
3. Gender: _____
4. Age: _____
5. Are you working with a R&D organization in the year 2020 when the pandemic hit?
☐ YES ☐ NO
6. How many months you experience working from home? _____
7. State your occupation or field in the R&D Organization. _____
8. What is your job responsibility? _____
9. How often do you use Digital technology as a medium of communication?
 - a. I only communicate to my colleagues through Digital Mediums
 - b. I regularly use Digital Mediums for communication
 - c. Only sometimes
 - d. Never
 - e. Others _____
10. What are the types of communication that is used in the workplace? Choose all that applies.
 - a. E-mail
 - b. Instant messaging
 - c. Telephone desk
 - d. Smart phone
 - e. Video conferencing (Zoom, MS Teams, Google Meet, etc.)