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# **The Effect of Geographic Dispersion, Language Differences, and Planning Effectiveness on Communication and Project Effectiveness: A Case Study from a Multinational Environment in the UAE**

تأثيرات الامتداد الجغرافي، الاختلافات اللغوية، وفاعلية التخطيط  
على فاعلية الاتصال وفاعلية المشروع: دراسة حالة من بيئة  
متعددة الجنسيات في دولة الإمارات العربية المتحدة

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## **ABSTRACT**

The rapid growth of the UAE and the Gulf region in general, has led to a dramatic increase in the number of projects in all sectors. Some of these projects require special expertise and knowledge, and so they are outsourced or run in cooperation with experienced companies from all over the world, with different cultures and ideologies. However, recent failures made organisations question the effectiveness of such multinational projects. Interestingly, researchers in the UAE have not addressed this issue adequately.

In this dissertation, we investigated communication and project effectiveness through a real-world case study in the UAE. The research focused on geographic dispersion, language differences, and planning effectiveness as the main factors of communication and project effectiveness. Following an extensive review of literature, we hypothesised that both geographic dispersion and language differences would have negative relationships with communication and project effectiveness, while planning effectiveness would have a positive relationship with the same.

Data from 112 questionnaire sets were analysed using quantitative research analysis tools, with some qualitative analysis. Findings rejected the negative relationship between geographic dispersion and communication effectiveness, but supported the negative relationship of language differences, and the positive relationship of planning effectiveness, with communication and project effectiveness. Moreover, recommendations to reduce language differences included providing communication skills training, in addition to English courses. Moreover, planning effectiveness could be enhanced by hiring a project management consultancy company, employing Project Management Professional (PMP) certified people, and providing project management training. Finally, suggestions for future research include investigating geographic dispersion, exploring additional factors, and developing new and existing technologies to enhance communication and project effectiveness.

## خلاصة

أدى النمو السريع في دولة الإمارات العربية المتحدة ومنطقة الخليج بشكل عام إلى زيادة كبيرة في عدد المشاريع في جميع قطاعات الأعمال. بعض هذه المشاريع تتطلب خبرة ومعرفة واسعة ولذا يتم الاستعانة بشركات أجنبية ذات خبرة في هذه المجالات من مختلف أنحاء العالم، مع اختلاف الثقافات والأيدولوجيات. بيد أن فشل بعض من هذه المشاريع في الآونة الأخيرة جعل هذه الشركات تتساءل عن مدى فعالية هذا النوع من المشاريع المتعددة الجنسيات. جدير بالذكر أن الدراسات في دولة الإمارات العربية المتحدة لم تتناول هذه المسألة على نحو كاف.

في هذه الأطروحة قمنا بدراسة فعالية الاتصال وفعالية المشروع من خلال دراسة حالة حقيقية في دولة الإمارات العربية المتحدة. تركّز البحث حول تأثيرات التشتت الجغرافي والاختلافات اللغوية وفعالية التخطيط، باعتبارها من أهم العوامل المؤثرة في فعالية الاتصال وفعالية المشروع. وبعد أن استعرضنا مجموعة واسعة من الأدبيات والمؤلفات السابقة في هذا المجال، قمنا بوضع الفرضيات ليمحور البحث حولها. حيث توقعنا أن عاملي التشتت الجغرافي والاختلافات اللغوية سيكون لهما علاقة سلبية مع فعالية الاتصال وفعالية المشروع، في حين أن عامل فعالية التخطيط سيكون له علاقة إيجابية مع فعالية الاتصال وفعالية المشروع.

تم تحليل البيانات من مجموع 112 استبيان باستخدام أدوات التحليل الكمي للبحوث، مع بعض التحليل النوعي. ولم تؤيد النتائج العلاقة السلبية بين التشتت الجغرافي وفعالية الاتصال والمشروع، إلا أنها أيدت العلاقة السلبية بين الاختلافات اللغوية وفعالية الاتصال والمشروع، والعلاقة الإيجابية بين فعالية التخطيط وفعالية الاتصال والمشروع. بالإضافة إلى ذلك، قمنا بوضع بعض التوصيات للحد من الاختلافات اللغوية عن طريق التدريب على مهارات الاتصال، علاوة على توفير دورات اللغة الإنجليزية. كما أنه يمكن تعزيز فعالية التخطيط عن طريق التعاقد مع مستشارين لإدارة المشروع وتوظيف كواادر حاصلة على شهادة خبير إدارة المشاريع (PMP) وتوفير التدريب على إدارة المشاريع. وأخيراً شملت الاقتراحات للدراسات المستقبلية التحقيق في تأثيرات التشتت الجغرافي والبحث عن عوامل إضافية لفعالية الاتصال والمشروع وتطوير التكنولوجيا لتعزيز التواصل وفعالية المشروع.

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Moreover, I cannot express enough gratitude to the Mohammed Bin Rashid Foundation (MBRF) for fully sponsoring my studies at BUiD and placing their trust in me as a member of the MBRF Pioneers program. Their initiatives in providing such best world-class education to everyone are truly appreciated.

Finally, I dedicate this dissertation and all efforts spent to pursue this degree to my family, who always pushed me to make this dream come true. In the past two years, they showed full encouragement and support. They never complained for not spending enough time with them. In fact, they were always an endless source of strength and inspiration. I would like to thank them from the bottom of my heart. They really deserve this success and more.

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# 1. INTRODUCTION

## 1.1. BACKGROUND

As a result of the recent developments in the Gulf region, and more specifically the UAE, more and more projects are being initiated and executed every day. In addition, many of these projects are being managed in collaboration with experienced multinational companies from all over the world, such as the US, Europe, Australia, and Eastern Asia. While some of these projects make global headlines for successful stories, a lot of them on the other hand face many difficulties such as exceeding the allocated budget, overrunning the agreed schedule, implementing wrong requirements and specifications, not achieving the required quality, not meeting clients' needs and expectations, and eventually, leading to project failure.

Consequently, organisations have started to question and evaluate the effectiveness of their projects and the effectiveness of communications within the projects, and how to enhance the effectiveness in such multinational and dispersed environments by exploring and studying the factors which influence communication and project effectiveness. In this research, we will investigate the effect of geographic dispersion, language differences, and planning effectiveness on communication and project effectiveness by analysing a case study from a multinational environment in the UAE.

Project X is a huge physical security project in the UAE to provide a fully integrated security solution for several critical sites. The client of the project is Organisation X, a recently established government department responsible for securing critical facilities in the UAE, such as oil and gas facilities and power stations. The organisation uses a traditional organisational structure with around 1,000 employees, distributed between the headquarters and the different sites managed by the organisation. One of the functional departments in Organisation X is the project management department to

manage all ongoing projects. **Figure 1** below gives a general overview of the organisational structure of Organisation X.

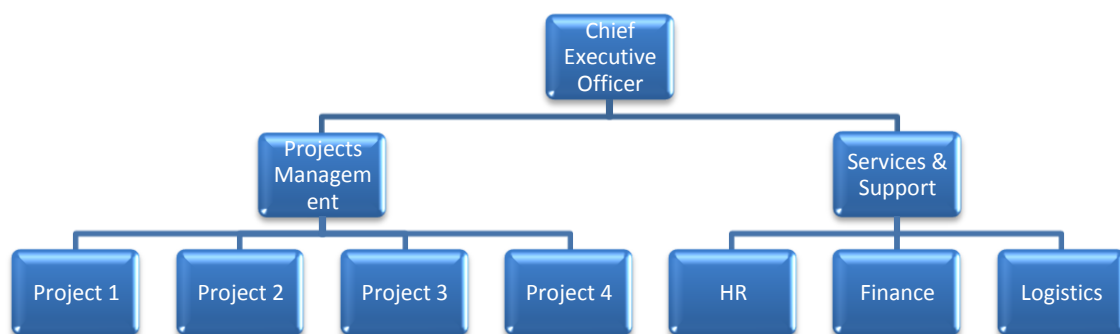


**Figure 1 – General overview of the organisational structure of Organisation X**

As Organisation X wanted to execute Project X but did not have the required skills and experience to do so, a thorough tender process was carried out to select a suitable contractor to carry out the project. A Request for Proposal (RFP) was written and sent to several well known international companies which specialise in providing full security solutions. Proposals were received and then followed by comprehensive technical and commercial evaluations, meetings, and negotiations, which eventually led to announce the winning bidder.

The contract was awarded to Organisation Y, a global US company which specialises in designing and implementing large-scale national security solutions. The company is one of the leading security companies in the world, with huge projects in many countries around the world. Its projects include integrated security solutions for borders, city surveillance, and other critical facilities such as oil and gas facilities, power stations, and airports. The current number of employees working for Organisation Y in all its projects is

around 2,000 employees in different managerial and technical positions. Due to its project-based nature, Organisation Y uses a pure project organisational structure where most of the structure is concerned with implementing and executing projects, whilst the remaining divisions, such as HR, finance, and logistics, provide services and support for projects. **Figure 2** below gives a general overview of the organisational structure of Organisation Y.



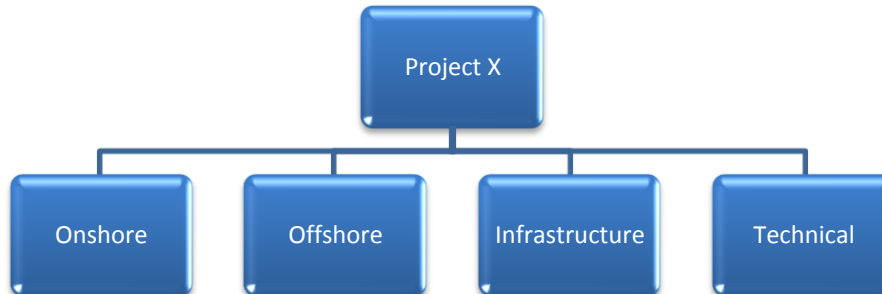
**Figure 2 – General overview of the organisational structure of Organisation Y**

The initial allocated budget for Project X was around \$3 billion, with a 5-year baseline schedule. Moreover, a project team was established to carry out the project. The team consisted of employees from both parties, Organisation X and Organisation Y, however the number of team members was not specified. At first, during the initiation and planning phases, the team consisted of around 20 people who did the planning and the initial site surveys. As the project progressed, more and more people from both organisations were involved in the project and the project was broken down into smaller sub-projects and teams where each team specialises in different elements of Project X. Hence, the number of team members increased gradually reaching around 150 members currently.

The structure of Project X is divided into four main divisions: (1) Onshore division: responsible for managing the project in all onshore sites, (2) Offshore division: responsible for managing the project in all offshore sites, (3) Infrastructure division: responsible for all infrastructure works in the project,

and (4) Technical division: responsible for technical matters of the project.

**Figure 3** below shows a general overview of the structure of Project X.



**Figure 3 – General overview of the structure of Project X**

This paper will address Project X, the largest project run by Organisation X, and investigate the factors affecting communication and project effectiveness of the project.

## **1.2. PROBLEM STATEMENT**

As mentioned earlier, some projects face obstacles and go through several difficulties which, if not solved, will affect the effectiveness of the project and may lead to project failure sooner or later. The same applies to Project X. Due to the wide geographic and cultural distribution of the project team members, who were merged from two different organisations, the effectiveness of Project X was negatively affected and the progress was very slow.

One of the issues faced in the project is the lack of face-to-face interaction between the members of each team. Because many of the project members who belong to Organisation Y are based in the US and Europe, it is very hard to maintain regular face-to-face communication between people, especially for the management which needs to cut expenses and travel costs as much as possible. Many researchers have highlighted face-to-face communication as the best communication channel in terms of richness and amount of

exchanged data (Goris, 2006; Robbins and Judge, 2009). Therefore, many members of the same team in Project X are unaware of what their colleagues are doing, unwilling to work together again, and do not share a common goal and target. In addition to the duplication of efforts, all of this will reduce communication and project effectiveness.

Another issue faced in the project is the diverse language capabilities among the project employees. Because they come from different cultures and nationalities, the employees have different fluency levels of English, which is the official language used in Project X. Some of them are fluent in English while others have some difficulties using it, so there will be a language barrier during communications. Additionally, people who come from the same culture will spontaneously use their native language instead of the official language, limiting communication with others (Kingston, 1996). Subsequently, it will negatively influence the communication and project effectiveness of the project.

Furthermore, many of Project X members have claimed that insufficient planning in the initial stages of the project has led to the current lack of control on progress. The planning of Project X was conducted by people who may be excellent in executing projects, but certainly lacked professional planning skills. Project members seem to miss direction and goals which they have to achieve. As well, many of the teams do not have a schedule timeline or a work breakdown structure (WBS) upon which they should work. A project of such size and complexity needs thorough and comprehensive planning carried by experienced and skilled professionals and expertise, taking into account all details and potential risks, even risks with the least possibility of occurrence (Baar, 2002; Stephenson, 2006). Thus, Project X started to go over budget and fall behind the time schedule, and ultimately, reducing communication and project effectiveness.

Basically, the problem statement of this research is: the effect of geographic dispersion, language differences, and planning effectiveness on communication and project effectiveness of Project X.

### 1.3. AIM & OBJECTIVES

In short, to know the main purpose of this study, we describe the aims and objectives as the following:

*Aim:*

To investigate the effect of geographic dispersion, language differences, and planning effectiveness on communication and project effectiveness.

*Objectives:*

Analyse the case study of Project X and find out the effect of geographic dispersion, language differences, and planning effectiveness.

Carry out an extensive literature review to develop research hypotheses and explore the factors of communication effectiveness and project effectiveness.

Test hypotheses, draw findings and conclusions, and propose recommendations to improve the effectiveness of Project X and for future research.

### 1.4. OVERVIEW OF DISSERTATION

The chapters of this dissertation paper are organised as follows:

**Introduction.** The first chapter of this paper provides a summary background of the researched topic, in addition to the background of Project X and the main parties involved in it, Organisation X and Organisation Y. Moreover, the Introduction chapter describes the problem statement of the paper, states the aim and objectives, and presents the organisation of the paper.



**Literature Review.** This chapter examines what was published on communication and project effectiveness by previous studies, such as books and journals. We will present communication and project effectiveness in terms of their importance, positive and negative outcomes, affecting factors, ways of improvement, and modern technologies.

**Conceptual Framework.** In this chapter, we will first explain the concepts upon which our theoretical understanding will be built on, including communication, projects, effectiveness, geographic dispersion, language differences, and planning effectiveness. Next, we will develop a theoretical understanding of the relationships between the different variables in the research, which will lead to deduce our research hypotheses.

**Methodology.** This chapter will talk about the research methodology used to achieve the goals of this study. This includes research approach, data access and collection, survey design and implementation, research sample, and dependent and independent variables.

**Data Analysis, Findings, & Discussion.** In the Data Analysis section we will present all quantitative and qualitative analyses conducted on the collected data, including reliability tests and correlation and regression analyses. After that, in the Findings & Discussion section, we will thoroughly discuss our test results and confirm whether our hypotheses were supported or rejected.

**Conclusions & Recommendations.** Lastly, the closing chapter will summarise the main of the conclusions of this dissertation and the support/reject of our hypotheses. Then, we will propose several recommendations to improve the performance and effectiveness of Project

X. We will also talk about some of the limitations we faced during the course of the study, and finally, suggestions for future researchers.

## **2. LITERATURE REVIEW**

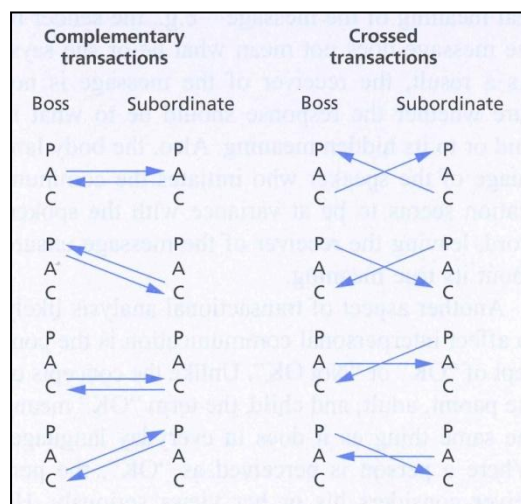
### **2.1. INTRODUCTION**

Communication is vital in everyday business, starting from start up family businesses to multinational organisations with headquarters all over the world. Researchers always considered communication a significant aspect of effective projects and organisations. Even though modern technology plays an important role in our daily communications, it is also vital to communicate the right information to the right people using proper communication channels. This will bind scattered individuals into effective, coherent, and highly motivated teams working towards common vision and goals.

Robbins and Judge (2009) defined communication as 'the transfer of meaning among its members.' Information and ideas can only be expressed through transmitting meaning from one party to another. Therefore, 'no individual, group, or organisation can exist without communication'. However, in addition to the transfer of the meaning, understanding of the meaning is also crucial. If one party speaks a language that is different than the language spoken by the other party then the meaning won't be understood and, hence, there is no communication. Even though it is never achieved in real life, 'perfect communication' exists when a transmitted meaning is perceived by the receiver exactly the same as it was perceived by the sender (Robbins and Judge, 2009).

Early researchers have used the transactional analysis theory, discussed by Berne (1964) and Harris (1969), to explain communication. The theory is based on 3 personality states: the parent, the adult, and the child. People tend to move from one state to another depending on the situation they are in. For example, in the parent state, a person seems to be over-protective, adhere to rules, judgemental, and offer guidance based on past experience. In the adult state, a person is rational, objective, and uses evidence to deduce ideas and decisions. In the child state, a person is described as emotional, dependant, immature, creative, and seeks attention. Transactions can be categorised as

complementary and crossed. In complementary transactions, communications are positive and effective and result in highly motivated individuals. In contrast, crossed transactions are negative and ineffective and lead to demotivation, dissatisfaction, and personal problems. **Figure 4** below compares complementary and crossed transactions. Transactional analysis is used in some organisations to improve the effectiveness of communications between employees; nonetheless, some studies have argued its validity due to the lack of empirical evidence (Bowen and Rath, 1978).



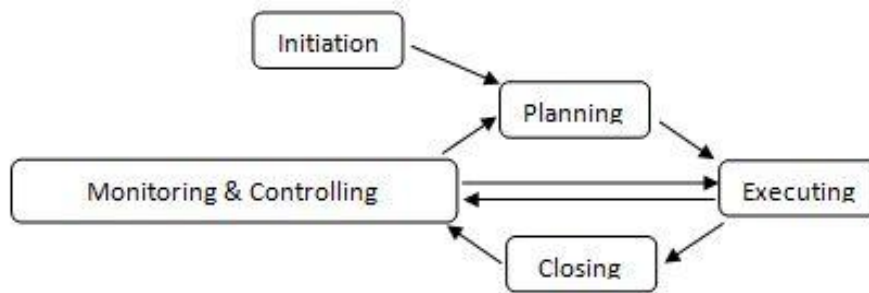
P: parent, A: adult, C: child

Source: DuBrin (1990)

**Figure 4 – Communication in the context of transactional analysis**

## 2.2. COMMUNICATION IN PROJECTS

According to PMI (2008), project communications management has been considered one of the 9 fundamental knowledge criteria defined by the Project Management Body of Knowledge (PMBok). In addition to project communications management, the criteria include time, cost, quality, risk, scope, human resources, procurement, and integration management. Besides, the communications management plan is a main section in the overall project management plan which is written in the first process of the planning phase, the second phase of the project life cycle. **Figure 5** below shows a typical project life cycle.



Source: PMI (2008)

**Figure 5 – Project life cycle**

The connection between communication and effective project managers has been emphasised in literature. Tsui et al. (1995) conducted a study of 410 US projects managers and found out that managers who explain their decisions and seek information from their colleagues and employees, whether it was positive or negative information, are the most effective project managers. Mulcahy (2005) stated that ‘communications is the number one problem a project manager has on a project’ and ‘project managers spend 90 percent of their time communicating’. Good project managers should create a communications management plan and not just report the project status. The project manager should know what data is required to be distributed to stakeholders, what data is required from them. Moreover, the communications management plans must be evaluated and updated from time to time (Mulcahy, 2005).

Moreover, Luthans et al. (1988) looked at the different activities project managers usually do. They compared between 3 types of project managers: (1) average managers, (2) successful managers: defined in terms of the speed of promotions and rewards they receive in the company, and (3) effective managers: are the ones who achieve superior performance and experience highest employee motivation. Luthans et al. (1988) studied more than 450 project managers and they categorised all managerial activities which these managers engaged in into 4 categories of management: (1)

communication: sharing data and information and executing paperwork (2) interactive: meeting external parties, talking to employees, and exercising 2-way feedback, (3) traditional: such as scheduling, monitoring, and administrative work, and (4) HR: such as recruiting, developing, inspiring, setting rules and policies, and dispute resolving.

The study concluded that while average managers and successful managers spent only 28% and 29% respectively of their time in communication, effective managers spent around 44% which explains their performance and subordinate satisfaction and commitment. Another interesting result was that successful managers used around 50% of the day doing interactive activities, while average managers and effective managers spent only 19% and 11% respectively. Clearly, networking and building relationships made the largest contribution to the promotion and personal success of managers within their organisations. The results of Luthans et al. (1988) are summarised in **Figure 6** below.



Source: Luthans (1988)

**Figure 6 – Distribution of managerial activities within project managers**

Another empirical study concluded that projects which exercise sufficient communication will usually end up doing well and satisfying the customer (Proctor and Doukakis, 2003). They also encouraged leaders and managers to use modern communication methods like email and conferencing, instead of traditional communication. Goris (2006) described that communication

activates and coordinates social systems such as projects and organisations. Goris investigated employee communication and its effects on satisfaction and efficiency. He gathered information from around 300 people in a number of companies and deduced that communication is a major factor of individuals' satisfaction and efficiency. Campobasso and Hosking (2004) showed the value of communication during projects and believed that poor communication between key stakeholders one of the main reasons for derailing projects.

In addition, empowering employees was found out to be highly connected with communication. The more communication exercised between managers and employees, the more empowered employees will be, and the more effective and productive the organisation will be. Therefore, leaders and project managers must always consider creating an empowered culture in their work areas (Mallak and Kurstedt, 1996). Literature also viewed engagement of employees as a form of enhanced communication. In a qualitative research, it was found out that projects exercising engagement resulted in lower turnover, higher motivation and satisfaction, and better overall performance (Smythe, 2007). Therefore, creating a sense of engagement in the company will eventually result in higher communication and project effectiveness.

### **2.3. CLASSIFYING PROJECT COMMUNICATIONS**

PMI (2008) identified three communication methods for exchanging information with stakeholders in projects. The methods are (1) interactive, (2) push, and (3) pull. Interactive communication is the most effective method because it requires instant multidirectional communication between two or more parties to ensure a common understanding. It includes face-to-face meetings, phone calls, and video conferencing. Push communication is one directional and sent only to parties who need to know the information, but there is no guarantee that the information is received or understood. It includes letter, emails, reports, and faxes. Finally, pull communication requires making the information available for parties to access and includes

intranets, newsletters, and online databases. It is used when you need to provide large volumes of optional or general information for large audiences (PMI, 2008). The selected method depends on the type of information and recipients involved in every situation.

Literature classified communication channels in projects as formal and informal channels. Formal channels are established by the management and follow the project's authority chain. They are used by employees to communicate messages that are related to the tasks and professional activities of the employees. On the other hand, informal channels are spontaneous channels created by employees to communicate personal and social messages (Robbins and Judge, 2009). McKenna (2008) described formal channels as 'officially inspired' and are originated from a known sender, while informal channels are 'unofficial, unplanned and spontaneous' communication channels. Moreover, communication can be classified based on its direction: (1) downwards, (2) upwards, and (3) lateral. In downward communication, information flows from the manager to his subordinates in order to assign tasks and goals, set policies and rules, and provide performance feedback. In contrast, information in upward communication flows from employees to their managers to update work status, suggest improvements and new ideas, and report issues needed to be solved. Lastly, lateral communication occurs, formally or informally, between employees in the same level to facilitate work and save time. In some informal cases, lateral communication can cause problems if employees breach the rules or make decisions without the project manager's knowledge (McKenna, 2008; Robbins and Judge, 2009). In addition, communication can be identified as a 'one-way' communication where the sender transmits the message but does not receive any feedback from the receiver of the message, or a 'two-way' communication where both parties will act as senders and receivers being able to transmit messages and provide feedback as well (McKenna, 2008).

Furthermore, researchers examined different ways of communication including (1) oral communication, (2), written communication (3) nonverbal communication, (4) new technology, and (5) communication networks. First, oral communication is the easiest form of communication where parties can



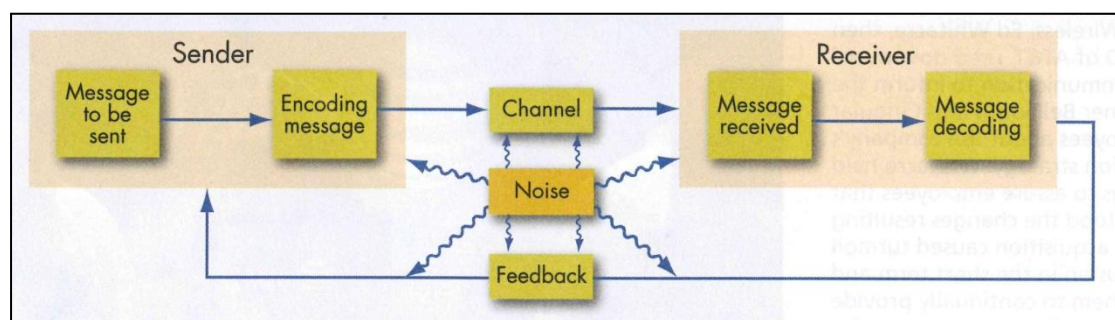
freely send messages, provide feedback, and ask and answer questions either face-to-face, in groups, or over the phone. It is the fastest way of communication since messages are sent and received immediately, and has the advantage of being personal, particularly in face-to-face situations. One drawback of oral communication is distortion of the original message, especially when information has to pass through several people before reaching its destination. In addition, absence of a record means that communicated information can be easily forgotten, misunderstood, or misinterpreted, unless the conversations are taped (Robbins and Judge, 2009; McKenna, 2008). On the other hand, written communication is accurate and provides a record of events in an organised and efficient way for future reference such as minutes of meetings (MoMs), letters, and reports, which allows the communicating parties to organise their thoughts and actions. However, written communication is usually impersonal and much more time-consuming than oral communication especially when feedback is necessary (McKenna, 2008). Formal meetings are an example of where oral and written communications are combined to allow free communication with swift feedback but is still recorded and distributed to all participants for future reference in the form of minutes of meeting.

Nonverbal communications are all communications that are not transferred orally or in writing. It includes many aspects such as body language, facial expressions, emphasis on words, and physical distance between people. Nonverbal communication provides a clearer meaning of the communicated information but we should also be careful not to misunderstand peoples' actions (Furnham, 1999). New technology, or what is known now as information and communication technology (ICT), includes email, messaging, phone, fax, video conferencing, and web applications. Although these new technologies have made our lives much easier by allowing instant communication, other issues are raised such as employee privacy and the inability to replace face-to-face meetings (Cooper, 2002). Finally, communication networks can be formal or informal. Formal networks are established by organisations to do certain tasks and speed up procedures and information exchange, while informal networks, or 'grapevines', are

uncontrolled networks formed spontaneously between the employees to exchange social and personal information which are not provided by the organisation (Davis, 1976; Zaremba, 1988).

## 2.4. THE COMMUNICATION MODEL

Previous researches have introduced several communication models including Curtis and Detert (1981), McKenna (2008), and Robbins and Judge (2009). Even though some researchers have differentiated between project and organisational communication models, all models have contained the following key components: (1) the sender, (2) encoding: translating the idea into a language which is understood by others, (3) the message: the idea to be communicated after encoding, (4) the medium: the method used to transfer the message, (5) decoding: translating the message back into a meaningful idea, (6) the receiver, (7) noise: anything that interferes with the communication and the understanding of the message, and (8) feedback: the receiver's response to the message. **Figure 7** below shows the basic communication model.



Source: PMI (2008)

**Figure 7 – The communication model**

The communication starts when the sender has a clear idea of what he wants to communicate. He then encodes the idea into meaningful words using a

language understood by the receiver. This produces a message ready to be transmitted to the receiver. The sender must then select the appropriate medium to transmit the message using one of the formal or informal channels which were discussed earlier. The sender transmits the message and makes sure it is received. During transmission, the message gets interfered by technological and/or environmental noise such as voice fluctuations, network overload, semantic differences, etc. On the other side, the receiver decodes the message into a form that can be understood. If feedback is necessary, the receiver will repeat the same process and send a response message back to the sender (PMI, 2008; Robbins and Judge, 2009; McKenna, 2008; Curtis and Detert, 1981).

## **2.5. OUTCOMES OF EFFECTIVE COMMUNICATIONS & PROJECTS**

From our review of the literature, we found out that researchers mentioned many outcomes of communication and project effectiveness. We can categorize these outcomes into project and personal outcomes. Project outcomes are associated with accomplishing predefined project goals and overall success such as achieving higher profitability, larger market share, increased customer satisfaction, higher performance and productivity, and improved project effectiveness. Personal outcomes are related to individuals and their perception to work such as motivation, satisfaction, job involvement, employee engagement, and commitment.

In a research conducted by Trahan (2008), it was found out that project performance and communication were highly correlated; as communication increases, project performance also increases. However, in order to achieve such effective communication, encouragement for involvement, engagement, and empowerment must always be present. Training must also be utilised to develop the communication skills of project managers and team members. In an empirical research of around 1 thousand workers from different business sectors, around 20% of the surveyed sample viewed communication as the

answer to reduce turnover and increase satisfaction and performance. Moreover, communication was found out to lead to higher financial results such as revenue and return on investment (Sinickas, 2006).

Additionally, literature investigated the effect of engagement programs on project effectiveness in around 8,000 departments in different organisations. Once again, it was concluded that engagement programs strongly correlated with project effectiveness. In addition, such projects experienced higher employee retention, enhanced efficiency, and highly satisfied clients (Konrad, 2006). In another experiment of involvement initiatives in different organisations in the US, questionnaires were sent to 279 organisations. Around 68% of the surveyed organisations confirmed that implemented involvement initiatives had positive outcomes on the organisations (Mohrman et al., 1996).

Another study was also carried out on 111 project managers investigating how communication influences trust, dedication, and creativity. The study found out that the higher the level of communication exercised between the project manager and the team members, the more trust and confidence will be between them. Consequently, the more confidence in the relationship between managers and employees, the higher dedication will be shown from the team members, and eventually, this will lead to higher creativity from the team members in the way they solve problems and accomplish tasks (Ruppel and Harrington, 2000). While Shadur et al. (1999) questioned 270 project managers in the technology sector and found out that communication effectiveness is highly correlated with project effectiveness by engaging employees to be involved project activities, and therefore, enhance project effectiveness. Besides, Krahn and Hartment (2006) expressed that in order for project managers to do well, they must enhance their interpersonal skills which is critical skill for managers and project managers in general.

Another research of around 500 employees from health organisations investigated satisfaction and communication as factors of employee dedication. Surprisingly, the research concluded that effective communication is even more important than satisfying the employees. Communications

proved to be a strong factor of employee dedication. On the other hand, satisfaction didn't prove to be a factor of employee dedication (Trombetta and Rogers, 1988). In an online study, which specifically tested the effect of interpersonal skills of project managers on team member performance and retention, results showed that superior interpersonal skills of project managers will have a dramatic effect on team member performance and retention (Henderson, 2008). Furthermore, Goodman et al. (2001) surveyed 276 employees in a number of hospitals to explore communication outcomes on overall performance. The survey concluded a strong relationship between communication outcomes and overall performance. In addition, communication was found out to lead to additional commitment from employees to achieve organisational, as well as personal goals. Again, it was also concluded that communication will lead higher retention of skills and talents.

Moreover, researchers highlighted the significance of communicating goals and vision. When realistic goals and vision are clearly defined and communicated to the employees via the appropriate communication channels, then the employees will be highly motivated and committed and there will be something pushing them to accomplish their goals. Ilies et al. (2006) discussed how defining the vision would influence followers' goal pursue. Helland and Winston (2005) recommended that project managers should inspire followers to work towards a common vision and motivate them by involving them in setting goals. Locke and Latham (2002) noted that goals should be worthwhile and attainable for followers not to lose commitment. Finally, Ammeter and Dukerich (2002) expressed the dissemination of project vision and mission by project managers to achieve project objectives and client satisfaction.

## **2.6. REASONS FOR INEFFECTIVE COMMUNICATIONS & PROJECTS**

Even though literature mentioned numerous reasons for ineffective communications and projects, we will narrow down our review to focus on the main reasons which led to the communication and project ineffectiveness in our case study due to time and space limitations. These reasons are: (1) geographic dispersion, (2) language differences, and (3) planning effectiveness.

### **2.6.1. Geographic Dispersion**

Geographic dispersion has been widely discussed in literature in the context of multinational organisations and Virtual Teams (VTs). Geographic dispersion can be defined as the locating of team members over different geographic locations and time zones to accomplish a common task or goal (Bell and Kozlowski, 2002; Cramton, 2001). Teams are becoming increasingly dispersed because project tasks require the input of specialized knowledge at multiple locations. Team members find it more difficult to perform high quality teamwork as team member dispersion increases, and therefore, team performance decreases. Nevertheless, geographic dispersion can be controlled with the use of proper technology such as email, phone, intranet, etc., to build high performing teams, as in virtual teams (Bosch-Sijtsema, 2007).

Koehler (1990) described geographic dispersion as a key factor to consider while developing the organisational structure. For example, the opportunity for frequent face-to-face contact must be considered despite technological advances in instant messaging because personal contact remains an essential element in creating communication and project effectiveness. Other aspects also include type and diversity of operation, the organisation's evolutionary stage, and management style and capabilities. In her study of communication, Schomaker (2006) confirmed that geographic dispersion shows the expected negative effect on ease of knowledge communication. Mulcahy (2005)

illustrated that good project management cannot be done with geographically dispersed teams or virtual teams. Team members who do not meet face-to-face on a regular basis will experience more conflicts, decreased productivity, and other impacts that affect the project time, cost, and quality. Mulcahy (2005) expressed that managers should try their best to physically co-locate their teams together and have their offices in one place. This co-location will enhance communication, reduce conflicts and solve them quickly if they happen, and build a project identity for the team and the management. Alrais (2008) highlighted how geographic dispersion can negatively affect communication and project effectiveness in a real-life case study project in the UAE.

Cairncross (2002) explained that due to today's geographic dispersion, organisations are unable to communicate corporate values to the employees, making it difficult for to maintain corporate mission and goals through the organisation. Hence, geographic dispersion can fade away loyalty and create a dispersed fragmented workforce without a corporate organisational culture. Building a strong sense of belonging and commitment is the key to bind fragmented workforce back together. This will produce a positive organisational culture where employees understand corporate goals and work towards them. Technology, such as email, phone and intranet, is one solution to accomplish this by helping both to spread corporate culture and link communities together (Cairncross, 2002). Another solution is to create smaller units to which people can feel they belong. Studies have shown that large groups of people have trouble interacting constructively as a group. In addition, people are more committed to other individuals than to amorphous corporations (Katzenbach and Smith, 1994).

On the other hand, while most literature has confirmed that performance of teamwork in projects would decrease as team member dispersion increases, Hoegl *et al.* (2007) argued that teamwork performance is affected positively as team member dispersion increases. They collected data from 575 people from different levels in

projects to study geographic dispersion influence. Hoegl *et al.* (2007) used regression analysis to find support for their initial hypothesis which is: as team member dispersion increases, the teamwork quality and team performance also increases accordingly.

Moreover, Ariel (2000) supported the positive influence of geographic dispersion on communication and project effectiveness. She surveyed 85 process improvement teams in a large multinational organisation in the technology sector where the team members are geographically dispersed. Surprisingly, Ariel (2000) found out that geographic dispersion is positively related with team performance. In addition, geographic dispersion was not related to the amount of communication problems, but positively related to the amount of coordination problems. Other benefits of geographic dispersion include recruiting cheap labour from different parts of the world, increasing working hours due to the different time zones, and having a diverse pool of talents in different fields. Nonetheless, synchronising time zones and overcoming language differences are critical issues to deal with (Ariel, 2000).

### **2.6.2. Language Differences**

Language differences refer to the difference between two or more parties who use completely different languages, or use the same language but come from different cultures and backgrounds so they experience differences in pronunciation, language usage, vocabulary, syntax, and writing styles. A common language between the parties in any communication is the key factor for communication and project effectiveness. Moreover, a mutual understanding of the used language should exist, otherwise the parties will not be able to communicate properly. Language differences can create serious issues especially in international transactions or projects where communication occurs between organisations in different countries and cultures. Surprisingly,



previous literature has not discussed the language problem and its implications on international business thoroughly.

Schomaker (2006) highlighted that the relationship between communication and language and the resulting implications for research has remained unspecified by researchers. However, studies investigating cultural asymmetry described that these differences can cause some problems for any organisation doing business abroad. Cultural asymmetry has clearly shown their effect on many aspects, including performance, leadership style, and workplace values. Furthermore, language difference was considered the main reason for most of misinterpretations and lack of understanding during communications between individuals of different cultures and languages (Schomaker, 2006).

Fredriksson *et al.* (2006) provided an in-depth case study analysis of Siemens AG, a huge global multinational company in electronics and electrical engineering, operating in the industry, energy and healthcare sectors. Fredriksson *et al.* (2006) conducted 36 personal interviews in three different organisational units of Siemens: 20 at Siemens headquarters in Munich, Germany, 4 at a subsidiary in Mannheim, Germany, and 12 at a subsidiary in Espoo, Finland. English has been approved as the official corporate language in Siemens to overcome misunderstandings, avoid time and money consuming translations, create cohesion within the firm, and facilitate communication between headquarters and global subsidiaries as they enter new markets. However, the study revealed that Siemens' subsidiaries were stick to their local languages due to the varying fluency of English within the employees (Fredriksson *et al.*, 2006).

Menard and Menard (2006) talked about the importance of proper communication for multinational organisations, and making sure that the language used is clearly understood by clients and suppliers to achieve project goals. Apart from misunderstanding and misinterpretation, Menard and Menard (2006) pointed out that

language differences can hinder organisational growth in global markets in many ways, such as delaying communications, delivering poor quality projects, and not meeting clients' requirements and expectations. They also pointed out to translation as a vital tool to be used when dealing with organisations from different cultures (Menard and Menard, 2006).

Harzing and Feely (2008) explained that communication and project effectiveness depends on a common shared language, which is a 'pre-requisite that does not exist in many international business situations.' Without a common language, the resulting language barriers will play a key role in the continuation of such multilingual relationships which, if not dealt with immediately, will lead to failure in most cases. Despite its significance, Harzing and Feely (2008) claimed that very little research has investigated the impact of language diversity on communication and project effectiveness. One main negative result of language differences is the underestimation of talents. An example is a talented hardworking employee who comes up with creative ideas but lacks rhetorical skills such as charisma, confidence, and leadership skills due to his language difficulties, thus he might fail to impress his senior managers who will choose to ignore his ideas.

Another negative impact is misunderstandings. Misunderstandings can arise when employees, especially in senior positions, want to hide the fact that they did not understand a point during a meeting or a discussion to avoid embarrassment and 'loss of face'. They would prefer to remain in silence or mimic a knowing facade with a positive nod instead of asking the other party to explain or repeat the point because they do not want to be considered stupid, ill informed or slow to understand. Although the concept of 'face' is much used when discussing Japanese or Chinese cultures, it does apply to all nationalities (Ting-Toomey, 1988; Lincoln *et al.*, 1995). Another issue is code switching. Code switching occurs a lot during meetings or discussions where second language users suddenly switch to their native language to discuss between themselves a critical matter or an

issue over which there was a misunderstanding, isolating others from the discussion. Psychological studies have explained this act as a normal reaction for second language users because their comprehension and understanding is optimal in their native language. However, other members in the discussion who do understand the other language might consider code switching as conspiracy or double-dealing, especially when the meeting gets heated or commercial subjects are discussed (Kingston, 1996).

Finally, language differences can also lead to power-authority distortion. For example, in some meetings between clients and suppliers with different native languages, suppliers are sometimes forced to use their native language which clients do not understand. The reason for this could be having the majority of the meeting participants from the supplier company, or having the meeting in the supplier's country. This creates a distortion into the power-authority balance, where the power seems to shift from the clients, assumably having the greater power, to the suppliers. As a result, the clients would feel that they lost some of the control over the relationship to the suppliers (Gallois and Callan, 1995). They may still have formal authority but power will be exercised by the suppliers who are communicating fluently using their native language or a third language, which they are more capable of than the clients (Kim, 2001). This could result in conflicts and disputes between the two companies and threaten business relationships. In addition to client-supplier relationships, the same applies to HQ-subsidary relationships. For instance, when HQ members attend meetings with subsidiary members in the subsidiary company, which is in a different country with a different native language (Gallois and Callan, 1995).

### **2.6.3.Planning Effectiveness**

Surprisingly, planning effectiveness can be considered one of the main factors of communication and project effectiveness. Kerzner (1987) considered commitment to planning and control one of the six critical success factors for excellence in project management. If the output of a project is to contain quality then this quality must be properly planned for in the early stages of a project, otherwise it will hardly be achieved. Additionally, Baar (2002) emphasised project planning as one of the key work processes used to organise the execution of a project, regardless of size or phase. Also, Johnson *et al.* (2001) identified high-quality planning as one of the critical success factors of project management, which could dramatically increase the probability of project success.

In a survey conducted by a management consultant firm in the USA, Stephenson (2006) mentioned that over 75% of the companies that responded to the survey agreed that the lack of planning skills affected productivity and performance. Therefore, poor planning can directly lead to poor performance and execution. Alrais (2009b) examined a real-world project in the UAE's telecom industry which suffered a 6-month time overrun due to poor planning. The study revealed how poor planning can drive projects to experience huge time and cost overruns and eventually lead to project failure. Moreover, Aladwani (2002) surveyed 42 IT project managers in 19 well-known organisations in Kuwait to study the effect of project planning on communication and project effectiveness. He found out that planning is a major factor for communication and project effectiveness.

Going back to the PMI (2008) project life cycle, shown in **Figure 5**, there are certain communication processes that must be done during project planning, executing, and monitoring and controlling phases. For example, in the planning phase, you must plan communications. Planning communications is the process of determining the information and communication needs of the stakeholders and defining a communication approach. In other words, you must specify what information needs to be communicated, to whom the information must

be distributed, with what method the information is communicated, and when and how frequently the information must be sent. This process will result with a communications management plan which is part of the overall project management plan (PMI, 2008; Mulcahy, 2005).

When specifying what information to be communicated, it is important to include all information that may, directly or indirectly, influence the outcome of the project. Moreover, information which is related to any of the stakeholders in any way must also be communicated to keep that stakeholder updated and involved, leading to a successful project. Communicated information may include project charter, project management plan, work breakdown structure (WBS), project status, current and new risks, issues and problems, changes, date of the next milestone, performance reports, and lessons learned. Another aspect is to involve all stakeholders, especially strong and influential stakeholders. Therefore, it is essential to identify all stakeholders, people or organisations, who are involved or impacted by the project.

Furthermore, it is important to specify the communication method by which the information is distributed to the stakeholder. The selected method depends on the stakeholder; some stakeholders may choose advanced methods such as email or video conferencing, while others may prefer traditional methods such as phone, fax, or face-to-face meetings. The project manager must be able to utilise any method as long as the information is delivered to the stakeholder. Finally, the stakeholder must also specify when (time and day) and how frequently (daily, weekly, or monthly) the information must be communicated to him/her (PMI, 2008; Mulcahy, 2005).

## **2.7. IMPROVING COMMUNICATION & PROJECT EFFECTIVENESS**

Researchers have suggested various tools and techniques to enhance communication and project effectiveness, including co-location, face-to-face

meeting, training, feedback, and usage of communication technologies such as email, phone, video conferencing, messaging, etc. However, none of these can be portrayed as the best or most effective improvement tool in all situations; the selection of improvement tools depends on the nature of the work and the project. Communication and project effectiveness needs in projects must be thoroughly studied and analysed by management, and then proper improvement tools must be established based on the project's needs.

### **2.7.1.Co-location**

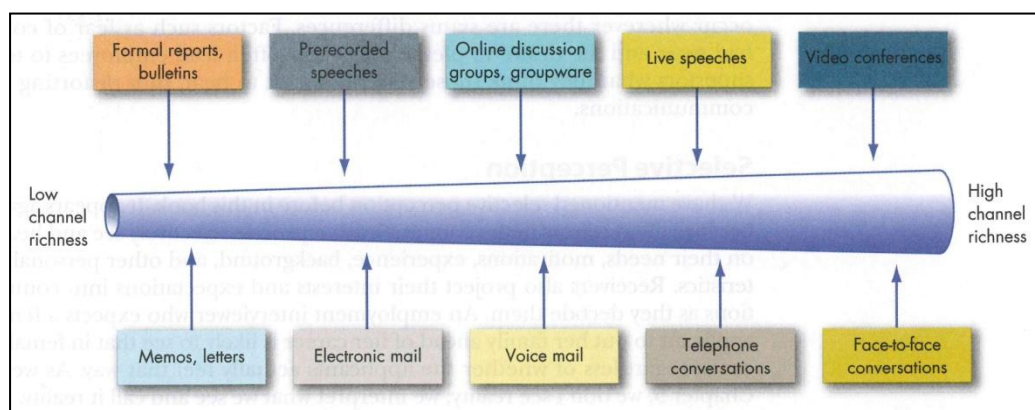
Co-location is physically locating a group of people or team members in the same office to achieve a common project goal; it is the opposite of geographic dispersion. Mulcahy (2005) pointed out that good project management cannot be done without co-location and she recommended project managers to co-locate their teams together to enhance communication, reduce and quickly resolve conflicts, and create an identity for the project in the organisation. Bosch-Sijtsema (2007) explained that co-location can result in high quality teamwork since co-location increases team performance. Koehler (1990) encouraged project managers to keep in mind the co-location of their team members when developing project structure despite technological advances. Moreover, Schomaker (2006) confirmed that geographic dispersion has a negative effect on communication and project effectiveness.

### **2.7.2.Face-to-face Meeting**

There is a consensus in literature that face-to-face meeting is one of the most ideal methods of project communication because it is fast and allows instant feedback from the receiver. For example, Dulye (2006) confirmed that face-to-face communication is 'the best way to get information to and from employees.' Kilgallon and Lampe (2007)

assured that electronic communication cannot substitute face-to-face meetings in projects. In addition, Goris (2006) mentioned that face-to-face communication represents the richest communication channel. Cooper (2002) discussed the inability of new technologies to replace face-to-face communication. Koehler (1990) suggested that project managers must consider face-to-face contact despite technological advances because personal contact remains an essential element of communication and project effectiveness.

Furthermore, Alrais (2009a) found out a positive relationship between face-to-face meetings and communication and project effectiveness. Mulcahy (2005) expressed that project teams which never meet face-to-face will have more conflict, decreased productivity, and negative impacts project schedule and cost. Robbins and Judge (2009) illustrated that face-to-face meeting scored the highest in channel richness (the amount of information to be transmitted in a communication) since it provides: (1) multiple information cues, i.e. words, body language, facial expressions, emphasis, etc., (2) instant feedback, and (3) being personal. **Figure 8** below shows information richness of different information channels.



Source: Robbins and Judge (2009)

**Figure 8 – Information richness of different communication channels**

### **2.7.3. Training**

Training employees, and most importantly managers, on the basics and methods of communication is crucial to achieve communication and project effectiveness. Managers shall be able to communicate the right information to the right people using the most effective communication channel in any given situation. Trahant (2008) urged organisations to continuously work on enhancing communication skills of their project managers so they convey the right message to employees. Robbins and Judge (2009) highlighted that project managers should not always go with the richest communication channels; the type of the communicated information decides what richness to be used. Studies confirmed that high performing project managers are better able to match appropriate media richness with the ambiguity involved in the communication.

Communication capabilities and training was also highlighted by Robertson (2005), who encouraged organisations to train their employees to acquire communication and interpersonal skills to enhance external relationships. In addition, he encouraged regular performance evaluation to enable project managers to assign appropriate training requirements to project members. Smythe (2007) showed that managers must use open decision making models instead of the traditional top-down decision making to get the best out of their employees.

### **2.7.4. Feedback**

As mentioned earlier, performance evaluation is a very important tool to enhance communication effectiveness between managers and employees. Such evaluation will allow employees to find out where they stand in relation to the performance required from them. One component of evaluation is feedback. It is essential that performance



evaluations allow feedback between manager and employees. Moreover, the feedback must be 2-way mutual feedback. In other words, the employees must be allowed to evaluate their managers and provide feedback whenever necessary (O'Reilly and Anderson, 1980).

In addition, researchers highlighted the role of feedback in increasing project effectiveness. A strong correlation between feedback, communication, and output was concluded. If sufficient feedback occurs between employees and managers this means that communication is effectively occurring between them. Moreover, when employees get a sense of care and attention from their managers in order to develop their performance, they will be more dedicated to accomplish what is required from them and more, which will boost their output (Kim, 1975; Downs *et al.*, 1984).

### **2.7.5. Project Communication Technologies**

Projects use different communication tools and technologies to enhance communication and project effectiveness. There are some traditional communication tools which are essential and irreplaceable, and are still used in projects such as phone and fax. Recent communication technologies, also known as information and communication technology (ICT), are also used to enhance communication and project effectiveness by making communication faster and diverse. These communication technologies include email, video conferencing, messaging, and web-based applications. Although these new technologies have made our lives much easier by allowing instant communication, other issues are raised such as employee privacy and the inability to replace face-to-face meetings (Cooper, 2002).

### 2.7.5.1. Email

Even though not considered a rich communication channel because of the absence of any oral or visual interaction, email is the most widely used communication technology in projects. Email was expressed as an efficient communication tool with the ability to distribute information to as many people as the sender wishes with just one click, rather than sending information from the highest level and going down through all subsequent levels, wasting time and resources (Proctor and Doukakis, 2003). Moreover, Bosch-Sijtsema (2007) suggested the use of proper technology, such as email, to control and eliminate the downsides of geographic dispersion in projects. Cairncross (2002) pointed out email as one of the project communication methods that will help in spreading a positive project culture and build a strong sense of belonging and commitment to bind fragmented workforce all together.

Benefits of email include: (1) ease of writing and editing an email, (2) instantly received by the destination, (3) fast and effective since you can send an email to hundreds or thousands of people with one click, (4) automatically stored and archived for future reference, and (5) it is the cheapest form of communication. On the other hand, there is a dark side of email in spite of its benefits and popularity. For example: (1) it is very hard to communicate non-routine rich messages via email, such as layoffs and major project changes, which can be ambiguous and require large amount of information to be conveyed, (2) emails can be easily misunderstood or misinterpreted especially when the communicating parties are from different cultures, (3) overuse and/or misuse of email can waste employees' time and reduce productivity and effectiveness, and (4) invading employees' privacy since corporate emails are usually monitored by the system administrators in organisations

(Robbins and Judge, 2009). In short, email is an easy, cheap, and effective communication technology which must be controlled and used in the right way to realise its benefits. Also, project managers must understand that email is ideal to communicate routine and direct messages, while richer communication channels must be used for non-routine ambiguous messages.

#### **2.7.5.2. Video Conferencing**

Video conferencing is a relatively new communication technology which allows people at different geographical locations to have live interactive meetings where they can watch, listen, and talk to each other without having to be in the same room. Based on **Figure 8**, video conferencing is the second richest communication channel right after face-to-face meeting since it allows oral and nonverbal communication (body language, facial expressions, word emphasis, etc.), immediate feedback, and can be personal. Video conferencing technology is still improving day after day to provide clearer audio and video and minimise delay lags which occur sometimes, especially if the two locations are very far away from each other. In addition, as companies in the communication industry are continuing to compete in providing the best video conferencing devices, prices have been gradually declining over the years. Therefore, it is expected that popularity of video conferencing will keep increasing to save time and travel costs until it becomes a necessary project communication technology, and instead of being installed in conference and meeting rooms only, it will be available in all employees' workstations just like email and phone (Robbins and Judge, 2009). One issue that organisations have to consider when using video conferencing is

synchronising between the different time zones of the locations participating in the video conference and selecting the best time that will suit all parties.

### **2.7.5.3. Phone & Fax**

Phone is one of the oldest communication tools used, if not the oldest. Yet, it is still quite heavily used in everyday business and projects. Although there is no visual interaction, body language, and facial expressions in phone calls, phone provides oral communication and emphasis we put on words, allows immediate feedback, and can be personal too. Hence, phone is a richer communication channel than email. Phone facilitates quick coordination, information exchange, and ensures information is properly understood.

Another old communication tool is the fax. Fax is one of the low rated communication channels since it provides only written communication without any oral or nonverbal interaction. Moreover, clarity degradation of faxed documents is also another issue when talking about fax. Therefore, fax is just used to send simple routine messages or to share copies of documents when email is not available. Though it is still used in many organisations, fax is being replaced by RightFax, a software application that scans documents and sends them by email.

### **2.7.5.4. Messaging**

Messaging is a recent communication technology used to exchange short information. Similar to email, messaging uses written communication only without any oral or nonverbal

communications. In general, there are two types of messaging: text and instant. Originally, text messaging are messages sent using mobile devices such as cellular phones where each message is a separate operation, while in instant messaging an entire real-time two-way conversation is seen as one session and is sent using a software application installed in computers. However, with current technology advances, modern mobile devices are now capable of instant messaging as well. Generally speaking, messaging is a flexible, fast, and cheap written communication technology but ideal only for brief informal messages, not long professional messages as in email, which explains why messaging is very common in personal communication and not for corporate usage (Robbins and Judge, 2009).

#### **2.7.5.5. Web-based Applications**

With the increasing popularity of the Internet and the ease of access by all ages, modern communication technologies have emerged via the Internet. Like messaging, most web-based applications use written communication only. An example of such web applications is networking software applications such as MySpace, Facebook, and LinkedIn. Most people use these networking software applications for personal purposes like keeping in touch with family and friends or reconnecting with old friends. However, there are some professional networking software applications which people use, for instance, to publish their resumes for interested employers. Another type of web applications is web logs, or blogs, which are web pages people use daily to write general things about themselves and are available for anyone to read. Again, most online blogs are used by people to publish general things like diaries, while some

organisations provide corporate blogs to give ideas, discuss issues, and give their opinions (Robbins and Judge, 2009).

### **3. CONCEPTUAL FRAMEWORK**

#### **3.1. INTRODUCTION**

The aim of this research is to investigate communication and project effectiveness in our case study. In addition, we will investigate geographic dispersion, language differences, and planning effectiveness and their effects on communication effectiveness and project effectiveness. In order to do that, we will build a theoretical argument on how these relationships are likely to occur and then deduce the main research hypotheses of this paper. But before doing that, it is important also that we discuss and fully understand the main concepts upon which our theoretical understanding will be built on. In the next section, we will explain and define the concepts of projects, communication, and effectiveness in the context of this research, and then use them to build our theoretical understanding.

#### **3.2. PROJECTS, COMMUNICATION, & EFFECTIVENESS**

##### *Projects*

According to PMI (2008), a project is a temporary endeavour with a definite start and a definite end, undertaken to create a unique product, service, or result. Therefore a project is not an on-going effort; the end is reached when the project objectives have been achieved, or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists. However, being temporary does not necessarily mean short in duration; big projects or programs can go on for years. In addition, although it is temporary, the unique product, service, or result created by the project is usually designed to be a long-lasting outcome for years or decades. Moreover, the characteristics of the outcome in a project is described as progressively elaborated, meaning that the characteristics are not fixed; things can be changed throughout the life cycle of the project (PMI, 2008; Mulcahy, 2005).

On the other hand, an operation or a process is the opposite of a project. Operational work is generally an ongoing effort involving a repetitive process daily, weekly, monthly, etc. Hence, the outcome here is fixed and the final product is already known by all parties. While in projects, the outcome is progressively elaborated and there may be many uncertainties which require thorough and comprehensive planning. Furthermore, operational work goes through the same routine over and over again and follows the organisation's existing rules and procedures. Whereas in projects, every project task can be new to the project team members who will get the chance to learn, develop, and go through different experiences which cannot be found in operations (PMI, 2008; Mulcahy, 2005).

### *Communication*

Communication can be simply defined as the transfer and the understanding of meaning between certain parties (Robbins and Judge, 2009). As we have seen earlier in the literature review, researchers have addressed communication as a key success factor in projects and organisations. In order for project teams to be able to work collaboratively with each other to reach predefined goals, there should be proper and planned communication. Communication is needed in projects to have a common understanding and disseminate information among all project stakeholders such as the project manager, the sponsor, the steering committee, the customer, functional managers, regulatory authorities, suppliers, end users, etc. In addition to keeping them updated, communication can provide support from influential stakeholders increasing the probability of project success.

Moreover, communication can be utilised by project managers and leaders to motivate their subordinates and increase satisfaction within the employees, increasing their performance. Studies have proved that project managers who exercise effective communication with their employees, experience a higher sense of buy-in and ownership of work from their employees (Trombetta and Rogers, 1988; Goodman *et al.*, 2001; Trahant, 2008). Communication will also show employees the significance of their roles and positions within the project



or the organisation which will spontaneously increase their self engagement and job involvement towards their roles. Additionally, communicating clear and realistic project aims and goals will create a focused workforce that is committed to accomplish both organisational and personal goals (Ilies *et al.*, 2006; Sinickas, 2006; Henderson, 2008).

### *Effectiveness*

Robbins and Judge (2009) simply defined effectiveness as the 'achievement of goals', whether they are project, organisational, or personal goals. Hackman (1990) divided effectiveness into several components including the actual output that the team produces, the satisfaction of the team members, and the viability of the team (the ability and willingness of the team members to work together in the future). In this paper, we will tackle effectiveness in two different areas: communication effectiveness and project effectiveness. In communication effectiveness we refer to the ability of the selected communication method and communication channel to successfully transfer the information from the sender to the receiver and create a mutual understanding between both parties. Whilst in project effectiveness we refer to the successful delivery of the project outcome or milestones on schedule, within budget, and with the desired quality.

Using proper communication methods and proper communication channels will ensure that the right and complete message is transferred from the sender to the receiver. For instance, aims and goals will be delivered from the project manager to his subordinates, or project status will be delivered from the project manager to the stakeholders. Thus, communication effectiveness will exist because the purpose of that communication was achieved. Additionally, as communication is highlighted as a basic factor for success, then communication effectiveness is a key factor for project effectiveness. In other words, having proper and effective communications is one of the main reasons that will lead to a successful project which clarifies the strong relationship between projects, communication and effectiveness.

### *Connecting Projects, Communication & Effectiveness*

Communication is illustrated as a key reason for project and organisational success, this indicates a strong relationship between communication and project effectiveness (Luthans *et al.*, 1988; Tsui *et al.*, 1995; PMI, 2008; Mulcahy, 2005). However, the variable that determines whether such relationship is positive or negative is the effectiveness of the communication, i.e. the ability of the communication to achieve its goals by transferring the message itself as well as its meaning (Furnham, 1999; McKenna, 2008; Robbins and Judge, 2009). In many real life projects, you can see that communication is present but still the project is unable to deliver its outcome. The question here is: were the used communication methods able to deliver the message? And were the communication methods able to transfer the meaning of the message? If the answer to both questions is yes, then we can say that the communication has achieved its goals and, hence, the communication is effective. As a result, this would enable all project parties to have a common understanding of the project and aid them in achieving project goals and produce an effective project (Furnham, 1999; McKenna, 2008; Robbins and Judge, 2009).

Additionally, many empirical studies indicated the effect of communication effectiveness on project effectiveness and organisational success. Tsui *et al.* (1995) surveyed 410 project managers and found out that effective projects are managed by project managers who explain their decisions and seek information from their colleagues and employees. Luthans *et al.* (1988) surveyed 450 project managers and found out that effective managers spent around 44% of their time in communication. Sinickas (2006) revealed that 20% of the surveyed sample viewed communication as the answer to reduce turnover and increase satisfaction and performance. Konrad (2006) concluded that engagement programs strongly correlated with project effectiveness. In addition, such projects experienced higher employee retention, enhanced efficiency, and highly satisfied clients. Goodman *et al.* (2001) concluded a strong relationship between communication outcomes and overall performance. In addition, communication was found out to lead to additional commitment from employees to achieve organisational, as well as personal

goals. Ruppel and Harrington (2000) found out that the higher the level of communication exercised between the project manager and the team members, the more trust and confidence will be between them. Henderson (2008) showed that superior interpersonal skills of project managers will have a dramatic effect on team member performance and retention.

Furthermore, PMI (2008) and Mulcahy (2005) showed the strong relationship between communication effectiveness and project effectiveness by considering communications management as a main component of the overall project plan. Moreover, they described that effective project managers spend 90% of their time communicating and that communications is the number one problem when analysing project problems (PMI, 2008; Mulcahy, 2005). Krahn and Hartment (2006) expressed that in order for project managers to do well, they must enhance their interpersonal skills which is critical skill for managers and project managers in general. Ammeter and Dukerich (2002) expressed the dissemination of project vision and mission by project managers to achieve project objectives and client satisfaction. Trahant (2008) showed a strong correlation between effective employee communication and superior performance.

After understanding the firm relationship between projects, communication and effectiveness, in the next section we are going to build our theoretical understanding from which we will deduce the main research hypotheses.

### **3.3. THEORETICAL UNDERSTANDING**

After examining the concepts of projects, communication, and effectiveness in the context of this paper, we can now analyse the main factors of communication and project effectiveness concluded from literature, which are geographic dispersion, language differences, and planning effectiveness, and their relationship with communication effectiveness and project effectiveness. Based on these relationships, we will introduce our hypotheses which we will be tested later on.

### **3.3.1. Geographic Dispersion vs. Communication Effectiveness**

As seen in literature, geographic dispersion is being utilised by international organisations to exploit commercial and regional benefits such as cheaper labour, increased work hours, and having a diversity of talents (Ariel, 2000; Hoegl *et al.*, 2007). Nonetheless, geographic dispersion has also introduced some downsides to organisations including cultural barriers between different cultures, conflicting regional time zones, and a main reason for impeding communication (Cairncross, 2002; Katzenbach and Smith, 1994).

Schomaker (2006) confirmed the expected negative effect of geographic dispersion on ease of knowledge communication due to the absence of direct contact between individuals and replacing it with communication technologies. Mulcahy (2005) explained how the co-location of employees and project teams in one physical place can enhance communication by facilitating constant easy communication between team members, expediting coordination, problem solving, and accomplishing project goals effectively. On the other hand, Mulcahy (2005) described that geographic dispersion will hinder achieving communication effectiveness because geographically dispersed teams will experience more conflicts, decreased productivity, and other impacts that affect the project time, cost, and quality. Bosch-Sijtsema (2007) described that geographic dispersion negatively affects communication effectiveness by reducing the opportunity of face-to-face meeting between project teams and, in some cases, between individuals in the same team. Bosch-Sijtsema (2007) explained that in addition to the lack of proper communication, geographic dispersion can also negatively affect the ability of team members to perform high quality collaborated teamwork.

Many empirical studies proved that face-to-face communication is an essential element of effective communication nowadays. In a study of 35 project teams in the UAE, Alrais (2009a) found out that face-to-face meetings is positively related to overall communication and employee satisfaction. Dulye (2006) confirmed that face-to-face communication is 'the best way to get information to and from employees.' Kilgallon and Lampe (2007) assured that electronic communication cannot substitute face-to-face meetings. In addition, Goris (2006) mentioned that face-to-face communication represents the richest communication channel. Cooper (2002) discussed the inability of new technologies to replace face-to-face meetings. Koehler (1990) suggested that organisations consider face-to-face contact despite technological advances because personal contact remains an essential element of effective management. Robbins and Judge (2009) illustrated that face-to-face meeting scored the highest in channel richness since it is personal, provides instant feedback, and provides multiple information cues. Therefore, all these studies indicate how geographic dispersion can negatively affect communication effectiveness by eliminating essential communication elements, such as face-to-face meetings, if projects and organisations are geographically dispersed.

In a case study of a project-managed environment, Alrais (2008) discussed how geographically dispersed teams are unable to easily communicate and coordinate project tasks between each other. Alrais (2008) also described how small issues in geographically dispersed projects can be pending for long periods of time and turn into serious problems due to the lack of communication, whilst in co-located projects such issues are solved effectively and instantly as they come up without having to wait for weeks to arrange meetings (Alrais, 2008). In addition, Cairncross (2002) discussed how geographic dispersion prevents project managers from communicating a common understanding of the project within their geographically dispersed teams, making it difficult for the project manager to maintain project goals and objectives throughout the project workforce (Cairncross,

2002). Moreover, Katzenbach and Smith (1994) explained that geographic dispersion can make employees feel detached and isolated from other project teams and negatively affect the sense of commitment and ownership of work within employees.

All of the above arguments lead us to our first hypothesis:

**Hypothesis 1:** *Geographic dispersion is negatively related with communication effectiveness.*

### **3.3.2. Language Differences vs. Communication Effectiveness**

For businesses to survive in such competitive global markets they need to grow and develop opportunities in different parts of the world and become multinational organisations, which involves more projects and transactions with people from the new markets who have different cultures and languages. Consequently, language differences will appear throughout projects whether it was between people using completely different native languages, or between people using the same language but have different cultures and backgrounds, affecting communication and project effectiveness.

Schomaker (2006) explained that language differences can decrease communication effectiveness in projects because such differences will be a source of most of the misinterpretations and lack of understanding during communications between individuals of different cultures and languages. Schomaker (2006) also explained that such misinterpretations and misunderstanding caused by language differences during project communications can lead to the implementation of wrong requirements and producing an outcome which does not meet client expectations.

In addition, Menard and Menard (2006) noted that most international projects experience delayed communications due to the language

differences between the communicating parties. Menard and Menard (2006) highlighted that such language differences between project parties, and especially between clients and suppliers, can produce a huge impact on communication effectiveness which, if not managed appropriately, could eventually affect the outcome and the quality of the project in a negative way. Menard and Menard (2006) also indicated that language differences can hamper communications in international projects and lead to delivering poor quality projects and not meeting clients' requirements and expectations.

Moreover, Harzing and Feely (2008) described that language differences can lead to the underestimation of creative hardworking talents who might not be able to effectively communicate their ideas to their superiors and be ignored. Some of these ideas and suggestions may add considerable value to the project and increase performance and efficiency. Lincoln *et al.* (1995) also mentioned that senior individuals in the project might pretend to understand what the other person is saying just to avoid embarrassment while they actually didn't understand, thus reducing communication effectiveness. This can also lead to the deployment of incorrect requirements and specifications, impacting project success.

Furthermore, code switching is another result of language differences, a phenomenon discussed by Kingston (1996) where a group of people switch to their native language during a meeting or a conversation. Kingston (1996) explained that even though code switching occurs unintentionally because people tend to be more comprehensive using their native language, it is clearly ineffective communication since some of the participants will not understand the message. Additionally, the remaining participants can also interpret it as conspiracy or double-dealing which could lead to suspicion and mistrust between the two parties, threatening project success.

Gallois and Callan (1995) talked about the ineffective communication caused by power-authority distortion between clients and suppliers in

projects. In cases like conducting meetings in the supplier's premises where most of the participants are from the supplier company, the supplier is forced to use his native language meaning that the client will not be able to understand the message. Moreover, when the power-authority balance seems to shift from the clients, who usually have the greater power, to the suppliers, the clients would feel they lost control over the relationship. Gallois and Callan (1995) explained that such distortion could create conflicts and disputes and threaten the relationship between clients and suppliers.

All of these arguments show the negative relationship between language differences and communication effectiveness, leading us to the following hypothesis:

**Hypothesis 2:** *Language differences are negatively related with communication effectiveness.*

### **3.3.3.Planning Effectiveness vs. Communication Effectiveness**

Project planning is a very critical stage during the project life cycle because even if the project execution was perfect but the planning is improper, then the outcome will also be improper, and the project will not achieve its goals. Researchers in project management have highlighted the significance of planning the communication in projects to achieve the desired effective communication. PMI (2008) have also pointed out to communication in several phases of the project life cycle, shown in **Figure 5**, including the planning phase. In the planning phase, a document called the project management plan (PMP) is developed by the project manager to give the project stakeholders an overview of the project plan before commencing with the project.

According to the Project Management Body of Knowledge (PMBOK) by PMI (2008), the plan consists of 10 sections where each section



addresses an important component of the project, and one of these sections is the communications plan. All of this attention is given to communication during project planning to ensure communication effectiveness in the project. Moreover, PMI (2008) stated clearly that in order to have effective communication in a project, communication must be thoroughly planned and explained to the project stakeholders to ensure timely and appropriate development, collection, dissemination, storage, and disposition of project information.

In addition, Mulcahy (2005) highlighted that the communication plan will ensure communication effectiveness because it will determine the information and communication needs of the stakeholders and define a communication approach. The communication plan will allow the project manager to document the approach to communicate most effectively with the stakeholders by providing the information to the right audience, at the right time, in the right format, and via the right channels. Mulcahy (2005) pointed out that improper communication planning will certainly lead to ineffective communication and create problems such as delays in message delivery, communication of sensitive information to the wrong audience, and lack of communication to some of the required stakeholders.

Alrais (2009b) described that organisations tend to underestimate the role of project planning and its effect on communication success and effectiveness. Alrais (2009b) examined a project in the UAE's telecom industry and realized how insufficient communication caused by poor planning can drive projects to suffer from huge time and cost overruns and eventually lead to project failure.

Johnson *et al.* (2001) identified planning as one of the critical success factors in a project. Moreover, Johnson *et al.* (2001) stated that high-quality planning increases the probability that the project will be properly communicated and executed and, hence, accomplish communication effectiveness. Kerzner (1987) considered commitment to planning and control one of the six critical success factors for

achieving effective communications projects. Baar (2002) emphasised the role of proper planning in achieving communication effectiveness. He identified planning as one of the key work processes used to organise the communication and execution of a project to achieve its goals, regardless of size or phase.

Other empirical studies have also confirmed the positive relationship between planning effectiveness and communication effectiveness. Stephenson (2006) found out that over 75% of the companies that responded to his survey agreed that the lack of planning skills affected project communications negatively. Aladwani (2002) studied project planning in 19 well-known organisations in Kuwait and found out that planning is a major factor for communication effectiveness, leading to project success.

Thus, we can obviously see the positive relationship between planning effectiveness and communication effectiveness and conclude the following hypothesis:

**Hypothesis 3:** *Planning effectiveness is positively related with communication effectiveness.*

### **3.3.4. Communication Effectiveness vs. Project Effectiveness**

Communication is illustrated as a key reason for project and organisational success; this indicates a strong relationship between communication and project effectiveness (Luthans *et al.*, 1988; Tsui *et al.*, 1995; PMI, 2008; Mulcahy, 2005). However, the variable that determines whether such relationship is positive or negative is the effectiveness of the communication, i.e. the ability of the communication to actually achieve its goals by transferring the message itself as well as its meaning (Furnham, 1999; McKenna, 2008; Robbins and Judge, 2009). In many real life projects, you can

see that communication is present but still the project is unable to deliver its outcome. The question here is: were the used communication methods able to deliver the message? And were the communication methods able to transfer the meaning of the message? If the answer to both questions is yes then we can say that the communication has achieved its goals and, hence, the communication is effective. As a result, this would enable all project parties to have a common understanding of the project and aid them in achieving project goals and produce an effective project (Furnham, 1999; McKenna, 2008; Robbins and Judge, 2009).

Additionally, many empirical studies indicated the effect of proper communication on project and organisational success. Tsui *et al.* (1995) surveyed 410 managers and found out that effective projects are managed by project managers who explain their decisions and seek information from their colleagues and employees. Luthans *et al.* (1988) surveyed 450 managers and found out that effective managers spent around 44% of their time in communication. Sinickas (2006) sent surveys to over 1,000 employees in different companies and found that 19% of the employees considered communication as the number one factor that led to project effectiveness. Konrad (2006) studied employee communication in 7,939 business units in 36 companies and found that employee communication was positively associated with performance in many ways. Goodman *et al.* (2001) sent questionnaires to 276 people in 7 different hospitals and the study revealed that organisational communication is positively related to effectiveness. Ruppel and Harrington (2000) conducted a survey of 111 managers to find that the more communication the project managers exercise with team members, the more committed the team members will be and the more effective the project is. Henderson (2008) conducted a survey of 564 respondents to reveal that communication competencies of project managers significantly contribute to project performance and the team members' satisfaction and productivity.

Furthermore, PMI (2008) and Mulcahy (2005) showed the strong relationship between communication effectiveness and project effectiveness by considering communications management as a main component of the overall project plan. Moreover, they described that effective project managers spend 90% of their time communicating and that communications is the number one problem in projects (PMI, 2008; Mulcahy, 2005). Krahn and Hartment (2006) found that communication was rated by experts in the top 10 of a list of 50 competencies important for project managers to be successful in today's work environments. Ammeter and Dukerich (2002) showed the importance of communication between project managers and their teams to achieve project goals. Trahant (2008) showed a strong correlation between effective employee communication and superior performance.

As a result, we can clearly see the strong positive relationship between communication effectiveness and project effectiveness and deduce our last hypothesis:

**Hypothesis 4:** *Communication effectiveness is positively related with project effectiveness.*

### 3.4. CONCLUSION

In this chapter, we explained the concepts of projects, communication, and effectiveness and their relation to this research paper. Based on literature review, we also analysed geographic dispersion, language differences, and planning effectiveness as the main factors of communication effectiveness and project effectiveness. This led us to deduce the following research hypotheses:

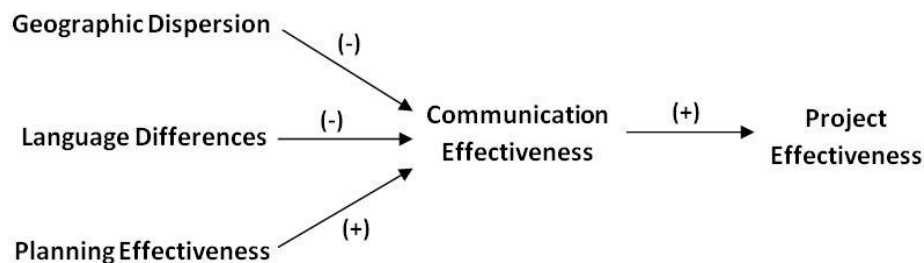
**Hypothesis 1:** *Geographic dispersion is negatively related with communication effectiveness.*

**Hypothesis 2:** *Language differences are negatively related with communication effectiveness.*

**Hypothesis 3:** *Planning effectiveness is positively related with communication effectiveness.*

**Hypothesis 4:** *Communication effectiveness is positively related with project effectiveness.*

Looking at the above hypotheses, we can obviously conclude the research variables of our study, and categorise them into dependent, independent, and mediating variables. First, we have three independent variables: geographic dispersion, language differences, and planning effectiveness. Additionally, there is one mediating variable which is communication effectiveness, and one independent variable which is project effectiveness. To have a clearer overview of the hypothesised relationships between these constructs, **Figure 9** below summarises these relationships.



**Figure 9 – A summary diagram of the hypothesised relationships between the constructs**

As **Figure 9** shows, both geographic dispersion and planning effectiveness show a negative relationship with communication effectiveness, while planning effectiveness shows a positive relationship with communication effectiveness. Moreover, as a mediating variable, communication effectiveness has a positive relationship with project effectiveness. In the following chapter, we will explain the development and implementation of

research methodologies and survey tools used in this paper to collect and analyse data in order to test the above hypotheses.

## 4. METHODOLOGY

### 4.1. INTRODUCTION

The main purpose of this paper is to examine geographic dispersion, language differences, and planning effectiveness and their effect on communication and project effectiveness in our case study. In this chapter, we will explain the research approach used in this paper, the source of primary data used to conduct the study, survey design and implementation, the dependent and independent variables which survey questions were based on, and the tools used to analyse the data and test the stated hypotheses.

### 4.2. RESEARCH APPROACH

In this research we followed a deductive, or top-down, approach of research. Hence, we first presented the theory of geographic dispersion, language differences, and planning effectiveness and their effect on communication effectiveness and project effectiveness, which we already did in the literature review chapter. Based on that, we have deduced our hypotheses as we did in chapter two, the conceptual framework. Next we observed and tested the hypotheses using different statistical and analytical tools. Finally, the findings were discussed and this led us to accept or reject our hypotheses. **Figure 10** shows the framework of our deductive approach.



**Figure 10 – Deductive approach framework**

To help us using this approach effectively, quantitative tools would be more appropriate to use than qualitative tools. Quantitative tools would produce facts based on actual evidence and records, while qualitative tools are based on opinions, views and perceptions. Moreover, quantitative tools test and confirm the hypothesis and the relationship between the different variables, while qualitative tools develop theories and concepts. Finally, data in quantitative tools is hard and reliable, while in qualitative tools data is rich and deep (Naoum, 1997; Gill & Johnson 2006). Therefore, questionnaires will be used as our quantitative research tool.

Lastly, the data collected from the research questionnaire will be analysed quantitatively and qualitatively using different analysis tools, such as the Statistical Package for Social Sciences (SPSS) software (version 17) and Microsoft Excel. The analysis will include tests like reliability, correlation, and regression analyses, which will be explained in detail in the next chapter. The findings from these tests will be discussed and this will lead us to support or reject our hypotheses. Our research variables are communication effectiveness, project effectiveness, geographic dispersion, language differences, and planning effectiveness, and they will be explained later in this chapter.

### **4.3. DATA ACCESS**

Data collection is critical in research studies. Without data we would be unable to reach conclusions or support/reject hypotheses. As an employee of the organisation, access to research data was quite easy. Top management was very supportive and they welcomed the idea of conducting research studies on one of the organisation's projects. I was allowed to distribute questionnaires to the employees without getting any formal approval. They also would be very happy to see a presentation of the research and the main findings when it is completed. The data collected from these questionnaires will as serve as the primary data for this research.



After that I needed to specify the individuals and the teams which I would distribute the questionnaire to. Therefore, I met the project manager and he showed me a detailed organisational structure of the whole project. This helped me in selecting the individuals and the teams which were always available in the local headquarters. In parallel, I was also in the process of developing the questionnaire. Before distributing the questionnaires, I met top management and the project manager again and we went through the questionnaire to get their opinion and inform them that I am going to start distributing them. It was important to keep them informed and involved in the questionnaire distribution process to get their full support.

#### **4.4. SURVEY DESIGN & IMPLEMENTATION**

As mentioned, questionnaires will be used as a quantitative tool to collect primary data for this research. Even though numerous questionnaires were designed by other researchers, none of them seemed to provide measures for all of our variables and completely satisfy the needs of this research. For example, O'Reilly and Roberts (1977) designed a questionnaire to study communication and effectiveness in three different organisations; however, they measured variables such as task structure, group structure, and communication as one general variable. Therefore, we decided to design our own customised questionnaire to satisfy the variables of this research which are communication effectiveness, project effectiveness, geographic dispersion, language differences, and planning effectiveness.

According to the variables, the questionnaire is divided into 5 main sections: communication effectiveness, project effectiveness, geographic dispersion, language differences, and planning effectiveness. Clearly, all 5 variables are addressed individually in a separate section, and each section contains 10 questions, yielding a total of 50 questions. All of these 50 questions are closed questions where multiple choices are offered and the respondents had to rate the extent to which they agree or disagree with these 50 statements on

a five-point scale, ranging from 1 for “strongly disagree”, 2 for “disagree”, 3 for “neither”, 4 for “disagree”, and 5 for “strongly agree”. Such close-ended questions might restrict respondent to select only from the offered choices, but it is the most effective approach to produce hard and reliable data for analysis (Naoum, 1997; Gill & Johnson 2006).

In addition to these 5 sections, a section for demographics was added in the beginning of the questionnaire to facilitate data analysis based on demographic data such as age or gender, and to assist in future empirical studies. Moreover, another section for general opinions was added in the very end of the questionnaire in the form of an open-ended question where respondents can express themselves freely and are not restricted by multiple choices. Even though they might be time-consuming when analysing the data, we believe that such open-ended questions could discover new issues not tackled by this study and might be investigated in future research. A sample of the questionnaire is provided in **Appendix 1**.

After finalising the questionnaire and reviewing it with the management and the project manager we had to start the survey implementation process. Before starting the process, a cover letter had to be written to be included with the questionnaire. The letter briefly explained the purpose of the study and what it is aiming to achieve, in addition to the main sections of the questionnaire itself. Most importantly, the letter highlighted that all responses will be totally confidential; it will not ask for any names or identities and will be used only for research purposes. The cover letter is attached with the questionnaire in **Appendix 1**.

Then, the first step was to distribute the questionnaire to the selected teams and individuals. Initially, the idea was to send the questionnaire electronically by email to all respondents. However, this was not done because although the questionnaire itself does not ask for names or identification information, the email could disclose people identities from the email ID. Thus, knowing that they could be identified, respondents may not reflect the real situation and the responses would be unrealistic and dishonest, affecting research reliability. As a result, the distribution approach was changed to give the questionnaires

hand-to-hand to the respondents. Though such approach is time-consuming, it ensures honest responses and realistic data and, eventually, reliable findings and conclusions.

Next is questionnaire collection. It was mentioned in the cover letter that completed questionnaires will be collected by the end of the week, or the respondents may hand it in before that if they wish to. Luckily, respondents were very cooperative and nearly half of the completed questionnaires were handed in by the respondents themselves during the week which facilitated the collection process. The rest of the completed questionnaires were collected by the end of the week.

#### **4.5. SAMPLE**

The original sample that was selected contained a total of 120 individuals, all of which are members of the studied project. This number was chosen to ensure around 100 responses to be able to perform realistic statistical analysis. The questionnaires were given hand-to-hand to these 120 individuals and, of course, participating in the questionnaire was completely optional. In total, 112 questionnaires were returned and all of them were completely answered, yielding a 93.3% response rate, which is sufficient to perform the required analysis. We presume that such relatively high response rate was achieved due to respondents' cooperative and the simplicity of the designed questionnaire and the questions.

As described earlier, the project is divided into 4 main divisions: onshore, offshore, infrastructure, and technical. The 112 individuals who participated in the questionnaire came from all these 4 divisions. Each of these divisions is composed of smaller teams. The total number of surveyed teams is 18. Team sizes ranged from as few as 2 members to as many as 12 members. The average team size is 7. 33.3% of the teams had 5 members or lower, while 88.8% of the teams had 10 members or lower. In addition, the teams varied in the level of their geographic dispersion. Some teams were all co-located in

one building, some were dispersed over several buildings, and some were dispersed over several countries.

## **4.6. VARIABLES**

The variables measured in the survey are divided into dependent, independent, and mediating variables. Independent variables represent the nature of the project and are independent of any other variables. On the other hand, the mediating variable is the variable which is affected directly by the independent variables. Consequently, this mediating variable will have a direct effect on the dependent variable. The direct relationships between all of these variables, summarised in **Figure 9**, will serve as a basis to support or reject our hypotheses.

### **4.6.1.Independent Variables**

Independent variables in the survey are: geographic dispersion, language differences, and planning effectiveness. As mentioned earlier, these variables are a result of the nature and organisational structure of the project and the organisation. However, we assume that these independent variables have a direct effect on the mediating variable. Below is an explanation of each independent variable and its connection to the survey questions.

#### **4.6.1.1. Geographic Dispersion**

The first independent variable in our study is geographic dispersion. Literature considered geographic dispersion as a reason for impeding communication and creating time zone

conflicts between dispersed teams (Dulye, 2006; Cooper, 2002). Geographic dispersion also reduces communication effectiveness due to the absence of rich and direct contact and face-to-face meetings (Goris, 2006; Schomaker, 2006; Robbins and Judge, 2009). Many empirical studies have also confirmed that negative relationship between geographic dispersion and communication effectiveness (Alrais, 2009a; Koehler, 1990; Kilgallon and Lampe, 2007).

Furthermore, geographic dispersion will hinder the achievement of project goals and objectives and lead the project to experience more conflicts, decreased productivity, and other impacts that affect time, cost, and quality of the project (Mulcahy, 2005; Bosch-Sijtsema, 2007). In addition, geographic dispersion will create a sense of isolation and poor commitment and make it difficult for project managers to build a common understanding of the project within their geographically dispersed teams (Katzenbach and Smith, 1994; Cairncross, 2002; Alrais, 2008). All of the above suggested that geographic dispersion can strongly affect communication effectiveness.

In order to understand the connection between the survey questions and the geographic dispersion variable, the conceptual understanding of each question in the survey must be explained. **Table 1** below lists the ten 5-scaled multiple-choice questions in the geographic dispersion section in the questionnaire and their connection to the measured variable.

**Table 1 – Geographical dispersion questions and their explanation**

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
1. My team members are located in more than one building	As a first question in the geographic dispersion section, this statement will confirm whether geographic dispersion exists in the project. Since it is known that it exists, it is expected that all respondents will agree or extremely agree

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
	depending on their perception of geographic dispersion.
2. My team members are located in more than one city	In addition to its existence, it is also important to measure the level of geographic dispersion. Being dispersed over more than one city means lower frequency of face-to-face meetings and direct communication.
3. My team members are located in more than one country	Again, this question addresses the level of geographic dispersion. The larger the geographic area over which team members are dispersed, the lower face-to-face meetings and communication effectiveness, and the lower project effectiveness.
4. My team members are located over different time zones	In addition to physical dispersion, if a team is dispersed over different time zones then this would reduce the common working hours where the team members can work together, thus, further reducing productivity and communication effectiveness.
5. Conflicting time zones usually cause communication delays between team members	This question confirms the conflicting time zones and working hours. The higher the geographic dispersion, the more difference in time zones and communication delays, the less working hours and productivity, and the less communication effectiveness.
6. Tasks and activities are delayed due to geographical dispersion	As a result of the preceding statement, conflicting time zones and working hours due to geographical dispersion will also delay tasks and activities which are performed cooperatively between different teams, or between several members of the same team, negatively affecting communication and project effectiveness.
7. Misunderstandings and misinterpretations usually occur between geographically dispersed members	Geographic dispersion can create misunderstandings and misinterpretations between team members. This statement will clarify the extent to which misunderstandings and misinterpretations occur between the dispersed teams.
8. I meet all of my team members face-to-face at least once every week	This question measures the extent to which the team is experiencing face-to-face communication. Geographic dispersion is known to minimise direct contact, especially face-to-face meetings, which is agreed by many researchers as the richest communication channel.
9. Email and messaging technologies are utilised by team members	Even though most technologies, such as email and messaging technologies, cannot replace face-to-face communication, the right utilisation of such technologies can reduce the negative impact of geographic dispersion. This question will show whether such technologies are deployed.
10. Call and video conferencing is provided to do meetings with team members in different	Call and video conferencing are the best technologies to replace face-to-face communications. Conferencing is the second richest communication channel since it provides oral and nonverbal communication, immediate feedback, and

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
locations	can be personal. Moreover, it can save time and travel costs. This question will confirm the usage of conferencing.

#### 4.6.1.2. Language Differences

The second independent variable in the list is language differences. Researchers mentioned that language differences between different project stakeholders is critical and can decide the success or failure of projects. Language differences can reduce communication effectiveness by being a source of many misunderstandings and misinterpretations, and delaying communication between the different project parties. Such misunderstandings can lead to the implementation of wrong requirements and specifications, and producing an outcome which does not meet client expectations (Schomaker, 2006; Menard and Menard, 2006). Code switching is also another consequence of language differences on the effectiveness of communication where communicating parties could have different understandings due to switching the language. Code switching can also create mistrust and conspiracy perceptions within supplier-client relationships (Kingston, 1996).

Furthermore, projects can miss great ideas to improve effectiveness due to underestimating creative talents because of their language difficulties (Harzing and Feely, 2008). Also, pretending to understand to avoid embarrassment will lead to misunderstandings and deploying wrong requirements (Lincoln *et al.*, 1995). Lastly, language differences can also introduce power-authority distortion forcing a certain party to use its native language so the other parties will not receive the message and, hence, causing ineffective communication. Also, such distortion

can produce conflicts and disputes, and threaten supplier-client relationships (Gallois and Callan, 1995).

In order to understand the connection between the survey questions and the language differences variable, the conceptual understanding of each question in the survey must be explained.

**Table 2** below lists the ten 5-scaled multiple-choice questions in the language differences section in the questionnaire and their connection to the measured variable.

**Table 2 – Language differences questions and their explanation**

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
1. My team members come from different cultures and backgrounds	The first statement is to show the existence of language differences within the team. Coming from different cultures and backgrounds means that team members have different native languages leading to language differences whether they are using their native languages or using English, the official language, as a second language.
2. More than one language is used within my team	Again, this statement will confirm the existence of language differences in the respondent's team. Also, this question will indicate whether English is used in all communications as the organisation's official language.
3. My team members show different capabilities in using the company's official language	Showing different capabilities in using English as the organisation's official language will not only show a language differences, but will also show the varying levels of English within teams. This question could lead us to the role of training when enforcing an organisational official language.
4. Misunderstandings and misinterpretations are usually caused by such language differences	As seen earlier, misunderstandings and misinterpretations can result in communication and project ineffectiveness. This question will measure the extent to which such misunderstandings and misinterpretations occur, and whether it is caused by language differences.
5. My native language is different than the company's official language	If the respondent's native language is different than the organisation's official language, then he/she is using English as a second language. This would suggest the possibility of experiencing language differences with other people who use English as a native language.
6. I experience difficulties when I communicate using the official language	This statement will directly indicate the magnitude of the experienced language differences. It will also show the people's acceptance of English and their willingness to use it as the official language. Again,



Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
	recommendations can be deduced from this question as whether training is needed to overcome or minimise the language difference issue.
7. Ideas and suggestions from members who have language difficulties are sometimes being ignored	As discussed previously, creative ideas from creative people could be ignored because of their language difficulties. Projects could miss great opportunities for development and improvement by ignoring such innovative suggestions which might greatly enhance communication effectiveness and productivity.
8. I usually communicate with my native team members using my native language	This question measures the likelihood of the respondent to use his native language whenever he is communicating with a native team member. The higher the likelihood, the higher the amount of code switching the project is likely to experience during meetings and discussions.
9. Team members sometimes switch to their native language during meetings or discussions	This question directly addresses the issue of code switching caused by language differences. It will indicate whether code switching exists, and if it exists it will show an estimate of the amount of code switching occurring in the project.
10. Some members pretend to understand discussions with other members to avoid embarrassment	The act of pretending to understand to avoid embarrassment and loss of face is an important issue because it could affect communication and project effectiveness. It could create misunderstanding while communicating as well as implementing wrong requirements of the client.

#### 4.6.1.3. Planning Effectiveness

Planning effectiveness is the third and last independent variable. As confirmed by literature, most projects fail due to the poor or insufficient amount of planning and so it serves as the most important phase in projects. More specifically, communication effectiveness has been linked to the planning effectiveness of the project. As recommended by the PMBOK, a project management plan (PMP) is developed by the project manager during the planning phase of a project and the communications management plan is one of the main sections in the PMP (PMI, 2008). Furthermore, planning the communications in projects will ensure communication effectiveness because it will determine the information and communication needs of the

stakeholders and define a communication approach (Mulcahy, 2005).

In addition, researchers highlighted planning as one of the critical success factors for achieving effective communication and that high-quality planning increases the probability that the project will be properly communicated and executed (Johnson *et al.*, 2001; Kerzner, 1987). Planning organises the communication and execution of a project to achieve its goals, regardless of size or phase, while poor planning will lead to insufficient communication which can drive projects to suffer from huge time and cost overruns and eventually lead to project failure (Baar, 2002; Alrais, 2009b). Many empirical studies have also confirmed the role of project planning in creating communication effectiveness and that the lack of planning affects projects negatively (Aladwani, 2002; Stephenson, 2006).

In order to understand the connection between the survey questions and the planning effectiveness variable, the conceptual understanding of each question in the survey must be explained. **Table 3** below lists the ten 5-scaled multiple-choice questions in the planning effectiveness section in the questionnaire and their connection to the measured variable.

**Table 3 – Planning effectiveness questions and their explanation**

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
1. I am aware of the project plan or communication management plan of the project	If a project plan or communication management plan exists and the project teams are aware of it then this could point out that people in the project tried to do planning effectively. If not, then this indicates the ineffective planning which could be part of the explanation of the project's current situation. It will also show you poor communication between the project's management and the teams.
2. My team is aware of the overall project timeline and work breakdown structure	Project timeline and WBS and the most important documents in all projects because they set the baseline for the project's progress and lifecycle. If such documents exist and are distributed to the

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
(WBS)	project teams then this shows effective planning and communications, otherwise it will show poor planning and communication effectiveness.
3. My team has timeline and WBSs for its tasks and activities	In such huge projects, a project is divided into smaller projects to delegate work to expert teams and work in parallel to reduce time and increase productivity. Therefore, each team can also create its own timeline and WBS. This question will indicate whether individual teams are capable of planning their own tasks and activities regardless of the overall project planning.
4. Professional project management third parties were consulted to assist in project planning	In case the project's management is unable to plan the project due to its size and complexity or the unavailability of knowledge and expertise, then the management of the project can be outsourced to professional project management third parties who can prepare all required documents and take care of every detail in the project. This question will indicate whether such practices have been adopted.
5. List of stakeholders is properly identified, documented, and updated	In the planning phase, the process of identifying and managing stakeholders is an essential section of the overall project management plan (PMP). It is critical to identify all stakeholders involved or affected by the project to gain their support and run the project successfully. It is also critical to communicate with them effectively to enhance project communications.
6. Stakeholders are involved in the project planning phase	Involving stakeholders in the planning phase is even more important than involving them later on. Early stakeholder involvement will guarantee complete understanding of all their requirements and specifications and, thus, the project will run smoothly with low risk of doing any major changes. Moreover, getting stakeholders onboard in the early stages will make them understand the need for the project and ensure their support till the goals are achieved.
7. Stakeholders are continuously updated with project status	To provide communication effectiveness, it is always crucial in projects to keep stakeholders updated with the current project status. Stakeholders must know of progress and advancements in the project as well as any obstacles or issues hindering the progress. It is very important not to hide anything from stakeholders and inform them of any risks perceived in advance.
8. Specific information is sent to specific stakeholders on a regular basis	Updating and communicating with the stakeholder must be done in an organised predefined way, as specified in the communications management plan. Not all information must be sent to all stakeholders. Each stakeholder is interested only in the part he is involved in or affected by. Also, the information must be sent on a regular basis, daily, weekly, or monthly, depending on the stakeholders' preferences.
9. Risk registers are	Similar to the communications management plan,

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
properly identified, documented, controlled, and updated	the risk management plan is another key task during planning. The key here is to identify all possible risks that could be identified in order to prepare appropriate response plan to each risk, despite of its size. Then the risks must be carefully monitored in case they actually occur. Risk registers must be effectively communicated to the customer and the key stakeholders.
10. Proper access rights and restrictions are applied to sensitive information	Implementing appropriate restrictions and access rights to sensitive information shows effective planning. This will ensure that information is disclosed only to the right people. Such practices will regulate communications effectiveness.

#### 4.6.2. Mediating Variable

The mediating variable in our survey is communication effectiveness. Communication effectiveness is supposed to be affected by the independent variables: geographic dispersion, language differences, and planning effectiveness. From our literature review and conceptual framework study, we hypothesised that both geographic dispersion and language differences would have a negative effect on communication effectiveness, while planning effectiveness would have a positive effect on communication effectiveness. Below we will discuss communication effectiveness variable and its connection to the survey questions.

##### 4.6.2.1. Communication Effectiveness

Communication effectiveness is the ability to successfully transfer and assure mutual understanding of meaning between certain parties (Hackman, 1990; Robbins and Judge, 2009). Most researchers, if not all, agree that communication as a key success factor in projects and organisations in general. In

project management, the communications management plan is a basic component of the overall project management plan (PMI, 2008; Mulcahy, 2005). Communication is needed to have a common understanding and disseminate information among all project stakeholders, in addition to boosting employee motivation, job satisfaction, and overall performance (Trombetta and Rogers, 1988; Goodman *et al.*, 2001; Trahant, 2008). Communication is also connected to other organisational qualities such as job involvement, buy-in and ownership of the work, employee self engagement, and commitment (Ilies *et al.*, 2006; Sinickas, 2006; Henderson, 2008).

In relation to geographic dispersion, communication effectiveness is expected to respond negatively because geographic dispersion eliminates the direct contact and face-to-face meetings between employees which is the richest communication channel. Geographic dispersion also delays communications between areas with different time zones (Goris, 2006; Cooper, 2002; Robbins and Judge, 2009). Communication effectiveness is expected to respond negatively also with language differences as misunderstandings and misinterpretations will increase, besides other phenomena such as code switching and underestimation of talents (Kingston, 1996; Schomaker, 2006; Harzing and Feely, 2008). Nonetheless, communication effectiveness is expected to respond positively to planning effectiveness since planning pays high attention to communications management to ensure mutual understanding within all project stakeholders using predefined communication tools on regular basis (PMI, 2008; Mulcahy, 2005).

In order to understand the connection between the survey questions and the communication effectiveness variable, the conceptual understanding of each question in the survey must be explained. **Table 4** below lists the ten 5-scaled multiple-

choice questions in the communication effectiveness section in the questionnaire and their connection to the measured variable.

**Table 4 – Communication effectiveness questions and their explanation**

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
1. Members of my team communicate well with each other	The first aspect to indicate communication effectiveness is being able to actually communicate. This statement will show the extent to which team members are actually able to communicate well with each other. If they are not able to communicate well, then this could mean that there is a serious communication problem in the project preventing teams to communicate, and should be addressed immediately.
2. Generally, misunderstandings and misinterpretations rarely occur in my team	The second aspect is to actually understand the message. Misunderstandings and misinterpretations are important indicators of communication effectiveness. The lower the amount of misunderstandings and misinterpretations occurring in the project, the higher the communication effectiveness.
3. We can easily keep each other informed of our activities	Being on the same page and having a mutual understanding of each other's activities is also crucial. This would eliminate duplication of works and portray a strong team image in front of clients, vendors, and other teams. In addition, keeping everybody updated will facilitate handover and knowledge transfer if someone from the team goes on vacation or leaves the organisation.
4. I can easily get in contact with any of my team members	Contacting other team members easily indicates the availability of sufficient direct contact and face-to-face meetings. Moreover, this question indicates the provision of communication technologies such as email, phone, messaging, and call and video conferencing. All of this will lead to higher communication effectiveness within the project.
5. We can easily and clearly communicate with each other	This question reinforces the existence of the first aspect of communication, being able to actually communicate and transfer messages. If the parties in a communication are unable to deliver the message from one party to another, then there is no communication. Geographic dispersion, language differences, and noise are some examples of what could be hindering the communication.
6. My team members can easily understand each other	Going back to the second question, this statement will support whether transferred messages between communicating parties are actually understood. Again, if messages are exchanged but the participating parties are unable to understand each

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
	other, then actually there is no communication. In addition to delivery, the message has to be understood as well in order for the communication to be effective.
7. I always know what my other team members are doing	Again, this statement will reveal how much communication is going on within the team. Knowing what other team members are doing means that there is communication going on between them. The more knowledge available about other colleagues in the team, the more communication being exchanged within the team.
8. I am always informed of decisions taken within the project	Being informed of decisions taken within the project is an important point. This question will show the extent to which the management of the project is communicating with individuals and team members. If such communication exists then this could represent effective communication, otherwise communication is ineffective and the management of the project needs to solve this issue right away.
9. There is enough communication among my team members	This is a general statement on communication which will provide a broad perception on communication of the team members about their project. If individuals perceive strong communication about their project, then this could lead us to conclude higher communication effectiveness.
10. We are informed of developments and future plans	This question not only represents communication among the team and the project, but also gives an idea of communication effectiveness throughout the whole project. Such organisational communication is extremely important to increase employee morals, boost their motivation, and create a positive organisation culture.

#### 4.6.3. Dependent Variable

The dependent variable in our survey is project effectiveness. As explained in **Figure 9**, project effectiveness is supposed to be directly affected by the mediating variable, communication effectiveness. Again, based on the literature review and conceptual framework study, we hypothesised that communication effectiveness would have a strong positive relationship with project effectiveness. Below we will discuss project effectiveness variable and its connection to the survey questions.

#### 4.6.3.1. Project Effectiveness

Project effectiveness can be defined as the ability of a temporary effort, with a defined start and end dates, to successfully deliver an outcome and achieve its goals (PMI, 2008; Hackman, 1990). We can say that a project is effective if it was able to produce the desired outcome, whether it is a product, a service, or a result, based on the customer's requirements and specifications, within the specified period of time, the allocated budget and resources, and the desired quality.

Based on the literature review, we expect a clear positive relationship between communication effectiveness and project effectiveness, as communication effectiveness was identified as a key reason for project and organisational success (Luthans *et al.*, 1988; Tsui *et al.*, 1995). In addition, PMI (2008) and Mulcahy (2005) stated that effective project managers spend around 90% of their time communicating with different project stakeholders, and the communications management plan is considered as a main component of the overall project plan (PMI, 2008; Mulcahy, 2005). Moreover, Ammeter and Dukerich (2002) and Trahan (2008) indicated a strong correlation between effective manager-employee communication and performance, while Krahn and Hartment (2006) considered communication one of the top 10 competencies of project managers.

Additional confirmation of the strong relationship between communication effectiveness and project effectiveness is provided by many empirical studies. For instance, Sinickas (2006) found out that 19% of the employees considered communication as the number one factor leading to project effectiveness, Konrad (2006) concluded that employee



communication was positively associated with many aspects of project performance and effectiveness, Goodman *et al.* (2001) studied effectiveness in hospitals and revealed that communication is positively related to effectiveness, Ruppel and Harrington (2000) found out that the more communication project managers exercise with employees, the more committed they will be, resulting in higher project effectiveness, Henderson (2008) concluded that communication competencies of project managers significantly contributed to employees' satisfaction and productivity and, hence, project performance.

In order to understand the connection between the survey questions and the project effectiveness variable, the conceptual understanding of each question in the survey must be explained. **Table 5** below lists the ten 5-scaled multiple-choice questions in the project effectiveness section in the questionnaire and their connection to the measured variable.

**Table 5 – Project effectiveness questions and their explanation**

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
1. The team is aware of the project start date and end date	The most basic piece of information about any project is its start and end dates as a project is defined as a temporary effort with a start date and an end date. Even though it is expected that all individuals know this information, this question will test the extent to which such basic information is known by all individuals involved in the project.
2. My team members are aware and completely understand the project goals	The first requirement for a project to be effective is to be able achieve its goals on schedule, within the assigned budget, and with the desired quality. If project teams are aware and completely understand the project goals, then this could give a good sign about project effectiveness. Otherwise, a serious problem exists in the project if are working but not knowing what is the actual goal of the project and the expected outcomes.
3. My team members are aware and completely understand the tasks assigned to the team	Similar to the preceding question, every individual in the project must know the tasks assigned to his team, and more specifically, the tasks assigned to him individually. If this is not the case, then there will

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
	high duplication and low progress since people do not work towards a specific objective, leading to poor project effectiveness.
4. The team's tasks are realistic and worthwhile	In order to achieve an effective project you should have a workforce with high commitment and motivation. To have such workforce, tasks assigned to the employees must always be realistic and worthwhile, based on each individual's role in the project. A realistic task is a task which is actually doable and achievable and not an impossible mission. While a worthwhile task is a task which is challenging and not too easy.
5. The project offers the chance to develop and learn new experiences	The nature of projects allows people participating in it to develop their experiences and develop new skills every day. Such environments proved to be more satisfying and motivating to people. As a result, employees will show high performance and productivity, leading to enhanced project effectiveness. On the other hand, operational work is boring, repetitive, and offers limited learning opportunities.
6. Project goals and tasks are actually being achieved	From the perception of the project individuals, this statement will indicate whether they perceive that work is being done and progress can be noticed throughout the project lifecycle. Also, whether they see that project goals are being achieved. The most important characteristic of an effective project is that goals are being achieved and progress is clear.
7. The actual output that the team produces is satisfactory	One of the aspects of project effectiveness is the actual output that the team produces. If individuals observe that the work they are producing is satisfactory compared to what they should have been actually produced based on the project timeline, then this would give us an idea of the actual effectiveness of the project.
8. Generally, my team members are satisfied with their jobs	Another aspect of project effectiveness is the satisfaction of the team members with their jobs. If an individual feels satisfied with his job then this means that he is actually achieving some work and accomplishing his tasks. Satisfied employees usually have high motivation and commitment and so they can help the project to reach effectiveness.
9. My team members are able to work together as a team	Like the above statement, if people in a project are working well with each other as a team then this could indicate a healthy work environment and a positive organisational culture. If this is the case then the project is more likely to be effective since teams are working well together and achieving their assigned tasks.
10. My team members are willing to work together in the future	The third and final characteristic of an effective project is the viability of the team. In other words, the ability and willingness of the team members to work

Question	Explanation and relation to the research variable
<b>To which extent do you agree or disagree with the following statements?</b>	
	together again in the future. Once more, this gives us a clear indication that the team has high performance and productivity, leading eventually to higher project effectiveness.

## 4.7. CONCLUSION

In this chapter, we discussed the research methodology in this study. We described the deductive approach of research followed and the quantitative research tools used to collect and analyse data. We also talked about access to primary data and the process of selecting the teams to survey. Moreover, we explained the design and implementation of the survey questionnaire, and the data sample collected after returning the questionnaires. Finally, we discussed the different variables in the paper which are: project effectiveness as the dependent variable, communication effectiveness as the mediating variable, and geographic dispersion, language differences, and planning effectiveness as independent variables. Each variable was discussed and connected to every question in the survey questionnaire.

In the next chapter, we are going to present the collected data and analyse it using different statistical tools. This analysis will drive us to conclude some findings which will be discussed thoroughly.

## **5. DATA ANALYSIS, FINDINGS, & DISCUSSION**

### **5.1. INTRODUCTION**

In this chapter, data collected from the questionnaire survey will be presented, analysed, and discussed. While most of the data will be analysed using quantitative analysis tools, the last part will be analysed qualitatively due to the open-ended nature of the last question. After the analysis, we will use our findings to support or reject each of our hypotheses.

### **5.2. DATA ANALYSIS**

Since the majority of the survey questions are close-ended multiple choice questions, most of the gathered data was analysed statistically using the Statistical Package for Social Sciences (SPSS) software (version 17). Reliability tests and correlation and regression analyses were used to test our hypotheses on the relationship between our independent variables (geographic dispersion, language differences, and planning effectiveness) and the mediating variable (communication effectiveness), and between the mediating variable and the dependent variable (project effectiveness).

On the other hand, the general opinions data collected with the last open-ended question of the questionnaire was analysed qualitatively utilising the MS Excel spreadsheets and graphs. We will now start with the quantitative analysis and then followed by the qualitative analysis.

#### **5.2.1. Quantitative Analysis**

### 5.2.1.1. Descriptives Analysis

Before doing the reliability, correlation and regression analyses, a number of important descriptives about the data were generated to get a statistical overview of the gathered data. These descriptive statistics are summarized in **Table 6** below.

**Table 6 – Descriptive Statistics**

	Age	Gender	Work Experience	Comm. Effective.	Project Effective.	Geographic Dispersion	Language Differences	Planning Effective.
<b>N</b>	112	112	112	112	112	112	112	112
<b>Valid</b>								
<b>Missing</b>	0	0	0	0	0	0	0	0
<b>Mean</b>	35.33	-	13.87	2.63	2.59	3.46	3.34	2.62
<b>Median</b>	35.00	-	13.00	2.50	2.00	4.00	3.00	2.00
<b>Mode</b>	28 <sup>a</sup>	1	14	1	2	4	5	1
<b>Std. Dev.</b>	8.954	-	9.153	1.323	1.284	1.266	1.312	1.377
<b>Variance</b>	80.169	-	83.775	1.750	1.650	1.602	1.722	1.896
<b>Minimum</b>	19	-	0	1	1	1	1	1
<b>Maximum</b>	56	-	32	5	5	5	5	5

a. Multiple modes exist. The smallest value is shown

**Table 6** shows that there are 112 valid responses entered in the SPSS software (n = 112). The demographics (age, gender, work experience, and nationality) will be discussed in the following section. The means of our dependent, independent, and mediating variables range from 2.5 to 3.5. Starting with the independent variables, geographic dispersion has a mean of 3.46, a median of 4.00, and a mode of 4. This indicates that most respondents were towards the 'agree' side, meaning a high geographic dispersion. Furthermore, language differences has a mean of 3.34, a median of 3.00, and a mode of 5. Similarly, this shows a tendency towards the 'agree' side, with

high language differences between the employees. Lastly, planning effectiveness has a mean of 2.62, a median of 2.00, and a mode of 1. Therefore, planning effectiveness seems to be towards the 'disagree' side, illustrating low perceptions of planning effectiveness.

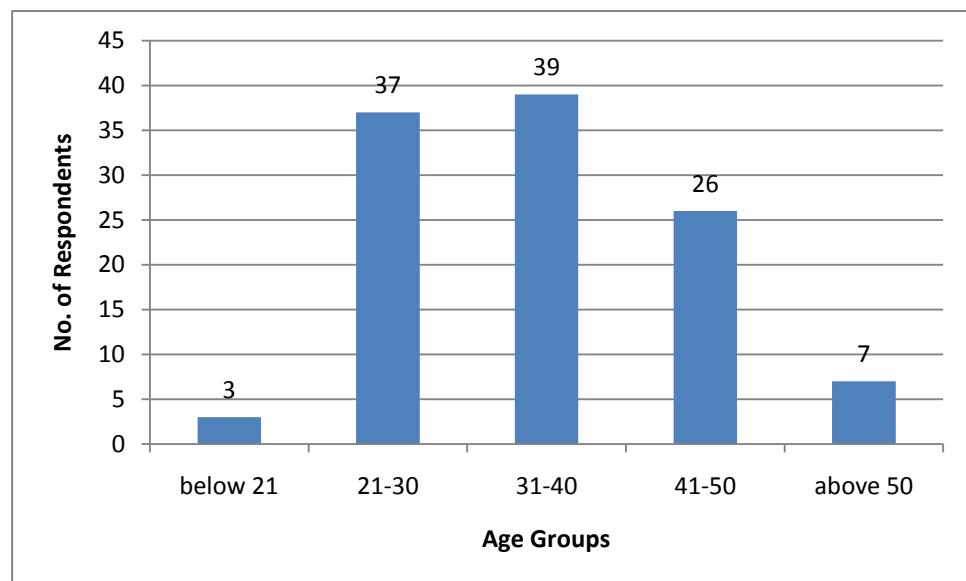
In addition, the mediating variable, communication effectiveness, has a mean of 2.63, a median of 2.50, and a mode of 1. This indicates that the majority of the responses were towards the 'disagree' side, showing a low perception of communication effectiveness from project members. Moreover, the dependent variable, project effectiveness has a mean of 2.59, a median of 2.00, and a mode of 2. Again, this shows a tendency towards the 'disagree' side, indicating a low perception of project effectiveness from project members.

#### 5.2.1.2. Demographic Data Analysis

The demographic data part asked for the following information about the respondents: Age, Gender, Work Experience, and Nationality. The descriptive statistics in **Table 6** contains the collected demographic data, except Nationality which will be discussed later.

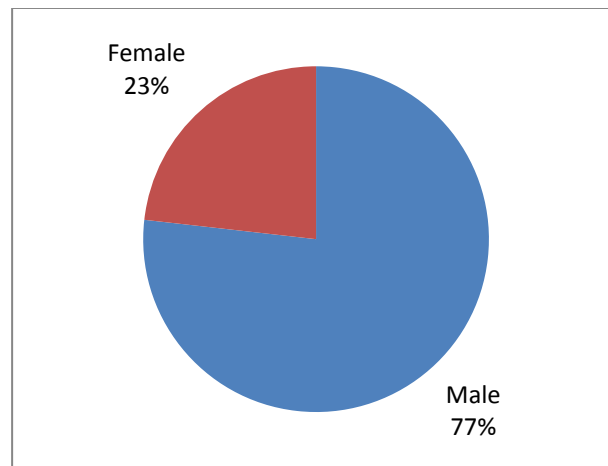
The mean age of employees in Project X is around 35 years, the median is 35 years, and the mode is 28 years (note that multiple modes of age exist, 28 is the smallest mode). Moreover, the minimum age is 19 years and the maximum is 56 showing a wide range in age. **Figure 11** below illustrates how this range is distributed between the different age groups. Age group 31-40 is the highest with 39 respondents (35%), next age group 21-30

with 37 respondents (33%), then age group 41-50 with 26 respondents (23%), after that age group above 50 with 7 respondents (6%), and finally age group below 21 with 3 respondents (3%). Hence, the majority Project X staff is distributed within the range of 20 to 40 years old, mixing young and experienced people.



**Figure 11 – Distribution of respondents' ages**

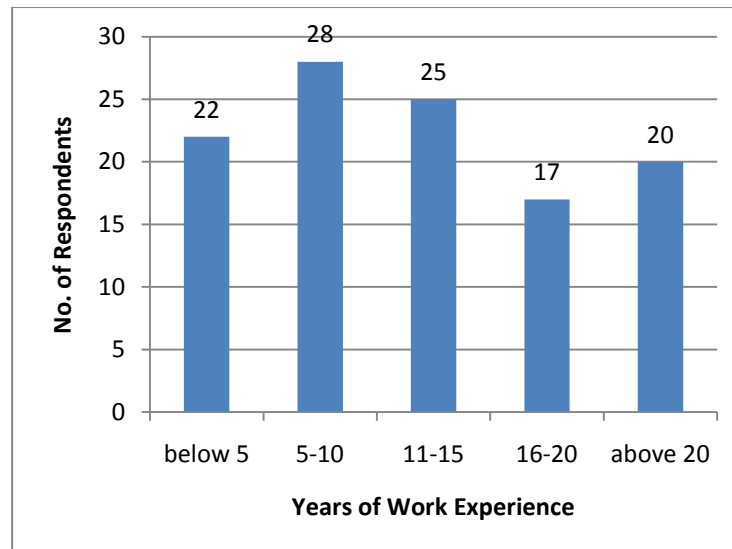
For gender, **Table 6** represents 1 as male while 2 represents female. Mean, median, standard deviation, variance, range, minimum, and maximum are not sensible for the nominal measure of gender, so they were not included in **Table 6**. However, the mode is 1 which means that the most of the Project X staff are male. This could be explained by the nature of such projects which requires a lot of outdoor physical work such as site surveys and equipment installation. **Figure 12** below shows the percentages of gender distribution within the project. 77% of the staff are male (86 respondents), while the remaining 23% are female (26 respondents).



**Figure 12 – Distribution of respondents' gender**

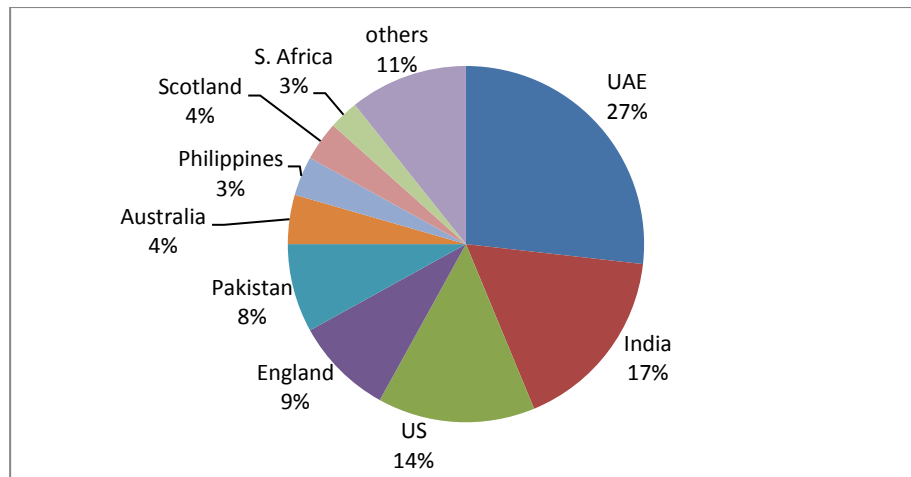
Moving into the years of work experience of Project X staff, **Table 6** shows that the mean number of work experience years is around 13 years, the median is also 13 years, and the mode is 14 years. In addition, the minimum years of work experience is 0 years and the maximum is 32 showing a wide range of work experiences in the project. **Figure 13** below illustrates how this range is distributed between the different work experience groups. Work experience group 5-10 is the highest with 28 respondents (25%), next comes work experience group 11-15 with 25 respondents (22%), then work experience group below 5 with 22 respondents (20%), after that work experience group above 20 with 20 respondents (18%), and finally work experience group 16-20 with 17 respondents (15%). Thus, we can conclude that the number of work experience years is distributed on the different groups with a slight higher trend between 5 and 15 years of work experience. This could be explained by the need of Project X for both, experienced people to do expertise specialised work, and young people for everyday administrative tasks.





**Figure 13 – Distribution of respondents' work experience**

The last piece of information in the demographics part is the nationality which could be directly related to some of our variables, like geographic dispersion and language differences. Nationality could not be included in **Table 6** since the data is text, unlike the rest of the data which is mostly numeric. Therefore, **Figure 14** below was produced to demonstrate the distribution of nationalities among Project X staff. Starting with the most common nationality, the chart shows UAE with 27% (30 respondents), India with 17% (19 respondents), US with 14% (16 respondents), England with 9% (10 respondents), Pakistan with 8% (9 respondents), Australia with 4.5% (5 respondents), Philippines with 3.5% (4 respondents), Scotland with 3.5% (4 respondents), South Africa with 2.5% (3 respondents), and other nationalities with 11% (12 respondents).



**Figure 14 – Distribution of respondents' nationalities**

As Organisation X is a UAE government department, then this explains the UAE nationality majority of 27% in Project X. The 17% and 8% distribution of Indian and Pakistan nationalities respectively, could be explained by the high percentage of these nationalities in the UAE in general. The rest of the nationalities (US, England, Australia, Philippines, Scotland, South Africa, and others) are mostly from the different headquarters of Organisation Y who are brought and dedicated to work on Project X.

### 5.2.1.3. Reliability Test

Prior to the correlation and regression analyses, a reliability test was undertaken to assess internal reliability of the measures of our constructs (communication effectiveness, project effectiveness, geographic dispersion, language differences, and planning effectiveness). As shown in **Table 7** below, the Cronbach's alpha value of each of the variables range from 0.82 to 0.92, which demonstrates that the used measures of each of the constructs were reliable.

**Table 7 – Reliability test**

Variable	Cronbach's Alpha
Geographic Dispersion	0.90
Language Differences	0.92
Planning Effectiveness	0.82
Communication Effectiveness	0.89
Project Effectiveness	0.87

#### 5.2.1.4. Correlation Analysis

The next test is the correlation analysis. Correlation analysis was conducted to check whether the variables correlate with each other, either positively or negatively, and how strong are the correlations. The result of the correlation analysis is shown in **Table 8** below.

**Table 8 – Correlation analysis**

		1	2	3	4	5
<b>1- Geographic Dispersion</b>	Pearson	1				
	Correlation					
	Sig. (2-tailed)					
	N	112				
<b>2- Language Differences</b>	Pearson	.843**	1			
	Correlation					
	Sig. (2-tailed)	.000				
	N	112	112			
<b>3- Planning Effectiveness</b>	Pearson	-.760**	-.710**	1		
	Correlation					
	Sig. (2-tailed)	.000	.000			
	N	112	112	112		

		1	2	3	4	5
<b>4- Comm. Effectiveness</b>	Pearson	-.702**	-.741**	.835**	1	
	Correlation					
	Sig. (2-tailed)	.000	.000	.000		
	N	112	112	112	112	
<b>5- Project Effectiveness</b>	Pearson	-.724**	-.713**	.852**	.799**	1
	Correlation					
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	112	112	112	112	112

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Measured at the significance level of 0.01, all of the variables showed significant correlations to each other. Nevertheless, some variables showed positive correlation while other showed negative correlation. For example, geographic dispersion negatively correlated with communication effectiveness ( $r = -0.702$ ;  $p < 0.01$ ) and language differences negatively correlated with communication effectiveness as well ( $r = -0.741$ ;  $p < 0.01$ ). On the other hand, planning effectiveness positively correlated with communication effectiveness ( $r = 0.835$ ;  $p < 0.01$ ). Additionally, communication effectiveness positively correlated as well with project effectiveness ( $r = 0.799$ ;  $p < 0.01$ ).

#### **5.2.1.5. Regression Analysis – Independent variables vs. Mediating variable**

Finally, regression analysis was done to provide an in-depth analysis of each relationship between our dependent, independent, and mediating variables. Starting with the relationship between the independent variables (geographic dispersion, language differences, and planning effectiveness) and the mediating variable (communication effectiveness),

**Table 9** below shows that  $R^2 = 0.744$  which indicates a valid relationship between communication effectiveness and the independent variables. In other words, this means that 74.4% of the variation in communication effectiveness is explained by the variation in the independent variables.

**Table 9 – Regression analysis (geographic dispersion, language differences, and planning effectiveness vs. communication effectiveness)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.862 <sup>a</sup>	.744	.737	.679

a. Predictors: (Constant), Planning Effectiveness, Language Differences, Geographic Dispersion

In addition, **Table 10** below shows the ANOVA table for the regression between communication effectiveness and independent variables. The table shows a significance value of 0.00, which means that the overall model is significant to the 0.01 level.

**Table 10 – ANOVA table (geographic dispersion, language differences, and planning effectiveness vs. communication effectiveness)**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	144.488	3	48.163	104.528	.000 <sup>a</sup>
Residual	49.762	108	.461		
Total	194.250	111			

a. Predictors: (Constant), Planning Effectiveness, Language Differences, Geographic Dispersion

b. Dependent Variable: Communication Effectiveness

Furthermore, **Table 11** below shows the regression coefficients table for the regression between communication effectiveness and the independent variables. Interestingly, while both language differences and planning effectiveness coefficients

show a significance value of 0.00 and hence are significant to the 0.01 level, geographic dispersion coefficient shows a significance value of 0.335. Therefore, this reveals that geographic dispersion is not significant, and we can conclude that the relationship between geographic dispersion and communication effectiveness is invalid and so it is not a factor of communication effectiveness.

**Table 11 – Regression coefficients table (geographic dispersion, language differences, and planning effectiveness vs. communication effectiveness)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.832	.450		4.069	.000
Geographic Dispersion	.101	.104	.097	.968	.335
Language Differences	-.360	.093	-.357	-3.873	.000
Planning Effectiveness	.629	.073	.655	8.566	.000

a. Dependent Variable: Communication Effectiveness

To confirm these findings, we carried out a similar regression analysis between communication effectiveness and the independent variables, but this time excluding geographic dispersion. **Table 12** below shows the regression analysis between language differences and planning effectiveness, against communication effectiveness. The table shows that  $R^2 = 0.742$  which again indicates a valid relationship between communication effectiveness and the two independent variables. In other words, this means that 74.2% of the variation in communication effectiveness is explained by the variation in language differences and planning effectiveness.

**Table 12 – Regression analysis (language differences and planning effectiveness vs. communication effectiveness)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.861 <sup>a</sup>	.742	.737	.679

a. Predictors: (Constant), Planning Effectiveness, Language Differences

In addition, **Table 13** below shows the ANOVA table for the regression between communication effectiveness and the two independent variables. The table shows a significance value of 0.00, which means that the overall model is significant to the 0.01 level.

**Table 13 – ANOVA table (language differences and planning effectiveness vs. communication effectiveness)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	144.056	2	72.028	156.414	.000 <sup>a</sup>
	Residual	50.194	109	.460		
	Total	194.250	111			

a. Predictors: (Constant), Planning Effectiveness, Language Differences

b. Dependent Variable: Communication Effectiveness

Furthermore, **Table 14** below shows the regression coefficients table for the regression between communication effectiveness and the two independent variables. Once more, both language differences and planning effectiveness coefficients show a significance value of 0.00 and hence are significant to the 0.01 level. Therefore, both language differences and planning effectiveness are significant, and we can conclude that the relationships of both language differences and planning effectiveness with communication effectiveness are valid and they are factors of communication effectiveness.

**Table 14 – Regression coefficients table (language differences and planning effectiveness vs. communication effectiveness)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	2.063	.382		5.399	.000
Language Differences	-.301	.070	-.298	-4.314	.000
Planning Effectiveness	.599	.066	.623	9.015	.000

a. Dependent Variable: Communication Effectiveness

Finally, after confirming relationship between communication effectiveness and the two independent variables (language differences and planning effectiveness), we would like to know which of the independent variables has the higher effect on communication effectiveness. From the correlation analysis in **Table 8**, planning effectiveness shows a higher correlation to communication effectiveness than language differences, 0.835 and 0.741 respectively. However, to further investigate this, we performed one-to-one regression analyses, language differences against communication effectiveness, and planning effectiveness against communication effectiveness.

Starting with the one-to-one regression analysis between language differences and communication effectiveness, **Table 15** below shows that  $R^2 = 0.549$ , indicating that 55% of the variation in communication effectiveness is explained directly by the variation in language differences while the remaining could be explained by planning effectiveness or other factors.

**Table 15 – One-to-one regression analysis (language differences vs. communication effectiveness)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.741 <sup>a</sup>	.549	.545	.892



Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.741 <sup>a</sup>	.549	.545	.892

a. Predictors: (Constant), Language Differences

In addition, **Table 16** below shows the ANOVA table for the one-to-one regression between language differences and communication effectiveness. The table shows a significance value of 0.00, which means that the overall model is significant to the 0.01 level.

**Table 16 – ANOVA table (language differences vs. communication effectiveness)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	106.629	1	106.629	133.863	.000 <sup>a</sup>
	Residual	87.621	110	.797		
	Total	194.250	111			

a. Predictors: (Constant), Language Differences

b. Dependent Variable: Communication Effectiveness

Furthermore, **Table 17** below shows the regression coefficients table for the one-to-one regression between language differences and communication effectiveness. Again, the coefficient of language differences shows a significance value of 0.00 and hence is significant to the 0.01 level.

**Table 17 – Regression coefficients table (language differences vs. communication effectiveness)**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.119	.231		22.114	.000
	Language Differences	-.747	.065	-.741	-11.570	.000

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	5.119	.231		22.114	.000
Language Differences	-.747	.065	-.741	-11.570	.000

a. Dependent Variable: Communication Effectiveness

Moving onto the one-to-one regression analysis between planning effectiveness and communication effectiveness, **Table 18** below shows that  $R^2 = 0.697$ . In other word, around 70% of the variation in communication effectiveness is explained directly by the variation in planning effectiveness while the rest of the variation could be explained by language differences or other factors.

**Table 18 – One-to-one regression analysis (planning effectiveness vs. communication effectiveness)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.835 <sup>a</sup>	.697	.695	.731

a. Predictors: (Constant), Planning Effectiveness

In addition, **Table 19** below shows the ANOVA table for the one-to-one regression between planning effectiveness and communication effectiveness. The table shows a significance value of 0.00, which means that the overall model is significant to the 0.01 level.

**Table 19 – ANOVA table (planning effectiveness vs. communication effectiveness)**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	135.487	1	135.487	253.621	.000 <sup>a</sup>
Residual	58.763	110	.534		
Total	194.250	111			

a. Predictors: (Constant), Planning Effectiveness

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	135.487	1	135.487	253.621	.000 <sup>a</sup>
	Residual	58.763	110	.534		
	Total	194.250	111			

a. Predictors: (Constant), Planning Effectiveness

b. Dependent Variable: Communication Effectiveness

Furthermore, **Table 20** below shows the regression coefficients table for the one-to-one regression between planning effectiveness and communication effectiveness. Again, the coefficient of planning effectiveness shows a significance value of 0.00 and hence is significant to the 0.01 level.

**Table 20 – Regression coefficients table (planning effectiveness vs. communication effectiveness)**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.526	.149		3.536	.001
	Planning Effectiveness	.802	.050	.835	15.925	.000

a. Dependent Variable: Communication Effectiveness

Therefore, as the correlation coefficient of planning effectiveness is higher than the correlation coefficient of language differences, 0.835 and 0.741 respectively, and the  $R^2$  value of planning effectiveness is higher than the  $R^2$  value of language differences, 0.697 and 0.549 respectively, we can conclude that planning effectiveness is the stronger factor affecting communication effectiveness.

### 5.2.1.6. Regression Analysis – Mediating variable vs. Dependent variable

The final regression analysis is to investigate the relationship between communication effectiveness (mediating variable) and project effectiveness (dependent variable). **Table 21** below shows the one-to-one regression analysis between communication effectiveness and project effectiveness. As shown in the table,  $R^2 = 0.639$ , indicating that about 64% of the variation in project effectiveness is explained directly by the variation in communication effectiveness, while the remaining could be explained by other factors.

**Table 21 – One-to-one regression analysis (communication effectiveness vs. project effectiveness)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.799 <sup>a</sup>	.639	.636	.775

a. Predictors: (Constant), Communication Effectiveness

Moreover, **Table 22** below shows the ANOVA table for the one-to-one regression between communication effectiveness and project effectiveness. The table shows a significance value of 0.00, which means that the overall model is significant to the 0.01 level.

**Table 22 – ANOVA table (communication effectiveness vs. project effectiveness)**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	116.991	1	116.991	194.644	.000 <sup>a</sup>
	Residual	66.116	110	.601		
	Total	183.107	111			

a. Predictors: (Constant), Communication Effectiveness

b. Dependent Variable: Project Effectiveness

Lastly, **Table 23** below shows the regression coefficients table for the one-to-one regression between communication effectiveness and project effectiveness. Clearly, the coefficient of language differences shows a significance value of 0.00 and hence is significant to the 0.01 level.

**Table 23 – Regression coefficients table (communication effectiveness vs. project effectiveness)**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.552	.163		3.380	.001
Communication Effectiveness	.776	.056	.799	13.951	.000

a. Dependent Variable: Project Effectiveness

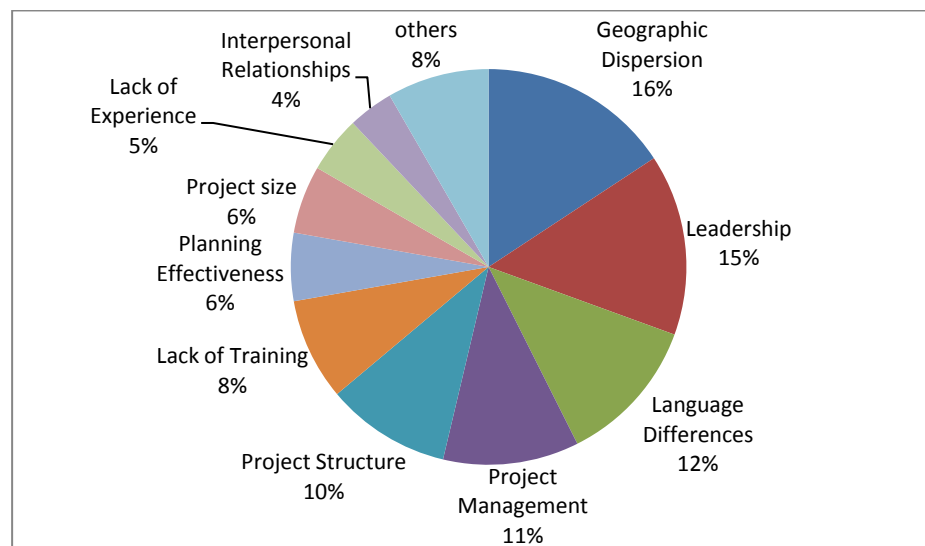
Therefore, a significant relationship between communication effectiveness and project effectiveness exists, indicating that communication effectiveness is strong factor of project effectiveness.

### 5.2.2. Qualitative Analysis

For this qualitative analysis we will look more into the data collected from the General Opinions part which contains an open-ended question asking respondents to freely express their views. Although it may not be directly related to the variables investigated in this research, such information may raise new aspects and suggest additional questions which could be the basis for future research. This section will be analysed qualitatively using MS Excel spreadsheets and graphs.

### 5.2.2.1. General Opinions

The General Opinions part contains an open-ended question, Question 51, which asks about the respondents' perceptions on communication effectiveness and project effectiveness and the factors affecting them. We will review both questions and the respondents' answers. Question 51 stated the following: "In your opinion, what is the most important factor which is affecting the communications in your project?" The responses were summarized and grouped into several categories. **Figure 15** below shows the main factors highlighted by the respondents with a percentage distribution for each. The "others" category represents factors which are not related to communication and project effectiveness.



**Figure 15 – Factors affecting communication and project effectiveness**

Geographic dispersion is seen as the most common factor affecting communication and project effectiveness with 16% (17

respondents). Next comes leadership with 15% (16 respondents), language differences with 12% (13 respondents), project management with 11% (12 respondents), project structure with 10% (11 respondents), lack of training with 8% (9 respondents), planning effectiveness with 6% (6 respondents), project size with 6% (6 respondents), lack of experience with 5% (5 respondents), interpersonal relationships with 4% (4 respondents), and others with 8% (9 respondents). Hence, the respondents confirmed the significance of some of the factors we mentioned such as Geographic dispersion and language differences. Moreover, additional factors were introduced like leadership, project management, and project structure.

### 5.3. FINDINGS & DISCUSSION

The study at hand investigates the effect of geographic dispersion, language differences, and planning effectiveness on communication and project effectiveness. Based on literature review and the nature of our case-study project, a set of hypotheses were deduced and then tested using survey tools and quantitative and qualitative analyses. Now, this will allow us to reach our findings and discuss whether our hypotheses are supported or rejected.

Starting with **Hypothesis 1**, it states that: Geographic dispersion is negatively related with communication effectiveness. Most researchers highlighted that geographic dispersion impedes communication effectiveness by introducing cultural barriers between different cultures, and creating conflicts between the different regional time zones (Cairncross, 2002; Katzenbach and Smith, 1994; Cooper, 2002). Moreover, studies expressed how geographic dispersion can eliminate the richest communication channel from the communication process, which is face-to-face meeting (Schomaker, 2006; Goris, 2006; Alrais, 2009a). Even so, some researchers such as Ariel (2000) and Hoegl *et al.*

(2007), went against the prevailing opinion and argued that geographic dispersion can actually enhance communication effectiveness by utilising modern communication technologies such as email, messaging, and conferencing. They also discussed other positive effects of geographic dispersion like providing cheaper labour to increase efficiency, or by distributing the workforce across several time zones to increase work hours and boost productivity (Ariel, 2000; Hoegl *et al.*, 2007).

Going back to the correlation analysis in **Table 8**, the analysis proved a negative relationship between geographic dispersion and communication effectiveness with a significant correlation of -0.702 at the 0.01 level (2-tailed). Nevertheless, the coefficients table of the regression analysis in **Table 11**, showed that the geographic dispersion coefficient has a significance value of 0.335, concluding that the relationship is not significant and geographic dispersion is not a factor of communication effectiveness. Additionally, another regression analysis was carried out in **Table 12** where geographic dispersion was removed, while the other variables (language differences and planning effectiveness) showed coefficients with significance values of 0.00, as shown in **Table 14**, and this confirmed the invalid relationship of geographic dispersion with communication effectiveness. Therefore, our finding went against most literature and **Hypothesis 1** is rejected.

This means that it is not necessary to co-locate all project staff in one geographic location in order to achieve communication effectiveness, especially if the project requires people located in different parts of the world. As Bosch-Sijtsema (2007) and Proctor and Doukakis (2003) mentioned, communication technologies can always be used to minimise the effect of geographic dispersion. One of these technologies is call and video conferencing which is considered the second richest communication channel after face-to-face communication because it offers most of the things provided by face-to-face communication such as having multiple information sources and instant 2-way communication with feedback (Robbins and Judge, 2009). Another technology which also enhances communication is email which is the most spread communication technology. Email is instant, easy to use, fast,



can be stored and archived for future reference, and is the cheapest communication technology (Cairncross, 2002; Robbins and Judge, 2009).

For **Hypothesis 2**, it states that: Language differences are negatively related with communication effectiveness. Literature showed us a wide range of negative impacts caused by language differences on communication effectiveness. For example, language differences would increase misunderstandings and misinterpretations during any form of communication, lead to the phenomena of coding switching during meetings and discussions, and cause individuals to pretend understanding even if they haven't just to avoid embarrassment (Schomaker, 2006; Kingston, 1996; Lincoln *et al.*, 1995). Moreover, language differences could lead to implementing wrong requirements which do not meet client expectations, cause project managers to ignore valuable ideas which are suggested by talented people who face language difficulties, and introduce power-authority distortion creating conflicts and disputes between clients and suppliers (Menard and Menard, 2006; Harzing and Feely, 2008; Gallois and Callan, 1995). As you would expect, such negative relationship between language differences and communication effectiveness was confirmed by the data analysis we carried out.

The correlation analysis in **Table 8** proved a strong negative relationship between language differences and communication effectiveness with a significant correlation of -0.741 at the 0.01 level (2-tailed). In addition, the 3-to-1 regression analysis in **Table 9**, the 2-to-1 regression analysis in **Table 12**, and the 1-to-1 regression analysis in **Table 15**, all confirmed the relationship by showing that 55%, 74%, and 55% of the variation in communication effectiveness respectively, is explained by the variation in language differences, with a significant at the 0.01 level. Hence, **Hypothesis 2** is accepted.

Therefore, organisations and project managers must make sure that language differences are addressed especially when working in multinational environments where clients and/or supplier, or even the members of the same project, have different cultures and backgrounds. Communication skills of

employees, specifically customer facing employees, must be always developed to avoid mistakes, like code switching and power-authority distortion, which threaten relationships with business partners (Kingston, 1996; Gallois and Callan, 1995; Kim, 2001). In addition, utilising 2-way feedback is one of the approaches that could be used reduce the language and culture gap between managers and employees and adjust future behaviours. Feedback will also allow managers to meet and talk to employees, listen to their problems if they have any, and get new ideas and suggestions from them (Downs, 1990; O'Reilly and Anderson, 1980). Finally, to get better in a language you must practice it. Organisations should enforce using the corporate official language and managers must always encourage their employees to do so, which will lead to less misunderstandings and misinterpretations within the project (Fredriksson *et al.*, 2006; Schomaker, 2006).

Furthermore, **Hypothesis 3** states that: Planning effectiveness is positively related with communication effectiveness. Literature emphasized planning as a critical factor for the success of project communications. The PMBOK expressed that communications occupies a big part during the planning phase of projects; the project plan consists of 10 main sections and the communication plan is one of them (PMI, 2008; Mulcahy, 2005). In addition, high quality planning organises the communication and execution of projects to eventually achieve goals, and increase the probability that the project will be completed on-time and within budget (Johnson *et al.*, 2001; Kerzner, 1987; Baar, 2002). On the other hand, poor planning and the lack of planning skills could negatively affect project communications and cause huge time and cost overruns and eventually lead to project failure (Alrais, 2009b; Stephenson, 2006; Aladwani, 2002).

In fact, our data analysis strongly supported the positive relationship between planning effectiveness and communication effectiveness. The correlation analysis in **Table 8** proved a strong positive relationship between planning effectiveness and communication effectiveness with a significant correlation of 0.835 at the 0.01 level (2-tailed). In addition, the 3-to-1 regression analysis in **Table 9**, the 2-to-1 regression analysis in **Table 12**, and the 1-to-1 regression

analysis in **Table 18**, all confirmed the relationship by showing that 74%, 74%, and 70% of the variation in communication effectiveness respectively, is explained by the variation in planning effectiveness, with a significant at the 0.01 level. Consequently, **Hypothesis 3** is also supported. In fact, planning effectiveness showed a higher correlation with communication effectiveness than language differences, 0.835 and 0.741 respectively, as shown in **Table 8**. Moreover, when language differences and planning effectiveness were compared in individual 1-to-1 regression analyses in **Tables 15** and **18**, again planning effectiveness showed a higher  $R^2$  value than language differences, 0.697 and 0.549 respectively.

As a result, planning effectiveness must be considered as a critical factor of communication effectiveness that should be addressed thoroughly. During the planning phase of any project, a comprehensive project plan must be prepared taking into account the main project components, especially the communications management plan (PMI, 2008; Mulcahy, 2005). In addition, the communications management plan must include all stakeholders of the project and specify what information to be distributed, method of distribution, and the frequency of distribution. Furthermore, if project members are lacking knowledge, skills and experience in preparing project plans, then it is always worth it to assign this task to an external project management consultant (Johnson *et al.*, 2001; Baar, 2002). Finally, organisations must always look into improving its planning capabilities either by providing project management courses to their employees, or by employing Project Management Professional (PMP) certified people (PMI, 2008; Mulcahy, 2005).

Lastly, **Hypothesis 4** states that: Communication effectiveness is positively related with project effectiveness. From our review of literature, all researchers agreed that communication is a key reason for project and organisational success, indicating a strong relationship between communication and project effectiveness (Luthans *et al.*, 1988; Tsui *et al.*, 1995; PMI, 2008; Mulcahy, 2005). Furthermore, numerous empirical studies illustrated the positive outcomes of effective communication such as employee satisfaction, productivity, and increased project effectiveness

(Konrad, 2006; Goodman *et al.*, 2001; Ruppel and Harrington, 2000; Henderson, 2008).

Indeed, our findings strongly supported the positive relationship between communication effectiveness and project effectiveness. Looking at the correlation analysis in **Table 8**, the analysis proved a strong positive relationship between communication effectiveness and project effectiveness with a significant correlation of 0.799 at the 0.01 level (2-tailed). In addition, the regression analysis in **Table 4** supported the strong relationship by illustrating that 63.9% of the variation in project effectiveness is explained by the variation in communication effectiveness. Therefore, **Hypothesis 4** is accepted as well. Thus, communication effectiveness must be always considered as a key factor for overall project effectiveness and success. In addition to minimising language differences and enhancing planning effectiveness, communication effectiveness must also improved using the modern communication technologies mentioned earlier, such as conferencing, messaging, and email.

Additionally, interesting findings were concluded from the qualitative analysis. Even though geographic dispersion was rejected in the quantitative analysis as a factor of communication effectiveness, respondents perceived geographic dispersion as the most important factor affecting communication effectiveness of Project X. Therefore, geographic dispersion must be thoroughly studied to further investigate its relationship with communication effectiveness. Moreover, leadership, project management, project structure, and lack of training were also considered important factors by respondents and should be researched to understand their implications.

## 5.4. CONCLUSION

Data gathered from the questionnaire survey were analysed quantitatively and qualitatively using statistical tools such as SPSS and MS Excel. For the quantitative analysis, we applied reliability, correlation, and regression

analyses, in addition to the descriptive statistics. For the qualitative analysis, we used bar graphs and pie charts to present the data. In general, one hypothesis was rejected and three were supported. In the next chapter, we will present our final conclusions and recommendations, along with the research limitations and recommendations for future research.

## **6. CONCLUSIONS & RECOMMENDATIONS**

The aim of this paper was to investigate the effect of geographic dispersion, language differences, and planning effectiveness on communication and project effectiveness through a case study of a multinational environment in the UAE. After an extensive review of previous literature, a set of four hypotheses was deduced predicting the relationship between our dependent variable (project effectiveness), independent variables (geographic dispersion, language differences, and planning effectiveness), and mediating variable (communication effectiveness).

Primary data for the research was gathered using questionnaire surveys answered by the staff of our case study. The collected data was then analysed using quantitative and qualitative analysis tools, such as SPSS and MS Excel, to test the predicted relationships and confirm whether they are accepted or rejected. In this chapter, we will mention the limitations faced during the research, summarise the main conclusions, offer recommendations to improve the communication and project effectiveness of Project X, and suggest directions for future research.

### **6.1. CONCLUSIONS**

The study at hand is one of the few studies in the UAE which investigated geographic dispersion, language differences, and planning in the context of communication and project effectiveness. The need for research in such topic was inspired from the fact that more and more projects in the UAE are being managed and executed in cooperation with international companies from all over the world, such as the US, Europe, Australia, and Eastern Asia. However, some questions have been raised about the effectiveness of these projects with such ideological, geographical, cultural, and language variety. Therefore, the best approach to investigate this research area is to study a real life case study which experiences the same diverse environment.

Generally, literature showed a negative effect of geographic dispersion on communication effectiveness (Schomaker, 2006; Cairncross, 2002; Alrais, 2009a; Goris, 2006). Additionally, the same negative effect of language differences was expressed on communication effectiveness (Kingston, 1996; Lincoln *et al.*, 1995; Menard and Menard, 2006; Harzing and Feely, 2008). In contrast, a positive effect of planning effectiveness was illustrated on communication effectiveness (PMI, 2008; Mulcahy, 2005; Johnson *et al.*, 2001; Kerzner, 1987; Baar, 2002). Based on that, we made our research hypotheses which were then tested to decide whether they are accepted or rejected.

Primary data for this research were collected using survey questionnaires which were given hand-to-hand to 120 individuals from Project X. In return, we received back 112 answered questionnaires from the respondents, with a 93.3% response rate. The data was then organised and analysed using quantitative and qualitative tools. In general, findings of the tests provided support for three of our four hypotheses. **Table 18** below shows the hypotheses and the result for each.

**Table 24 – Research hypotheses and results**

Hypothesis	Result
1. Geographic dispersion is negatively related with communication effectiveness.	Rejected
2. Language differences are negatively related with communication effectiveness.	Supported
3. Planning effectiveness is positively related with communication effectiveness.	Supported
4. Communication effectiveness is positively related with project effectiveness.	Supported

The above findings can contribute to literature as a basis for further investigation. Future research can build on these conclusions to study in detail the actual implications of geographic dispersion on communication

effectiveness. Moreover, additional factors of communication effectiveness and project effectiveness can be explored and identified. More suggestions for future research will be discussed in the following sections.

## **6.2. RECOMMENDATIONS**

Based on our findings, several recommendations can be offered to the management of Project X in order to enhance its communication and project effectiveness. First and most importantly, the management of Project X must put into account the importance of planning effectiveness and its crucial role in achieving communication and project effectiveness, as planning effectiveness was indicated by our findings and by literature as the most important factor to achieve communication and project effectiveness (PMI, 2008; Mulcahy, 2005; Johnson *et al.*, 2001). The management of Project X must look again at the overall project plan, and especially the communications management plan. Since the project currently doesn't have anyone who is capable of preparing a professional project plan based on the PMI (2008) standard, the task must be given to a project management consultancy company. This would be the best short term solution to solve the current planning issues and accelerate Project X. Although project management consultants may cost a lot, they will be able to create full plans and project documentation in a short time which will define the direction and approach for project execution (PMI, 2008; Mulcahy, 2005; Johnson *et al.*, 2001; Baar, 2002). Additionally, meanwhile the project plan is being prepared by the third party, the management of Project X must improve its internal planning capabilities as a long term solution. The management can accomplish this by providing project management training to its key employees and project managers. Moreover, the management should study hiring qualified and experienced Project Management Professional (PMP) certified people to start building a professional project management culture in the organisation and adopt world-class best practices (Mallak and Kurstedt, 1996; PMI, 2008).



Secondly, the management must understand the multinational environment of the project and the implications of the language differences factor on the project. The findings of this paper, along with literature review, have confirmed the negative effect of language differences on communication and project effectiveness. Some of these negative effects include misunderstandings and misinterpretations, code switching, and power-authority distortion (Schomaker, 2006; Kingston, 1996; Gallois and Callan, 1995). One of the solutions to be considered to minimise language differences between the staff of Project X is to enforce feedback. The management of Project X must establish a 2-way manager-employee performance evaluation and feedback which should be done at least twice a year. Such feedback will allow managers and employees to evaluate each other and identify any weaknesses, including language, and adjust accordingly. Moreover, managers will listen to their employees if they face any language difficulty with any specific person in the project (Downs, 1990; O'Reilly and Anderson, 1980).

In addition, another approach to reduce language differences is to develop employees' communication skills, especially employees who face customers and other external parties regularly. This can be done through training the employees on interpersonal, presentation, coordination, and collaboration skills. These skills will highly improve the way employees face external parties and minimise code switching and power-authority distortion, which will ensure long term business relationships (Kingston, 1996; Gallois and Callan, 1995). Additionally, based on the biannual evaluation and feedback reports mentioned above, different levels of English courses must be provided to reduce misunderstandings and misinterpretations between Project X employees and with external parties as much as possible, leading to effective and successful projects (Trahan, 2008; Mallak and Kurstedt, 1996; Schomaker, 2006).

Finally, since geographic dispersion was rejected as a factor of communication and project effectiveness, then the management of Project X shall not worry a lot about co-locating all project members in one physical

location. Also, this would save Organisation X a lot of time and travel costs (Robbins and Judge, 2009). Nonetheless, as our findings indicated a strong positive relationship between communication effectiveness and project effectiveness, as mentioned by other researchers as well (Luthans *et al.*, 1988; Furnham, 1999; McKenna, 2008), measures must be taken to enhance communications in the project. The most important measure is to utilise modern communication technologies to enhance the communication and project effectiveness of Project X. As described earlier, the management must facilitate staff communication by providing the required technologies such as email, messaging, and call and video conferencing (Proctor and Doukakis, 2003; Robbins and Judge, 2009). Conferencing must be provided in workstations of all employees to enable them to meet and talk to other team members located in any part of the world. In addition, even though email is an old well known technology, email is instant, fast, and considered as the cheapest communication technology. Some employees need to be trained on how to use email effectively and exploit all features provided by email applications to be able to communicate effectively. Moreover, available messaging technologies, either on phones or PCs, must be utilised since messaging is a very convenient and easy to use communication technology (Proctor and Doukakis, 2003; Robbins and Judge, 2009). Such communication technologies will boost the project effectiveness of Project X because communication effectiveness is strongly and positively related with project effectiveness.

Another very important measure to enhance communication and project effectiveness of Project X is face-to-face communication. Face-to-face communication represents the richest communication channel and provides instant feedback, body language, and facial expressions. Therefore, the management must encourage face-to-face communication throughout the project. This could be done by enforcing weekly, biweekly, or monthly corporate gatherings to enhance employee relationships and build a strong organisational culture. The management could also enforce teams and project managers to carry out face-to-face team meetings on regular weekly basis

leading to a strong project culture (Dulye, 2006; Goris, 2006; Robbins and Judge, 2009).

### **6.3. LIMITATIONS**

Despite the reliability of our empirical findings and the value of the paper, we faced some limitations during the course of the study. Such limitations must be mentioned to assist future researchers to achieve more reliable results. Most of the limitations that we faced were about the generalisability of the findings. The study was carried out in specific case study of one environment and, therefore, many things could be done to generalise the results on other environments as well.

Since we were investigating Project X as a case study, one of the limitations that we faced is being restricted to the staff of Project X only. This forced us to send the research questionnaire to 120 people out of which 112 people replied back with a response rate of 93.3%. Having more people to participate in the questionnaire would have increased the reliability of the results because reliability increases proportionally as the sample size increases.

In addition to sample size, the case study approach also restricted us to carry out the research within one project in one organisation. Yet again, the findings we got for Project X may not apply to other organisations, or even more, may not apply to other projects in Organisation X, and thus, questioning the reliability of the study. In order to increase the reliability, the research could be generalised and carried out on several projects, within different organisations. Moreover, the research could include organisations from a variety of business sectors in different parts of the world to further increase its reliability and generalisability.

Nevertheless, the findings at hand show quite high reliability and can be used as a starting point for further investigation. The next section will outline some directions for future research.

## 6.4. FUTURE RESEARCH

As said earlier, this study is one of the few studies in the UAE that investigates geographic dispersion, language differences, and planning effectiveness in the context of communication and project effectiveness. Hence, a lot of work is needed to be done to further explore this area and reach solid findings.

One of the possible considerations for future research is to discover additional factors for communication and project effectiveness. From our findings in the general opinions question, **Figure 15** shows other factors that could affect communication and project effectiveness from the perception of Project X staff. Some of these factors show high percentages of the respondents' answers, such as leadership, project management, project structure, and lack of training. These factors, and others which could be identified, must be thoroughly investigated and verified as valid factors for communication and project effectiveness.

Another aspect for future research could be how to improve communication and project effectiveness because organisations need to know how to solve the problem after identifying it. One of the ways to improve communication and project effectiveness could be the introduction of a universal communication model which could be used by any project around the world. Additionally, researchers can study enhancing the existing modern communication technologies such as the call and video conferencing, or even come up with new technologies that could facilitate communication.

Going back to the topic of reliability, we recommend future researchers to enhance the generalisation of their studies by increasing the sample size, studying several projects in more than one organisation, and expanding the research to a variety of sectors in different parts of the world. Moreover, researchers are advised to increase their sources of data by using multiple

data collection tools. For example, in addition to questionnaires as a quantitative data collection tool, personal interviews can be used as a qualitative data collection tool. Again, this would improve the reliability and generalisation of their findings. In short, a great deal of research remains to be conducted to improve communication and project effectiveness despite the contribution of this paper.

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## **APPENDIX**

### **APPENDIX 1 – COVER LETTER & QUESTIONNAIRE**

A sample of the cover letter and the questionnaire (next page).

Dear Colleague,

It is my pleasure to invite you to participate in the attached questionnaire, which is part of my studies in MSc of Project Management. This questionnaire will serve as the primary source of information to the research paper I am carrying out to investigate the effects of geographical dispersion, language differences, and planning effectiveness on communication and project effectiveness. The questionnaire is composed of the following sections:

1. Demographics
2. Communication effectiveness
3. Project effectiveness
4. Geographical dispersion
5. Language differences
6. Planning effectiveness
7. General opinions

Please be assured that your response is confidential and will be only disclosed to myself and my university supervisors. In addition, the information is strictly used for research purposes only and no individuals or organisations will be identified from the responses. Therefore, kindly take your time to fill in this questionnaire and be as honest as possible to reflect your true opinion on the mentioned subjects. Completed questionnaires will be collected by the end of the week, or you are more than welcomed to hand it in before that.

Thank you beforehand for your time and consideration.

Yours truly,  
Marwan Al Rais

Section 1 - Demographics		
• Age (years)		
• Gender	Male	Female
• Work experience (years)		
• Nationality		

To what extent do you agree or disagree with the following statements?

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
<b>Section 2 - Communication Effectiveness</b>					
1. Members of my team communicate well with each other	1	2	3	4	5
2. Generally, misunderstandings and misinterpretations rarely occur in my team	1	2	3	4	5
3. We can easily keep each other informed of our activities	1	2	3	4	5
4. I can easily get in contact with any of my team members	1	2	3	4	5
5. We can easily and clearly communicate with each other	1	2	3	4	5
6. My team members can easily understand each other	1	2	3	4	5
7. I always know what my other team members are doing	1	2	3	4	5
8. I am always informed of decisions taken within the project	1	2	3	4	5
9. There is enough communication among my team members	1	2	3	4	5
10. We are informed of developments and future plans	1	2	3	4	5
<b>Section 3 - Project Effectiveness</b>					
11. The team is aware of the project start date and end date	1	2	3	4	5
12. My team members are aware and completely understand the project goals	1	2	3	4	5
13. My team members are aware and completely understand the tasks assigned to the team	1	2	3	4	5
14. The team's tasks are realistic and worthwhile	1	2	3	4	5
15. The project offers the chance to develop and learn new experiences	1	2	3	4	5
16. Project goals and tasks are actually being achieved	1	2	3	4	5
17. The actual output that the team produces is satisfactory	1	2	3	4	5
18. Generally, my team members are satisfied with their jobs	1	2	3	4	5

19. My team members are able to work together as a team	1	2	3	4	5
20. My team members are willing to work together in the future	1	2	3	4	5
<b>Section 4 - Geographical Dispersion</b>					
21. My team members are located in more than one building	1	2	3	4	5
22. My team members are located in more than one city	1	2	3	4	5
23. My team members are located in more than one country	1	2	3	4	5
24. My team members are located over different time zones	1	2	3	4	5
25. Conflicting time zones usually cause communication delays between team members	1	2	3	4	5
26. Tasks and activities are delayed due to geographical dispersion	1	2	3	4	5
27. Misunderstandings and misinterpretations usually occur between geographically dispersed members	1	2	3	4	5
28. I meet all of my team members face-to-face at least once every week	1	2	3	4	5
29. Email and messaging technologies are utilised by team members	1	2	3	4	5
30. Call and video conferencing is provided to do meetings with team members in different locations	1	2	3	4	5
<b>Section 5 - Language Differences</b>					
31. My team members come from different cultures and backgrounds	1	2	3	4	5
32. More than one language is used within my team	1	2	3	4	5
33. My team members show different capabilities in using the company's official language	1	2	3	4	5
34. Misunderstandings and misinterpretation are usually caused by such language differences	1	2	3	4	5
35. My native language is different than the company's official language	1	2	3	4	5
36. I experience difficulties when I communicate using the official language	1	2	3	4	5
37. Ideas and suggestions from members who have language difficulties are sometimes being ignored	1	2	3	4	5
38. I usually communicate with my native team members using my native language	1	2	3	4	5
39. Team members sometimes switch to their native language during meetings or discussions	1	2	3	4	5
40. Some members pretend to understand discussions with other members to avoid embarrassment	1	2	3	4	5
<b>Section 6 - Planning Effectiveness</b>					
41. I am aware of the project plan or communication management plan of the project	1	2	3	4	5

42. My team is aware of the overall project timeline and work breakdown structure (WBS)	1	2	3	4	5
43. My team has timeline and WBSs for its tasks and activities	1	2	3	4	5
44. Professional project management third parties were consulted to assist in project planning	1	2	3	4	5
45. List of stakeholders is properly identified, documented, and updated	1	2	3	4	5
46. Stakeholders are involved in the project planning phase	1	2	3	4	5
47. Stakeholders are continuously updated with project status	1	2	3	4	5
48. Specific information is sent to specific stakeholders on a regular basis	1	2	3	4	5
49. Risk registers are properly identified, documented, controlled, and updated	1	2	3	4	5
50. Proper access rights and restrictions are applied to sensitive information	1	2	3	4	5
<b>Section 7 - General Opinions</b>					
51. In your opinion, what is the most important factor that is affecting the communication effectiveness in your project? ..... ..... .....					