

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Management



Diploma Thesis

**The Impact of Advanced Technology in Communication
within the Business Environment**

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DIPLOMA THESIS ASSIGNMENT

Adelina Buzhala

Economics and Management

Thesis title

The Impact of Advanced Technology in Communication within Business Environment

Objectives of thesis

The purpose of this thesis is to determine the effects of technological advancement on the effectiveness of communications within the business environment, concentrating on the development of video conferencing. This thesis will identify the advantages it brings to communication in businesses which operate in more than one country and will analyze the risks and benefits that technological devices have brought to the modern business environment.

The research question for the thesis is: What are the major drawbacks and benefits that Video Conferencing has brought at the workplaces? And, Is VC an economic solution for Solaborate company and did it replace fully the Face to Face meetings?

Methodology

This study is sustained in two parts, in practical and theoretical part.

The first part of the thesis is based on the theoretical summary of the problem and defines the main technological communication tools. Methods that have been used for this thesis are descriptive research methods and the scientific literature review.

The second part is based on the practical summary. The method that has been used is the qualitative method. The data is going to be gained from the questionnaire, who is designed for employees from different companies, which is prepared to analyze and understand the role of VCs on their workplace and to see what are some benefits and drawbacks that the most advanced technology communication tool has brought on their workplace. Other analyses will be for understanding both financial and non-financial benefits that VC has brought on the company, by comparing the meeting cost of VC versus F2F expenses for the chosen company, Solaborate company.

Hence, the data that has been calculated and analyzed it will help to achieve the practical conclusion on the efficiency of communication by advanced technology.

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Asafe, Y. N. (2014). Information Communication Technology (ICT) [Concepts and Application]. Nigeria: Hasfem Publication Center

Scheer A., et al; Business Process Change Management; Springer 2003; ISBN-13: 978-354000243



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Declaration

I declare that I have worked on my diploma thesis titled "The Impact of Advanced Technology in Communication within Business Environment" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 29 November 2018: _____

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The Impact of advanced technology in communication within business environment

Abstract

This work demonstrates the impact of the current and the same time most advanced communication technology in the modern world (Video Conferencing) and how is used in the communication within the business environment. Hence, the Video Conferencing is one of the most advanced technology in communication, the aim of the thesis is to identify the benefits and drawbacks this solution has brought to communication in businesses which operate in more than one country. The theoretical part presents in depth view of business communication and communication technology (such as VC) based on scientific work. The practical part is firstly focused on the chosen company “Solaborate”, since the company uses on daily bases the VC as communication tool in their own business. The practical part provides the analyses of the benefits that the advanced technology has brought to the company and a comparison of cost analysis if they would have to meet in face to face vs via VC. In the second part, data is stemming from the own research gained from the questionnaire, which is designed for employees from different companies, which is prepared to analyse and understand the role of video conference on their workplace. And, in the end to see what benefits and drawbacks video conferencing has brought on communication effectiveness and its full transmission from F2F to VC meetings in “Solaborate”.

Keywords: Video Conferencing, Communication, Solaborate, Hello Solaborate, Business, Information and Communication Technology (ICT), Verbal Communication, Nonverbal Communication, Advanced technology.

Dopad pokročilých technologií na komunikaci v podnikovém prostředí

Abstrakt

Tato diplomová práce poukazuje na vliv nejvíce progresivní komunikační technologie současnosti (video konference) a na její využití v korporátním prostředí. Práce si dává za cíl identifikovat, proč je video konference jednou z nejpokrokovějších technik v komunikaci a definuje její výhody a nedostatky pro společnosti působící ve více než jedné zemi. Teoretická část obsahuje detailní pohled na komunikaci v organizaci a komunikační technologie (jako je např. video konference), k čemuž využívá odbornou oborovou literaturu. Praktická část se zabývá vybranou organizací “Solaborate”, vzhledem k tomu, že organizace využívá video konference na denním pořádku. Praktická část dále analyzuje výhody, které tato moderní technologie přinesla do organizace Solaborate a dále také zmiňuje náklady, které by organizace musela vynaložit, pokud by se místo použití techniky videokonference, museli zaměstnanci osobně sejít. Druhá část praktické části využívá dotazníkové řešení, které proběhlo mezi zaměstnanci různých společností využívajících video konference. Cílem dotazníkového řešení bylo zjistit, jakou roli má video konference na pracovišti a jak je vnímána zaměstnanci. V poslední řadě praktická část dokazuje, jaké výhody a nevýhody video konference přinesla a jakou efektivitu tato technologie přinesla do organizace “Solaborate” místo setkávání se v tváři tvář.

Klíčová slova: Video Konference, Komunikace, Solaborate, Hello Solaborate, Business, Informační a komunikační technologie (ICT), Verbální komunikace, Neverbální Komunikace, Moderní technologie

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List of abbreviations

CEO – Chief Executive Officer

CMO – Chief Marketing Officer

F2F – Face to Face

ICT – Information and Communication Technology

IT – Information Technology

K\$ - Thousand Dollar

KS - Kosovo

ROI - Return of Investment

RTC – Real-Time Communication

TTY – Teletype

TV – Television

US – United States

VC – Video Conference

WWW – World Wide Web

1. Introduction

Being able to live in a world where you see the evolution that technology has brought into the business world and the dependency that we have established with it, makes this topic even more interesting. The current state of technology has made the world look much smaller than it was before, it has given us the ability to communicate anywhere, anytime and by just one click.

Nowadays, without doubts it is a new area of a business culture. The competition at the market has become more powerful and aggressive after innovations of the diverse types of technology designed to help or improve besides the consumer daily lives, as well as for the professional environment.

Information and Communication Technology (ICT) is allowing the modern business world to reach their goals and understanding it has become an essential part of it. Communication in business environment is the key of the success and it is a fact that technology has changed it drastically.

The business culture was totally different back in time. In order to make business strategies, decision making etc, the meetings required to be only face to face and the time required to be spent on travelling and information in order to be transmitted required long period of time in order to reach the goals. Today it is impossible even to imagine it. Today, the most advanced technology in communication has brought a solution to this issue, which is Video Conferencing. VC in a very short time has satisfied the businesses, by bringing many options of communication, making it much easier, faster, in effective way a costless. The evolution of Video conference might become in every company an unexceptional tool, nowadays.

2. Objectives and Methodology

2.1 Objectives

The purpose of this thesis is to determine the effects of technological advancement on the effectiveness of communications within the business environment, concentrating on the development of video conferencing. This thesis will identify the advantages it brings to communication in businesses which operate in more than one country and will analyse the risks and benefits that technological devices have brought to the modern business environment.

The research question for the thesis are:

- What are the major drawbacks and benefits that Video Conference has brought at the workplaces?
- For Solaborate company, is video conference an economic solution and is video conference system replacing fully face to face meetings?

2.2 Methodology

This study is sustained in two parts, in practical and theoretical part.

The first part of the thesis is based on the theoretical summary of the problem and defines the main technological communication tools. Methods that have been used for this thesis are descriptive research methods and the scientific literature review.

The second part is based on the practical summary. The method that has been used is the qualitative method. The data is going to be gained from the questionnaire, who is designed for employees from different companies, which is prepared to analyse and understand the role of VCs on their workplace and to see what are some benefits and drawbacks that the most advanced technology communication tool has brought on their workplace. Another analyse will be for understanding both financial and non-financial benefits that VC has brought on the company, by comparing the meeting cost of VC versus F2F expenses for the chosen company, Solaborate company.

Hence, the data that has been calculated and analysed it will help to achieve the practical conclusion on the efficiency of communication by advanced technology.

3. Literature Review

3.1 Technology transformation within business environment

“We are in the middle of humanity’s second great information explosion. The first explosion came with the invention of movable type. The second is being fueled by the marriage of computer and communication” (Derfler, 1983)

Seeing how technology is becoming every day more advanced, businesses should pay more attention to this “marriage” of technology and communication.

In such a short time the technology has changed and is impacting all businesses around the world and is touching all views of the business, starting from the main one which is communication and is making the businesses to take advantage of all opportunities that this evolution of technology have brought. The authors describe the beginning of the transformation, We live in a society that is well into the early stages of experiencing an "Information Revolution" in which the nature of the individual household, the work organization, and society itself is undergoing a very major transformation (Voigt, Melvin J, Rogers, Everett M, Marburg, Universitai, Bellinghaus, Erwin B, Halloran, D, Shank, Diego Russell, Williams, Frederick, 1980)

Computers and technology have become the center of the business industry. Nowadays the speed of transfer of information is one of the key points of a successful business, and the technology has helped work organizations offering beside the information to be transferred in a matter of seconds, to be able to get the carry on the information in computer memory and having a lower cost. Together with other technical innovations, microelectronics technology increases the capacity of both crucial components of communication technology: a) the technical network, which allows for the telecommunication of signals, and b) adequate end-user equipment, which allows for comfortable handling of complex telecommunication processes (Voigt, Melvin J, Rogers, Everett M, Marburg, Universitai, Bellinghaus, Erwin B, Halloran, D, Shank, Diego Russell, Williams, Frederick, 1980)

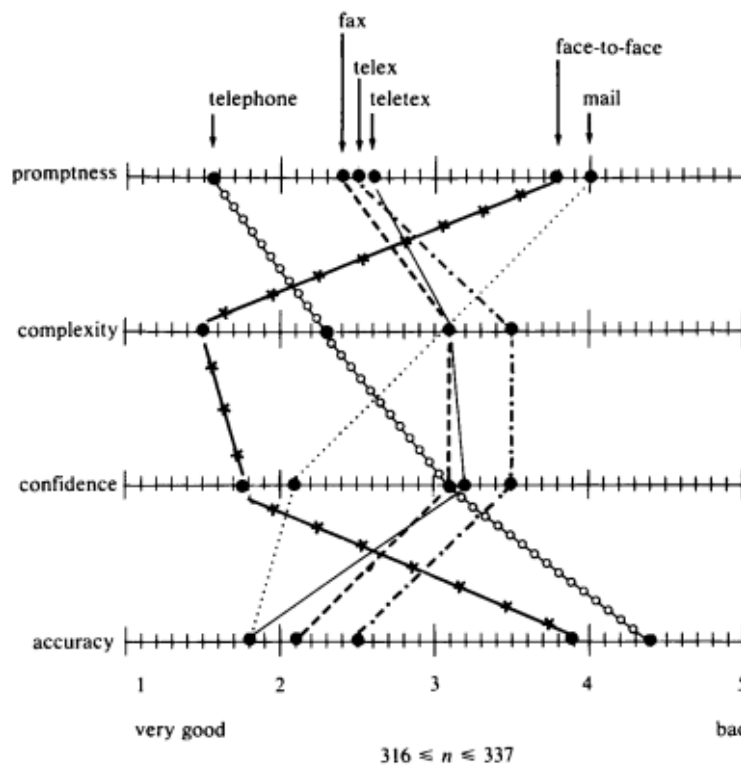
As per the channel communication that organization use, the researcher has found four key problems to be overcome by organizational communication (Voigt, Melvin J, Rogers,

Everett M, Marburg, Universitai, Bellinghaus, Erwin B, Halloran, D, Shank, Diego Russell, Williams, Frederick, 1980):

1. Managerial promptness
2. Semantic complexity,
3. Interpersonal confidence, and
4. Administrative accuracy

On the figure below is shown the communication technology in the organization it shows that about the time consuming and the number of contacts, the first three issues prevail on communication within the organization:

Figure 4. Task-Oriented Evaluation of Communication Channels in Organizations



Source: (Voigt, Melvin J, Rogers, Everett M, Marburg, Universitai, Bellinghaus, Erwin B, Halloran, D, Shank, Diego Russell, Williams, Frederick, 1980)

With the entrance of technology in the business world, we can see that on the beginning of "Information Revolution" there are a lot of doubts of the influence of it by sharing the information through the technology in the organization and the face to face communication is still necessary especially for confidential information.

3.1.1 The concept of communication technology or information and communication technology (ICT)

Information and communication technology in a very short time has become one of the main topics of the modern society and all businesses aim to understand better about it because it helps for having an effective communication by receiving information on the right time and place.

An exact definition about the ICT it is hard to found, but from an article's conclusion, they define ICT as the use and application of computers, telecommunications, and microelectronics in the acquisition, storage, retrieval, transfer and dissemination of information (Ashikuzzaman M. ,2014). Another definition found as, ICT is technology that supports activities involving information. Such activities include gathering, processing, storing and presenting data. Increasingly these activities also involve collaboration and communication (Gokhe, 2012). The term ICT is used mostly to represent more components that are involved with the digital technologies; it allowed interacting and using the information all businesses, individuals, and organization in the digital world. In the context of business is seen as equipment to transmit, store data and its aim is to support decision making, management and how people interact with this technology with the idea of the support of business processes.

The components of information and communication technology is growing more and more, some of them have existed for years such as a telephone or computer, but the list of it has changed dramatically today. Example of the newest communication technology that has entered such as Video conferencing, digital TVs, Smartphone's, etc.

The main components of the ICT system are (Oliver, 2009):

1. **People** – Our role is to provide data, to decide and give feedback from the output supplied to the system of information and communication technology.
2. **Information** – It converts the results from the data which give it a meaning of it from the ICT system.
3. **Data** – Raw material, statistics, etc.

4. **Hardware and Software** – Physical components of communication devices, or computer that create the ICT system. And the information that provides you the instruction how the job should be done.
5. **Procedures** – Decide what is missing to be done or what else is needed, its pass the information between people.

There are both positive and negative impacts of ICT in this modern society:

Positive effects that the communication technology has brought:

- **Faster communication Speed** – Back on time just to receive a message or a post mail it took months and not sure if this message was delivered or not. Nowadays, with the connection speed of the Internet, the message or news can be delivered fast and in an instant.
- **Lower Communication Cost** – With so many communications application that is offering to communicate for free just by having their app and internet on the phone it allowed people it has reduced the cost of money just by comparing it just fifteen years ago how much we have paid for one telephone call.
- **Paperless Environment** – This term means information can be stored and retrieved through the digital medium instead of paper. Online communication via emails, online chat and instant messaging also helps in creating the paperless environment (Nureni, 2014).

Negative effects that the communication technology has brought:

- **Individualistic and introvert** - Technology has made people get connected in one way but has impacted so much on communication between people, now people are choosing online communication rather than face to face conversation, and in this point, there are so misunderstanding and not able to see their body language or their real emotions and is affecting on people by being more introvert.
- **Private Life and Secure posts** – Social media have influenced our lifestyle in a dramatic way and knowing the fact of how easy unknown people can access it. In a study considering the effect of electronic mail in an organization, as the author Markus conclude that “negative social effects occur regardless of how people use electronic communication technology because it strips away personal and social cues or provides new capabilities” (M.L., April 1994)

- **Replacement of Human works** – With the advanced technology so many jobs that only humans could have done it, now are being replaced by machines or robots, as an example, Companies once had large departments full of people whose job it was to do calculations (e.g. profit, loss, billing, etc.) a personal computer running a spreadsheet can now do the same work (Nureni, 2014). Technology as well is affecting the unemployment rate especially to the people of the non-modern generation with a lower background in a technological world.

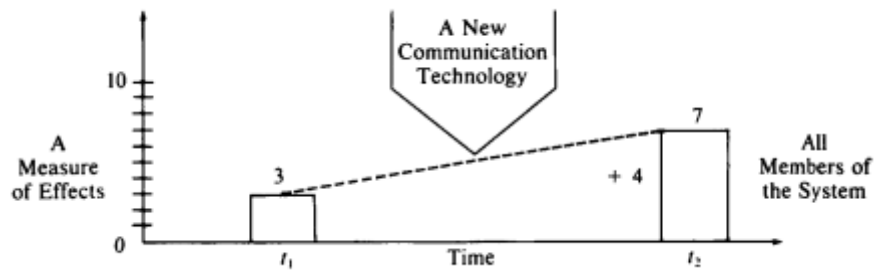
Looking at our jobs from the current's view we should ask ourselves, if can we do our job without technology, and the result of it is a big No. We can tell how much the advanced technology has impacted the communication in the workplace and the job itself. On the paragraphs, it's going to be described as a brief look at how technology has changed the communication in our workplaces.

3.1.2 Communication technology till 1990

The importance of communication has been always and still is the main component of a business environment. All types of communication, the verbal, or written, visual and electromechanical one incorporate early year before 1990 was totally different. For the world of business, there weren't too many options for communicating, especially for the businesses who had more than one location, managing effectively this business was very costly and not too many options.

This period touches likewise the transformation of communication, because of the technology evolution. The skepticism of this evolution was part of so many researchers, as in a book they describe the equity of new technology and is there a gap between rich information and poor information, so if those with the richer information will get richer. On figure 2 is shown that average of effect the new communication technology has and is shown that for all members of the system, an average increase of 4 Units, measured as the difference from t1 to t2

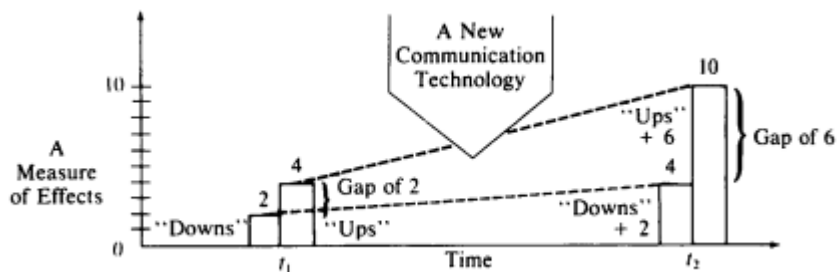
Figure 5. First Dimension of Communication Effects



Source: (Voigt, Melvin J, Rogers, Everett M, Marburg, Universitai, Bellinghaus, Erwin B, Halloran, D, Shank, Diego Russell, Williams, Frederick, 1980)

And, on the figure 3 the second dimension of communication, show the effect of certain individuals experience greater effect of the new communication technology than do others and it explained as "Downs" are absolutely better off as a result of the new communication technology (+ 2), but they are relatively worse off (as the "Ups" gained +6). So the rich get richer (informationally) and the poor get less poor (Voigt, Melvin J, Rogers, Everett M, Marburg, Universitai, Bellinghaus, Erwin B, Halloran, D, Shank, Diego Russell, Williams, Frederick, 1980).

Figure 6. Second Dimention of of Communication Effects



Source: (Voigt, Melvin J, Rogers, Everett M, Marburg, Universitai, Bellinghaus, Erwin B, Halloran, D, Shank, Diego Russell, Williams, Frederick, 1980)

Transferring messages between the business environments on the written type of communication in the non-modern era was more slowly and totally different types of equipment's used for it. Some of the communication technology that has been used until the 90s are:

- **Face to Face** – Back on time workplace communication was primarily restricted to in-person meetings. They value the importance of meeting people directly. Electric communication will never be a substitute for the face of someone who with their soul encourages another person to be brave and true (Academy, 2012). Meetings were so

rare, and the only option served, and it had a very important role because the corporate communication it flowed only one way, and so the meeting was only from the high levels example: executive leadership was informing the message down to the management, so they can transfer to the workers. Other ways of communication were in a group way or as a manager or a leader had to spread the message by standing in the middle of the office so all could receive the message.

- **Telephones** – The first telephone was invented long time ago, around 1660s (Appendix 1) was the first time that a mechanical vibration from our voice was traveling down and converted to voice and around 1700s scientist conclude that there are the possibilities of transmitting the message through electricity but the invention the telephone was on 1800s. This innovation for the business environment was epic. Before 1990 the telephone was already innovated, but with time has got developed on more innovative shapes. Although during this period the mobile phones on businesses environment already received but the long-distance communication was costly, and some time has required the need of support of telephone operator.
- **Mails** – Exchanging written message from different countries or locations back on the early years was only by the paper letters, which was sent by post mailman. The time letters have received it took weeks and sometimes months, depends on the distance. But the evolution of technology during the time is always the only solution that helps with the communication. Therefore, still, there is an enormous difference between the evolution of technology between modern and non-modern area. On the figure (Appendix 2) is shown how people did exchange emails at the workplace.
- **Telegraph** – The telegraph encouraged the growth and vertical integration of firms by forwarding the emergence of national market areas to absorb local and regional market areas (Yates, 1986). The idea of using electricity for creating something that will help people communicate easier in larger distances has become since the 1800s. In communication technology, Telegraph (Appendix 3) was known as the first major advancement and for the business environment. This discovery played a huge role on communication cost and time, by reducing it and creating an easier way of connecting in the long-distance locations. Telegraph is known as the first discovery that had an

extreme economic impact; there were more jobs available, communication less costly, etc. theory

- **Teletypes** - A Teletype (As well called teleprinter, teletypewriter, or TTY for TeleType/TeleTypewriter) is an electromechanical typewriter that can be used to communicate typed messages from point to point and point to multipoint over a variety of communications channels that range from a simple electrical connection, such as a pair of wires, to the use of radio and microwave as the transmission medium (K., 2010). This device (Appendix 4) was more modern and not limited to write on it, the only the wrong part was that in case there is a letter wrong there was not a delete part so they have to start to overwrite it again.

3.1.3 Communication technology till 2000

The most historical of modern communication technology innovation was on the 1990s decade, the world just started to get way much smaller with the innovation that has just started, and it plays a very important part on the communication advances. Since the 90s, new technology has an impact on a dramatic change in our working lives. What makes historical this decade was that the first real announcement found in technology where the birth of the internet, the www (World Wide Web), where this article shows the growth of www in such a short time, in June 1993, there were 130 websites. By December 1993 that number had almost doubled to 623. Between 1993 and 1994, there was a growth of 2,006 percent as the number rose to more than 2,700 sites. And just four years later it had grown to roughly 650,000 (Mortillaro, 2016).

How the transformation of communication within the business environment has changed by the impact of technology are:

- **Face to Face** - The chances for people to communicate on the 90s were easier and faster with the new technology that was developed, but even during that time they consider that face to face communication in the same place and taking the time to speak to each other had a real value.
- **Mobile Phones**- There was a big developer on cell phones, they grew the lot on the 1990s (Appendix 5), and a lot of innovation such as screens with colour, cell

phones with different colours design and with many options for cases, small enough to carry and be fit in a pocket, flat phones, first “flip” form, car phones, etc.

- **Emails** – In 1991 the www was invented and introduced the network access for everyone. It allowed everyone across the world in a different time and place to be connected, offering users emailing to one another anytime and everywhere. Because this way of formal communication for businesses was one of the most important and preferred ways of communications, so the demand for email was high. In this area, new brands of emails enter the market, and which even today are still the biggest players, which are Hotmail and Yahoo. Having these brands who were allowing so many options on the emails such as sending the attached forms, etc. the emails in a business environment was the most used communication tool. It was way much less time-consuming and not costly compared to the back at the time when communication was by exchanging letters.
- **Beepers/Pagers** – New innovation on written communication were beepers or Pagers (Appendix 6), there were popular in the health industry, the doctors used it a lot. This tool on the beginning was allowing just messages on numeric display way, so people were communicating by codes, where every number had a meaning and after it allowed alphanumeric, so they could have exchange text messages via the digital network. The innovation of beepers/pagers in the 1990s was the pagers with keyboards.

3.1.4 Communication technology till 2018

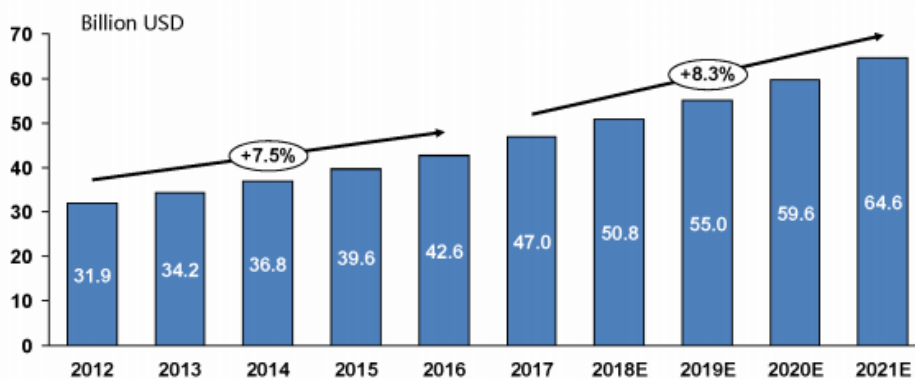
Today to plan the future for businesses is very difficult knowing how technology is changing massively in such a very short time. Over the last 20 years, there have been too many changes in communication technology and this tells how important is for organizations to counter the changes in the business environment.

Increasingly, companies are taking advantage of communication technology, using offered applications for strategic alliances, via the internet, etc to improve their profit and their process of business. Gaining business benefits from investing in ICT is far from guaranteed (Maguire, 2009), the future of business world communication technology. From 2000 till

2018 or the current year the communication technology has got advanced in the unbelievable way, the most common type of communication in business world that has changed is: Today technology did make the world look so small. Some of the communication tools that have been developed in the modern world within a business environment are:

- **Video Conference** – A simple definition: a video conference is alive, visual connection between two or more people residing in separate locations for the purpose of communications (Rouse, 2016). Face to face communication is still important but with the help of this new tool and the equipment that are being used it is creating people the idea as they are meeting in a person, as in the same article was describes as its most sophisticated, it provides transmission of full-motion video images and high-quality audio between multiple locations (Rouse, 2016). Video conferencing, it is technology for quite some time, but the importance of the benefit of it has now been realized. A researcher on the graph below, shows how in such a short time the market sizing of global video conferencing and how there is a bright future and will bring more benefits, the market size of the global video conferencing market has increased at a CAGR of 7.5% from 2012 to 2016, from USD31.9 billion to USD42.6 billion. It is expected that the CAGR will reach a faster speed at 8.3% from 2017 to 2021 (Sullivan & Frost).

Figure 4: Global Video Conferencing market size (2012-2021)



***Note:** The global video conferencing market size is based on the video conferencing providers' revenue from selling the products such as video conferencing endpoints, video conferencing systems, video conferencing infrastructure, cameras, headsets, and other accessories, as well as the package solutions.

Source: Frost and Sullivan

For the business environment videoconferencing is helpful for so many departments, and the benefits of this tool of communication are such as the lower travel costs, for training, teaching, team project meetings in the different time zones and locations, etc.

There are three most common types communication technology through video conferencing (Brown, 2017):

Desktop Video Conferencing – This type allows businesses to communicate through their laptops or desktop computers, all that is needed is to install the software and to get access to communicate.

Telepresence – This way of communication it offers the participants who are on the meeting a life-size simulation and it creates the feeling like face to face meeting because it allows them to make the eye contact because of the high definition quality of cameras.

Room-Based - Video conferencing where participants will be in one particular room that needs to be connected with any other location, but the installation of this device is on that particular room where people will go and get connect to the other locations.

Video Conferencing is getting popular and is the future of communication technology in a business environment.

Figure 5: Video Conferencing



Source: *Video Conferencing Solution*, www.eteletech.com

- **Smartphones and Smartwatches** – The smartphones and smart watches (Appendix 7) offers functionality the same as a computer or laptops. Our daily

routine work and lifestyle are depended on this device. Communication with this advanced technology now is allowing people to communicate verbal and written types of communication very fast and effectively by just having applications for exchanging the messages such as emails, newspapers, magazines and a lot of application for verbal communication for free only with the access of internet such as Viber, WhatsApp, etc

- **Social Media** – Another important communication tool is social media, which is helping on efficiency and productivity all businesses dramatically today, by contacting with them online, getting feedback about their product and understanding better what is trendy so they can be on time with what the customers, some examples of communications through social media such as Facebook, Instagram, Twitter, LinkedIn, etc

- **Laptops/Computer** – Computers has been the main communication technology for so many decades in the business environment, just on the modern world, the shape and the evolution of it have changed in a dramatic way. Nowadays we can carry our computer whenever we are.

Communication technology is clearly the most dominant features of the year that we are living now and the changes that have been in such a short amount of time we can see that it did change a lot the business future strategies.

3.2 Communication in business

The central purpose of business writing is to communicate a useful message – one that serves your readers’ needs, that makes your exact meaning clear, and that enables readers to share information with you (Dumont & Lannon, 1985). In general communication to the businesses is the key an extremely important tool. For a business to survive or to achieve the desired result, they should have a very effective communication. Possessing an efficient communication will help the teams, all the managers or leaders and as well the customer in all aspects of business operations.

Based on a study, companies with high effectiveness in change management and communication are three and a half times more likely to significantly outperform their industry (Watson, 2013-2014). The importance of communication in a business is a very important for both internally and externally views. It promotes motivation by when the employees will receive a clear idea of a task that need to be done and the points that needs improvement from them. For leaders or member who will need during the decision-making process to share and communicate their information in a clear way, thus in this case, when the team is well informed there will be less informed and confusion on their job. It is a very important tool as well for the customers, not making to them to go elsewhere just because of not receiving the correct order and making them waste the valuable time.

On this theoretical part will be described in more details the meaning of communication and being more specific on explaining the importance of communication in a business environment.

3.2.1 Concept of Communication

There are many different concepts or definition of the meaning of communication of what people understand or mean with it. Starting from the fact that communication is a tool that since when we as human existence, we use it in many ways to express it. Dictionary the manning of the word communication is as below:

The word *communication* stems from the Latin word, *communcare*, meaning to share, to have in common. A closely related Latin word, *communion*, means fellowship or holding in common (Dumont & Lannon, 1985). The translation of the word is covering two main points what I mean by communication in real life and for the business environment too.

According to one of the book, the author summarize one of the definition as the definitions of communication reflect fields at almost every conceivable level ranging from all behavior to meaningful, purposive behavior of human beings in conscious interaction (Dance, 1970). People communicate their messages in everyday life in unlike ways, on the way they behave, the body language that we use, there is a message that is trying to be sent or received.

Moreover there is a different viewpoints of communication theory:

- **Mechanistic** – This view considers communication as a perfect transaction of a message from the sender to the receiver (Peraltrees: Communication Theory, 2016). The spread of information from the first group which is the senders to the second group who are the receivers.
- **Psychological** - Based on this view of point communication is not exactly the information that receiver is getting by the sender, but is the actual thoughts or feelings where the sender is trying to share and as well as the other side (receiver) is understanding or decoding the information based on her/his feeling or reaction.
- **Social** – Communication-based on this point of view is considered as the effect of interaction between the first party and the second party by creating or meaning or how something is said to decide what the message is, how one communicate can be the main ingredient of this new point.
- **Systemic** – This point of view consider the communication as a new message which comes as a result that is created after people interpreted and re-interpreted in their own way.
- **Critical** - This view considers communication as a source of power and oppression of individuals and social groups (Peraltrees: Communication Theory, 2016). This point of view sees communication as a way in which people show their power and authority with the other people or individuals.

3.2.2 The Proces of Communication

Is when at least two people are trying to share or communicate with each other, on this process main characters are two participants the sender and the receiver of the message. Communication originates from mental images within a person who desires to convey those images to another (Pfeiffer, 1994). Human beings communicate by sharing thoughts, emotions, ideas with others and once these messages are exchanged, they activate the other part of the person and this describes the purpose of communication. The main meaning of communication is that both participants (sender and receivers) are connected to the other side of the space and time and the way of transferring the message people use the images and symbols, the process of translating images into symbols is called encoding (Pfeiffer, 1994).

Figure 6: The Communication Model



Source: *Basic Communication Model / Pfeiffer j William*

In the figure above is described that in order for the message to get received, the message from the sender needs to be encoded, and there are different ways of doing it.

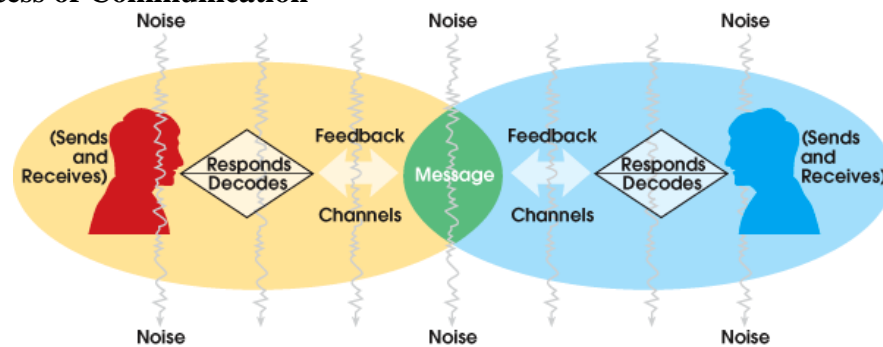
Even though we can say that the process of communication can be told in such a simple and short time, but actually there are different elements of communication:

- **Context / Clear Message** - All messages are affected by the circumstances that create the situation for an idea or event in terms of which it can be entirely understood. There are different aspects of the context, and the sender chooses to share the message within a context by depending which aspect may be social, cultural or physical.
- **Encoder/Sender** – Is the person who shares her/his inner thoughts into the message, since it is important that her/his ideas be clear and understandable the sender use symbols as words or nonverbal ways, verbal communication and written one.
- **Medium** – In the current center that we are living this process of communication plays a very important role in receiving a clear message. This way of communication is in an electronic way as TV or radio, computer network (like an online newspaper, social media, email, etc.), telephone and video conferencing. For transmitting an effective and well-understood message at the receiver, the sender should be careful about choosing an appropriate medium.
- **Decoder/ Receiver** – Is the person whom will receive the message or is intended to be sent, but the way that the decoder or receiver understand the message depends on different factors, like as knowledge e or the relation with the sender, it depends on the way they decode the message.
- **Feedback** – This process of the communication is the main one for one reason because the sender is getting to know what receiver did understand or did he understand on the intended way. The feedback is a reaction, that thing helping us to understand if communication has been understood. In our everyday life we are

unconsciously looking for the “return” message in all our actions; this way things seem to have more sense (Georgievska). Feedbacks in the business world helps a lot in improving the communication and all the working system, it allows all the employees or external target group to share their thoughts, likes/dislikes about the business. There two types of feedback the positive and negative one. The positive one is when the receiver responds in the same way or in a clear understanding of the message that was tended to be sent. And negative feedback is when there is the misunderstanding of the message. Feedback can be received in two ways either immediate (oral responses) or delayed (written response).

- **Noise** – The meaning of the term “noise” in this process of communication is referred to the factors that can deform the meaning or the point of the message.

Figure 7: Process of Communication



Source: Wikimedia Commons / Mmodaona 2011

There are a lot of factors that are affecting the effectiveness of communication among people. Journalist John Edmonds describes three types of noise that we should consider when we are communicating (Edmonds, 2016):

1. **Physical noise:** It is referring to the obvious distractions like noisy rooms, traffic etc, that it makes hard to pay attention or hear the message.
2. **Psychological noise:** This is more referring to the inner voices/noises, or images that we have already created about a person, or the stereotypes that we have on the head. With all this factor impacting the communication is hard to be delivered a pure and target message.
3. **Semantic noise:** Occurs when the receiver is not understanding clearly the message because of grammar or technical language problems. In order to deliver

the correct message, we should understand the type and nature of the audience and know what terminology we should use.

In the daily life noises are most of the time present, thus in this case, the process of communication undertake some degree of deformation of the message.

Hence, the main meaning of the communication process is when two or more people exchange or share the information, with the idea to share a clear message and be received the original message.

3.2.3 Basic forms of communication

In making sure that you are sending the correct message, is very important in understanding the basic types of communication and knowing how to choose the suitable medium. According to John X Wang, why selecting the right communication channel is important, he explains as selecting the right communication channel is like shopping in the right store. If you select the wrong store, you will not get the items you want (Wang, 2008).

3.2.3.1 Nonverbal Communication

Non-verbal communication is very important in our daily life. A very meaningful quote can explain nonverbal communication, as Peter Drucker said: “The most important thing in communication is hearing what isn’t said” (Drucker, 2005).

People communicate by sending and receiving the message which is caused by other instruments other than words. The majority of the messages that humans try to share can be understood through gestures, like eye contacts, body language that they are using, facial expression or as well as from the outside look, like hairstyle or dress code etc. This way of communication is giving people the chance to understand the person’s mind even when the person tries to mask the feelings, real thoughts or reactions.

The other reason why non-verbal communication is important is when people face different culture, and in particular when there are language barriers thus we need to use hands in order to explain our vocabulary, but the negative part in this cases can be that usually, every country has their own understanding of non-verba communication of gestures which directs to the misunderstanding, for that reason we have to be aware of them and to

understand how to use this process of communication and try to decode body language in the smallest detail.

Just as verbal language is broken up into various categories, there are as well different types of nonverbal communication (Schmitz, 2012):

- (1) **Kinesics** – this type is referring to the body and face movements and where includes components as:
 - *Gestures* – Arm and hand movements, which includes the thumbs-up as we say okay, or face scratching, hand bouncing etc
 - *Head movements and posture* – example nodding which can indicate agreement or disagreement.
 - *Eye contact* – Give us the turn-taking signals, wherein business communication this is the strongest tool. It a strong tool because it connects us to the other people.
 - *Facial expression* – It carries different emotion like happiness, sadness, fear, etc.
- (2) **Haptics** – It is referring to touch behaviours (social-politic, friendship, love-intimacy) that bring meaning when interaction.
- (3) **Vocalist** – This means the volume or the tone of our voice we use during the communication.
- (4) **Proxemics** – Is the position of the speaker like distance and the space that is within communication.
- (5) **Chronemics** – refers to the perception of time, how it affects communication.
- (6) **Personal presentation and environment** – refer to the objects we adorn ourselves.

3.2.3.2 Verbal Communication

For sharing our information with others, we use speech as verbal communication, (which is as well the main point in my practical part). Verbal communication helps us meet various needs through our ability to express ourselves (Schmitz, 2012). As we explained that there are many components that send us to the misunderstanding communication, thus we use verbal communication by making a question that helps us to be on the right track of understanding the specific information. For business environment, verbal communication is

the main tool, its uses to exchange ideas, understand the main points, during meeting or interviews etc.

Exchanging the information through verbal communication, it could be into two different forms: As oral communication in which information is exchanged by the words and it can in two ways: speaking and listening. And as written communication which information is exchanged through written way, it can be in two ways like writing and reading.

Verbal expressions are another tool that helps us communicate our feelings, needs, thoughts, etc. On the table below, there are described some types of the verbal expressions that we use:

Table 1: Four Types of Verbal Expression

Type	Description	Example
Observation	Report of sensory experiences or memories	"Pauline asked me to bring this file to you."
Thought	Conclusion about or judgment of experiences and observations	"Students today have much less respect for authority."
Feeling	Communicating emotions	"I feel at peace when we're together."
Need	Stating wants or requesting help or support	"I'm saving money for summer vacation. Is it OK if we skip our regular night out this week?"

Source: Schmitz, A. (2012). *Nonverbal Communication*. In *A Primer on Communication Studies (V.1.0)* (p. 142).

For the person decoding our information to have it easier, it is very important that we are more specific when we are verbal communication our message through any of the verbal expression types.

As a system of symbols and signs which is language, in this case, speech is the process of it. In expressing our identity or in the way how we support our ideas language plays a very important role in the verbal communication. As words express the emotions and thoughts, Language likewise provides endless opportunities for fun because of it 's limitless, sometimes nonsensical, and always changing nature (Schmitz, 2012). Language is powerful, is fun, dynamic and relational.

3.2.3.3 Communication type based on Purpose

This type of communication-based on the purpose or style is divided into two groups: Formal and Informal communication.

1. **Formal Communication** – occurs formally, the messages are officially sent by the organization. Formal communication exchange only official documents or messages. This communication involves professional settings and formal language and mostly is used in writing way and should take on consider the form of policy manuals and rulebooks, reports etc. Inside the organization structure, there is three distinct direction of formal communication: Vertical (downward, upward) and horizontal.

- **Vertical communication** – are the exchanged information between a higher level of the organization who allows sharing the instruction or giving recommendation and getting feedbacks. Vertical communication can be in two forms: upward and downward

Downward communication - Traditional way of communication in businesses have been dominated by this type of communication, downward communication. It flows of information from high designation to a lower one (e.g. Managers or leaders communicate downward to subordinated). It can be in the different form as notices, memos, speeches, etc. The purposes of this type of communication are: To implement objectives or goals; To directive on job instructions, inform people how to do a job; Procedures and practices; Socialization, how is the relationship between employees with the company; And for performance feedback.

Upward communication – It refers to the communication that is travelled from the lower designation to the higher one. The purposes of this way of communications are: It helps the higher level to understand better by getting as a feedback of how clear they have understood the message; To know the progress of tasks; Receive from the person who is working that task for any suggestion how it can be better way and receive any proposal in general with the work.

- **Horizontal communication** – Refers to the communication between equal levels (e.g. similar departments, who share the same problems). Horizontal

communication usually takes place by face to face conversation. The purpose is that it will help on problem-solving faster because these messages or problems will be shared between people who are doing the same thing are in the same level and have the chance to brainstorm with a faster result and grow coordination. Another type of horizontal communication is diagonal communication.

- **Diagonal communication** - Cross-functional communication between employees at different levels of the organizational hierarchy is described as diagonal communication (MacDonald, 2018). This way of communication will help to reduce the misinterpretation by couraging the relevant parties to communicate.

2. Informal Communication – Is the exchange of message outside formal channels, this communication is between a social relationship and family, friends in our case in business is the language between the colleagues. This type of communication we use in unprofessional setups and includes that the language is not formal either and we use such as slangs, or gossips and rumours. The reason for this way of communication is to satisfy our personal needs and to be able to share some information about the organization which is not informed by the formal way of communication.

As a conclusion, ensuring human survival, communication between each other's it is necessary. Since when the humans exist and till now in modern time communication has been essential for all types of human's life.

In all situation of Human life, we depend predominantly by the communication on the relationship with each other, such as friends, family, co-workers, etc.

Communication is not just talking to each other is as well of understanding the clear message, ideas with a different view, knowledge, opinions, and considering all types of communication that are including on the process of the exchanged information.

4. Practical Part

This chapter will demonstrate the analysis for both research questions of this thesis. Solaborate company, as a multinational company is analysed to illustrate the cost analyses of the video conference system used by the company itself in compare to face to face meetings instead of VC meetings. In addition, the analyses of the gained result from the questionnaire, which will show the benefits and drawbacks from another point of view, such as people from different department and business industry who use Video Conferencing system already on their workplaces.

4.1 Solaborate profile

Solaborate is a communication platform company that was established in 2012 from siblings Labinot and Mimoza Bytyqi, where fled the war in Kosovo in 1999 and arriving as refugees on Los Angeles, California (US) where Solaborate is headquartered but the biggest part of the team is located in the heart of Prishtina, Kosovo “we have a diverse team at offices spread out in the US, China and Kosovo. As part of our commitment to inclusion and diversity, we cultivate an empathetic workspace, a listening environment, always learning and getting inspired by our community. We grow together and dream about the next thing to create together (Solaborate, 2018).

A new productive communication platform such an as Solaborate is dedicated to connecting the companies, discover opportunities, and bring innovative products and services for an easy, effective and productive way of connecting the companies regardless where they are located. Solaborate provides the right communication tools and services for businesses to collaborate and stay productive to you and people you need to stay with, as they represent on the website that: We believe that reinventing and simplifying communication tools and services represents our greatest opportunity to improve people’s lives and help our planet. Our products empower people to stay connected, improve productivity and provide better work-life balance (Solaborate, 2018).

Today’s most required desire where a group of efficiently developing companies shared the same mission “Our mission is to improve people’s lives via communication while reducing the carbon footprint of all our users. We aim to enable every office and home to reduce

carbon footprint daily through our video communication and collaboration products” (Solaborate, 2018).

Solaborate is focused on providing the most effective, fast and productive communication through technology, their Vision is “Our vision has always been to create a video conferencing device that adds another dimension to communication. One so immersive, your phone and devices around you respect the TV. And so intelligent, it easily responds to your voice, and even your touch. With HELLO2, our vision is on reality” (Solaborate, 2018).

It is very important for the Solaborate to work hard and ensure their innovation can reach as many people as possible to make a real difference in various communities all over the world. But the most important point to the company and its member or the Core Values are:

- Customer Satisfaction
- Teamwork & Communication
- Quality & Innovation
- Expert Knowledge
- Continuous Learning

Solaborate is simply developed and design to make people more productive. The main goal is to improve the way people find, connect, collaborate and to improve the communication and cooperation between professionals by allowing them to stay in touch wherever they are.

4.1.1 History of Solaborate

The CEO Labinot Bytyqi co-founded the company in 2012 together with his sister Mimoza Bytyqi. By seeing the gaps in the market, especially in the social communication network, they thought the time to create something innovative to improve communication is needed. The idea of Solaborate was born when, as both were working in an international corporation and they had to have so many meetings and by seeing that how much time it took to set up a meeting with decision makers. In April 2013, Solaborate launched its private beta and announced it has raised \$1 Million from angel investors, which shows from such a start time the success of the idea and how the new advanced technology is going to be one of the most helpful devices on communication and making the world look smaller.

In October 2013, at TechEd¹ Las Vegas, Solaborate officially launched its public beta. Since from the start they have committed to constantly improve their platform, in July 2016, Solaborate launched a Kickstarter² campaign for “Hello” 1-the most affordable alternative to high-end video communication system out there.

Solaborate started their “Hello” journey on Kickstarter, with the goal to raise \$30K, but instead, with all the support they got, they managed to raise over \$400K. After Kickstarter, they continue their journey on IndieGoGo³ where have raised \$630K and later launched an online store for “Hello”, shipping worldwide. Currently, is very easy on buying “Hello” by pre-ordering it on IndieGoGo or purchase it in the “Hello” store where so far it has been sold over \$670K.

Knowing the market and how to improve their costumer’s needs Solaborate brought in their new product more innovative ideas, thus In January 2018, Solaborate announces “Hello 2” and other “Hello” products at CES 2018. Currently, the company is preparing to launch “Hello 2”, “Hello Creator Edition”, “Hello Touch”, “Hello Button” and “Hello Controller” on Kickstarter.

Solaborate in such a short time, has already received some very important awards such as, in 2013 Solaborate won the “Best in Show Award” at the WebRTC⁴ Conference and Expo hosted by TMC⁵ in Atlanta US, as well as in the same year as the company was launched in 2013, Solaborate won the “People’s Choice Award” at SAP’s Palo Alto, during the 10th start-up forum and in 2017, “Hello” from Solaborate won the “Innovation of the Year” at the Albanian ICT Awards.

4.1.2 Solaborate VC System - HELLO

Video conferencing system in 2018 has a lot of options, depends on which solution and which system the company has chosen to use. The Solaborate company uses their own

¹ TechEd (Las Vegas) – Is a yearly event that SAP TechEd have for the Intellegent Enterprises, who promisis insights from technology experts.

² Kickstarter - The world's largest funding platform for creative projects.

³ IndieGoGo – Online shop for new innovations in tech and design before they go mainstream.

⁴ WebRTC - Is a free, open project that enables web browsers with Real-Time Communications.

⁵ TMC – ATA’s Technology & Maintenance Council’s, an event for annual meeting and Transportation Technology Exhibition.

product VC solution, which is called HELLO Solaborate. In the following part will show some of the benefits that this system offers by using VC for their meetings.

Since the company is in three different continents with a totally different time zone, for Solaborate the high quality of VC is highly required. The benefits that they have seen by using Video Conferencing are as

- **Home Office** – As an alternative method for employees that Solaborate offers is the working from home, and since even though the presence of them is not on office still is required a regular communication with the team and video conferencing solution is allowing it. The time zone difference sometimes require from Solaborate team to participate on the meeting as well as from their homes, but as well as offering their employees solution to do more productive work and since they have daily VC connection with other teams, the Hello VC solution allows this meeting an easy way of connecting to any TV and provides all in one, voice solution, wireless screen sharing, live broadcasting, security surveillance with motion and more (Appendix 8).
- **Quality/Features** – Quality of the video and audio is great, for the reason that the VC system that Solaborate uses, such as built-in accelerometer, tilting lens, an array of smart microphones, a 4K video sensor and the quad-core processor. All these features are including on the company's VC system solution, which works together to ensure all team are clearly heard and seen wherever they are in the room and where it makes it easier for the team to collaborate and share their ideas through the VC and to stay in touch anytime they want and whenever they are.
- **Easy to control** – Their VC system device is easy to control, they can use the remote-controlled, or by phones and Solaborate has not shown any technical team support needed.
- **Real-Time Live Broadcasting** - It allows the team to globally stream live events with all colleagues and besides that, it helps them on marketing by using the live broadcasting where they gained newer followers and receiving feedback during the live times once they are sharing their news of the products with both internal and external participants.

- **Wireless Screen sharing** – This option allows all participant on the meeting to the team via wireless to share the content, files, videos, photos from their device and in this way everyone in the room will be on the same page;
- **Security Surveillance** – Since they share so many confidential information through VC meeting, the security is very important for Solaborate, their VC system motion activated notifications by letting them know whenever it detects unusual activity in their offices or home while you are away. It as well performs as a security camera that notifies them to any device they own in real time.
- **Real-Time digital Whiteboarding** - The Hello VC system has an option while they are on the meeting they can use the digital whiteboarding where it allows all participant at the meeting to see what they are writing and as well the other teams to share from their end and explain what would they change and how to improve that decision makings, as is shown on the figure below:

Figure 8: VC Digital Whiteboarding



Source: *Solaborate web page* www.solaborate.com

4.2 Solaborate cost comparison of VC vs F2F meetings

For the cost analyses of video conference meetings compare to the face to face meetings it was decided to use first the gathered data of the Solaborate's video conferencing meetings

per year. Communication on Solaborate is highly required since they are a multinational company and located on three different location such as Los Angeles, Kosovo and China.

The tables below will show the data of the meetings, that Solaborate company uses yearly through the video conferencing system. Beside the video, company itself uses the device also for audio calls. The data has been provided directly from the CMO of Solaborate company.

Table number two shows in more details only the video calls of Solaborate through VC system solution and the description of each meetings, such as the length of it, how many participants usually are present on the meeting, which department inside the company is having the meetings and a deeply description of the employees that participate on the meeting based on departments.

Table 2: Total VC Within Solaborate Company (Worldwide)

Yearly	Category	Length (h)	Participants	Department	Other Description
13	Video Call	1.5	8	Marketing	Entire Marketing team
20	Video Call	0.5	4	Development	Managerial team
12	Video Call	1.5	6	Development	Entire Development team
20	Video Call	1	2	IT	Hardware Manager
20	Video Call	0.5	7	IT	Components Hardware Managers
20	Video Call	1	2	Production	Production Manager
20	Video Call	1	5	Testing	Testing Manager
20	Video Call	1	4	Packaging	Packaging Manager
3	Video Call	1	3	HR	Interviews
148		9	41		

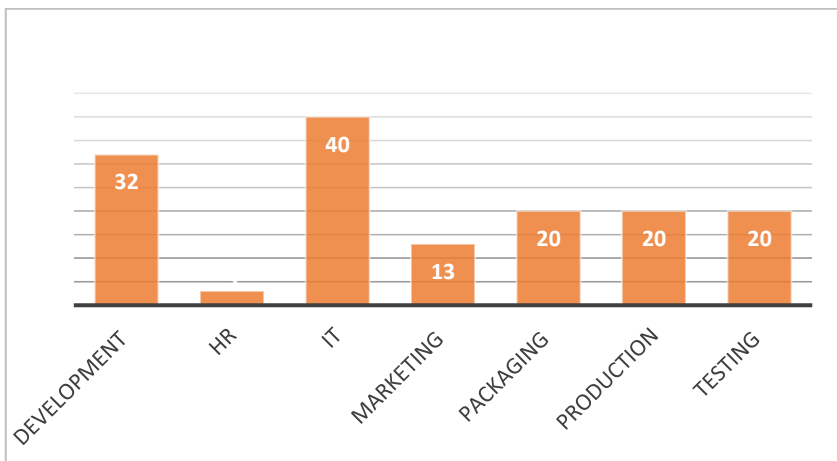
Table number three shows the Audio conferencing or Voice Calls that Solaborate uses yearly within their company in three locations. As well as on the table above the description of the participants, length and which department do they belong are included on the table of total yearly audio. The importance of this table is showing also the impact of the other communication technology used on the company.

Table 3: Total Audio Calls Within Solaborate Company (Worldwide)

Yearly	Category	Length (h)	Participants	Department	Other Description
20	Voice Call	0.5	3	Marketing	Managerial team
20	Voice Call	0.5	4	Development	Managerial team
12	Voice Call	1	7	Development	Entire Development team
20	Voice Call	1	2	IT	Hardware Manager
20	Voice Call	0.5	7	IT	Components Hardware Managers
20	Voice Call	0.5	2	Production	Production Manager
20	Voice Call	0.5	5	Testing	Testing Manager
20	Voice Call	0.5	4	Packaging	Packaging Manager
152		5	34		

From table two of the video conference meetings, based on the department the graph below shows that which department is using mostly the VC system at Solaborate. In our case, the highest percentage of communication is between the IT department, they need daily communication within their teams to get the correct information for their new product that they have produced, and as well the company itself is a technology orientated company.

Figure 9: Graph of yearly VC meetings as per department on Solaborate



Communication within the teams in Solaborate company, to have an effective and productive work is highly needed, and the advanced technology solution is covering almost fully of their meetings, besides once per year the board members still need the F2F meeting.

4.2.1 Cost benefits of Solaborate Video conference

Since Solaborate is already using Video Conferencing solution for communication, on this chapter the analyse of the cost of face to face meetings compare the VC meetings, will be analysed from the result above (Table 2). Yearly meetings that Solaborate does through VC will be compared if they would have to do all this meeting without the technology solution, but instead by meeting face to face.

As well will be be the calculation of return on investment, for the reason as on scientific journeal explain that, calculation of ROI it is easier for management to see the value of video conferencing and, thus, understand the need to continue growing the use of the technology (Earon, S. Ann Ph.D., 2013).

The ROI (Return on Investment) for Videoconferencing in our case, includes: travel cost saving, increase productivity and time efficiency, Based on the result of yearly meetings that Solaborate has within their business, the table below show cost difference analysis of Videoconferencing versus Face to face meetings. The tables below are in order, the divided part on points are to show the justification of calculation. Below:

- Point A, the difference of the annual meeting cost is **7.400\$ (29600\$-22200\$)**, on the face to face meetings we assume that the length of the meeting it should be higher than using the VC meeting, because there can be more discussing and the time is little longer since participants have travelled from across the world to participate on this meeting thus the length is not the same as using VC system, when you have the ability to work other cases after the meeting. The result for Solaborate Company shown on the table below:

Table 4: Total Annual meeting cost per year for Solaborate

A	Meeting Costs Yearly	VC Meeting	F2F Meeting
1	Number of meetings	148	148
2	Meeting Length (hours)	1.5	2
3	Avarage Nr. of attendees	5	5
4	Avarage Nr. of travelers	0	4
5	Avarage attendees wage/hour	\$ 20.00	\$ 20.00
6	Annual meeting costs (1*2*3*5)	\$ 22,200.00	\$ 29,600.00

- Point B/Travel Cost - For this calculation in regards of the blanket result is for VC meetings, since Solaborate uses VC already on this point there are no expenses, such as traveling cost, but if they would use the F2F meetings instead the total number of roundtrips is **592** (gained from the numbers of meetings and average of people who will participate on the meeting), and in the average cost are included the cheapest option, such as for 1 person the ticket from Kosovo to Los Angeles; or China to LA, based on the flight web pages Skyscanner the roundtrip cheapest ticket was **1225\$** pp and based on the booking.com the approximately **250\$** per night thus the total average cost pp **1475\$**.

Table 5: Total travel cost of VC vs F2F for Solaborate company

	Travel Costs	VC Meeting	F2F Meeting
7	Number of Roundtrips (1*4)		592
8	Avarage cost per roundtrip (KS-US-CH)		\$ 1,475.00
9	Annual travel costs (7*8)		\$ 873,200.00

- Point C – When planning a meeting between the different locations, the first thing we must consider is the traveling cost and cost that is not productive for the participants. Mention at the history of Solaborate, the company is in three different countries and three locations are in totally different continents such as the main one is in Los Angeles, Kosovo and the other one in China, the length of the flight is minimum **15h** one way. Thus, the non- productive time including ground travel like personal mileage, rental car or taxi, meal, luggage etc its around **60%** and as the result of the non-productive cost that would have caused to the company for having face to face meetings is pritty high.

Table 6: Non-Productive costs of VC vs F2F for Solaborate

	Productivity Costs	VC Meeting	F2F Meeting
10	Avarage travel time (hours)		15
11	Percent (%) non -productive time		60%
12	Avarage travel wage/hour		\$ 20.00
13	Number of Roundtrips		592
14	Non-productive costs (10*11*12*13)		\$ 106,560.00

- Point D - shows us the total amount of money that Solaborate has invested in the VC system, since the system that they are using is self-service device and since this device is still new on market the subscription fee still is not included on service. On regards of bridge fee for VC system in our case it need only to buy the Hello VC Device which costs **799\$ one peace** (Appendix 9) and they needed **30 of these devicec to be located on thier** offices worldwide, which give us the result of how much in our case the company has invested for video conference system solution. Result on the table below:

Table 7: VC system cost/Investment on VC for Solaborate

	Video Conferencing Cost	VC Meeting	F2F Meeting
15	Hours of VC (1*2)	222	
16	Equipment/Facility costs (799\$*30)	\$ 23,970.00	
18	VC Cost	\$ 23,970.00	

- Point E: The calcuations on the table below gives us the final result of how much would it cost Solaborate to run the team’s meeting through face to face instead the video conference meetings. The gained result for point E, comes from the calculation of the tables above. Result below shows that Solaborate company by impimenting video conferece solution for meetings or advanced communication technology it has impact positively and shows that video conference system is very economic beneficial solution:

Table 8: Differential Cost between F2F and VC Meetings

	Total Costs	VC Meeting	F2F Meeting
19	F2F Meetings		\$ 1,009,360.00
20	VC Meetings	\$ 46,170.00	
	Difference of VC vs F2F Meetings	\$	963,190.00

- Living in the technology world, there are online web pages that are helping businesses before they want to invest in their company to use Video conferencing, they calculate the Return on Investment for video conferencing. Gained calculation from the analysis of Solaborate meetings and getting the cost difference of benefit that Solaborate had gained compare to having to make face to face meeting and

spend time and money on traveling across the world, with this information above, are calculated the ROI of VC in an online system, and result has been found (Appendix 10). The formula that has been used to get the result of ROI of Solaborate Video conferencing (ROI) : $ROI = (Cost - Gain) / Project\ cost \times 100$. Gained result of ROI for Solaborate company are shown on the table below:

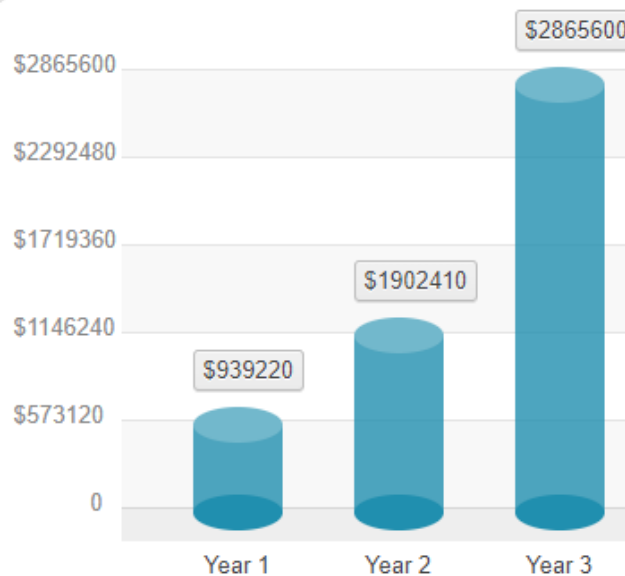
Table 9: Return of Investment (ROI) of Video Conferencing in Solaborate Company

Return on Investment (Cost - Gain) / Project cost x 100)	3918.3145598665%
Payback Period (Years)	0.024886055710711282
Savings on year 2	1902410
Savings on year 3	2865600

Source: Return of Investment system: <http://roi.conferenceroomsystems.com/>

With the calculation above, on the figure below is demonstrated on the graph how effective video conferencing can be for Solaborate by saving in three next years. As well as the above calculation showed that how much travel expenses have been reduced and how much time has been gained the company because of the impact of technology.

Figure 10: Saving of using VC in three years of Solaborate Company



Source: Return of Investment system: <http://roi.conferenceroomsystems.com/>

The results above show us that for Solaborate company the video conferencing solution is a very economical solution and by having VC instead of F2F meetings company is saving in a huge amount of money. Communication within the teams for an effective and productive work is highly needed in Solaborate, and the advanced technology solution is covering almost fully of their meetings.

4.2.2 Non-monetary benefits

Nowadays, for attracting a productive workforce is essential that companies offer some non-monetary benefits. As an article describes: Offering benefits above the expected amount can be an incentive program and used to recruit highly skilled employees to an organization (Boundless Management: Compensation and Motivation). The advanced technology communication such as video conferencing is helping Solaborate company to offer her staff as well as non-monetary benefits such as:

- **Speed up decision-making** – It allows Solaborate’s employees to move in the same speed their competitors are moving and being fast on changing and making a decision about their work. It allows them to have meetings across the world in a

very short notice, no longer have the barriers of location or travel 15h in order to make a decision.

- **Work-life balance** – Reducing the traveling it is not just saving the time in business decision making, beside it, is allowing them to be part of their daily celebrating by using VC solution and be with their family after work.
- **Home Office** – It plays a very huge role on employee's motivation and productivity work by allowing them to work from home even once per week, and especially for those who have children, besides that reduces the expenses of gas it gives them time to spend more with their families.

4.3 Questionnaire Design

As a deep understanding of the role of the video conference in the workplace, the data is going to be gained from the questionnaire, which is designed for employees from different companies.

This questionnaire is designed to see from another point of view, out of Solaborate company, of what are some of the main problems they are facing by using video conferencing and the benefits that they have gained by using it.

In total, there are seventy people who answered the questions from different company industries and multiple departments. There were eight question totals, some of them need their written opinion.

Below are the questions that were needed to be answered (Appendix 11). The questionnaire has been answered by people who already work in a company and the company where they work is it located in more than two different locations:

1. Do you currently use Video Conference for communicating at your work?
2. How many electronic devices do you use for video conferencing?
3. How many times do you use video conference weekly?
4. How often did your meeting get cancelled due to Video Conference issues?
5. What do you like most about Video conference?

6. What do you dislike the most about video conference?
7. Which business sector does your company belong to?
8. Which department do you work at?

4.2.2 Data analyses

The gained result from the questionnaire allows us to understand most of the benefits and drawbacks that Video conferencing has brought in communication within the business environment.

The other point of the questionnaire is to understand the role of video conference from a different point of view such as different working departments. Based on the results, the highest percentage is the others (where based on the business industry, it belongs to Education, Travel agency, Procurement, Pharmacy, etc) and the second is the IT department (plus 6 more people who have answered as other belong to the IT department), and the other department in a smaller percentage.

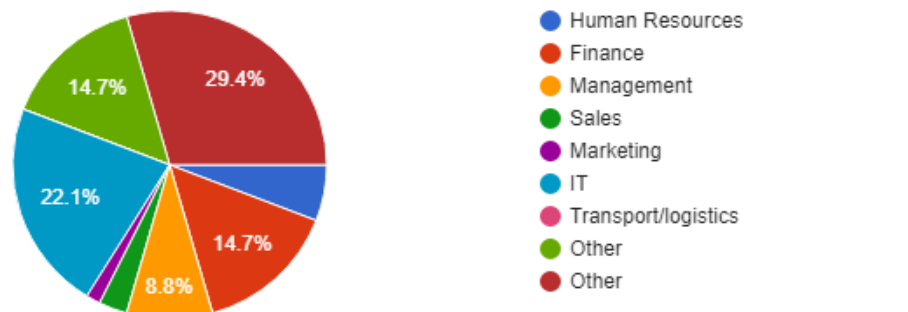


Table 10: Total VC used based on working department

- The group of people who answered the questionnaire were people who already hold a job in a multinational company and they will need to communicate with other locations since their company is in more than one place.

Result has shown that in highest percentage of the responders uses the video conference system on their workplace.

On the table below, the gained result from the responders has answered that **78.6% they do use** Video conferencing on their workplace and **21.4%** answered that **they do not use** VC. Based on the result we can say that communication

technology tool on the past years has become more usable in many multinational companies.

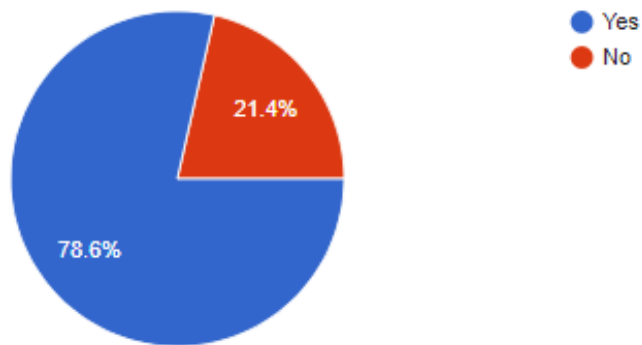


Table 11: Total of VC users in their workplace

- Today, we are living in a technology world and is highly requested on the market the possibility of connection with the multi-electronic communication devices in the same time, that are in the market nowadays. The Video conference system is the most advanced communication platform that has been developed on the business world because it allows more than one electronic device to get connected, such as you can connect yourself to VC meetings by phone, TV, laptop, smartwatch, computer, room, etc. Today the flexibility for international companies is an important part, there are different reasons that people in the technology world has more than one electronic device and the reasons that the availability of the participants to join the meeting from different electronic devices are different such as time zone differences, working from home, traveling, vacations, etc.

The result that we have got its show that **73.9%** of the use **0-2 devices**, **18.4%** of them use **3 devices** and **7.2%** (89% of them work in IT department and the other 11% belongs to other departments) of them use **4 and more** electronic devices.

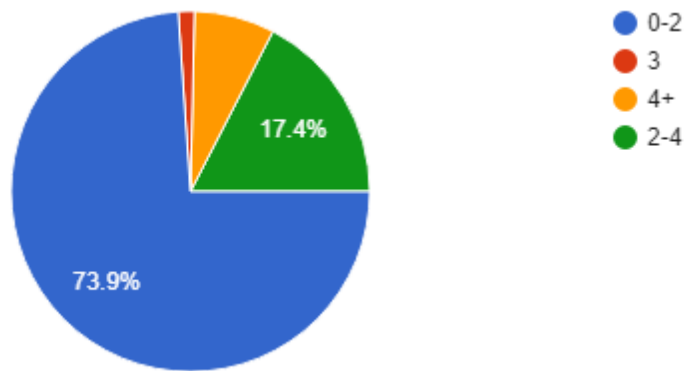


Table 12: Total of electronic devices connected to VC

- Most companies have weekly regular meetings with other teams, the result shows that **26%** of them uses more than **four times per week** (78% of them belongs to the IT department, 10% to the Finance department and 12% to the other departments), since 21% of people who do not use VC on their workplace it directly influenced this chart which **22%** use **zero time** the VC, **21%** of them use the VC **once per week**, (the highest percentage were from Human resources department), and we can see that the lowest percentage with **13%** of them uses **rarely (monthly)** and most of the answers were from the Manage team, which shows that they use mostly face to face meetings.

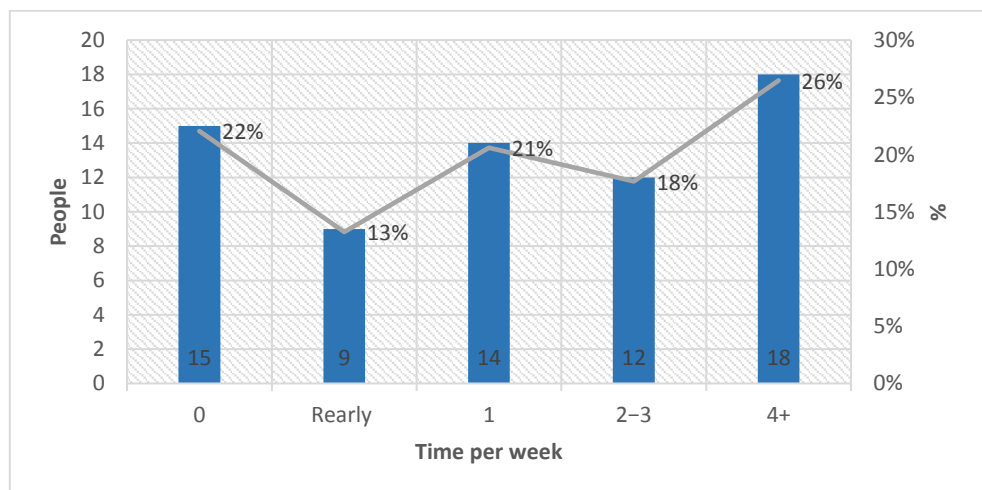


Table 13: Total weekly Video Conferencing

- A very important point of the questionnaire is to understand if their meetings got cancelled during the time when they were having VC system for meetings with other locations. Result shows the highest percentage **37.7%** of them has answered

that their meetings sometimes got cancelled, **34.8%** of them has occasionally to cancel the meeting because of VC issues and with a low percentage as **26.1%** of them has answered that their meetings never got cancelled, were the answers are mostly from which 57% of them belongs to the IT department and 43% of them are the other departments such as Finance and Human resources and **1.4%** has answered that often they have to cancel the meeting.

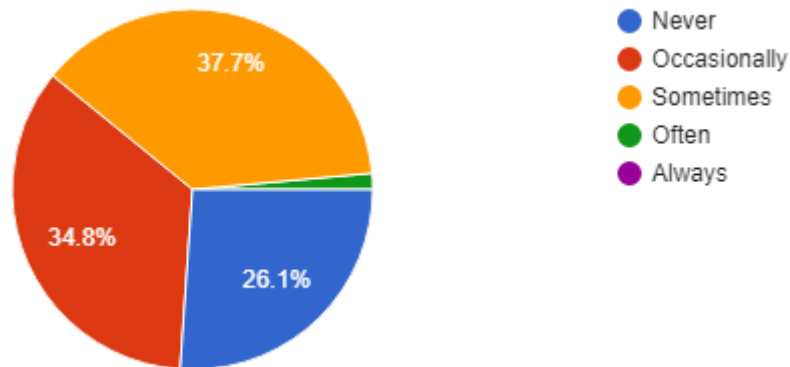


Table 14: Total Video Conference cancelled

The advantage of the video conference in their workplace, or regarding the question that what do they like the most by using VC as a communication tool. This point will show in more depth the result for one of the main research questions for this thesis, such as the benefits that video conference system has brought on our business life today.

Many of the answers were looked alike or had the same context, thus on points below there are divided and created on different groups that will show the main benefits:

- **No Physical Barriers** – One of the first benefits that video conference did bring to their work, responders considered the ability to participate on the meeting without having the physical barriers. VC system is helping to be on the loop with the work cases, getting to know the teams across the world and sharing ideas with them regardless their location or time zone.

Responders has answered in regards of this point, such as:

- *Gives you the opportunity to share information with people, even if they are not physically able to attend the conference/meeting.*
- *Real-time and a meeting or training do not depend on the physical presence of attendees.*

- *No need for physical presence*
- *Almost real interaction between people*
- *The ability to interact visually with the attendees*
- *The feeling of a more personal interaction*
- *As good as the actual conference*
- *Connect people I can see them and update strategy during the call*
- *It's a great way to connect live with partners abroad*
- *The possibility of being in many places in a single day*
- *Seeing new people from a long distance*

➤ **Mobility and Time-saving** – This result shows that the VC help remote workers to communicate and collaborate in an effective way and VC did improve the work to be more productive. Cost-reducing is one of substantial of VC and being able not to waste time on traveling and being tired and spending much more money, in order to make your job, VC has brought this flexibility on easy, faster and the experience of having “face-to-face” meetings anytime and anywhere. Below are the gained answers form the questionnaire about this group or point of benefit:

- *The flexibility that it gives. You don't have to be at the same place to get things done.*
- *You can stay in touch with anyone anytime*
- *Possibility to reach out to anyone anywhere.*
- *It's easy to communicate with all team members at the same time*
- *It makes it easier to communicate with colleagues that you don't share the same working place*
- *I can speak with ppl in Asia while staying in Europe.*
- *Communication is easier. You can better express yourself while speaking than writing.*
- *Because you can talk and see the other person at the same time*
- *Flexibility and time saved for not having to travel to a conference*
- *Its quicker than writing emails*
- *Easy to contact without having to be present*

➤ **Economical** –Since the answers were by employees and this point was more elaborated and demonstrated on Solaborate case with the example of their meetings, and the result showed that is a highly economic solution, but as well it is noticed that current technology it has impact the cost reduce for the company. The answers which describe this point are:

- *It saves time and money and gives you the feeling of being in the same room with the person you need to meet with*
- *Less costly and time-consuming*
- *It's cost effective and time effective.*
- *It is real-time and no travel expenses.*

The disadvantage of video conference - The result of the question what they dislike by using VC system on their workplace shows us the risk or drawbacks that responders are facing on their own experience while using Video conference solution.

Responders showed us and helped us understand that the highest percentage of them were getting as Sometimes a cancelled VC meeting, which is higher number of the failing meetings because of technology and in this case is impacting the effectiveness of communication and is a time consuming.

Therefore, regarding this question there were answered which had the same context, in this case below are on points the summary of this answer:

➤ **Technical Issues** – Many of the responders were facing the similar issues, such as the Technical issue during the video conference meetings. Today, on the market there are different system VC solution, some companies have a VC system which requires the third part such as technical support team to make this type of connection and as the result of it, is that participants on meeting cannot troubleshoot these issues, in many cases the meeting end up being cancelled or rescheduling it. The other type of VC there is the self-serve solution, the system that Solaborate as well use it, which is manageable by the participants on troubleshooting with technical issues, but since there is not much technical knowledge and as the gap of it some technical stuff is not able to be fixed and end

up not having a successful meeting. The answers below, are some that belong to this point gained from the questionnaire:

- *Technical errors while having them*
- *The pain of arranging it when technology doesn't make it easy*
- *Technical issues echo in voices bad microphones*
- *Experiencing Technical Difficulties*
- *Video quality and technical issues*
- *Technical Glitches*
- *Delay and issue to connect and during the conferences*
- *In case of bad video quality*
- *Some technical problems*

➤ **VC Cancellation and Content sharing**– This other point is kind of in the same concept such as technical, and some of the meetings are based on the content sharing and for that reason the meeting end up by being not successfully, in case they will not find any solution of it and continue meeting without it. Some of the answers from the questionnaire are as:

- *Unexpected issues and delays*
- *The meetings can be cancelled, and this is annoying.*
- *Video conference cancellation because of the poor internet connection.*
- *Sometimes it doesn't work*
- *Can be problematic*
- *Not having space to fully clarify your thoughts*
- *When you can't see well the presentations*
- *Can't use the whiteboard in our room*
- *When the picture gets stuck, but audio is ok*

➤ **Require Strong Internet Connection**– As another technical issue, such as the Internet network is required to be strong to have an effective VC. Some of the answers are:

- *It requires too much connection, time to time I used to have it through mobile internet, and at the end you can realize that you have 0 kb left on your balance.*
- *It can be unreliable if you do not have a stable internet connection.*
- *Sometimes due to some network issues video conference can be stopped and then you'll have to start over again and sometimes even repeat many things*
- *Potential interruptions from the network*
- *When you can't understand enough the conversation because of poor internet*
- *Sometimes bad internet connection or some other technical issues*
- *It needs a strong internet connection*
- *Bad internet connection or poor visibility.*

- **Sound Issues** – Further risk that responders have mention on the regards of the drawback of using VC system, is as well the sound issue. This point can be included on the same category as the technical part of the issues or the network issue but is as well showing that they have sometimes non-effective meeting.

As shown below the gained answers from the questionnaire:

- *I don't like echo sound during the meeting*
- *Usually, the sound is bad in video conferences*
- *When you can't be heard and need to repeat yourself many times*
- *Sometimes, bad acoustics*
- *Receiving communication from the other party seconds later*

- **Lack of Physical Contact** – As per this result there are responders who consider face to face meetings as a better solution and that video conference system is impacting on bad way the meetings since there is the lack of physical contact.

The result shows that a low percentage of the answers prefer face to face meetings.

Some of the answers are:

- *The lack of personality*

- *Lack of physical presence*
- *It can never fully replace personal contact.*
- *Time limitation*

Result showed that Solaborate is benefiting highly from the amount of cost reduction per year from implementing VC system on their company. As per the other benefits, such as the increase of the efficiency, VC is allowing people to interact in the real time and is helping participants to communicate their problems, share the new ideas and is more preferable than exchanging back and forth the ideas via email, or phone calls which is considered of not allowing many options that VC system is giving, such as sharing the screen, being able to see their body language for a better understanding, receiving feedback during the moment and not only verbal but as well as through body language. Thus, using VC system they will have less miscommunication, and as the result of it the work productivity is higher, projects will be completed faster and the efficiency of the company is improved.

However, there are as well some drawbacks gained from the external point of view, such as: not effective meeting, they have to repeat themselves many times because of technical issues, and as the result of it ending with an unsuccessful video conferencing meetings which ends up with cancelling it.

5. Results and Discussion

5.1 Research result

The results of this research have shown that technology is highly impacting communication within the business environment and communication tools have changed dramatically from the past periods until today.

Analysis of Solaborate company, which is already implementing the video conferencing “Hello” for their meetings within three different countries in three different continents, showed that video conference is an economic investment by not only reducing cost but as well allowing a secure and efficient communication within the company. Solaborate company has benefited by video conferencing as well as from the non-monetary benefits, such as work-balance, time consuming, increasing the satisfaction of employees and as the result of it they are more loyal to the company. In the article it is stated that, it's not always the money that keeps talented people contributing to your bottom line. Just as often, it's the way you treat your people that determines whether they'll give you 30 percent or 100 percent (Perkins, Abby. 2014).

Although, regarding to my research question, if the VC system is replacing fully face to face meetings, the finding from Solaborate show that there is still a need for face to face meetings, even though in low percentage, such as one per year and only for people on high positions such as CEO, CMO and main managers. Besides the results from the thesis, which showed that VC is very economical solution, it is proven from the theoretical part as well, as was mentioned “For a minimal cost, it is possible to set-up a fully functional video conferencing system that works in a professional and reliable way “(Essays, UK. 2013).

The questionnaire results show us from an external point of view the benefits and the drawbacks that they have been facing using VC system for their meetings on their workplace. The gained results in regards of the benefits are not many different from Solaborate company. Both results, internal and external agree that video conferencing helps them benefit on time-saving, faster decision- making, effective communication and being on the same page with all other teams across the world.

Regarding the drawbacks, questionnaire results from respondents helped us understand more about the issues regarding the obstacles faced during the video conferencing, issues which were not shown by Solaborate company. An important point gained in regard of the meeting cancellation using VC system has been shown that the highest percentage 37.7% of them answers were Sometimes, compared to only 26.1% which answered with Never. This makes us understand that when it comes to some sensitive meetings and high-profile meetings, it is yet better to rely on face to face meetings. Some of the issues and reasons why their meetings were being cancelled and not effective were: technical issues, sound issues, content sharing problems and the need for a strong internet connection. In the other hand, for Solaborate company the shown result on the graph (or table number four) that the highest percentage of VC meetings are from the IT department thus we can conclude that, in regard to the technical issues during the meeting, in Solaborate the team is well knowledgably on technological issues and in cases of the company is facing it they are able to troubleshoot it

6. Conclusion and Recommendation

In today's modern world revolution of technology, such as Video conferencing and technology, in general, have made a boom in the global market. The literature review showed us that years ago communication via video or phone call in a business environment was a luxury. Today, in a such a short amount of time seeing how the technology has been developed and is still getting more advanced day by day, have a positive impact in communication for businesses worldwide and analyses show that Video conferencing is becoming increasingly popular as the most advanced communication technology tool.

Our results showed that VC has become widely used in many different, almost all type of industries. The impact of advanced technology has increased the chances for faster and cheaper way of communication and connection between different countries or locations in different time zones, and in this way not only has made more efficient and productive work but as well is participating on helping multinational organizations and corporates to grow and extend their business. The impact of technology on Solaborate company is the essentials and the reason why this type of industry business is on the global market nowadays. Therefore, communication in the business environment has undoubted benefits because of technology development.

Without being sidelined the drawbacks, such as cancellation of meetings because of technical issues, as a recommendation for future analyses would be such as:

- By the fact that there are different Video conferencing system solutions and since the chosen company Solaborate is using "Hello" VC system and the company itself does not face this kind of issues, the further research can analyze the advantages and disadvantages of this type of VC system compared to any direct competitors and conclude which system is a better solution.
- On the other hand, as per economic view, further research can analyze the impact of advanced technology on global, regional or local economic growth.

With the constant development of technology and especially video conferencing solution, apparently occurs that VC will become a fundamental part of business life. With the help of

advanced technology, the world looks smaller and communication for the business process is no longer limited by locations, its is a faster and more effective communication.

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8. Appendix

Appendix 1: First Mobile Phone



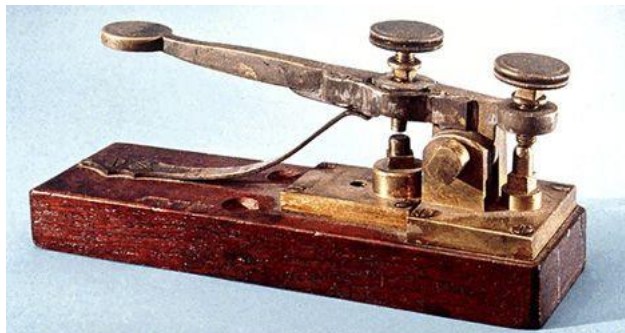
Source: *Which company made the first mobile phone. (2014). Quora for Busine.*

Appendix 2: Workplace on the 80s



Source: *1980, Wikimedia Commons, the free media repository*

Appendix 3: Telegraph used to send message from Baltimore to Washington D.C. in 1844



Source: 2013, *Smithsonian*; *How the Telegraph Went from Semaphore to Communication Game Changer*

Appendix 4: The Teletype on early ages



Source: K., L. (2010, December 14). *Dieselpunks: The Teletype Story*.

Appendix 5: Ericson phones on 1990s



Source: *Mobile Phone History*, www.mobilephonehisoty.co.uk

Appendix 6: History of Pagers



Source: 2015 (Saine, T.), *The History of Pagers*. Spok

Appendix 7: Smart Phones and Smart Watch



Source: *Smart Watch- The past, the present and the future and why it's a bright idea to pursue*, www.technologyvista.in

Appendix 8: VC Meeting from Home – Hello Solaborate



Source: (Solaborate, 2018)

Appendix 9: Hello VC Solaborate Device

HELLO | 2

The world's most powerful communication device



Source: Solaborate Company web page

Appendix 10: ROI of VC meetings for Solaborte

Calculate your ROI

Total Investment Cost:

Total Gain from
Investment:

Calculate ROI

Return on Investment
(Cost - Gain) / Project cost
x 100)

Payback Period (Years)

Savings on year 2

Savings on year 3

Appendix 11: Questionnaire Designee

1. Do you currently use Video Conference for communicating at your work?

- Yes
- No

2. How many electronic devices do you use for video conferencing?

- 0-2
- 3
- 4+

3. How many times you use video conference weekly?

Your answer _____

4. How often did your meeting get canceled due to Video Conference issues?

- Never
- Occasionally
- Sometimes
- Often
- Always

5. What do you like most about Video conference?

Your answer _____

6. What do you dislike the most about video conference?

Your answer _____

7. Which business sector does your company belong to?

Your answer _____

8. Which department do you work at?

- Human Resources
 - Finance
 - Management
 - Sales
 - Marketing
 - IT
 - Transport/logistics
 - Other
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