

Notre Dame University-Louaize
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&

Bordeaux Management School
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The Status of Virtual Workplace in Lebanon

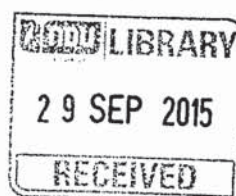
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Requirements for the Joint Degree of the Master of Business
Administration (M.B.A.) and the Master of Science in
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DECLARATION

I hereby declare that this Thesis is entirely my own work and that it has not been submitted as an exercise for a degree at any other University.

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ABSTRACT

Purpose - The concept of 'virtual' work relates to a world of information technology and communication advancements and improvements. This study aims to find out whether applying this international concept in Lebanese companies is a possibility and what criteria should be applied. Research has proven the importance of virtual work, as well; many multinational companies have proven the success of telecommuting. This study emphasizes the difference between workers' perception regarding virtual employment. As well, it researches telecommuting in Lebanon and whether Lebanese workers are potential candidates for the telecommuting project.

Design/methodology/approach - To assess the research question, a survey was conducted with the assistance of IPSOS to show whether we have significant differences in the susceptibility of telecommuting between men and women, women with and without children, and the young and older generation. Some of the statistical tests used were the Z-proportion test, the Chi2 test, the Anova test, and the Correlation test. A population sample of 300 respondents was randomly selected.

Findings - The findings revealed that there was a significant difference between men and women ($p\text{-value (Sig)} = 0.001 < 0.05$), between women with and without children ($p\text{-value (Sig)} = 0.000 < 0.05$), and between the young and older generation ($p\text{-value (Sig)} = 0.01 < 0.05$). However; the first two hypotheses were more significant than the third. Findings have also revealed that there is a difference in workers' perception regarding telecommuting; thus, we found a potential in Lebanese workers to telecommute.

Practical implications - With these findings at hand, the researcher of this study advise to the Lebanese organizations to propose virtual work opportunities to women, women with children, and the older generation.

Originality/value - This thesis relates to the implementation of an international booming concept which is being applied in the most developed countries, but has never been seriously applied in Lebanon.

Keywords - virtual, telecommuting, information technology, communication, virtual work, Lebanon

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Chapter 1: INTRODUCTION

1.1 General Background about the Topic

Given the technological high advancements and improvements, the concept of 'virtuality' has emerged alongside in many countries. The word 'virtual' can be defined as the following: "made, done, seen etc on the Internet or on a computer, rather than in the real world." (Longman Dictionary) However; the concept of "virtual" is a very broad one and it is defined in many different ways and fields. In this study, this concept was limited by the definition of "virtual office"; "the operational domain of any business or organization whose workforce includes a significant proportion of workers using technology to perform their work at home." (Oxford Dictionary) As well, along the study, you will find the word "telecommuting", which is the act of the individual who is using the concept of "virtual office".

Nowadays, many organizations and successful companies are using this concept in different ways; some of them are introducing the 'telecommuting' concept in their policies by having some departments fully or partially virtual. Some others are having their internationally dispersed teams work virtually; that is, if they have employees working from subsidiaries located in different countries and they should work on a similar project, the company will save all the expenses of traveling and its related costs as well as new recruits costs by using Information Technology to have them work together; each from his/her own location. This concept also is a kind of "virtual work" called "virtual teams". As well, there are some companies who are creating "virtual organizations", where the 'virtual' concept is taken to its extreme; that is, the company as a whole exists virtually without having any physical existence. Such companies are still rare relatively, but they are starting to emerge in countries such as the U.S. Many other kinds of virtual work is being introduced internationally; however in this study, it was narrowed by one kind called "telecommuting". On one hand, 'telecommuting' in Lebanon is a first step in order to reach 'virtual companies'; since 'telecommuting' and its clear understanding is fundamental to reach 'virtuality' in its further steps. On the

other hand, 'telecommuting' could be a solution for many societal problems in Lebanon such as the major traffic problem, the difficulty of employees staying in their jobs if they were obliged to move to further cities, saving of money on transportation, the difficulty of work-life balance, high stress and many other problems. So, it is an important question to ask if Lebanese people/workers are potential to telecommute so that in the end of this study we can find out if this project can be taken seriously and be if it can be launched beginning with the first step.

1.2 Need and Purpose of the study

"E-commerce, Information Technology, Internet, Telecommunication..." and much more are words which our world has become very familiar to. As you look around you, you can notice their importance and frequent usages in our everyday lives such as computers, mobile phones, tablets etc. For instance, think of how many times you use your mobile phones per day or your computers; every person needs a computer to be able to accomplish his/her work. Nowadays, we are all dependant on technology, which is continuously improving and advancing in a very quick pace. Consequently, technology is becoming a huge industry, which also includes communication being as well a big part of this growing and promising industry. Think of anything you want to do and you will find that it can be done from home by simply opening your laptop or tablet or even mobile phone and pressing some buttons. For instance, instead of going to the store to buy a newspaper; we can read it on our digital screens. As well, if we need to transact any amount of money to any part of the world, it is also done with the help of e-commerce. Moreover, if we need anything from clothes, books etc, we can deliver them through the internet with just few clicks on our laptops or mobile phones and we will have them delivered on our doorstep. Furthermore, we can book our plane tickets and even hotel rooms also with a few clicks on our mouse. As well, even jobs are following this technological trend by having people work from home without going to their workplace; which is the subject matter of this study.

As we are noticing with every passing day, IT and all the technological advances are changing many factors in our lives; also, our habits and ways of living in a way that we are becoming dependant on technology. Alongside with the technological big and quick improvements; communication has also greatly evolved by increasing their speeds and making 'connecting' much easier than yesterday. A whole new world is being created with the introduction of such technological and communicational advancements. Thus, it is of extreme importance that we focus on this field, which is the most influential in our today's altering world. In order to stay in line with our world, it is essential that we keep up with all its improvements and always be aware of the possible future changes that might occur by investing in the field that will bring amendments and modifications in our future; which is technology and communication in our case today. This study involves a new trend that we are facing today; which is working from home without going to the workplace; which is narrowed down in the study as 'teleworking' or 'virtual work'.

Communication and technology are both used together to telecommute; and these two factors are the world's subject matter nowadays; so it is very important to research them since our world's future depends on them. Particularly, the trend of many kinds of 'virtual work' is continuously increasing in a high rate such as 'virtual organizations', 'virtual teams', 'virtual office' etc. In this study, the focus was on one kind of 'virtual work', which is 'telecommuting'. More specifically in this study, the application of the concept of 'telecommuting' was taken to be studied on the Lebanese population. The objective here is to verify the degree of acceptance of this new concept by the Lebanese population, which is categorized by gender, age, and some other factors. You might ask the question: 'Why on the Lebanese community?' The answer is classified in two different parts; the first is that the world is witnessing this new trend internationally and in many successful companies it is widely used today, so Lebanon and its companies will highly benefit if they applied this successful and international concept knowing that it is showing positive results. However; the second part of the answer will be that Lebanon will be able to resolve problems of pollution, traffic, transportation etc. as well

as the high level of stress that people are suffering from given the dilemmas mentioned and much more; which will be explained further in the rest of the study.

1.3 International Perspective

Currently, a lot of research is being conducted internationally on the idea of introducing and improving virtual work in organizations; some of which are becoming hundred percent virtual; which means that the company does not have any physical existence. If we look around us, we can see that there exist also online companies that have no actual location; they do business through the internet only. In addition, even banks are starting to use virtual activities where any customer can transfer money and access their accounts through their mobile phones or laptops. Nevertheless, in this study, the objective was to take a part of this big project called ‘virtual’ and study its acceptance on the Lebanese community, since it is a new concept that is being introduced in Lebanon. Internationally and in many developed countries, this concept has reached high levels of adaptability and it has been very friendly with people. On the other hand, this concept is still in its first steps in Lebanon. Consequently, this study has taken this idea into consideration; therefore the ‘virtual work’ concept was narrowed down by one of its simplest types; which is ‘teleworking’.

As mentioned earlier, the concept of ‘virtual work’ generally and ‘teleworking’ specifically has been internationally exposed and practiced in many developed countries. In this study, we took the Lebanese community as the sample to be researched; however, this concept is and can be applied internationally. When it comes to technology, IT, and communication; the following key words directly come to mind: world, international, across countries, world trend etc.

1.4 Brief Overview of all Chapters

The following study will include five chapters, including this one, which will be treating the following ideas: Chapter 2 will be introducing the concept and definitions of ‘virtual’ as well as a brief overview of its history. Moreover, this chapter will be

covering the trends towards virtual organizations and its characteristics along with the types and levels of 'virtual work'. In addition, some examples of successful international organizations which implemented 'virtual work' will also be mentioned along with some requirements for their success. It will as well be covering some models and figures which will clarify more some specific ideas related to the concept of 'virtual'. Chapter 3 will be explaining the methodology and procedures we went through in the study to reach the sample studied along with the selected variables as well as the research question and its hypotheses that the study will be aiming. Chapter 4 will be exposing the findings of the study; the descriptive statistics and the main results along with the discussion of the findings and the hypotheses whether they were accepted or rejected. Chapter 5; which is the final chapter will be analyzing the main results with some recommendations along with some managerial implications and limitations of the research.

Chapter 2: REVIEW OF LITERATURE

2.1 State of Knowledge in the Area of Interest

The term 'virtual' and its concepts do not follow simply one agreed-on or universal definition; as well, its concept does not carry one unique and clear meaning rather, it is a very complex concept that was explained by many researchers and authors. However, there were different views and definitions on this subject matter. Thus, the application of this concept is very wide and consists of many types of the way it functions. Even though this concept did appear a while ago, nevertheless it is becoming more and more discussed and implied especially since we are living today in a world with no boundaries where the technological boom is invading it, which make us living in an Information Technology world that may lead us to an e-world, where everything is about technology. Accordingly, such a hot subject is of extreme importance in our transforming world where most of people are depending on the so-called 'Technological world and globalization". Throughout this chapter, many views and models of 'virtuality' studied by professional researchers will be discussed. An extensive research on Virtual Organizations and its kinds along with the literature that describes the concept of Virtual Organizations will be conferred. Also, the topics related to the research questions will be explored in this part.

2.1.1 Definitions and Concepts of "virtual"

The term 'virtual' in this sense has its roots in the computer industry. When a computer appears to have more storage capacity than it really possesses it is referred to as virtual memory. Recently, the word 'virtual' emerged with a new meaning alongside with the technological boom that the world has witnessed and is still witnessing till today. Nowadays, this word directs our minds to keywords such as: e-commerce, internet, technology, Skype, telecommuting, video-conferencing, teleconferencing, information technology etc. The concept of this word explains the existence of something that has no physical

appearance. Also, virtual organization or virtual work is often associated with terms such as virtual office, virtual teams, virtual leadership etc. For instance, when someone talks about a 'virtual' office, he/she is defining an office that does not have walls, desks, chairs etc. According to Thomas H. Davenport and Keri Pearlson, "the term 'virtual office' covers a variety of mobile and remote work environments." Hence, a virtual company is the concept of a registered company which recruits its employees from different places, countries, and even continents that have 'virtual' offices instead of physical traditional brick and mortar offices. In literature, many definitions were given to 'virtual organizations or companies', however, every author defined it according to his own view and understanding of 'virtual'. The following are some definitions:

"A form of organization that uses telecommunications networks and other information technologies to link the people, assets, and ideas of a variety of business partners, no matter where they may be, to exploit a business opportunity." (As defined by 'McGraw-hill')

"A geographically distributed organization whose members are bound by a long-term common interest or goal, and who communicate and coordinate their work through information technology." (As defined by Manju K. Ahuja and Kathleen M. Carley)

"Virtual Organizations are distributed 'business processes'. These processes may be 'owned' by one or more organizations acting in partnership. For a specific project, resources are assembled to perform a business process on behalf of the project owner(s), and then disassembled on completion of the contract." (Wolff, 1995)

"Telecommuting, remote work or telework is a work arrangement in which employees do not commute to a central place of work. A person who telecommutes is known as a "telecommuter", "teleworker", and sometimes as a "home-sourced" employee. Many telecommuters work from home, while others, sometimes called "nomad workers" use mobile telecommunications technology to work from coffee shops or other locations." (Wikipedia, 2013)

The following table reflects the two different views in literature regarding the definition of a virtual organization; the structure perspective which focuses on the building blocks and the properties of a virtual organization, and the process perspective which relies in its operations and behavior. (Saabel et al., 2002)

Perspective	Author	Terminology
Structure	Byrne (1993) Aken et al. (1998) Strader et al. (1998) Wildeman (1998) Grenier and Metes (1995) Wütrich and Phillips (1998) Mertens et al. (1998) Goldman et al. (1995) Davidow and Malone (1992)	Network Network Network Alliance Alliance Form of co-operation Form of co-operation Combination of core-competencies Combination of activities
Process	Hale and Whitlaw (1997) Venkatraman and Henderson (1998) Mowshowitz (1997) Katzy (1998)	Continuous or institutionalized change Strategic approach Management approach Action or ability

Table 1: Authors and their main focus on virtual organization (Saabel et al., 2002)

The eventual goal of the virtual organization is to provide innovative, high-quality products or services instantly in response to customer demands. As we can infer, the virtual organization is a wide concept that carries different definitions, so to clarify it we can refer to Scholz's model which divides the virtual organization into inter- and intra-organizational perspective as follows:

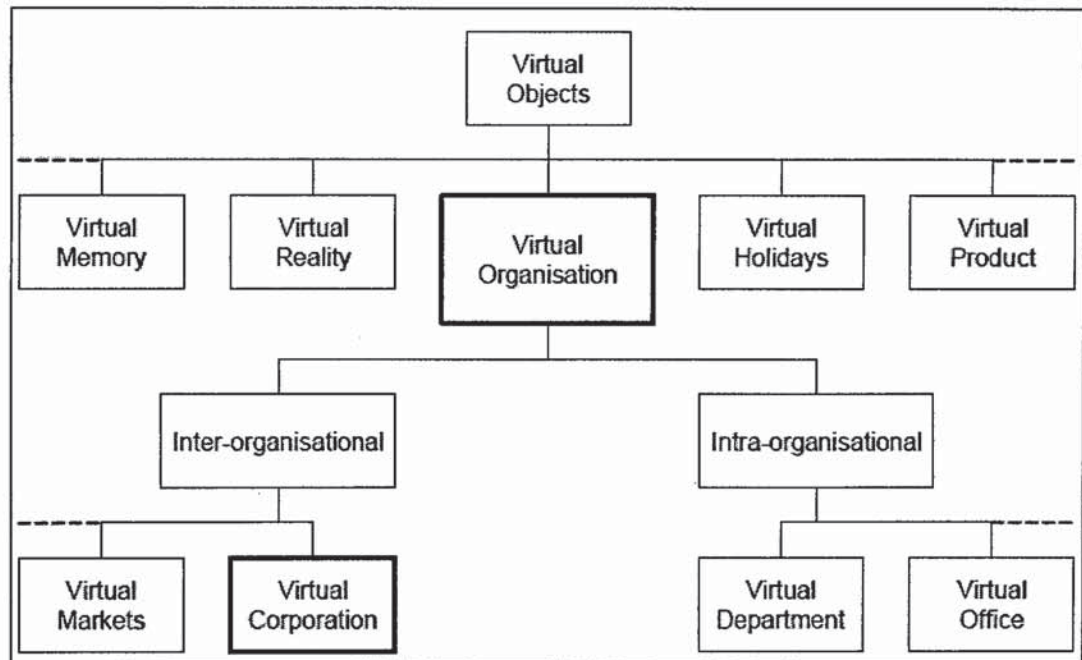


Figure 1: Virtual Objects (Scholz, 1997)

In my study, my focus is on the intra-organizational division of virtual organizations rather than the inter-organizational division.

Referring to the intra-organizational division of a virtual organization, we can go further in defining many concepts of virtual work in this category. The following part will be discussing them according to the continuum of different virtual office environments in a model constructed by Thomas H. Davenport and Keri Pearlson.

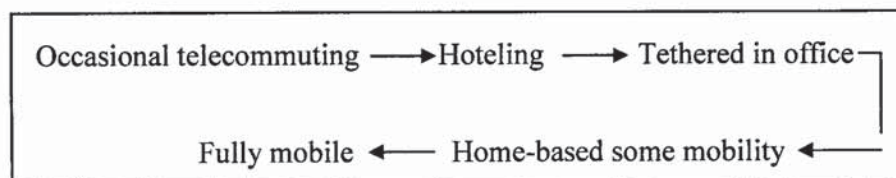


Figure 2: Continuum of Alternative Work Arrangements (Davenport & Pearlson, 1998)

- A. **Telecommuting:** “Refers to situations in which workers with fixed offices occasionally work at home.” According to their research, they found out that this type was the most common type used. Its primary benefits: Flexibility and

potentially increased profitability. However it is a low-risk and low-reward option.

- B. **Hoteling:** “Hotel-based workers come into the office frequently, but because they are not always physically present they are not given a fixed office space. Instead they can reserve a ‘hotel room’ (more likely a cubicle), where they can receive and make telephone calls and link their laptop computers to the network.” According to their research, hoteling is popular with professional services firms because personnel frequently work at client sites. However, workers find it more complicated than working in a simple office.
- C. **Tethered worker:** “has some mobility, but is expected to report to an office on a regular basis.” In such type of virtual work, an employee checks in in the morning and then they are free to wander wherever they want. However, some workers found it difficult to be creative and work with their teams effectively.
- D. **Home-based some mobility:** “‘Home’ workers have no office at all other than a room, or possibly the kitchen table, in their homes.” Its benefits are: flexibility for employees and reduced office-space costs for employers. However, some people preferred to work from their offices.
- E. **Fully mobile:** “‘Fully mobile’ workers do not even have home offices. They are expected to be on the roads or at customer sites at all times during the workday.” According to their research, they are most popular in field sales and customer service employees.

According to their study, most of the organizations surveyed used one or two types of virtual work. It is very common that organizations will increase their use of virtual work in the following years. As for my research, my focus will be on the home offices type of virtual work.

‘Virtual team’ is a concept associated with the term ‘virtual organization’ that is also essential to understand. It is defined as “groups of geographically and organizationally dispersed coworkers that are assembled using a combination of telecommunications and information technologies to accomplish an organizational task.” (David J. Pauleen)

Virtual Office is “the operational domain of any business or organization whose workforce includes a significant proportion of workers using technology to perform their work at home.” (Oxford Dictionary)

“Virtual offices, telecommuting and telework all mean essentially the same thing: employees work from another location outside of the traditional office.” (Ruth Mayhew)

After looking at the different definitions and concepts of ‘virtual organization’, we can look at the big picture by going through the attributes of the virtual organization as shown by Gerardine Desanctis and Peter Monge. (1999)

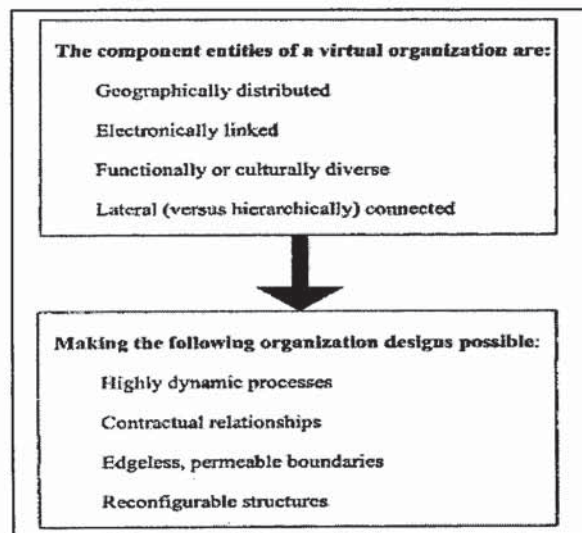


Figure 3: Summary of the Attributes of Virtual Organizing (Desanctis G., & Monge P., 1999)

Few pure virtual forms exist today (Dutton, 1999), however types of virtual work exist in its many forms in many organizations.

The following figure illustrates a general differentiation between “Same Place-Time” concept, which is the traditional organization and “Different Place-Time” concept, which is the virtual organization.

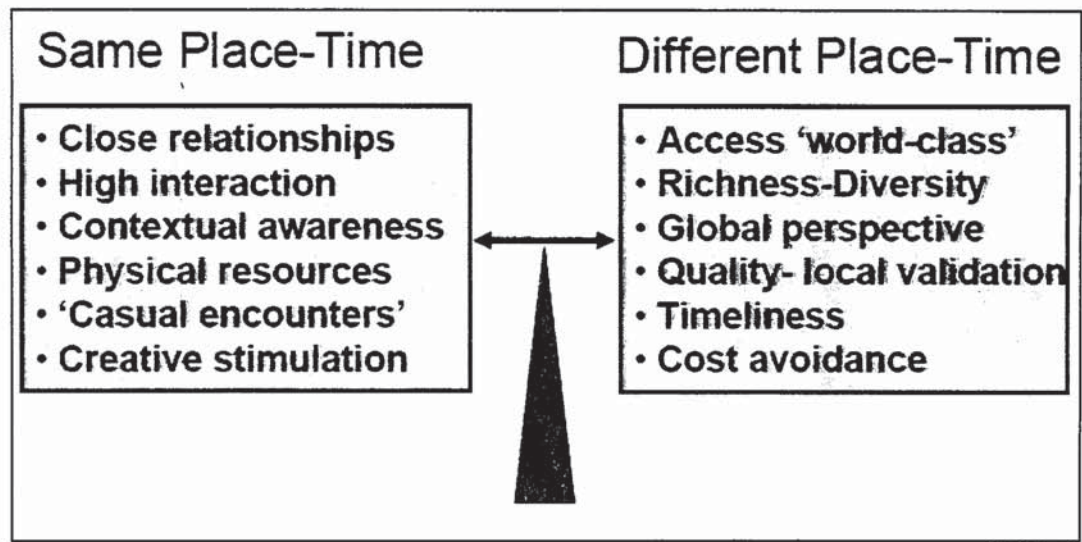


Figure 4: Virtualization-a balancing act (David J. Skyrme, 1999)

2.1.2 Overview and History

About thirty eight years ago, Jack Nilles came up with the term 'telecommuting' which means 'to work at home by the use of an electronic linkup with a central office.' (Merriam Webster-An Encyclopedia Britannica Company)

In the 1980s, companies started using this concept as a way to reduce the costs of office rent. Later, they started to implement it as a way to attract and keep top personnel in fields with short labor supply. Soon with the technological innovations and computer-based technologies which involved working from different countries electronically and without the need of traveling, the 'teleworking' concept emerged. (Kurland, N. B. & Bailey, D.E., 1999) As defined by the Telework Enhancement Act of 2010, "[t]he term 'telework' or 'teleworking' refers to a work flexibility arrangement under which an employee performs the duties and responsibilities of such employee's position, and other authorized activities, from an approved worksite other than the location from which the employee would otherwise work."

In 1986, Mowshowitz used the term 'Virtual Organization' for the first time. (Mowshowitz, A., 1986) Since then, many researchers studied this concept and gave it many definitions according to their own views. However, research on

this concept is still evolving and the literature still lacks precision to its exact meaning and structure.

In the 1990s, the concept of virtual organizations started developing with the improvements of the internet and e-commerce. (Ahmed N., Montagno R., & Sharma S., 2010) As well, in the mid-1990s, a form of mobile telework appeared which is called the “virtual office”. (Callentine, L. U., 1995) Nowadays, many multinational companies and organizations are practicing the concept of ‘virtual work’ in many of their departments and offices such as AT&T, Procter&Gamble, and IBM, which have replaced traditional offices for field sales and customer service with virtual ones. Moreover, other companies replaced traditional offices for accountants and researchers with virtual offices as well. “For these businesses, work is becoming something you do, not a place where you go.” (Davenport, T. H. & Pearlson, K., 1998) Many offices are being replaced with technologies in today’s business world.

According to AON Consulting Statistical Data, the prevalence of virtual workers has increased 39% due to many factors such as: the high speed internet connection, software solutions that enable remote collaboration, and improved telephone conferencing systems. All this facilitated the colleagues’ work among each other from wherever their work locations might be. Also, “The combination of a greater focus on employer and employee cost cutting initiatives, the increasing influence of the Millennial generation on workplace practices and benefits, and new tax incentives for virtual work programs are contributing to the growth of virtual workforces.” (Thompson C., Caputo P, 2009)

2.1.3 Trends toward Virtual Organizations

The current trend in companies and organizations worldwide is the implication of virtual work. More and more companies are practicing it in their programs and planning. What are these trends that are leading to the use of virtual work or the birth

of virtual companies? In literature, Fairchild (Fairchild, 2004) emphasized that trends towards Virtual Organizations are increasing. (Bleeker, 1994) cited four key trends, which are the following:

A. Pace

Bleeker (Bleeker, 1994) noted Alvin Toffler's (Toffler, 1970) argument of businesses demanding quick response anywhere at any time and his prediction that businesses would turn to be "survival of the fastest, not the fittest". Today, this concept is appearing in companies which are facing shortened life cycles and difficulty in responding to new demands. (Fairchild, 2004)

B. Cost

Bleeker (Bleeker, 1994) points out the decreasing costs of start-up businesses that newly enter the market, especially the technological driven firms. He discusses the threat of these new entrants and their potential of having a huge impact on innovation versus the big companies.

C. Personalization

This concept is being highly introduced instead of the economy of scale concept, since it is helping companies reduce costs by tailoring specific needs to specific customers; businesses are focusing more on customers' needs and demands. Bleeker emphasizes on this idea of "Today, customers get what they want or go elsewhere." (Bleeker, 1994)

D. Globalization

With globalization, the world has no boundaries; that is, companies no longer compete with their rivals inside their own countries, rather they compete with their rivals all over the world. "It's the age of emancipation. Time and space will collapse, and the barriers to communications will fall away." (Bleeker, 1994)

As we can conclude in this section, these trends are encouraging companies to shift from the traditional hierarchical systems to a new concept; 'Virtual Organizations.'

“Taken together, these factors in many instances have made a hierarchical organization an inappropriate solution to the market’s needs and have made Virtual Organizations viable options.” (Fairchild, 2004)

Bleeker did mention also “the unwired society” explaining that employees will be working independently of time and space constraints. “It’s the age of emancipation. Time and space will collapse, and the barriers to communication will fall away.” (Bleeker)

Moreover, there are other trends that are leading to the encouragement of using the virtual concept, which are technology which is offering increasingly better performance, connectivity, and portability and information/knowledge work (today more than 70% of work is information-intensive). (Skyrme, D. J., 1999)

2.1.4 Characteristics

In order to answer the question: “What is virtual work or virtual office or virtual organization?” we will have to clearly understand its characteristics, where we would be able to identify a more comprehensible concept for ‘Virtual Organizations’. In the following section, an overview of the characteristics of a virtual company will be discussed.

The following are characteristics for Virtual Organizations based on literature findings:

A. Boundary Crossing

Nowadays businesses are highly demanding flexibility since most of them are working on mass-customization by which they react immediately to specific customer demands rather than economies of scale. Such system requires high flexibility which in turn requires cooperation between independent departments or employees or branches that takes place in the form of a network type of virtual organization. This kind of collaboration where individuals are dependent on each other is practiced in virtual organizations. (Jagers, H. P. M., Jansen W., & Steenbakkens G. C. A., 1998)

B. Complementary core competencies/the pooling of resources

In Virtual Organizations, employees share their core competencies or core activities or businesses in order to strongly face all possible difficulties and demands. Getting together all core competencies can achieve much more than individual organizations. So the idea here is that all participants in a Virtual Organization gather their core competencies and resources to confront market barriers and to attain their maximum. (Jagers, H. P. M., Jansen W., & Steenbakkens G. C. A., 1998)

C. Geographical Dispersion

Virtual Organizations are characterized by their geographic dispersion of activities, since communication between employees is taken care of by the current information technology which made the work location no longer a significant factor for employees to communicate. This explains that employees in a Virtual Organization can easily communicate having countries or even continents separating them. (Jagers, H. P. M., Jansen W., & Steenbakkens G. C. A., 1998)

(Bultje and Van Wijk, 1998) define 'geographical dispersed' as "a company is geographically dispersed if the buildings are separated."

The following model (Mc Kay & Marshall, 2000) shows a classification of geographical dispersion related to business alliances.

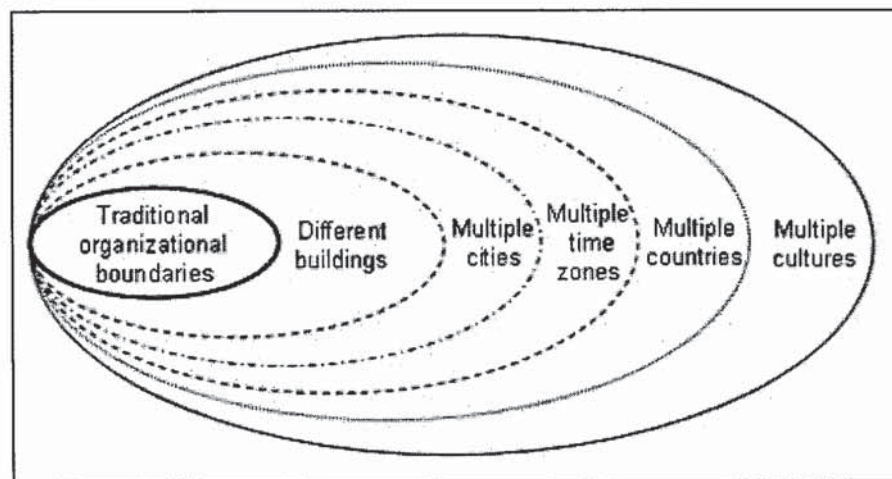


Figure 5: Characteristic dispersion of VOs (Mc Kay & Marshall, 2000)

This characteristic is the most essential for the use of Information and Communications Technology in Virtual Organizations. Here, ICT is enabling employees to collaborate independently of location and time.

D. Changing Participants

The previous characteristic raises questions such as ‘What involves or what consists of a virtual organization?’, ‘What is considered a virtual organization and what is not?’, ‘What participants are considered in the virtual organization and what participants are not?’ etc. “In actual fact, the virtual organization (as a composite of relations between people and/or organizations) can directly redevelop activities (often in a different compilation) for a new project.” (Jagers, H. P. M., Jansen W., & Steenbakkers G. C. A., 1998)

E. Participant Equality and Trust

In a virtual organization, trust between participants and equality in collaborative effort are essential for its success. “Virtuality requires trust to make it work: Technology on its own is not enough.” (Handy, 1995) Every participant carries the responsibility of putting his own effort to contribute to the improvement of the end product or service offered by the company and form good relations with the other participants regardless of his/her location. (Jagers, H. P. M., Jansen W., & Steenbakkers G. C. A., 1998)

F. Electronic Communication

Information and communications technology is a prerequisite for the appropriate implementation of a virtual organization, since through it all communication occurs. Virtual organization is a concept that ruptured the barriers of time and place replacing them by electronic communication such as E-mails, groupware, videoconferencing, voice mail and many others. So, electronic communication and ICT are the

basics of any virtual organization. (Jagers, H. P. M., Jansen W., & Steenbakkers G. C. A., 1998)

Many authors in the literature discussed some other characteristics and many disagreed on some mentioned, since till today it is not yet been agreed upon one definition for 'virtual organizations'. Here are some other characteristics for 'virtual organizations' discussed by other authors in the literature:

G. No Hierarchy

Sieber (Sieber, 1998) explained that the equality between the participants (a characteristic mentioned above) leads to a virtual organization that has a characteristic of 'No Hierarchy', which he called egalitarian structure. Many other authors in the literature did talk about this characteristic of virtual organizations; the authors (Malone & Rockart, 1993) constructed a model showing a comparison between the traditional hierarchy and the ad hoc corporate structures as follows:

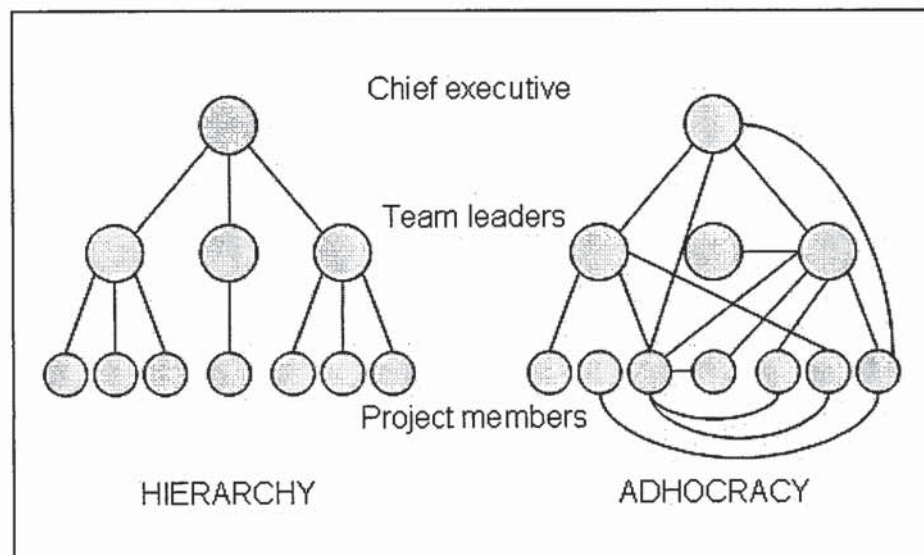


Figure 6: Traditional vs. ad hoc corporate structures (Malone & Rockart, 1993)

This model shows how the virtual organizations, with their different characteristics from traditional organizations, are shifting to the adhocracy concept (Toffler, 1970).

2.1.5 Typology of Virtual Organizations

The concept 'Virtual' in business has many connotations, meanings, and concepts and it is divided into many types. According to (Mowshowitz, 1994), the virtualization may be taken at different levels. In order to classify the types of 'Virtual' concept and understand more clearly their definitions and different meanings, the following table will be showing the Virtual Organizations types based on specific dimensions. (Palmer J. W., & Speier, C., 1997) This table was concluded after they conducted a survey on 55 organizations occupying the virtual model.

	Virtual Teams	Virtual Projects	Temporary VOs	Permanent VOs
Range of Involvement	Internal to an organizational function or departmental unit	Across functions and organizations	Across organizations	Across organizations
Membership	Small, local	Indeterminate	Typically larger	Typically smaller, but scalable

Mission	Teams on specific, ongoing tasks	Multiple organizational representatives working on specific projects	Multiple functions responding to a market opportunity	All functions and full functionality as a working organization
Length of project	Membership varies, but form is permanent	Temporary	Temporary	Permanent
Uses of IT	Connectivity, sharing embedded knowledge (e-mail, groupware)	Repository of shared data (databases, groupware)	Shared infrastructure (groupware, WANs, remote computing)	Channel for marketing and distribution, replacing physical infrastructure (Web, Intranet)

Table 2: VO types comparison on multiple dimensions (Palmer, J. W. & Speier, C., 1997)

On the other hand, Venkatraman (1995) and Saaksjarvi suggested several stratum in the process of virtualization as follows: **(Guyverson, V.)**

A. Individual level or sub-intra organizational

It involves local tasks in which a group of people in a different organization is working on through distance communication process.

B. Organizational level

It involves the use of information technology to manage and control the organization.

C. Inter organizational level

It involves the use of information technology to coordinate an economic activity through the cooperation of many organizations.

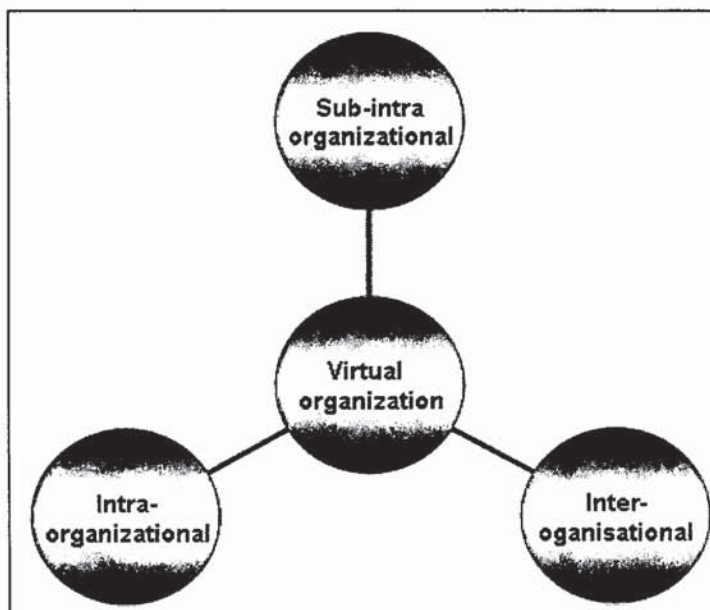


Figure 7: Typology of VO

2.1.6 Virtual Work Patterns

When we hear the word ‘virtual’ many concepts come to mind; however, every concept has a distinct meaning. In the previous section and in section 2.1, ‘Virtual Organization’ was divided into specific types; however, in this section, the emphasis is on the inter-organization level of ‘Virtual Organizations’, which will be discussed further with the explanation of the types of ‘virtual work’ in Virtual Organizations. The following figure



explains how the Virtual Organizations on the inter-organizational level consists of many kinds of virtual work, and each one of them is a whole simultaneously, a part of that Virtual Organization. (Lipnack, J. & Stamps, J., 1997)

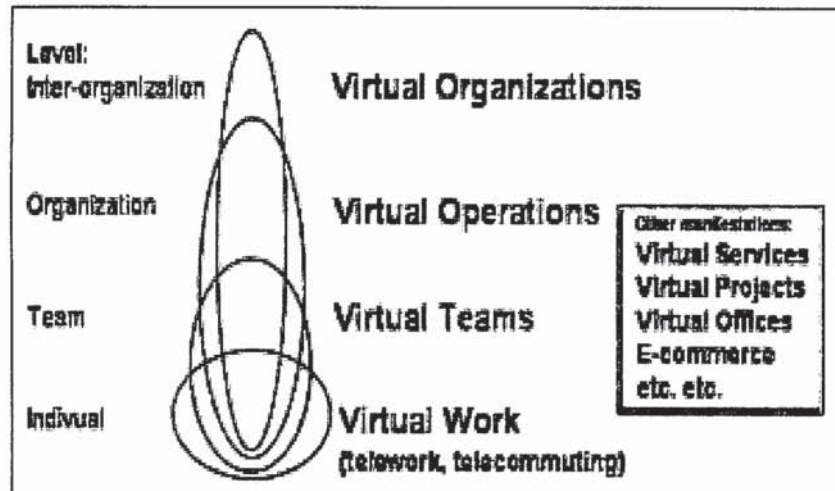


Figure 8: Adapted from a network 'holonomy' – a whole yet a part (Lipnack, J. & Stamps, J., 1997)

The above diagram matches every virtual activity to its level of involvement; virtual work is performed at the level of an individual who is telecommuting or teleworking (defined in section 2.1). As for virtual teams, it is performed at the level of a team, which is defined as "...a group of people who interact through interdependent tasks guided by common purpose. Unlike conventional teams, a virtual team works across space, time, and organizational boundaries with links strengthened by webs of communication technologies." (Lipnack, J. & Stamps, J., 1997) Also, virtual operations are executed at the level of an organization. So, a virtual organization consists of one or more of these activities and more such as virtual services, virtual projects, virtual offices etc.

2.2 Previous Research

2.2.1 Challenges in electronic communication and its implications on Virtual Organizations

As discussed in previous sections, Virtual Organizations' basis is Information Communication and Technology, so in the following table will be explained some challenges of electronic communication that, if not well handled, can have negative implications on the success of a virtual organization.

Table 1 Major Results of Research on Electronic Communication and Some Implications for Virtual Organizations	
Research on Electronic Communication	Implications for Virtual Organizations
<p>1. Communication Volume and Efficiency—In electronic communication settings, volume tends to increase and efficiency tends to decrease.</p> <p>2. Message Understanding—Message bias decreases but comprehension is more difficult (relative to face-to-face). Impression formation takes longer. Social context is critical.</p>	<p>Highly Dynamic Processes—Managing communication load and meaning will be difficult as business processes change repeatedly. Message understanding may go down (at least initially) when processes change. We can expect simultaneous pressures to routinize and personalize communication.</p>
<p>3. Virtual Tasks—Some tasks are performed less effectively when done electronically; for example, consensus formation.</p>	<p>Contractual Relationships—Some tasks may not lend themselves to execution across boundaries; design of contracts may have to vary by task, with some more formal (legal) and others more informal (psychological).</p>
<p>4. Lateral Communication—Broader, more diverse participation is likely; less domination and hierarchy in electronic communication (though these are not entirely eliminated).</p> <p>5. Norms of Technology Use—Styles of technology use emerge in individuals, groups, and organizations.</p>	<p>Edgeless, Permeable Boundaries—More boundary spanning is likely; broader, more functionally and culturally diverse parties will communicate. Conflicts are likely if communication norms that are formed in different locations are not compatible.</p>
<p>6. Evolutionary Effects—Impressions of others, impression management, and the degree and type of relational communication all change over time. Interpersonal relationships deepen. Norms develop.</p>	<p>Reconfigurable Structures—Reliable communication norms may be difficult to develop if redesign occurs too rapidly; use of communication histories may help to shorten evolutionary time periods following redesign.</p>

Table 3: Major Results of Research on Electronic Communication and Some implications for Virtual Organizations (Desanctis, G. & Monge, P., 1999)

2.2.2 Successful Virtual Work in Specific Sectors: Some findings and examples

A. Findings

According to the research study performed by Modalis Research Technologies (a market research firm) which was performed on a sample of 510 qualified people among which are management and staff-level employees, the following was inferred:

- a. Corporate acceptance of virtual work is greatest among the technology industry and large companies. (Note that large companies have at least 500 employees)
- b. Virtual work is most common among technology industry workers, and professional services.
- c. Optimism about virtual team opportunities is highest among technological industry workers, managers, and men.

On the other hand, according to the study performed by Thomas H. Davenport and Keri Pearlson (Davenport, T. H. & Pearlson, K., 1998) who took a sample of 100 companies among the Fortune 500 companies, the most prevalent industries for virtual work are information technology, consumer products, and professional services industries.

The following are some statistical data that shows the success of the telework concept: (Telework Coalition: www.telcoa.org)

- a. According to the Society for Human Resource Management's 2005 benefits survey, 37% of companies allow some sort of teleworking or telecommuting. (SHRM; the world's largest association devoted to human resource management)
- b. According to a huge compensation survey of 1,400 CFOs conducted by Robert Half International (a leader in professional staffing and consulting services), 46% said telecommuting is second only to salary as the best way to attract top talent, whereas 33% said telecommuting was the top draw.

- c. Less than 1% of telecommuters want to stop telecommuting once they have started.
- d. According to the survey conducted by Staples Advantage (the business-to-business division of Staples, Inc. (Nasdaq: SPLS)), which performed an online survey, with responses from more than 140 telecommuters at companies of various sizes and across industries (May 2011), the following was inferred: Telecommuters in the U.S said that:
 - i. Their stress level was reduced 25% on average when they started working from home. As well, 73% of them said that they also eat healthier when working from home.
 - ii. They (76%) are willing to work overtime and stay loyal to the company if working from home.
 - iii. That they (80%) are having a better work-life balance than working from the office in their work locations.
 - iv. They (86%) are more productive when they work from their home offices.

Moreover, according to a March 2009 report, “U.S Telecommuting Forecast, 2009 to 2016” from Forrester Research, Inc. , the number of telecommuters is expected to increase up to 63 million in U.S by 2016. (The sample of this survey was N=61,033)

B. Examples of flourishing companies employing telework successfully

(Brunelli, L. M., 2012); (Skyrme, D. J., 2011)

In the following part, four examples of successful companies integrating virtual work will be further discussed. These companies are from different sectors; service such as insurance, consulting, and telecommunication firms as well as manufacturing firms. Hence, this implies that virtual work is incorporated in several company sectors.

To start with, *Deloitte LLP*, which is a very successful consulting firm ranking # 63 in Fortune's "100 Best Companies to Work for", has been offering its 45,000 employees the luxury to telecommunicate as of fifteen years ago. Deloitte LLP was able to diminish its office space and energy costs by 30% after saving \$30 million in 2008 when they redesigned facilities to accommodate mobile workers who are not in need for permanent desks. Moreover, *Aetna*, also a successful insurance and managed care company, comprises telework in its departments such as the legal, sales, nursing, claims processing program, product management, and clinical staff departments. In addition, *AT&T*, a leader in telecommunication services integrates virtual work through telecommuting and work from different locations. According to the company website, in 2010 AT&T counted more than 12,000 approved telecommuters among its ranks and more than 130,000 employees have access to technology that allows them to work from a variety of locations. Finally, *Intel*, a thriving multinational semiconductor chip maker corporation ranking # 51 overall in Fortune's "100 Best Companies to Work for" in 2011, has made it on its top telecommuting company's list two years in a row with a report of 82 percent "regular" telecommuters. According to the company's benefits page, employees and managers may agree on an option such as telecommuting. Consequently, this kind of virtual work in the above examples elaborated can be classified under the Inter-organizational type of virtual Organization, which is the focus of my study.

Moreover, "Companies such as Procter & Gamble, IBM, Hewlett Packard, AT&T, and Compaq have partially or fully eliminated traditional offices for field sales and customer service. Other companies have eliminated offices for workers including researchers, real-estate managers, and accountants. For these businesses, work is becoming something you do, not a place where you go." (Davenport, T. H. & Pearlson, K., 1998)

2.2.3 Essential Foundations for effective virtual collaboration

In literature, many authors talked about virtual collaboration and its fundamentals; many of them believed that Information and Communication Technology is one of the most important factors or foundation for successful and effective virtual collaboration. In addition, some of the authors discussed the importance of human capital and social capital factors.

According to Riemer and Klein, (Riemer, K. & Klein, S., 2003) there are some essential foundations in order to reach successful virtual organization collaboration, which are: the human capital and the social capital sections. They explain that individual training and learning in the human capital section and group formation in the social capital section together complement each other along with their attributes to reach competence, ability, and willingness (motivation) which are ingredients for a successful collaboration.

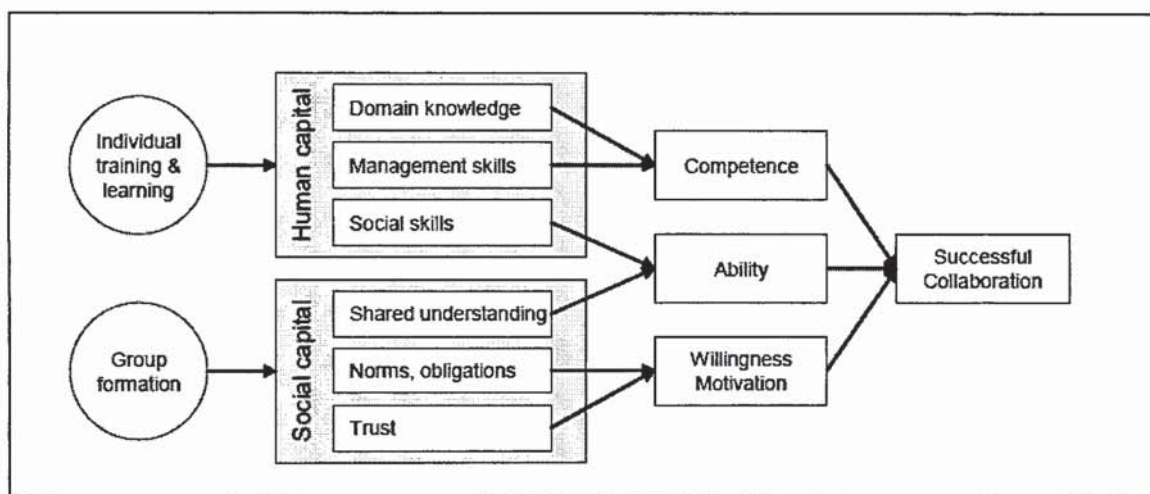


Figure 9: Successful VO collaboration (Riemer, K. & Klein, S., 2003)

Virtual collaboration, on the other hand, refers to the use of Information and Communication Technology for supporting the collective interaction among multiple parties involved (Hossain, L. & Wigand, R.T., 2003; Kock, N., 2000). The figure below demonstrates a conceptual framework for building and sustaining virtual collaboration

which illustrates the importance of trust between participants which in turn will lead to a higher knowledge sharing, guiding to a well-built and sustainable virtual collaboration.

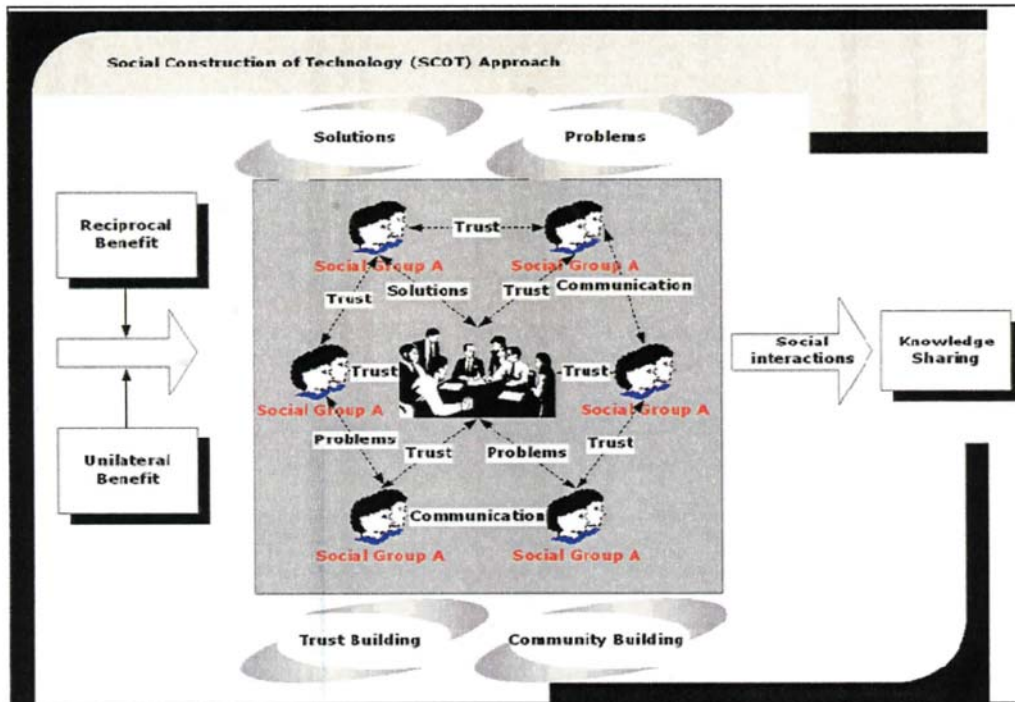


Figure 10: A conceptual framework for building and sustaining virtual collaboration

Authors emphasized greatly on the importance of trust in virtual collaboration declaring that a successful collaboration results from trust between participants. (Axelrod, R., 1997) Moreover, one of the studies classified two different types of activities to develop trust, which are cognitive-oriented and emotional-oriented. The cognitive-oriented activity implies that the person possesses high competence and reliability, so the others will trust him/her more that the task will be perfectly completed. On the other hand, the emotional-oriented activity implies that the person is increasing his confidence and trust towards the other person because he/she has developed an emotional bond. (Hossain & Wigand, 2002)

All the above details were explained for the purpose of emphasizing the significance of taking into consideration the factors mentioned above when thinking of the concept of virtual work which includes virtual collaboration in many of its kinds.

2.2.4 Requirements for successful virtual work

Many researches were performed regarding the requirements for a successful virtual company, which consists of virtual work. These studies were performed based on the success of such new type of organizations. Below will be listed some of these essential requirements according to different studies and some literature.

- A. According to the research study performed by Modalis Research Technologies (Sample of 510 qualified people) and WorldCom's experience in providing the technologies to facilitate communication, the following were recommended to improve the effectiveness and productivity of virtual work:
 - a. Encourage virtual project groups to stimulate new ideas and enhance teamwork (Almost 75% of workers surveyed were willing to engage in virtual project teams more frequently as well as 97% of them thought that virtual project teams make business relationships either improve or remain the same)
 - b. Supply your virtual workers with the basic tools to communicate effectively and flexibly along with all needed technological advancements (In 'virtual offices', the use of communication tools is of extreme importance such as conferencing, pagers, online scheduling etc. so that they transfer information quickly and efficiently)
 - c. Make use of today's conferencing technologies to work more productively (To be more efficient, a virtual worker must supplement the audio conferencing with a Web conference to share and revise documents online.)

- d. Meet virtually to reduce costs and improve productivity (A virtual worker must assess if time is better spent meeting through the desktop or face to face.)
- B.** According to AON Consulting Research study, assessing and evaluating all the hidden costs of a virtual business is very essential. In addition to this, a calculation of these costs must be compared to the costs of a non-virtual business to assess if this virtual business will be profitable or not. As well, AON Consulting discussed the following as requirements for a successful virtual company:
- a. Ensure that a virtual workforce is ready by assuring that the following is available:
 - i. The support of senior management
 - ii. Ability to manage virtual workers
 - iii. The setup of specific HR policies
 - iv. The possibility of a space reduction
 - v. Tools and plans for measuring virtual work performance
 - vi. A detailing plan for the changing structure and tasks of every specific virtual job
 - vii. Establishment of a communication plan
 - viii. Preparation of all needed training programs
 - ix. Analyze tasks and responsibilities of every job and identify which is suitable for virtual work
 - b. Match employees who are fit to work virtually and set them up for the suitable training
 - c. Manage the virtual workforce by including clear objectives and measurable criteria in the performance management process.
 - d. Ensure the engagement of virtual workers
 - e. Create policies and guidelines for the virtual workforce environment
 - f. Develop a change management and communication strategy to ensure the ongoing work of the virtual work program

On the other hand, requirements for virtual companies were given also by some authors in literature such as:

- C. According to Thomas H. Davenport and Keri Pearlson, (Davenport, T. H., & Pearlson, K., 1998) any company directing itself to virtual work must define the company objectives and needs, verify which type of virtual office best matches these needs, and determine the particular issues that each type of virtual work situation creates. Moreover, the type and percentage of virtual work as well as the family situation must all be matched with the virtual worker. Also, if virtual work is to pay off, managers must adopt different approaches to managing and leading in five key areas: managing people, managing information, managing teams, managing processes, and managing facilities. In managing people, firms must offer specific training programs for virtual workers. In managing information, firms must educate workers on how to be more effective providers and consumers of information. In managing teams, firms must provide trainings regarding the use of groupware tools as well as build processes to handle conflict resolution among remote workers. In managing processes, firms must evaluate whether knowledge workers are able to work separately from home. In managing facilities, firms must provide virtual workers with professional technical support, manage the deployment process for remote workers, and manage the office space of the traditional office. (Davenport, T. H., & Pearlson, K., 1998)
- D. According to (Kurland, N. B., & Bailey, D. E., 1999) the requirements for telework environments consist of the following:
 - a. Guidelines
Organizations have to establish some guidelines for their virtual employees covering topics such as: communication expectations, performance expectations, scheduling, telecommuting eligibility etc.

b. Infrastructure

Managers should provide their teleworkers with basic technical tools such as email access and responsive communication links in order to guarantee that off-site employees are well equipped to work efficiently and effectively.

c. Availability

Managers should agree with the teleworkers on the hours that they must be available in through any contact form.

d. Communication

Managers and employees must work together to improve their ability to communicate effectively with electronic media in spite of some cross-cultural communication and time zone barriers.

e. Task scheduling

Part-time telecommuters must organize their tasks by reserving certain work (work that can be done outside the office) for their telecommuting days.

f. Meeting scheduling

Organizations should periodically bring on-site virtual workers in order to be introduced to one another and to non-virtual workers in order to establish some kind of trust and familiarity that will strengthen virtual communication. This process must be done especially for virtual teams.

g. Trips to the main office

Organizations should ask employees to be present on-site before starting any virtual work in order to sink in the company's culture.

h. Performance management

Managers or supervisors must ask from their virtual workers to frequently submit electronically observable and quantifiable outputs such as reports, files, graphs, and other work-specific data. The authors of this study indicated that one of the managers

they interviewed said that his telecommuters are monitored daily via computerized statistics of product orders, number of buys etc.

i. Non-teleworker buy-in

Managers should do their best in order to discourage the considered gap between telecommuters and non-telecommuters especially because many non-telecommuters considers that they are stressed and pressured with a higher load of work than telecommuters do.

In the following part of this section, the emphasis of virtual work requirements will be addressing the technological and infrastructure issue in further details.

E. According to a survey done by Staples Technology Solutions, which was conducted on May, 2011 on 140 telecommuters at companies of various sizes and across industries, apart from Internet connectivity and access to company networks, telecommuters' key considerations included:

a. Communication tools

Email, instant messaging, videoconferencing, and unified communications technology to stay connected

b. Security

A proactive security strategy will help telecommuters prevent data loss, breaches and viruses, which can be spread to company networks.

c. Data Backup

It is extremely important to educate telecommuters to backup data, which must be automated and tested beforehand to ensure functionality.

2.2.5 Benefits of Virtual Companies

A virtual company or workforce has many benefits since this new work structure is constantly increasing with globalization trends, customer demands, costs of office space, and high technological communication and technology advancements. These benefits can be divided in to three categories; individual, organizational, and societal/environmental.

A. Individual Benefits

According to (Gajendran, R. S., & Harrison, D. A., 2007) meta-analysis of 46 studies of telecommuting involving 12,833 respondents, "Telecommuters reported more job satisfaction, less motivation to leave the company, less stress, improved work-family balance, and higher performance ratings by supervisors." He also said that "Autonomy is a major factor in worker satisfaction, and this rings true in our analysis."

According to (Pelych, D., 2006) the Managing Principal at Viretec Consulting, and specialists in Knowledge Working and Collaboration Solutions, he explains that virtual work reduces costs of time finding information and gives flexibility to work from wherever's best, which makes the worker feels in control which boosts his/her moral.

Besides, virtual work and telecommuting offers flexibility by giving employees the opportunity to work freely regarding some rules such as conforming to the dress code and the traditional work hours. Also, telecommuting or virtual work prevents the often unnecessary and unwelcome interruptions by co-workers and managers that can hamper productivity and attentiveness. (Mayhew, R.)

According to the survey study performed by Modalis Research Technologies Inc., the typical worker spends 7 hours per week in his way back and forth to

work. So, virtual work and virtual meetings do save time and money (56% strongly agreed to this and 63% of managers strongly agreed too). As well, it was concluded that time saved through virtual work is reinvested in work-related activities.

B. Organizational Benefits

Virtual work has led to increased employee performance, productivity and retention. The degree of increased productivity fluctuates depending on the organization ranging from 10% to 43%. (Crandal, W. & Gao, L., 2005; Nortel, (2004); Stevens, M. R., (2009)). Also, increases in employee retention ranges between 10% and 50%. (AHCCCS Virtual Office Pilot, 2007) Organization's virtual work program was proven to have a moderate to high impact on employee retention. (WorldatWork survey, 2009) As well, telecommuting has resulted in productivity gains of between 15%-20%. (Snizek, W. E., 1995)

According to a study by (Panol, Z. S., 1997) (professor and head of the public relations emphasis), virtual work leads to an increased employee morale and commitment along with a decrease in sick leave.

Virtual work resulted in recruitment improvement in attracting and retaining key employees. For example, it is proven that Gen Y employees expect the work-life balance and flexibility, which is afforded by virtual work. (Career Center at Cal State Fullerton, & Spectrum Knowledge, 2008) In addition, when personal circumstances dictate a need for relocation, companies can retain these valued employees and prevent themselves from losing their institutional knowledge by making them work virtually. On the other hand, this will aid companies to get rid of the costly expense to recruit, hire, and train a replacement. (AON Consulting, 2009) As well, virtual work can be an alternative to lay-offs. (Davenport, T. H., Pearlson, K., 1998)

Also, virtual work will lead to enhanced organizational attraction by making employees who are reluctant to move and sell their houses at highly discounted prices be attracted to virtual work arrangements, since it will offer them an advantage of not being restrained to a specific location. Consequently, the organization would be enlarging its recruitment base and will be able to recruit the best talent without being limited with capital and relocation costs. (AON Consulting, 2009)

Moreover, virtual work assisted in the reduction of real estate costs. It is possible for every organization which implements virtual work to calculate the costs they save from real estate reductions. A company can save between \$5,000 and \$8,000 per employee from real estate savings. (Stevens, M. R., 2009) For example, IBM reported that it has saved up to 60% because of real estate reductions, which is a significant number to mention. (Durkin, T., 1995) Additionally, reduction in real-estate costs and maintenance fees leads to lower operating expenses and higher profit margins. (AON Consulting, 2009)

Furthermore, in virtual teams it is easier to transfer information between members, decisions can be made quicker, collaboration is easier (“Collaboration gives the ability to link diverse assets into unique capabilities and leverage in pursuit of new opportunities” (Ghoshall and Barlett)), and creativity is encouraged. It was also found that business relationships have either improved or remained the same. (Modalis Research Technologies Inc survey, 2001)

In addition to all the above benefits mentioned, virtual organizations have proven to increase competitive capabilities, improve customer service, communication and internal control, and have greater responsiveness to the market and customers. (Grimshaw, D. J. and Kwok, F. T. Sandy, 1998)

C. Societal/Environmental Benefits

According to a study by Dr. Panol, (Panol, Z. S., 1997) virtual work leads to the reductions in traffic congestion and all the associated costs of road maintenance and public transportation. In addition, it leads to the reduction in energy consumption and improvements in air quality.

When working virtually, there would be a decrease in the number of employees in the company, which will lead to less communication which in turn leads to reduced carbon output. As well, fewer employees will be coming to work leading to less roads congestion and reduced fuel use, which will affect the environment positively. As well, it is estimated that fuel costs are reduced by billions of dollars. (Jones, K.C., 2008)

Virtual work and telecommuting leads to a higher job-involvement for elderly, handicapped, and parents with childcare responsibilities. (Snizek, W. E., 1995)

2.2.6 Drawbacks of Virtual Companies

Virtual companies or virtual work consist of many advantages which were discussed in the previous section; however, this concept is not completely advantageous or else we would be having only pure virtual organizations worldwide. The following section will be discussing these disadvantages that many researchers in the literature have identified. These drawbacks will be categorized under individual/societal and organizational drawbacks.

A. Individual/Societal

Some people find that virtual work is inappropriate for them because they have no space at home to establish a place or office to work in or because they have distracting families or home environments. (Davenport, T. H. & Pearlson, K., 1998)

Also, virtual workers might miss the daily face-to-face interactions and the degradation of non-verbal cues, which might affect their work. “While work mobility and flexibility have value, so do the face-to-face encounters with coworkers that are lost under the new arrangements.” (Davenport, T. H. & Pearlson, K., 1998)

Some studies showed that the absence of defined work hours in virtual work make them sometimes work longer hours, which leads to a struggle in the management of time with their personal activities, consequently resulting in family disagreements. (Mulki, J., Bardhi, F., Lask, F., & Nanavaty-Dahl, J., 2009)

In virtual work, there is a risk of personal isolation, which will affect the employee negatively. However, a full-time remote employee carries a higher risk of personal isolation than does a part-time teleworker. (Busch, E., Nash, J., & Bell, B. S., 2011)

B. Organizational

Sometimes companies find that real-estate and other savings are offset by the cost of technology and home office furnishings and by the inability to renegotiate leases quickly, which leads to a loss and not a gain for implementing virtual work. (Davenport, T. H. & Pearlson, K., 1998)

As for technology, it is considered very helpful in companies, but it cannot replace some factors that the traditional office offers such as: (Davenport, T. H. & Pearlson, K., 1998)

a. Corporate culture

In traditional offices, people will socialize and adapt to the corporate culture feeling they are part of it. However, in virtual offices, employees cannot grasp that culture the way the others do.

b. Loyalty

Workers going to a traditional office are more likely to feel a sense of loyalty than a virtual worker that does not have to go into the company office.

c. Communication

In traditional offices, workers will be exposed to frequent unplanned communication, face-to-face conversations that can convey information but as well attitudes and concerns that may be relevant to work. While in virtual offices, this is not applied.

d. Access to people

In traditional offices, workers talk to each other and ask questions more easily than a virtual worker who will need to reach his/her colleagues through technological services.

e. Managerial control

Some managers find it very difficult to manage, supervise, or control workers who are out of their sight. For example, at Xerox Company, some sales managers have moved back to their traditional offices after they felt that they lacked control over their employees and of the sales process.

f. Access to materials

In traditional offices unlike in virtual offices, workers can have an easy access to physical artifacts such as file cabinets, books, and other documents or expensive examples of products that are large and impossible to transfer.

There are high costs for Information and Communications Technology, operational costs, training costs, and maintenance costs. However, with the changing trends in technology costs, this drawback is becoming less significant. More important is the problems of trust and respect issues in knowledge sharing and the group dynamics of collaboration. In addition to this, cultural issues are a real challenge, since coping with different cultures in when working in virtual

teams is a complex task for managers and employees. (Grimshaw, D. J. and Kwok, F. T. Sandy, 1998)

2.3 Conclusion

As we concluded in this chapter, the 'virtual' definition and its concept are complex and do not carry one universal definition or concept; rather they were discussed by many authors who presented it in different point of views. However, nowadays 'virtuality' is being progressively more used than explained, and many international companies are applying it in their processes. This trend towards virtuality has to do with today's information technology world that is developing in a very quick pace, which is encouraging companies to use the latest technologies by incorporating the 'virtual' concept such as giving employees the opportunity to work from home. In Lebanon, this trend is not yet popular in its use and it could be very helpful if it is seriously implicated; yet we will have to study the Lebanese community and see if they are ready for such a concept or not. In the following chapter, the samples taken will be further explained with all the procedures and methodology used in the study.

Chapter 3: PROCEDURES AND METHODOLOGY

3.1 Introduction

As we concluded in the previous chapter, the 'virtual' concept is becoming more and more popular nowadays with the high advancement and improvement of technology. Many international companies have highly incorporated this concept in all its different forms, one of which is 'telecommuting', which is emphasized in our study. In Lebanon, this concept is not yet popular in its use and it could be very helpful if we think of implicating it in companies; yet we will have to study the Lebanese community and see if they are a potential for such a concept or not and how much they are aware of it. In our research question; "What is the difference in workers' perception regarding virtual employment?" we are finding the answer of whether the Lebanese community or workers are ready to step in the world of 'virtual work' by a first step called 'telecommuting'. As well, we are trying to find if they are aware of this concept or if they are a potential of this new project.

3.2 Hypotheses

The following are the alternative hypotheses and null hypotheses:

3.2.1 Hypothesis 1

H1 (alternative hypothesis): There is enough evidence that there is a significant difference between men and women in their choice of becoming a telecommuter.

Vs.

H0 (null hypothesis): No evidence that there is a significant difference between men and women in their choice of becoming a telecommuter.

3.2.2 Hypothesis 2

H1 (alternative hypothesis): There is enough evidence that there is a significant difference between women with children and women without children in their choice of becoming a telecommuter.

Vs.

H0 (null hypothesis): No evidence that there is a significant difference between women with children and women without children in their choice of becoming a telecommuter.

3.2.3 Hypothesis 3

H1 (alternative hypothesis): There is enough evidence that there is a significant difference between young and older workers in their choice of becoming a telecommuter.

Vs.

H0 (null hypothesis): No evidence that there is a significant difference between young and older workers in their choice of becoming a telecommuter.

3.3 Selected Variables

In the study, the selected variables are of two kinds; quantitative and qualitative. However; we can classify these variables into two types; the independent variables and the dependant variables.

3.3.1 The Independent Variables

The independent variables are identified as follows: Age, which is a variable studied in Hypothesis 3 showing if age affects the choice of being a telecommuter or not. Gender

and whether having children are independent variables studied in Hypothesis 2 showing whether women having children or not affect the choice of being a telecommuter or not. As well, gender is the independent variable studied in Hypothesis 1 showing if gender affects the choice of being a telecommuter or not.

3.3.2 The Dependant Variables

As for the dependant variables, there are many to be identified of which the most important are the following: The number of working hours per day which is used in Question 1 (Q1) of the survey to show if there is any relation between this dependant variable and the choice of becoming a telecommuter. The ranking of the following factors on a scale of 1 to 10 where 1 is not important at all and 10 means very important: Friendly and social environment, flexible schedule, working hours, distance (Having the workplace near my place), availability of personal space, salary, and financial rewards. These dependant variables are used in Question 3 of the survey (Q3). Moreover, in Question 4 of the survey (Q4), our dependant variable is the consideration of telecommuting when searching for a job. Also, in Question 5 we have the ranking on a scale of 1 to 10 (1 means not important at all and 10 means very important) of how much the option of telecommuting is important when searching for a job, which is considered as a dependant variable. In addition, we consider the importance of teleworking according to the individual (Question 9 in survey) as a dependant variable as well.

3.4 Methodology Used

3.4.1 Test the Above Hypotheses

As we mentioned earlier in this chapter, every hypothesis of the three hypotheses we are going to be testing will include a null and an alternative hypothesis. The null hypothesis that we represented as H_0 , will be the one tested and it is assumed to be true unless it is proven the contrary. However, the alternative hypothesis that we represented as H_1 , will be assumed true only if the null hypothesis was proven to be false.

3.4.2 Data Used

The 'virtual' concept is a very wide concept that needs detailed explanations to understand it deeply, so Chapter 2 includes the detailed explanation of its concept and kinds etc., which are considered to be secondary data, since many theories and definitions were explained by different authors and references. Thus, our study concentrated on a part or a kind of the 'virtual concept', which is 'telecommuting' that, is studied on a sample of the Lebanese individuals by using a survey or questionnaire. Hence, another kind of data was used in this study; which is called primary data, since the data was collected by us who conducted the research.

3.4.3 Pilot Test

Given the nature of the study, a pilot test was performed on individuals who are similar to the projected respondents in order to assure that the sample chosen is representative of the actual survey sample. So, 20 individuals were taken as a sample for the pilot test and we reviewed the survey responses along with the timing of how long it takes for an individual to complete the survey. Moreover, feedback to the survey and its process was collected. Given the results, we made some slight modifications to the questionnaire; we changed in the order of some questions as well as the labeling of some of them for more clarification.

3.4.4 Instrumentation

After performing the pilot test and testing the sample, we were ready to launch the modified questionnaire and begin our survey. The first step was field work, which is the part where we performed a survey in the form of CATI (Computer-assisted telephone interviewing); a telephonic surveying technique. The questionnaire was translated from the English language to the Arabic language (the Native language) by a professional sworn translator in order to make sure that all respondents understand the questions

well. For every questionnaire, the interviewer took 10 minutes to interview every respondent. This phase of the study took approximately 2 weeks to complete; from mid of March, 2013 till the end of March, 2013. The next step was quality control in which we implemented quality control or quality assurance procedures to avoid undesirable practices as well as to minimize error in data collection which will affect our results and make them unreliable. Monitoring of the results is completed too. On the other hand, while the survey is in process, special monitoring is also continuously achieved so that in case of any mistake in the way the question is asked or in an answer, this particular survey will be immediately disqualified. The third step was coding, in which all open-end questions are gathered under specified codes which are classified in a way that all similar answers are collected under one code. This is done to clarify the responses accordingly. The fourth step was data entry, in which all the data that was previously organized is now introduced in SPSS; a software package for statistical analysis. The fifth step is processing data and tabulation whereby with the help of the SPSS software, data are processed and translated into graphs and tables making us able to see the data obtained more clearly and ready to be analyzed. The sixth step is the analysis whereby the data is analyzed, which we will be covering in the following chapter.

3.4.5 The Statistical Package and the Statistical Techniques Used

As we mentioned earlier in this chapter, our statistical package in this study is the SPSS; specifically SPSS 19. As well, X-LStat is also used, which is an add-on in Excel. As for the statistical techniques, many tests are used such as the ANOVA test, which compares means of dependent variables between categories of independent variables. It tests whether the means differ significantly between the categories of independent variables. (If p-value (Sig) is less than 0.05 → the means differ significantly. If p-value (Sig) is greater than 0.05 → then no evidence that the means differ significantly.) Another test used is the Z-test, proportion test, which tests if vertical percentages differ significantly. As well, we used the Chi-square test (Chi2 test) or Correlation test (depending on the variable type). Chi2 test is an independence test between two categorical variables. (If p-value (Sig) is less than 0.05 → then there is a relation between the two variables i.e.

they are dependent. If p-value (Sig) is greater than 0.05 → then no evidence that the two variables are dependent i.e. the two variables are independent.) Whereas, the Correlation test tests the linear relationship between two quantitative variables (numerical and ordinal). In this kind of test, we also follow the same logic as the previous mentioned test regarding reading p-value; in addition, this test generates a coefficient of correlation (R). If $R > 0$ then there is a positive relationship between these 2 variables. If $R < 0$, then there is a negative relationship between the 2 variables. Furthermore, many other tests will be used in the following sections. All statistical tests are held at a 95% confidence level i.e. alpha (risk level) =5%.

3.4.6 Conceptual or Empirical Framework for Analyzing the Data

For the data analysis, the methodology we used is the empirical framework, since we are working on testing hypotheses and we are observing a sample's response. We are analyzing some experiments we made; in this case, a survey.

3.5 Conclusion

In conclusion, the methodology used in this study was based on an empirical framework including a well designed statistical package along with the needed statistical techniques in order to come out with the most accurate results possible. As we mentioned earlier in this chapter, there are simultaneous steps we followed before reaching to our study analysis, which will be discussed in the following chapter.

Chapter 4: FINDINGS

4.1 Introduction

The study was carried out in March 2013 in the form of CATI interviews (Computer-Assisted Telephone Interviewing) conducted by interviewers chosen and trained by IPSOS STAT, a worldwide leading research company. The sample is proportionate to the size of the population with respect to the following quota variables: Gender, Age and Region. Thus, the sample is considered to be a randomly selected one with some criteria to be respected; which is the quota variables mentioned earlier. The results from surveying the samples would be later used to infer how the population as a whole may have responded and to draw conclusions about the larger group. This method of sampling used in our study is the quota sampling, which is often used by market researchers. Interviewers are given a quota of subjects of a specified type to attempt to recruit.

4.2 Descriptive Statistics

This section will be introducing some demographics of the study:

		Count	Percentage
Gender	Female	150	50.0%
	Male	150	50.0%
Age	Under 25	0	.0%

	25-34	89	29.7%
	35 -44	83	27.7%
	45 -54	80	26.7%
	55 -64	48	16.0%
	Above 64	0	.0%
Marital Status	Single	97	32.3%
	Married	199	66.3%
	Divorced	4	1.3%
With/Without Children	With	189	93.1%
	Without	14	6.9%
Region	East Beirut	24	8.0%
	West Beirut	62	20.7%
	Metn	113	37.7%

	Baabda	43	14.3%
	Southern Suburbs	58	19.3%

Table 4: Demographics

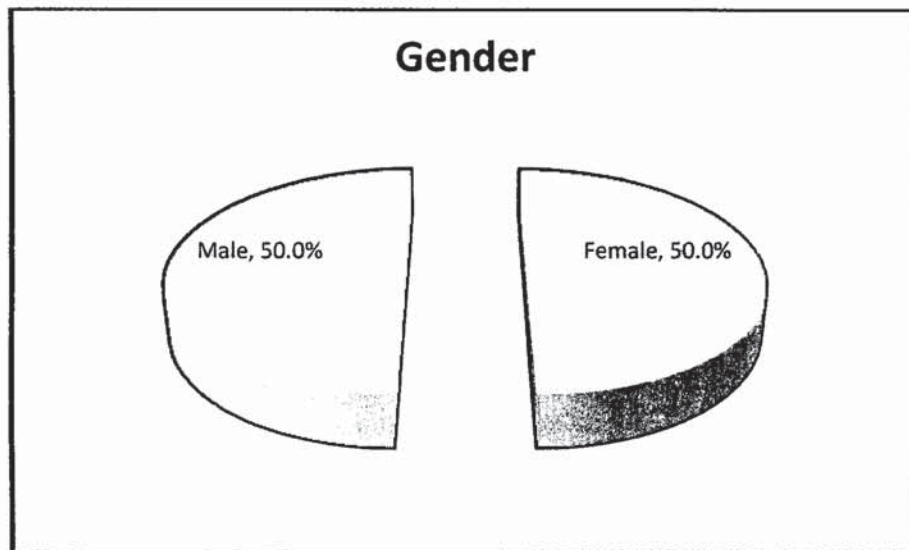


Figure 11: Gender

The sample studied included 50% men and 50% women.

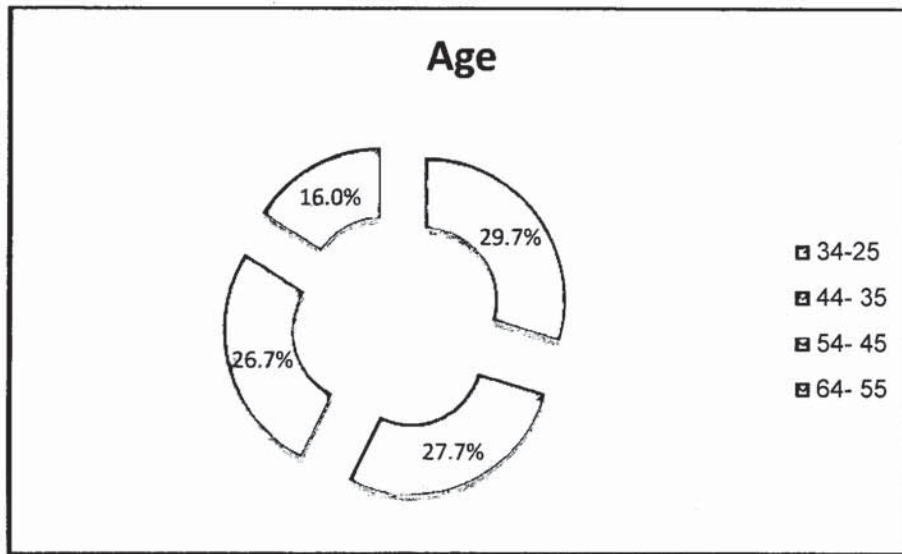


Figure 12: Age

The sample studied included around 30% belonging to the age bracket [25-34], around 28% belonging to the age bracket [35-44], around 27% belonging to the age bracket [45-54], and around 16% belonging to the age bracket [55-64].

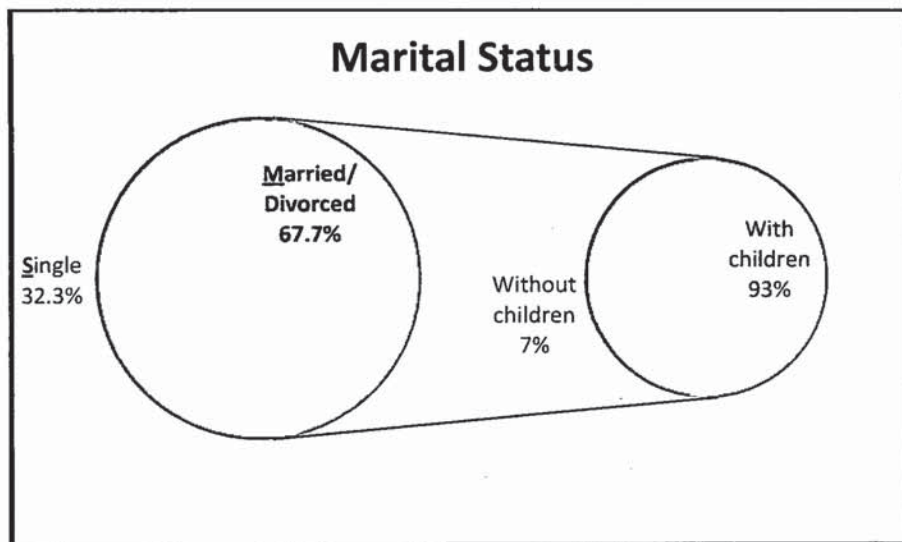


Figure 13: Marital status and children count

In the sample studied, the majority was married as well as 93% of those married have children; which is considered a high percentage.

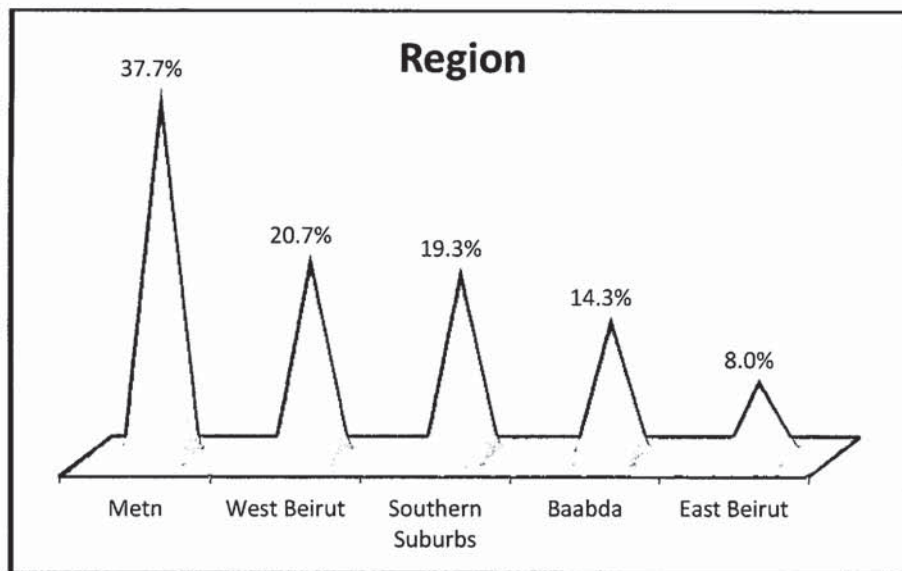


Figure 14: Region

In the sample studied, the respondents were distributed in 5 different regions in Lebanon; which is considered a major part of Greater Beirut and its districts.

4.3 Main Results and Discussion

In this section, we will classify major results and their findings into two categories; the objectives and the hypotheses.

4.3.1 Objectives

Before beginning any discussion, there is an important relation between two variables which is essential and fundamental to understand the rest of the study analysis. This relation is between the number of working hours and the choice of being a telecommuter. After performing the Z-test on these two variables (number of working hours per day and the consideration of teleworking when searching for a job), it showed

that there is a significant difference in their percentages proving that the individuals who work less consider teleworking more and the individuals who work more consider teleworking less; so these two variables are inversely proportional. In addition, after performing the Chi2 test, it resulted that p-value (Sig) =0.035<0.05 which means that there is a relation between the two variables i.e. they are dependent. A person considering telecommuting when searching for a job means that he/she will choose to be a telecommuter, so the above proven relation leads us to conclude that there is an inverse relation between the number of working hours and the choice of telecommuting.

		Q1A. How many hours you currently work per day? Working hours per day					
		4 to 6 Hours		6 to 8 hours		8+	
		Count	%	Count	%	Count	%
Q4. Have you ever considered teleworking while searching for a job?	Yes	27	55.1%	45	40.9%	30	32.6%
	No	22	44.9%	65	59.1%	62	67.4%
	Total	49	100%	110	100%	92	100%

Table 5: Cross-tabulation between the number of working hours and the consideration of teleworking when searching for a job

Consider the following variables; the number of hours that currently employed individuals is working and the number of hours that unemployed individuals who are looking for a job are working. After applying the Z-test, we inferred that the proportion of those who have a job working from 4 to 6 hours (19.5%) is significantly less than those who are unemployed looking for a job from 4 to 6 hours (44.9%). As for the proportion of those who have a job working 8+ hours (36.7%), it is significantly higher than those who are unemployed looking for a job for 8+ hours (8.2%). Looking at the unemployed part, we could conclude the number of working hours that people wish to work. Looking at the employed part, we conclude, in reality the number of working hours for employees. (See figure below, Figure 15). We can interpret in this part that the majority of individuals wish to work fewer hours they are actually working, and we did prove the inverse relation in the previous part between the number of working hours and the choice of being a telecommuter. So here, we can say that having the majority of individuals wish to work less hours, we can conclude that a majority of individuals is susceptible to accept telecommuting.

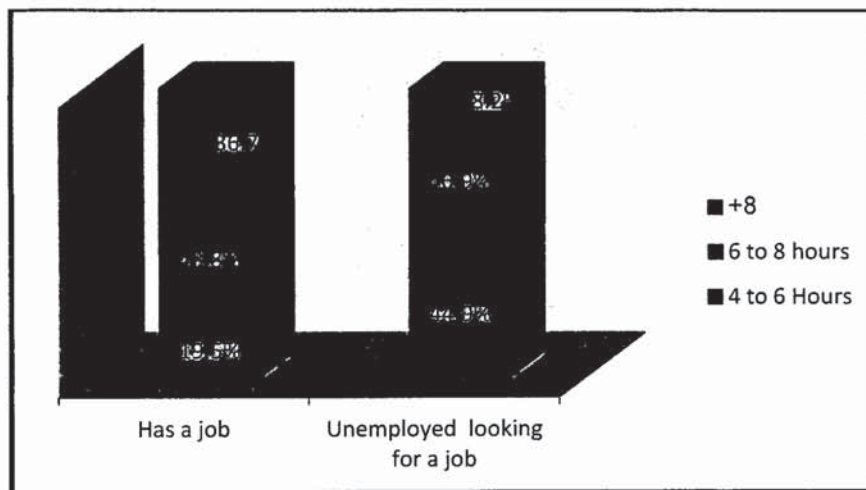


Figure 15: Number of working hours that individuals work and wish to work

When individuals were asked to rank the below factors (Refer to Figure 16 below), all of them were considered as important to them having the salary the most important, which is a very normal result. All the averages are greater than 5 on a scale of 10, which

means in average all factors are considered to be important factors for the respondents. Are they significantly greater than 5? We performed a ONE SAMPLE T-test, and the result was that for all factors $p\text{-value}=0.00$, which is less than 0.05, so all the averages are significantly greater than 5. We can conclude here that the factors which affect the choice of being a telecommuter were significantly important to the respondents; most importantly the following: Distance which affects the choice of telecommuting directly, since our study is done in a region outside the center of the city and in Lebanon most of jobs are located in the center of the city, so here the individual who chose to be close to his workplace will be susceptible to working from a closer place, which is the choice of telecommuting. Also, the factor of flexibility of schedule is directly related to the choice of being a telecommuter since an individual who finds this factor important will be willing to telecommute knowing that telecommuting offers a much flexible schedule than the traditional job. Furthermore, the factor of the number of working hours is positively related to the choice of telecommuting. (The relation was proven in the previous sections)

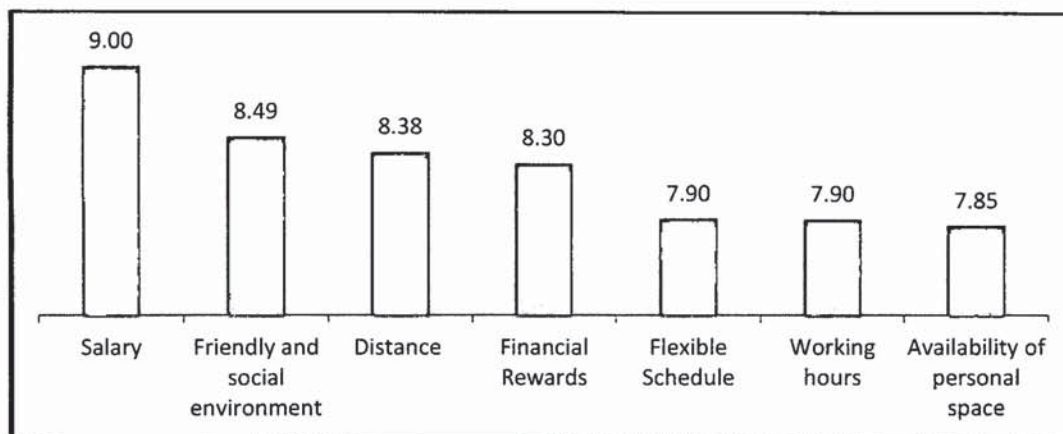


Figure 16: The importance of some factors according to the respondents

The table below (Table 6) shows that the percentage of individuals who ranked the factors of working hours and distance as very important giving it a full score (10) is the highest. As well, the percentages of 8 and 9 scores are also relatively low. As for the factor of flexibility in schedule, we can observe a 24.7% of individuals who ranked it as

very important; which is also relatively high. We can notice in the table below that these three factors are relatively of very high importance for respondents; which make us back up the conclusion we drew in the previous paragraph; a high percentage of individuals are susceptible to telecommuting since we got high rankings on the following three factors; flexible schedule, working hours, and distance; which are all positively related to the choice of becoming a telecommuter.

	Friendly and social environment	Flexible Schedule	Working hours	Distance (Having the workplace near my place)	Availability of personal space	Salary	Financial Rewards
	%	%	%	%	%	%	%
Very Important	44.0%	24.7%	32.0%	50.3%	30.7%	61.7%	51.0%
9	11.3%	10.7%	6.3%	8.3%	9.7%	10.3%	9.3%
8	23.7%	32.0%	28.3%	15.3%	28.3%	12.0%	14.3%
7	9.0%	14.3%	13.7%	8.7%	11.3%	8.3%	10.0%
6	3.0%	7.0%	6.3%	4.7%	7.0%	3.3%	3.0%
5	5.7%	8.0%	6.3%	7.7%	6.7%	2.0%	3.3%
4	1.3%	1.3%	3.0%	.7%	1.0%	1.0%	1.0%

3	.7%	1.0%	2.0%	1.0%	.3%	.3%	2.0%
2	.0%	.0%	1.0%	1.3%	.3%	.0%	1.0%
Not Important at all	1.3%	1.0%	1.0%	2.0%	4.7%	1.0%	5.0%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 6: Percentage of individuals in their ranking to some factors

In the following part, we will infer if the Lebanese people are potentials to the project of telecommuting. Let us see first how much they are aware of this concept; when we asked them if they have ever considered teleworking while searching for a job, 42.3% said yes and 57.7% said no. (Refer to table 7 and figure 17) We can conclude here that Lebanese people are still not completely aware of the concept, which is very normal since it is still not a popular and known concept in Lebanon. However; if we add up the percentages of people who considered teleworking while searching for a job who think it is important, we get a sum of 72.4%, (refer to table 7) which is considered a very high percentage. From this part, we can deduce that people who are aware of this concept are ready to telecommute; they are potentials in telecommuting.

		Count	%
Q4. Have you ever considered teleworking while searching for a job?	Yes	127	42.3%
	No	173	57.7%
	Total	300	100.0%
Q5. How much is this option important to you when searching for a job?	Very important	41	32.3%
	9	13	10.2%
	8	16	12.6%
	7	12	9.4%
	6	10	7.9%
	5	12	9.4%
	4	10	7.9%
	3	3	2.4%

	2	4	3.1%
	Not important at all	6	4.7%
	Total	127	100.0%

Table 7: Percentages of people considering telecommuting and its importance to them

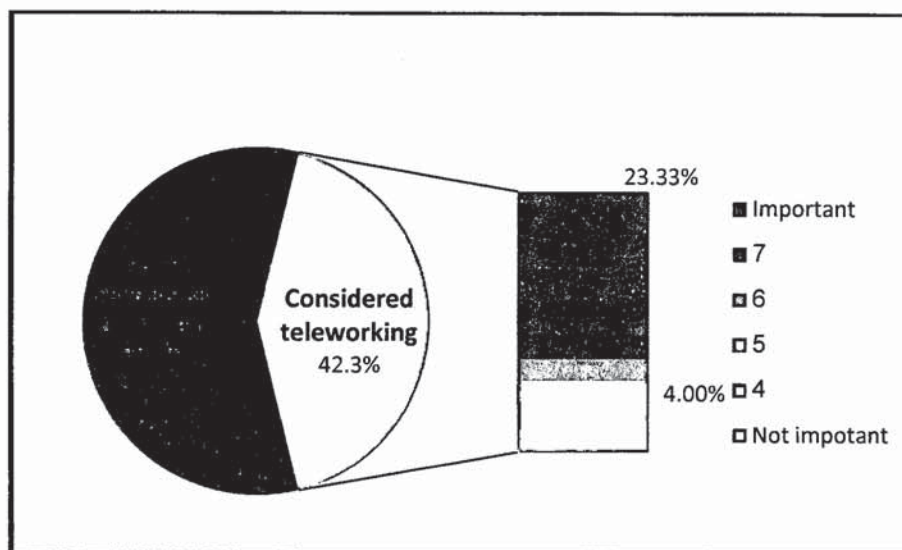


Figure 17: Percentages of people considering telecommuting and its importance to them

When we asked the respondents a direct question of what do they consider teleworking, the responses were somehow equally distributed; 37% said it is essential to them, 30% said it does not matter to them, and 33% said that it is not an option to them. (Refer to figure 18) However; if we go back to the previous question which was asked indirectly about if they consider telecommuting when searching for a job, we notice that we had a

higher percentage who is interested; we have a different percentage between the directly asked question and the indirect one. Here we can conclude that Lebanese people are potential to teleworking; thus they do not know it; telecommuting is a new concept to them.

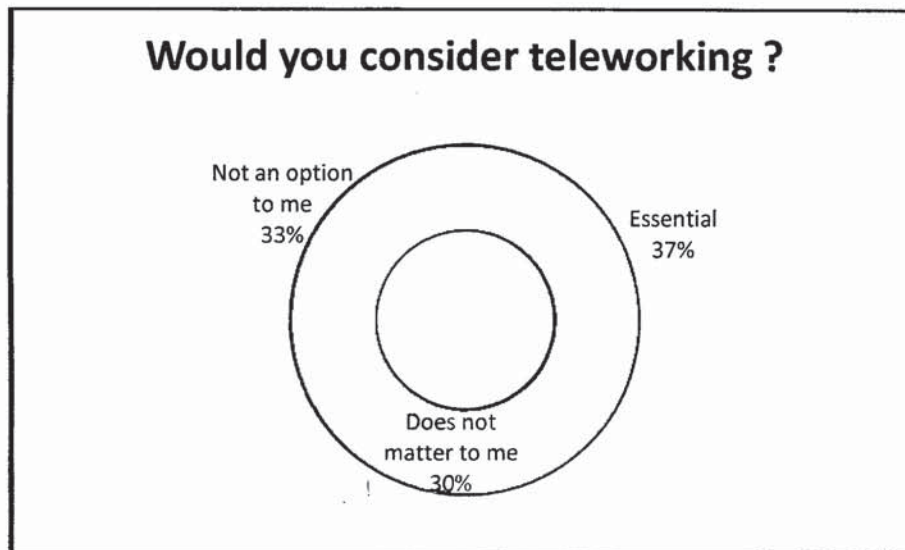


Figure 18: Percentages of what respondents consider teleworking

When the respondents were asked about the reasons they considered teleworking of a specific importance when looking for a job, we received multiple different answers that were codified in the table below. (Table 8)

People who considered teleworking when searching for a job and were aware of it gave out high percentages of answers with advantages of teleworking, some of which are: freedom to work whenever they want (which can be translated into flexibility too; which we proved previously that it has a positive relation with the choice of being a telecommuter); 27% of people in this question considered it one of the advantages of teleworking. Also, avoiding traffic was another major advantage of teleworking (14.67%); this shows that one of our reasons in studying the telecommuting project in Lebanon (refer to Chapter 1) is proven with this answer. As well reasons for

teleworking such as saving money for transportation, staying close to the family etc. are very important factors and objectives that are proven in this question of our study.

		Count	Percentage
Q6. You said that this factor is (read out answer in Q5...); Why you say so?	Freedom to work whenever we want if we work at home	81	27.00%
	Avoiding traffic	44	14.67%
	It will push you away from people: social withdrawal	43	14.33%
	Saving money on transportation	30	10.00%
	Staying close to the family	28	9.33%
	No suitable ambience for work	21	7.00%
	Routine/ it will get boring	15	5.00%
	Saving time	14	4.67%
	Extra income	14	4.67%
	I maintain my privacy	13	4.33%

No reason	10	3.33%
Low productivity at home	9	3.00%
Neglect will occur	8	2.67%
Change of scenery / having fun at work	8	2.67%
I don't like to use the internet	7	2.33%
Good for people with special needs	5	1.67%
We might be deceived/ I am concerned about the lack of credibility	5	1.67%
Not being harassed by others	5	1.67%
Easy work	4	1.33%
Lack of control over the work process	4	1.33%
A new type of work	4	1.33%
Because I am tied up with the housework	3	1.00%
Does not suit me	3	1.00%

	Do not get to meet new people	2	0.67%
	The client's comfort when we work at a specific central workplace	1	0.33%
	Ineffective work system in Lebanon	1	0.33%

Table 8: Reasons of the importance or not of teleworking

Now, if we gather the 'likes' and the 'dislikes' separately, we will obtain the following:

		Count	%
Q6.You said that this factor is (read out answer in Q5...); Why you say so?	LIKES	183	61.0%
	DISLIKES	121	40.3%

Table 9: Percentages of 'Likes' and 'Dislikes' of telecommuting

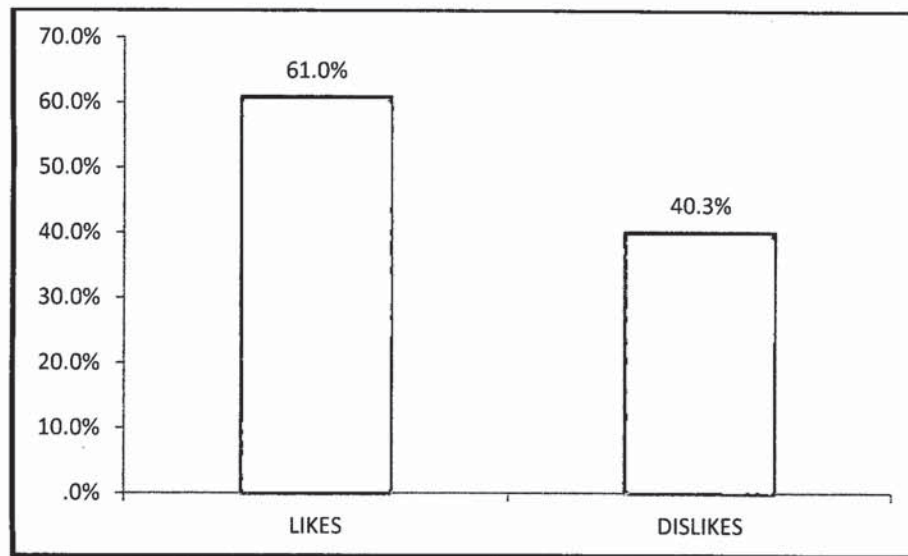


Figure19: Difference in percentages of 'Likes' and 'Dislikes' of telecommuting

From the above table (Table 9), we can observe that the percentage of the 'Likes' of telecommuting (61%) is higher than the percentage of the 'Dislikes' of telecommuting (40.3%). That is, respondents who answered an advantage of telecommuting are higher than the percentage of respondents who answered a disadvantage. We can conclude in this section that a majority of respondents saw telecommuting as an advantage.

In this question that was asked, the entire sample responded to it and not only the respondents who considered teleworking when searching for a job. Here, we took the answers of respondents who are aware of the concept and the ones who were introduced to it by the definition we gave in the survey. As we can see from the table below (Table 10), the most cited advantages are skip traffic, more family time (taking care of children, elderly etc.), less crowded and quiet work atmosphere, flexibility, more personal space, and feel less stressed. Again in this question, traffic was a major advantage of telecommuting relative to the Lebanese people, which shows its high importance and effect on the choice of becoming a telecommuter.

		Count	Percentage
Q7.Advantages of teleworking	Skip traffic	139	46.3%
	More family time (taking care of kids, elderly etc.)	104	34.7%
	Less crowded and quiet work atmosphere	89	29.7%
	Flexibility	46	15.3%
	More personal space	40	13.3%
	Feel less stressed	32	10.7%
	More motivation	19	6.3%
	Avoid problems with colleagues	15	5.0%
	Be exposed to less pollution	14	4.7%
	No conformation to dress code	11	3.7%
	Reduced expenses (gasoline)	11	3.7%
	Putting your time to good use	11	3.7%

Having no specific working hours	11	3.7%
Extra income	9	3.0%
Helps those with special needs	5	1.7%
More safety	4	1.3%
Work matters are facilitated	4	1.3%
More productivity	4	1.3%
Not having to commit to a certain work system	3	1.0%
Takes responsibility	2	.7%
Nothing	19	6.3%

Table 10: Advantages of telecommuting

4.3.2 Hypotheses

Hypothesis 1: There is a significant difference between men and women in their choice of becoming a telecommuter.

		S1. Gender			
		Female		Male	
		Count	%	Count	%
Q1a/b <i>(refer to questionnaire)</i>	4 to 6 Hours	51	34.0%	20	13.3%
	6 to 8 hours	71	47.3%	62	41.3%
	8+	28	18.7%	68	45.3%
	Total	150	100.0%	150	100.0%

Table 11: Cross-tabulation between gender and Q1a/b

After performing the Z-test, we deduced that the percentage of women who currently work per day or like to spend working from 4 to 6 hours per day is 34%; significantly higher than the percentage of men in the same category (13%). As for the "8+" workers, the percentage of men is significantly higher than the percentage of women. As we deduced in the beginning of the section that the number of working hours has an inverse proportion relation with the choice of becoming a telecommuter; here we infer that women prefer to work less hours than men do, so women are more likely to make the choice of becoming a telecommuter than men do. Again, to assure that gender has an effect on the number of working hours, we also performed a Chi2 test and we got p-value (Sig) = 0.00 which is < 0.05, proving that gender has an effect on the number of working hours.

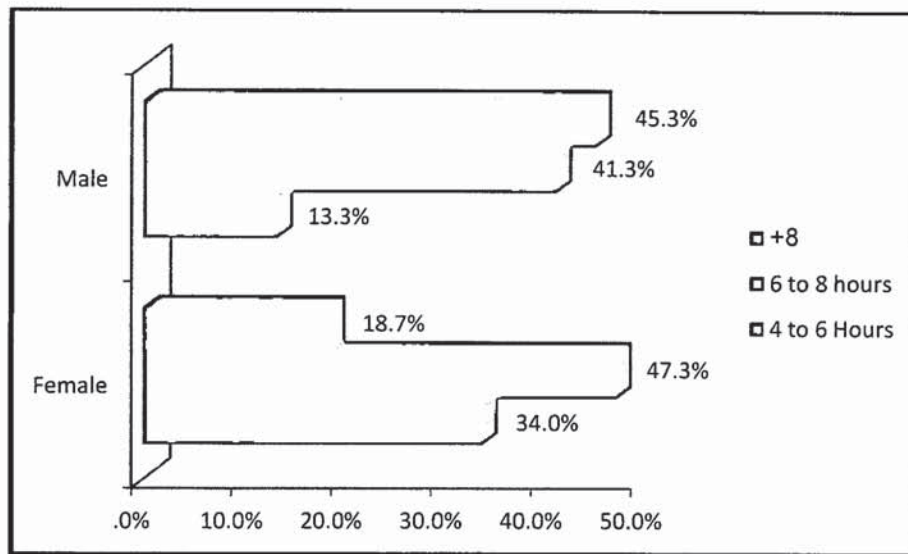


Figure 20: Difference in men and women in working hours

Q3 (refer to questionnaire)	S1. Gender			
	Female		Male	
	Count	%	Count	%
Friendly and social environment	98	65.3%	68	45.3%
Flexible Schedule	63	42.0%	43	28.7%
Working hours	63	42.0%	52	34.7%
Distance (Having the workplace near my place)	98	65.3%	78	52.0%

Availability of personal space	67	44.7%	54	36.0%
Salary	116	77.3%	100	66.7%
Financial Rewards	93	62.0%	88	58.7%

Table 12: Cross-tabulation between gender and Q3

After performing the Z-test, we concluded that the percentage of women who consider the factor 'flexible schedule' important is significantly higher (42%) than the percentage of men who consider the factor 'flexible schedule' important (28.7%). Furthermore, the percentage of women who consider the factor 'distance' important is significantly higher (65.3%) than the percentage of men who consider the factor 'distance' important (52%). Hence, women are more likely to make the choice of becoming a telecommuter than men do, since the two factors 'distance' and 'flexibility' are directly related to the choice of becoming a telecommuter.

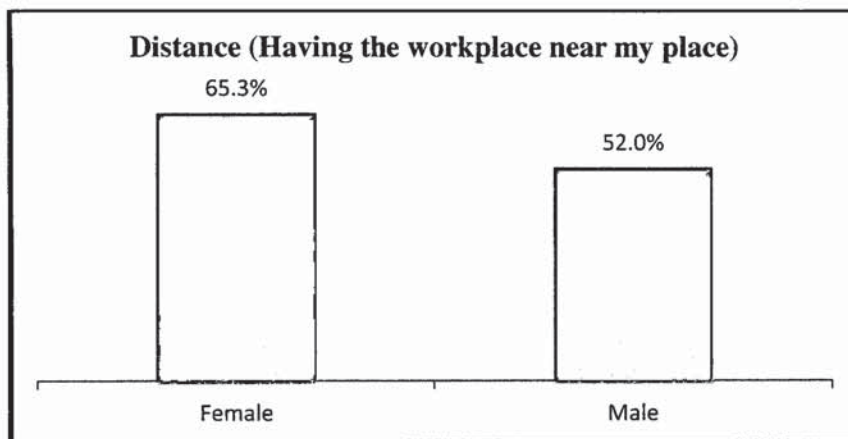


Figure 21: Distance

Besides, we performed the Chi2 test, and it showed that gender has a direct relation on distance (having the workplace near my place) giving a p-value (Sig) = 0.05.

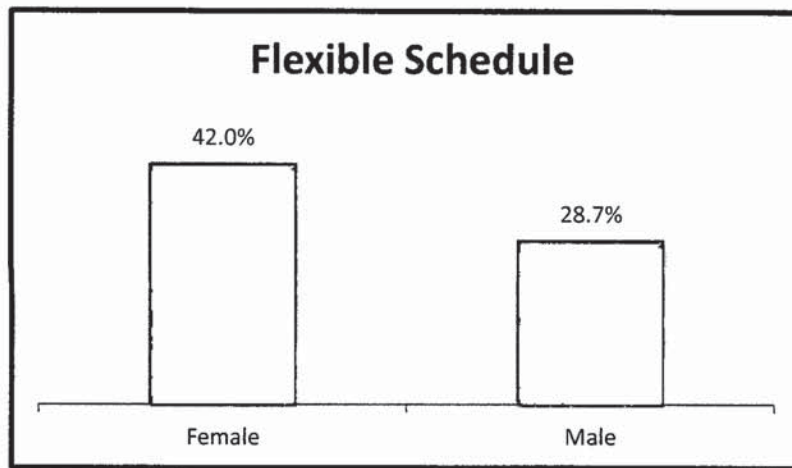


Figure 22: Flexible schedule

	Female	Male
Friendly and social environment	8.74	8.25
Flexible Schedule	8.16	7.65
Working hours	8.15	7.65
Distance (Having the workplace near my place)	8.73	8.03
Availability of personal space	8.18	7.53
Salary	9.21	8.79
Financial Rewards	8.48	8.13

Table 13: Average table

We performed a One Way ANOVA test to study whether the mean differs significantly between males and females. First we made sure all the assumptions of the test are met: normality, homoscedasticity, and randomness of the data. After performing the ANOVA test, we found out that the mean of importance of the factors is significantly different between males and females for all the factors except the "financial rewards factor". We can conclude that there is a significant difference between men and women regarding the importance of the following factors; friendly and social environment,

flexible schedule, working hours, distance, availability of personal space, and salary. Women scored significantly higher means on these factors.

		S1. Gender			
		Female		Male	
		Count	%	Count	%
Q4- Have you ever considered teleworking while searching for a job?	Yes	78	52.0%	49	32.7%
	No	72	48.0%	101	67.3%
	Total	150	100.0%	150	100.0%

Table 14: Cross-tabulation between gender and Q4

According to the Table 14, for women, the percentage of those who consider teleworking is 52%, which is slightly greater than those who do not. The majority of men do not consider teleworking (67%) who answered NO. Now, is the proportion of females considering teleworking (52%) significantly greater than the proportion of males who consider teleworking? According to Z-test, the answer is YES. Subsequently, women consider teleworking more than men while searching for a job. We also performed the Chi2 test and we got p-value (Sig) = 0.001 < 0.05, therefore we deduce that gender has an effect on considering teleworking or not.

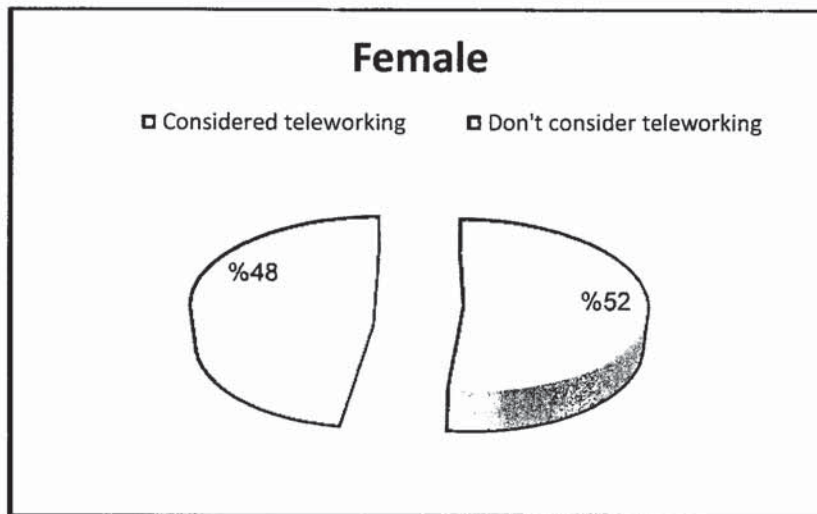


Figure 23: Percentage of women considering teleworking or not

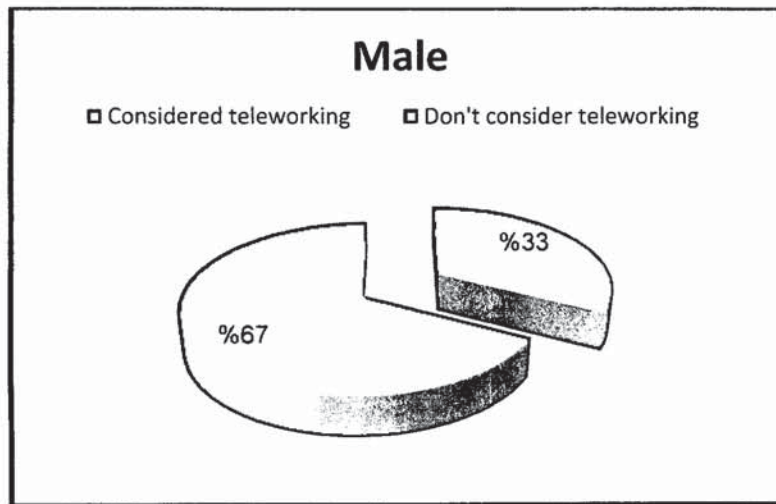


Figure 24: Percentage of men considering teleworking or not

When the respondents were asked about the advantages of teleworking, we noticed that from the 34.67% who answered 'more family time (taking care of kids, elderly etc.)', there is 46.67% who are females and 22.67% who are males. We can conclude here that the percentage of females answering this advantage is about double the percentage of males. Therefore, females are more interested to telecommute because they can take care of their children and have more family time.

Hypothesis 2: There is a significant difference between women with children and women without children in their choice of becoming a telecommuter.

		Women with /Without Children			
		Women without children		Women with children	
		Count	%	Count	%
Q1a/Q1b <i>(refer to questionnaire)</i>	4 to 6 Hours	7	13.2%	44	45.4%
	6 to 8 hours	31	58.5%	40	41.2%
	8+	15	28.3%	13	13.4%
	Total	53	100.0%	97	100.0%

Table 15: Cross-tabulation between women with/without children and Q1a/b

On one hand, the majority of women without children (58.5%) works or wishes to work from 6 to 8 hours. While about 50% of the women with children prefers to work from 4 to 6 hours. After performing the Z-proportion test, we found out the following: for non working women those who prefer to work from 4 to 6 hours, the percentage of those with children is significantly greater (45.4%) than those with children (13.2%). As for the '6 to 8' hours, the percentage of women without children (58.5%) is significantly higher than the percentage of women with children (41.2%). As for the '8+' hours, the percentage of women without children (28.3%) is also significantly higher than the

percentage of women with children (13.4%). We can deduce that women with children prefer to work less hours than women without children; consequently, women with children are more susceptible to the choice of becoming telecommuters than women without children. As well, after performing the Chi2 test, we found out that p-value=0.000 which is less than 0.05, so we can infer that women with children or not affects her choice/preference of working hours per day. Consequently, we can say as well that women with or without children affects the choice of being a telecommuter.

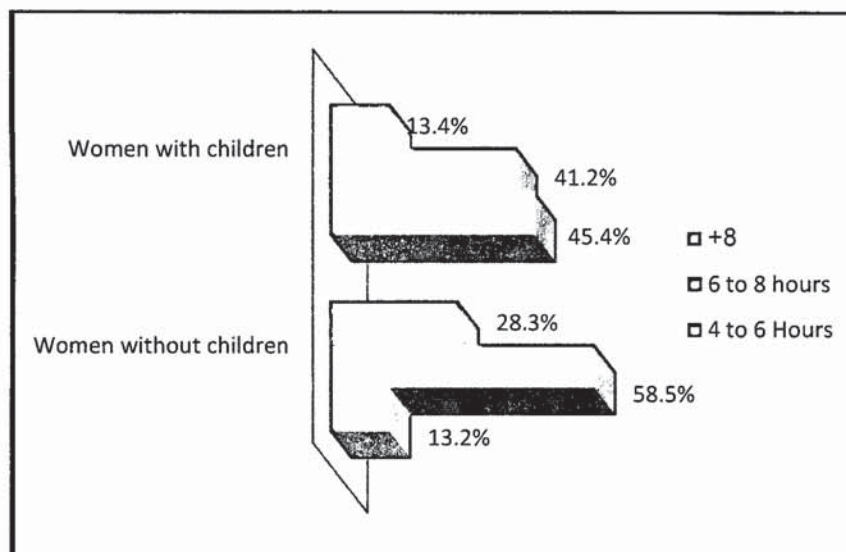


Figure 25: Difference in number of working hours' percentages between women with children and women without children

Q3 (refer to questionnaire)	Women with /Without Children			
	Women without children		Women with children	
	Count	%	Count	%
Friendly and social environment	33	62.3%	65	67.0%
Flexible Schedule	16	30.2%	47	48.5%
Working hours	23	43.4%	40	41.2%
Distance (Having the workplace near my place)	29	54.7%	69	71.1%
Availability of personal space	21	39.6%	46	47.4%
Salary	41	77.4%	75	77.3%
Financial Rewards	37	69.8%	56	57.7%

Table 16: Cross-tabulation between women with/without children and Q3

In the above table (Table 16), we can see that there are differences in the percentages of how important are these factors between women with children and women without children. After performing the Z-test, we found out that the percentage of women with children who consider 'flexible schedule' an important factor is significantly higher

(48.5%) than the percentage of those without children who consider 'flexible schedule' an important factor (30.2%). In addition, we found out that the percentage of women with children who consider 'distance (Having the workplace near my place)' an important factor is significantly higher (71.1%) than the percentage of those without children who consider 'distance' an important factor (54.7%). Therefore, flexibility and distance are the most important factors in which their importance differ between women with children and women without children. Since flexibility and distance are positively related to the choice of being a telecommuter, then women with children are more susceptible to choose telecommuting.

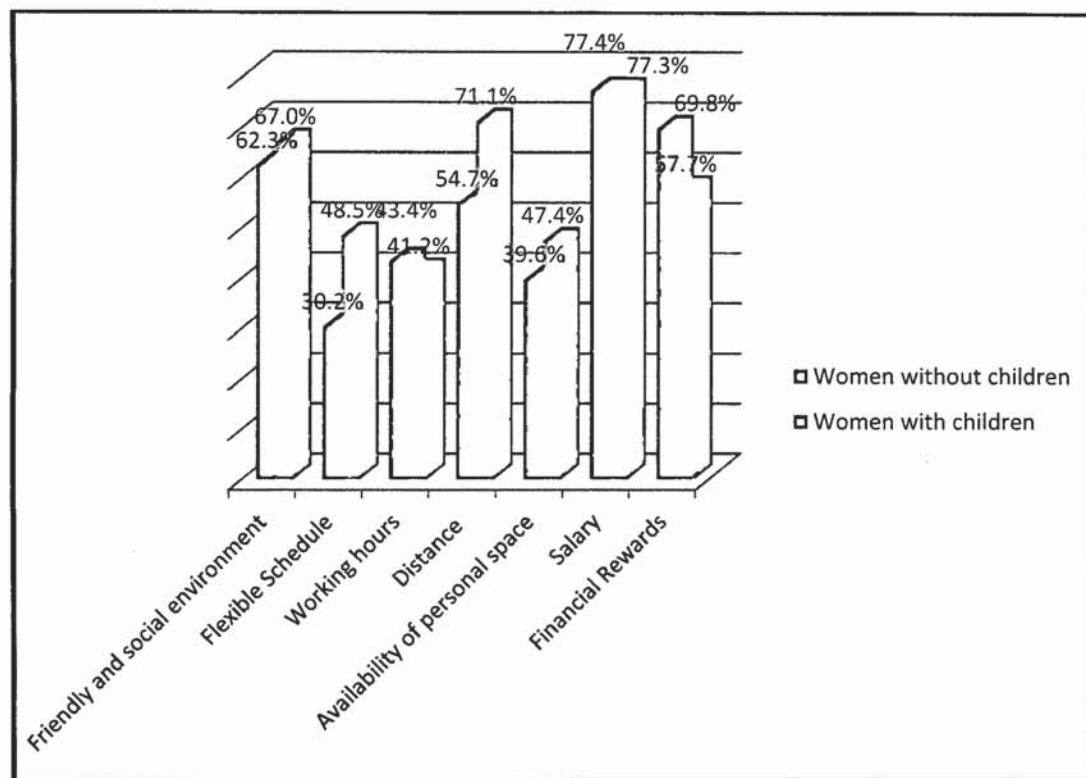


Figure 26: Percentages in the difference of importance of some factors between women with children and women without children

		Women with /Without Children			
		Women without children		Women with children	
		Count	%	Count	%
Q4. Have you ever considered teleworking while searching for a job?	Yes	25	47.2%	53	54.6%
	No	28	52.8%	44	45.4%
	Total	53	100.0%	97	100.0%

Table 17: Cross-tabulation between women with/without children and Q4

As we can notice from the results in the table above (Table 17), the majority of women without children have not considered teleworking while searching for a job (52.8%), whereas for the women with children, the majority has considered teleworking (54.6%). The percentage of women without children who consider teleworking is higher than the percentage of women with children who consider teleworking; however, after performing the Z-test it showed that the difference is not very significant. Moreover, after performing the Chi2 test, we found out that p-value= 0.381, which is >0.05, which tells that these two variables do not depend on each other. We can conclude here that when women were asked a direct question on teleworking, having children or not did not affect their decision significantly.

When we asked the women respondents about the advantages of teleworking, we had a higher percentage of women with children who answered 'skip traffic' (47.42%) than of women without children (33.96%). This shows that women with children are more in a

hurry to get back to their house than women without children; consequently we can say that women with children give more importance to the time they want to get home to than women without children.

Hypothesis 3: There is a significant difference between young and older workers in their choice of becoming a telecommuter.

		S4A. How old are you?							
		25-34		35 -44		45 -54		55 -64	
		Count	%	Count	%	Count	%	Count	%
Q1a+Q1b <i>(refer to questionnaire)</i>	4 to 6 Hours	15	16.9%	20	24.1%	18	22.5%	18	37.5%
	6 to 8 Hours	42	47.2%	32	38.6%	38	47.5%	21	43.8%
	8+	32	36.0%	31	37.3%	24	30.0%	9	18.8%
	Total	89	100.0%	83	100.0%	80	100.0%	48	100.0%

Table 18: Cross-tabulation between age and Q1a/b

We can observe from the table above that the percentage of the age bracket [25-34] who work and wish to work from 4 to 6 hours (16.9%) is less than the percentage of the age bracket [55-64] who work and wish to work from 4 to 6 hours (37.5%). After performing the Z-test, we concluded that this difference is significant. In addition, we

performed Spearman correlation test between these two variables and we got $p\text{-value} = 0.01$, which is less than 0.05 meaning that there is a correlation between these two variables; age and number of working hours. In order to understand the nature of this relation, we examined R (coefficient of correlation) and we found out that $R = -0.148$, which is negative, meaning that there is a negative relation between age and Q1a/b. i.e. when age increases working hours decrease, so we can deduce that age and working hours vary in opposite directions.

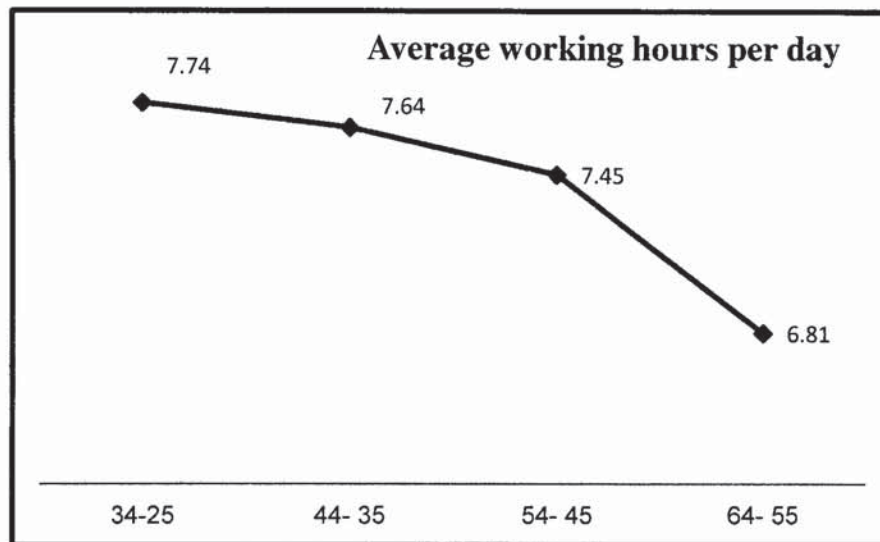


Figure 27: Average working hours per day according to age brackets

Does the average working hour differ significantly between age brackets? We performed a one-way Anova test to compare means; we got $p\text{-value} = 0.041$, which is less than 0.05, so there is a significant difference of the means between age brackets. If we come across the figure above, we notice the decreasing slope that shows the negative relation we talked about between the two variables. In addition, we used the post-hoc analysis test to specify which brackets specifically, and we found out that the significant difference is between age brackets; [25-34] and [55-64].

Now, if we go back to the relation we proved earlier between working hours and the choice of being a telecommuter, we can conclude here that people in the age bracket [25-34] are less susceptible to the choice of being a telecommuter, since the percentage

of older people [55-64] who chose to work less hours is higher than the percentage of younger people.

Q3 (refer to questionnaire)	Age			
	25-44		45-64	
	Count	%	Count	%
Friendly and social environment	92	53.5%	74	57.8%
Flexible Schedule	52	30.2%	54	42.2%
Working hours	66	38.4%	49	38.3%
Distance (Having the workplace near my place)	96	55.8%	80	62.5%
Availability of personal space	67	39.0%	54	42.2%
Salary	118	68.6%	98	76.6%
Financial Rewards	102	59.3%	79	61.7%

Table 19: Cross-tabulation between age and Q3

From the table above (Table 19), for the entire factors older worker give higher importance than for younger workers; however, after performing the Z-test , we found

out that older workers aged 45-64 years give significant higher importance (42.2%) to "Schedule flexibility" than younger ones (30.2%). Furthermore, we performed a correlation test and we got $p\text{-value} < 0.05$ in two factors; "Flexible Schedule" and "Distance (Having the workplace near my place)" i.e. there is a difference between age of worker and the importance they assign on these two factors. The correlation being > 0 , older persons gave higher importance to these two factors than younger ones; these two factors affect the choice of being a telecommuter and they were significantly higher for older people, so older people are more susceptible to the choice of being a telecommuter. We also did the One-way Anova test to compare the means and as a result the mean differed significantly between young workers and older ones for the same two factors, which assured our conclusion again. Notice the significant differences of these two factors in the figure below. (Figure 28)

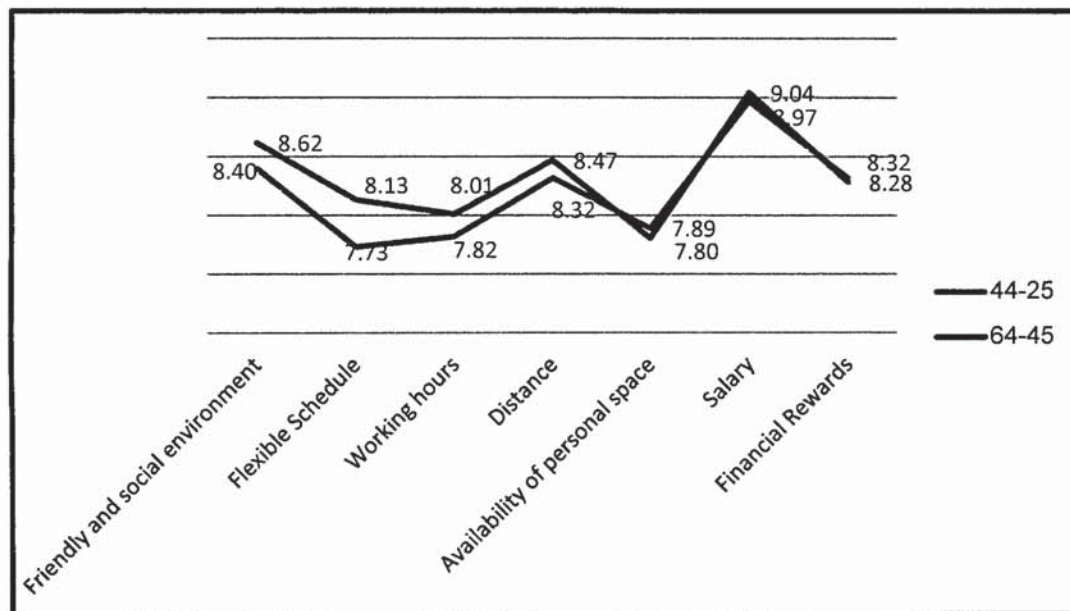


Figure 28: The difference in importance of factors according to age

After performing the Z-test: For those who consider teleworking when searching for a job, the percentage of young workers who don't give importance to teleworking (16.7%) is significantly greater than the percentage of those who are older and don't give it importance (3.5%).

Then, we made another table and we considered the following:

		Age			
		25-34		35+	
		Count	%	Count	%
Q5 (refer to questionnaire)	< 5	12	28.6%	11	12.9%
	5+	30	71.4%	74	87.1%
	Total	42	100.0%	85	100.0%

Table 20: Cross-tabulation between age and Q5

After performing the Z-test, we figured out that the percentage of people who considered teleworking not that important from the age bracket [25-34] is significantly greater (28.6%) than the percentage of people who considered teleworking not that important from the ages 35+, who are older (12.9%). As well, the percentage of people who considered teleworking important from the ages 35+ is significantly greater (87.1%) greater than the percentage of people who considered teleworking important from the age bracket [25-34], who are younger. Besides, we performed the Chi2 test and it gave p-value= 0.031, which is less than 0.05, so the two variables are dependant i.e. older people give more importance to telecommuting, so they are more susceptible to the choice of being a telecommuter.

4.4 Discussion of the Hypotheses (rejected or supported?)

After testing the three hypotheses and analyzing the findings, we can now infer if these hypotheses were supported or rejected. According to our findings discussed earlier in this Chapter, which included the needed tests performed to examine many relations between different variables needed to come up with the conclusions which lead us to either support or reject our hypotheses. Let us start with Hypothesis 1, which states: '*There is a significant difference between men and women in their choice of becoming a telecommuter.*' In the discussion and analysis of this hypothesis, we concluded the following: Women are more likely to make the choice of becoming a telecommuter than men do and gender has an effect on considering teleworking or not. Therefore, there is a significant difference between men and women in their choice of becoming a telecommuter or not; this leads us to say that Hypothesis 1 is supported.

As for Hypothesis 2 stating: '*There is a significant difference between women with children and women without children in their choice of becoming a telecommuter*', the following was concluded from its earlier discussion; women with or without children affects the choice of being a telecommuter and women with children are more susceptible to choose telecommuting. This leads us to say that Hypothesis 2 is also supported. Note that the difference in both hypotheses is significant given the specified tests performed.

As for Hypothesis 3 stating: '*There is a significant difference between young and older workers in their choice of becoming a telecommuter*'; the following was concluded: Young people in the age bracket [25-34] are less susceptible to the choice of being a telecommuter than older people [55-64]; specifically the significance was in these two age brackets only. Also, older people gave more importance to telecommuting, so they are more susceptible to the choice of being a telecommuter. This leads us to say that there is a significant difference between young and older workers in their choice of becoming a telecommuter; however the significance is not very high and the importance of this variable is not as important as the two previous variables studied in Hypothesis 1

and Hypothesis 2. Thus, we can say that Hypothesis 3 is supported; yet not as much as Hypotheses 1 and 2.

Note that the questions in the survey were asked in both ways; directly and indirectly to get clear results. We noticed that the significance in many direct questions had low significance; however in indirect questions we got more significant results.

4.5 Conclusion

To sum up this Chapter, we conclude that our three hypotheses were supported; having Hypotheses 1 and 2 with higher significance than Hypothesis 3. The most significant and dependant variables on the choice of becoming a telecommuter are gender and women with or without children. We obtained a lot of relations between these variables; some of which were direct and some indirect. Many tests were used to analyze our findings in the most accurate way possible.

Chapter 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This study was made in order to answer our research question and prove if our hypotheses are true or false. We had some objectives we wanted to attain in the end of this study; and that is the section where our answers will be clarified and where upon them we will be able to act on the project. During this study, we made an extensive research on the idea of 'virtual work' and its definitions along with a classification of different types of 'virtual work', however; our study focused on one specific type of 'virtual work', which is 'telecommuting'. Since this concept is relatively new, we tried to understand it in a more detailed and profound way in order to be able to make a study on one of its concepts. After grasping the concept well, we began the study using the survey method and we analyzed our results and findings. At this stage of the study, we will summarize our main results and findings and compare them to our objectives.

5.2 Summary of Main Results

After all the analysis of our results and findings that we did, we got answers to our research question and we were able to prove that our hypotheses are true with varying significances. One of our main results was that we proved that there is a difference in workers' perception regarding virtual employment; telecommuting. As well, we found out that the Lebanese community; more specifically, Lebanese workers are potential to the telecommuting project. The majority of respondents saw telecommuting as an advantage among who were the individuals who were aware of the concept and those who found it a new concept. However; we found out that there are specific variables that affect the choice of telecommuting; which are gender, women with/without children, and age. When we studied our hypotheses using different tests such as the significance, independence, and correlation tests, we got results which explained the different perceptions of telecommuting given these three variables of which gender and women with/without children were the most significant. If we take these two variables;

women showed more susceptibility to the choice of telecommuting than men did; also women with children showed even a higher susceptibility to the choice of telecommuting than women without children. Moreover; one of the main reasons which women considered important to telework is the factor of 'more family time'; this factor is very important to women; especially that nowadays women are working as men do and they are not finding the time to raise their children. This is one major problem that a lot of families are facing. Try to think of how many times you see these advertising sayings 'Do you want to work from home? Working-from-home mom'; this concept has been highly attracting women especially with children as we found out in our study. Many other factors were also important to them in their choice of telecommuting such as flexible schedule, distance, and others; which all relates to the telecommuting concept. As for the age variable, we found out an indirect relation that showed that older people are more susceptible to the choice of telecommuting than younger people; however the significance is not as much as the two other variables; gender and women with/without children.

In Chapter 1, we had asked the question of why in Lebanon we did this study, and the answer was because of two ideas; one of them is because our world is now transforming to a virtual world and to be able to follow all the technological advances in this Information Technology world, companies in Lebanon should start to work on this concept by starting with the 'telecommuting' project; which is the first step. The second idea is to solve many problems that Lebanon is facing such as the excess of traffic, the saving of money on transportation, and many other problems mentioned in Chapter 1 that will be affected indirectly if the project of 'telecommuting' is to be launched. In our findings, the highest percentage of the advantages of teleworking was given to 'Skip traffic'; which shows how much people are highly concerned about this chronic problem, so here we can prove that 'telecommuting' could be a successful solution. Thus, embracing the 'telecommuting' project in companies in Lebanon will lead to a big part of people who will not need to take his/her car everyday to the company location, leading to a reduced pressure on roads which will result in much less traffic

leading to lower stress levels and to money saving on transportation as well as less pollution and wastes.

Note that in the questions that were asked in a direct way in the survey, our significances were generally relatively low; however, it is in our indirect questions that our questions have been answered, where we noticed the high significances. It is important to note that the indirect questions and the indirect relations we analyzed were much more useful than the direct questions that were asked in the survey.

Starting with our objectives of this study to our research question and hypotheses, we can notice that they were all met successfully with our findings results.

5.3 Limitations of the research

During this research we faced some limitations; some of which we decided to make which are called restrictions; they are put in order to get the most reliable answers and results possible by targeting accurately the sample needed and others that we were obliged to face because of some restrictions of time and resources. The restrictions which we included were the following: All respondents should not have participated in a marketing research in the last 6 months (Question S2 in survey); this restraint was set for marketing research accuracy purposes. In addition, none of the respondents or any of their family members, relatives etc. work in neither of the following: Research agency, public relations agency or is personally a vocational/factory worker (Question S3 in survey); this restraint was also set for marketing research accuracy purposes as well as for the sake of targeting sample accuracy. Furthermore; all respondents are aged between [25-64] (Question S4 in survey); this restraint was set, since individuals under 25 years old are not our specific target, since they might not be working yet or even well experienced to be able to give reliable answers on our studied subject. Also, age 64 was the upper limit, since in Lebanon, it is considered in the Law to be the age of retirement. Besides, all respondents should be working or seeking for work (Questions S5/S6 on survey); this restraint was set for targeting sample accuracy.

As for the limitations we faced involuntarily in this study due to limited resources and time; we will state some as follows: Some regions in Lebanon were taken as the sample studied rather than all Lebanese regions for the reasons mentioned above. As well, for randomization purposes, reliability, and accuracy, we submitted the survey to a successful and professional international statistics company; IPSOS, in order to perform the survey distribution. In addition, we did not take the Information Technology section and infrastructure into consideration given that our project focuses on the idea of the project and whether it will be accepted and not its implementation. Moreover, our references in Chapter 2 contain some relatively old ones since this concept of 'virtual' was discussed by many authors from these days and today we are witnessing many implementations of this concept instead of many definitions and theories.

5.4 Recommendations

As proved in the study, Lebanese workers are potential to result in the success of this project; telecommuting. However; there are many steps that have to be taken care of in order to start implementing the project. First of all, a special study should be done on the availability of the needed Information Technology and appropriate infrastructure in Lebanon including the internet connectivity and speeds needed to make the project successful. Second, a Law for 'telecommuting' must be set and signed by the government as well as by-laws in companies regarding 'telecommuting' and its uses. Third, there must be more awareness on the subject matter through offering special trainings in companies concerning 'telecommuting' as well as awareness campaigns in advertisings through televisions, newspapers, radios, and many other media. Another important aspect is to promote a trusting image since many people will hesitate because of trust issues in the concept. For instance, in the by-laws of companies regarding 'telecommuting', there must be programs that include social security, a fixed salary etc. for every employee who telecommutes giving him/her the same benefits and package that are given to employees who do not telecommute. This will make people more and more aware and friendly to the concept; since as we saw in our findings that many people are still not well-aware of it; however we saw a potential in them to

'telecommute'. Fourth, the concept must be implemented in an escalating way; that is, it must be launched in small groups of every company first, then if it shows successful results we can spread it more and more. The groups that we can start with are the following: Women especially women with children and groups of older workers, that is; workers who are older than 44. These groups were chosen according to the results and findings in our study; showing that women are more susceptible to the choice of teleworking than men. As well as, women with children are more susceptible to the choice of telecommuting than women without children. Also, the older generation is more susceptible to the choice of telecommuting than is the younger generation. Consequently, it is logical to start implementing a new concept to a group of people who proved to be more ready to it than other groups.

The concept of 'telecommuting', if implemented successfully, will have many positive effects on the workers in Lebanon as well as on Lebanese community as a whole given its wide effects that can reach the solutions of traffic, money saving, decreased stress levels, less pollution and wastes etc. Let us take the example of traffic; if the project of telecommuting is implemented and big numbers of companies started launching it, we will have a big number of employees working from home, which will lead to less road pressures, consequently less traffic, which in turn will lead to reduced stress levels and more saving of time. If we take another example, we can think of it this way; an employee who moved out to a new and relatively far city, he/she will be obliged to leave his/her current work because of distance. In this case, if telecommuting is an option, the employee will have no problem staying in the company as well as if we take it in the company's perspective, the company will also benefit from saving the costs and time to recruit another person along with gaining the good employee. This project is potential to carry solutions to many problems in Lebanon and its society as well as its technological advancement benefits personally and internationally. Besides, we recommend that this study is further carried on all Lebanese regions to have even more reliable results and better implementation possible.

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APPENDICES

Appendix A: Questionnaire

English Version

Good morning / afternoon. I am a university student who is completing her thesis and would like to conduct the following survey about working habits and would like to ask you few questions. Thank you for your participation.

SCREENING SECTION

S1. Gender (circle by observation)

FEMALE	1	CONTINUE
MALE	2	CONTINUE

S2. Did you participate in a marketing research in the last 6 months?

NO	1	CONTINUE
YES	2	TERMINATE

S3. Do you or any of your family members, relatives or any of your close friends work in?

Research agency	1	TERMINATE
Public relations agency	2	
You personally are a vocational/factory worker	3	
None	4	CONTINUE

S4. How old are you?
Put exact age _____

Under 25	1	TERMINATE
25 – 34	2	CONTINUE
35 – 44	3	
45 – 54	4	
55 – 64	5	
Above 64	6	TERMINATE

S5. Are you employed?

YES	1
NO	2

If respondent is not employed (answered code 2 in S5) ask S6, otherwise skip this question.

S6. Are you looking for a job or consider working in the coming 6 months?

YES	1	CONTINUE
NO	2	TERMINATE

MAIN SECTION

Ask Q1 if code 1 in S5

Q1a. How many hours you currently work per day?

Q1b. If you are working, how many hours would you wish to work per day?

Q1a	Working hours per day	Q1b	Working hours per day
1	4 → 6	1	4 → 6
2	6 → 8	2	6 → 8
3	8+	3	8+

Q2. Talking about the ideal work environment; what are the main factors that you consider very important and that pushes you to work better and give more in your tasks.

1	Flexible Schedule
2	Working Hours
3	Distance (Having the workplace near my place)
4	Friendly and social environment
5	Availability of personal space

6	Salary
7	Financial Rewards
8	Other, specify:

Q3. Now, I am going to read out to you factors that some people have mentioned as important to have in their work environment. For each factor that I am going to read out to you, I want you to tell me how much you personally consider this factor as important in your choice.

Using a scale from 1 to 10, where 1 means not important at all and 10 means very important.

Not Important at all										Very Important
1	2	3	4	5	6	7	8	9	10	

										Score
1	Friendly and social environment									
2	Flexible Schedule									
3	Working hours									
4	Distance (Having the workplace near my place)									
5	Availability of personal space									
6	Salary									
7	Financial Rewards									

Talking about what we call "Telecommuting", it is defined as "a work arrangement in which employees do not commute to a central place of work. A person who telecommutes is known as a "telecommuter", "teleworker", and sometimes as a "home-sourced" employee. Many telecommuters work from home, while others, sometimes called "nomad workers" use mobile telecommunications technology to work from coffee shops or other locations."

Q4. Have you ever considered this option while searching for a job?

YES	1
NO	2

Q5. How much is this option important to you when searching for a job?

Using a scale from 1 to 10, where 1 means not important at all and 10 means very important.

Not Important at all										Very Important
1	2	3	4	5	6	7	8	9	10	

Q6. You said that this factor is (read out answer in Q5...); Why you say so?

--

Q7. What do you think are the advantages of teleworking?

1	Skip traffic
2	Be exposed to less pollution
3	Feel less stressed
4	Avoid problems with colleagues
5	More motivation
6	Less crowded and quiet work atmosphere
7	More personal space
8	More family time (taking care of kids, elderly etc.)
9	Flexibility
10	No conformation to dress code
	Other, specify:

Q8. What are the disadvantages of working from home?

1	Less motivation
2	More stress
3	Makes work boring with a quiet place
4	No social life
5	Family distractions
	Other, specify:

Q9. Would you say that 'teleworking' is.....?

1	Essential
2	Does not matter to me
3	Not an option to me

DEMOGRAPHIC SECTION

D1A – Marital Status

1	Single
2	Married
3	Divorced

Ask D1B ask for respondents who answered code 2 or 3 in D1A, otherwise go directly to D2

D1B – Do you have any children?

1	Yes
2	No

D2. Are you the chief wage earner?

1	Yes
2	No

D3. Could you please tell me on average, how much is:

- a. Your personal monthly income?
- b. Your family monthly income?

D3a Respondent	D3b Household	
1	1	Up to 750 \$
2	2	751 – 1000 \$
3	3	1001 – 1500 \$
4	4	1501 – 2000 \$
5	5	2001 – 3000 \$
6	6	3001 – 4000 \$
7	7	4001 – 6000 \$
8	8	6001 – 8000 \$
9	9	8001 – 10000 \$
10	10	More than 10000 \$
11	11	No Answer
12		No personal income

D4. a. What is your occupation?

ASK D4.b if code 2 in D2

- b. What is the occupation of the chief wage earner?

D4a Respondent	D4b CWE	
1	1	Upper Management: board of directors / managing director
2	2	Middle Management: branch manager/unit/officer
3	3	Specialized, Self-employed: doctor, lawyer, pharmacist
4	4	Specialized Employed: doctor, lawyer, pharmacist
5	5	Has his own business
6	6	Farmer or hunter
7	7	Office employee
8	8	Out-of-office employee: sales person...
9	9	Skilled worker: carpenter, technician...
10	10	Unskilled worker
11		Student
12		Unemployed / housewife
13	13	Retired

D5. a. What is your highest level of education?

ASK D5.b if code 2 in D2

- b. What is the highest education level of the main wage earner?

D5a Respondent	D5b CWE	
1	1	Illiterate/ does not read or write
2	2	Reads and writes but no degree
3	3	Elementary school
4	4	Finished elementary school
5	5	Middle school
6	6	Finished middle school

7	7	High school
8	8	Finished high school
9	9	University student
10	10	University graduate
11	11	Studying for the Masters, PHD
12	12	Attained his Masters, PHD...

D7 – Region

1	East Beirut
2	West Beirut
3	Metn

4	Baabda
5	Southern Suburbs

Thank you for your cooperation.

English Version (IPSOS)

STUDY:	IPSOS
March, 2013	
Interviewer Name:	REGION :
Interviewer code: <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	DATE :

“Good Morning / Afternoon / Evening” I amfrom IPSOS, one of the leading research Co. in the Middle East. Currently we are doing a study about working habits and would like to ask you a few questions.

There is no right or wrong answers, and I am not selling anything. Before we start, I would like to tell you that everything you say holds a lot of importance for us.

The information collected will stay confidential and your identity will be anonymous and will never be revealed to anybody. Your responses will be pooled with those of the other respondents and presented as a group opinion to our client.

Thank you very much in advance for your time and cooperation.

SCREENING SECTION

S1. Gender (circle by observation)

FEMALE 50%	1	CONTINUE
MALE 50%	2	CONTINUE

S2. Did you participate in a marketing research in the last 6 months?

NO	1	CONTINUE
YES	2	TERMINATE

S3. Do you or any of your family members, relatives or any of your close friends work in?

Research agency	1	TERMINATE
Public relations agency	2	
You personally are a vocational/factory worker	3	
None	4	CONTINUE

S4. How old are you?

Put exact age ____

Under 25	1	TERMINATE
25 – 34 29%	2	CONTINUE
35 – 44 28%	3	
45 – 54 27%	4	
55 – 64 16%	5	
Above 64	6	TERMINATE

S5. Are you employed?

YES	1
NO	2

If respondent is not employed (answered code 2 in S5) ask S6, otherwise skip this question.

S6. Are you looking for a job or consider working in the coming 6 months?

YES	1	CONTINUE
NO	2	TERMINATE

MAIN SECTION

Ask Q1 if code 1 in S5

Q1a. How many hours you currently work per day?

Q1b. If you are working, how many hours would you wish to work per day?

Q1a	Working hours per day	Q1b	Working hours per day
1	4 → 6	1	4 → 6
2	6 → 8	2	6 → 8
3	8+	3	8+

Q2. Talking about the ideal work environment; what are the main factors that you consider very important and that pushes you to work better and give more in your tasks. **(Multi answer) Do not Read**

1	Flexible Schedule
2	Working Hours
3	Distance (Having the workplace near my place)
4	Friendly and social environment
5	Availability of personal space
6	Salary
7	Financial Rewards
8	Other, specify:

Q3. Now, I am going to read out to you factors that some people have mentioned as important to have in their work environment. For each factor that I am going to read out to you, I want you to tell me how much you personally consider this factor as important in your choice.

Using a scale from 1 to 10, where 1 means not important at all and 10 means very important.

Not Important at all									Very Important
1	2	3	4	5	6	7	8	9	10

	Score
1 Friendly and social environment	
2 Flexible Schedule	
3 Working hours	
4 Distance (Having the workplace near my place)	
5 Availability of personal space	
6 Salary	
7 Financial Rewards	

Talking about what we call "Telecommuting", it is defined as "a work arrangement in which employees do not commute to a central place of work. A person who telecommutes is known as a "telecommuter", "teleworker", and sometimes as a "home-sourced" employee. Many telecommuters work from home, while others use mobile telecommunications technology to work from other locations."

Q4. Have you ever considered this option while searching for a job?

YES	1
NO	2

Q5. How much is this option important to you when searching for a job?

Using a scale from 1 to 10, where 1 means not important at all and 10 means very important.

Not Important at all											Very Important
1	2	3	4	5	6	7	8	9	10		

Q6. You said that this factor is (read out answer in Q5...); Why you say so?

Q7. What do you think are the advantages of teleworking? (Multi answers) Do Not Read

1	Skip traffic
2	Be exposed to less pollution
3	Feel less stressed
4	Avoid problems with colleagues
5	More motivation
6	Less crowded and quiet work atmosphere
7	More personal space
8	More family time (taking care of kids, elderly etc.)
9	Flexibility
10	No conformation to dress code
	Other, specify:

Q8. What are the disadvantages of working from home? (Multi answers) Do Not Read

1	Less motivation
2	More stress
3	Makes work boring with a quiet place
4	No social life
5	Family distractions
	Other, specify:

Q9. Would you say that 'teleworking' is.....? (Single Answer) Read

1	Essential
2	Does not matter to me
3	Not an option to me

DEMOGRAPHIC SECTION

D1A – Marital Status

1	Single
2	Married
3	Divorced

Ask D1B ask for respondents who answered code 2 or 3 in D1A, otherwise go directly to D2

D1B – Do you have any children?

1	Yes
2	No

D2. Are you the chief wage earner?

1	Yes
2	No

D3. Could you please tell me on average, how much is:

- Your personal monthly income?
- Your family monthly income?

D3a Respondent	D3b Household	
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3	3	1001 – 1500 \$
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5	5	2001 – 3000 \$
6	6	3001 – 4000 \$
7	7	4001 – 6000 \$
8	8	6001 – 8000 \$
9	9	8001 – 10000 \$
10	10	More than 10000 \$
11	11	No Answer
12		No personal income

D4. a. What is your occupation?

ASK D4.b if code 2 in D2

b. What is the occupation of the chief wage earner?

D4a Respondent	D4b CWE	
1	1	Upper Management: board of directors / managing director
2	2	Middle Management: branch manager/unit/officer
3	3	Specialized, Self-employed: doctor, lawyer, pharmacist
4	4	Specialized Employed: doctor, lawyer, pharmacist
5	5	Has his own business
6	6	Farmer or hunter
7	7	Office employee
8	8	Out-of-office employee: sales person...
9	9	Skilled worker: carpenter, technician...
10	10	Unskilled worker
11		Student
12		Unemployed / housewife
13	13	Retired

D5. a. What is your highest level of education?

ASK D5.b if code 2 in D2

b. What is the highest education level of the main wage earner?

D5a Respondent	D5b CWE	
1	1	Illiterate/ does not read or write
2	2	Reads and writes but no degree
3	3	Elementary school
4	4	Finished elementary school
5	5	Middle school
6	6	Finished middle school
7	7	High school
8	8	Finished high school
9	9	University student
10	10	University graduate
11	11	Studying for the Masters, PHD
12	12	Attained his Masters, PHD...

D7 – Region

1	East Beirut 9%
2	West Beirut 21%
3	Metn 37%

4	Baabda 13%
5	Southern Suburbs 20%

Resp. Name:	<u>Detailed address</u>
.....	Region:
Phone number:	Street:
Work phone nb:	Bldg:
	Floor:
	Apartment number:
	Near (in detail):

Thank you for your cooperation.

Arabic Version (Translated Version)

إيسوس	الدراسة:
	مارس ٢٠١٣
المنطقة:	إسم المستفتي:
التاريخ:	رمز المستفتي:

طاب يومك/ مساووك. أدعى..... وأنا من إيسوس، إحدى الشركات الرائدة في الأبحاث في الشرق الأوسط. نحن نُجري حالياً دراسة حول سلوك العمل وأود طرح بعض الأسئلة عليك.

ما من إجابات صحيحة أو خاطئة، وأنا لا أسعى لبيعك شيء. قبل البدء، أود إعلامك بأن كل ما تقوله مهم بالنسبة إلينا.

ستبقى المعلومات المستقاة سرية ولن يتم الكشف عن هويتك لأحد. سنجمع إجاباتك مع إجابات المستفتين الآخرين وثقّم للزبون كراي جماعي.

أشكرك مسبقاً على وقتك وتعاونك.

قسم الفرز

S1. الجنس (سجل بحسب الملاحظة)

أنثى %٥٠	1	تابع
ذكر %٥٠	2	تابع

S2. هل شاركت في دراسة تسويقية خلال الأشهر الستة الماضية؟

لا	1	تابع
نعم	2	توقف

S3. هل تعمل أنت أو أي من أفراد أسرتك، أقاربك أو أصدقائك المقربين في...؟

توقف	1	شركة أبحاث وكالة علاقات عامة
	2	
	3	أنت شخصياً عامل مهني/ عامل في مصنع
تابع	4	لا شيء من المذكور

S4. كم يبلغ عمرك؟

سجل العمر بالضبط _____

توقف	1	أقل من ٢٥ سنة
	2	٢٥ - ٣٤ سنة ٢٩%
تابع	3	٣٥ - ٤٤ سنة ٢٨%
	4	٤٥ - ٥٤ سنة ٢٧%
	5	٥٥ - ٦٤ سنة ١٦%
توقف	6	أكبر من ٦٤ سنة

S5. هل تعمل؟

1	نعم
2	لا

في حال لم يكن المجيب موظفاً (اختار الرمز ٢ في S5)، اسأل S6 وإلا لا تتطرق إلى هذا السؤال
S6. هل تبحث عن وظيفة أو تفكر بالعمل خلال الأشهر الستة المقبلة؟

1	نعم
2	لا

الإستمارة الرئيسية

اسأل Q1 إذا اختار الرمز 1 في S5

Q1a. كم ساعة في اليوم تعمل حالياً؟

Q1b. في حال حصلت على عمل، كم ساعة تود أن تمضيها في العمل؟

ساعات العمل في اليوم	Q1B	ساعات العمل في اليوم	Q1A
6 ← 4	1	4 ← 6	1
8 ← 6	2	8 ← 6	2
8 +	3	8+	3

Q2. بالتفكير في بيئة العمل المثالية، ما هي أبرز العوامل التي تعتبرها مهمة جداً والتي تحتك على العمل أكثر وبذل أقصى مجهود في مهامك؟ (إجابات عدة) لا تقرأ

1	جدول أعمال مرن
2	ساعات العمل
3	المسافة (قرب مقرّ العمل من منزلي)
4	جوّ لطيف وودود
5	توفر خصوصية ومساحة شخصية
6	الراتب
7	المكافآت المالية
8	غيره، حدد:

Q3. سأقرأ لك الآن عوامل اعتبر بعض الأشخاص أن وجودها مهم في بيئة عملهم. لكل عامل سأقرأه لك، أود منك

إخباري كم تعتبر شخصياً هذا العامل مهماً في اختيارك. استخدم رجاء مقياساً من 10 درجات حيث أن 1 =

غير مهم إطلاقاً و 10 = مهم جداً.

مهم جداً	غير مهم (إطلاقاً)
10	1
9	2
8	3
7	4
6	5
5	6
4	7
3	8
2	9
1	10

العلامة	
1	جوّ لطيف وودود
2	جدول أعمال مرن
3	ساعات العمل
4	المسافة (قرب مقرّ العمل من منزلي)
5	توفر خصوصية ومساحة شخصية
6	الراتب
7	المكافآت المالية

يُعرف العمل عن بُعد بأنه ترتيب يُتيح للموظفين عدم التقيّد بالذهاب إلى مقرّ عمل مركزي. إنّ الشخص الذي يعمل عن بُعد يُعرف بالعامِل عن بُعد وأحياناً بالموظف الذي يعمل من المنزل. يؤدّي الكثير من العاملين عن بُعد عملهم من المنزل، في حين أنّ الآخرين يستخدمون تكنولوجيا الإتصالات المتنقّلة للعمل من أماكن أخرى.

Q4. هل سبق أن فكرت بهذا الخيار أثناء البحث عن وظيفة؟

1	نعم
2	لا

Q5. كم يهَمُّك هذا الخيار أثناء البحث عن وظيفة؟ استخدم رجاؤ مقياساً من ١٠ درجات حيث أنّ ١ = غير مهم إطلاقاً و ١٠ = مهم جداً.

مهم جداً										غير مهم إطلاقاً
10	9	8	7	6	5	4	3	2	1	

Q6. قلت إنّ هذا العامل... (اقرأ الجواب من Q5)؛ ما سبب ذلك؟

Q7. ما هي برأيك حسنات العمل عن بُعد؟ (إجابات عدة) لا تقرأ الإحتمالات

1	تجنّب زحمة السير
2	التعرّض للتلوّث بنسبة أقل
3	الشعور بتوتر أقل
4	تجنّب المشاكل مع الزملاء
5	المزيد من التحفيز
6	جوّ عمل هادئ وأقلّ ازدحاماً
7	المزيد من الخصوصية
8	المزيد من الوقت المخصّص للعائلة (الإهتمام بالأولاد، الكبار في السن، إلخ)
9	مرونة
10	عدم التقيّد بلباس معين
	غيره، حدد:

Q8. ما هي سينات العمل من المنزل؟ (إجابات عدة) لا تقرأ الإحتمالات

1	قلة التحفيز
2	المزيد من التوتر
3	يصبح العمل مضجراً في مكان هادئ
4	لا حياة اجتماعية
5	إزعاج وإلهاء من العائلة
	غيره، حدد:

Q9. هل تعتبر أن "العمل عن بُعد".....؟ (إجابة واحدة) اقرأ

1	ضروري
2	لا يشكل لي فرقاً
3	ليس خياراً قد أفكر فيه

المعلومات الشخصية

D1A- الوضع العائلي

1	أعزب
2	متزوج
3	مطلق

اطرح السؤال D1B على المجيبين الذين اختاروا الرمز ٢ أو ٣ في D1A؛ وإلا انتقل مباشرة إلى D2

D1B- هل لديك أولاد؟

1	نعم
2	لا

D2. هل أنت معيل الأسرة؟

1	نعم
2	لا

D3- هل يمكنك إخباري تقريبا كم يبلغ:

- a. دخلك الفردي الشهري؟
b. دخل أسرتك الشهري؟

	D3b الأسرة	D3a المجيب
حتى ٧٥٠ دولار	1	1
٧٥١ - ١,٠٠٠	2	2
١,٠٠١ - ١,٥٠٠	3	3
١,٥٠١ - ٢,٠٠٠	4	4
٢,٠٠١ - ٣,٠٠٠	5	5
٣,٠٠١ - ٤,٠٠٠	6	6
٤,٠٠١ - ٦,٠٠٠	7	7
٦,٠٠١ - ٨,٠٠٠	8	8
٨,٠٠١ - ١٠,٠٠٠	9	9
أكثر من ١٠,٠٠٠	10	10
لا جواب	11	11
لا مدخول فردي		12

D4a. ما هي مهنتك؟

اسأل D4b إذا اختار الرمز ٢ في D2

b. ما هي مهنة معيل الأسرة؟

	D4b معييل الأسرة	D4a المجيب
إدارة عليا: مجلس إدارة/ مدير شركة	1	1
إدارة وسطى: مدير فرع/ قسم/ ضابط	2	2
متخصص يعمل لحسابه: طبيب/ محامي/ صيدلي	3	3
متخصص يعمل موظفاً: طبيب/ محامي/ صيدلي	4	4
يملك عمله الخاص	5	5
مزارع أو صياد	6	6
موظف يعمل داخل المكتب	7	7
موظف يعمل خارج المكتب: بائع متجول	8	8
عامل ذو مهارة: نجار/ عامل فني	9	9
عامل بدون مهارة	10	10
طالب		11
عاطل عن العمل/ ربة منزل		12
متقاعد	13	13

D5a. ما هو أعلى مستوى علمي وصلت إليه؟
اسأل D5.b إذا اختار الرمز ٢ في D2

b. ما هو أعلى مستوى علمي وصل إليه معيل الأسرة؟

	D5b معيّل الأسرة	D5a المجيب
أمي/ لا يجيد القراءة أو الكتابة	1	1
يجيد القراءة والكتابة لكن بدون شهادة	2	2
المرحلة الابتدائية	3	3
أنهى المرحلة الابتدائية	4	4
المرحلة التكميلية	5	5
أنهى المرحلة التكميلية	6	6
الثانوية	7	7
أنهى المرحلة الثانوية	8	8
طالب جامعي	9	9
خريج جامعي	10	10
يُكمل الماجستير، الدكتوراه	11	11
نال شهادة الماجستير، الدكتوراه...	12	12

D7. المنطقة

بعيدا ١٣%	4
الضاحية الجنوبية ٢٠%	5

بيروت الشرقية ٩%	1
بيروت الغربية ٢١%	2
المتن ٣٧%	3

مكان الإقامة بالتفصيل: المنطقة:	إسم المستفتي:
الشارع:	رقم الهاتف:
المبنى:	رقم العمل:
الطابق:	
رقم الشقة:	
قرب (بالتفصيل):	
.....	
.....	

شكراً لك على تعاونك.

Appendix B: Sample of SPSS files

Cross-tabulation between Q1A and Q4

		Q1A. How many hours you currently work per day? Working hours per day					
		4 to 6 Hours		6 to 8 hours		8+	
		Count	%	Count	%	Count	%
Q4. Have you ever considered teleworking while searching for a job?	Yes	27	55.1%	45	40.9%	30	32.6%
	No	22	44.9%	65	59.1%	62	67.4%
Total		49	100%	110	100%	92	100%

Z-Test

		Q1A. How many hours you currently work per day? Working hours per day		
		4 to 6 Hours	6 to 8 hours	8+
		(A)	(B)	(C)
Q4. Have you ever considered teleworking while searching for a job?	Yes	C		
	No			A

Chi2 Test

		Q1A. How many hours you currently work per day? Working hours per day
Q4. Have you ever considered teleworking while searching for a job?	Khi-Chi2	6.712
	ddl	2
	Sig.	.035*

Sample of a cross-tabulation in Hypothesis 1 and its tests performed

		S1. Gender			
		Female		Male	
		Count	%	Count	%
Have you ever considered teleworking while searching for a job?	Yes	78	52.0%	49	32.7%
	No	72	48.0%	101	67.3%
	Total	150	100.0%	150	100.0%

Z-Test

		S1. Gender	
		Female	Male
		(A)	(B)
Q4. Have you ever considered teleworking while searching for a job?	Yes	B	
	No		A

Chi2 Test

		S1. Gender
Q4. Have you ever considered teleworking while searching for a job?	Khi-Chi2	11.483
	Ddl	1
	Sig.	.001*

Sample of a cross-tabulation in Hypothesis 2 and its tests performed

		Women with /Without Children			
		Women without children		Women with children	
		Count	%	Count	%
q1a/Q1b	4 to 6 Hours	7	13.2%	44	45.4%
	6 to 8 hours	31	58.5%	40	41.2%
	8+	15	28.3%	13	13.4%
	Total	53	100.0%	97	100.0%

Z-Test

		Women with /Without Children	
		Women without children	Women with children
		(A)	(B)
q1a+Q1b	4 to 6 Hours		A
	6 to 8 hours	B	
	8+	B	

Chi2 Test

		Women with /Without Children
Q1a+Q1b	Khi-Chi2	16.653
	Ddl	2
	Sig.	.000*

**Sample of a cross-tabulation in Hypothesis 3 and its tests performed
ANOVA TEST**

Q1a/Q1b	Average of squares	Ddl	Average of squares	F	Signification
Inter-groups	29.621	3	9.874	2.791	0.094
Intra-groups	1047.325	296	3.538		
Total	1076.947	299			

Appendix C: Tests Used

Chi2 Test: It is an independence test between two categorical variables.

If p-value (Sig) is less than 0.05 → then there is a relation between the two variables i.e. they are dependent. However; if p-value (Sig) is greater than 0.05 → then there is no evidence that the two variables are dependent I.e. the two variables are independent.

ANOVA Test: This test compares means of dependent variables between categories of independent variables. It tests whether the means differ significantly between the categories of independent variables.

If p-value (Sig) is less than 0.05 → then the means differ significantly. However; if p-value (Sig) is greater than 0.05 → then there is no evidence that the means differ significantly.

Z-Test Proportion Test: It tests if vertical percentages differ significantly.

Correlation Test: It tests the linear relationship between two quantitative variables (numerical and ordinal.)

In this kind of test, we also follow the same logic as the Chi2 Test regarding reading p-value, in addition, this test generates a coefficient of correlation (R) .If $R > 0$ then there is a positive relationship between these two variables. However; If $R < 0$, then there is a negative relationship between the two variables.

One sample t-test: It is used to test whether the average of a the studied variable differs significantly from a certain value.