

# Impact of Remote Work on Project Management Cases from UAE Construction Sector

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## Abstract

The proposed study is coming at a time when companies have been facing challenges in employing an effective business model in their operational activities. In the UAE, the government proposed strict measures to curb coronavirus spread by advocating for working-at-home policies. Companies with no system architecture to adapt to the work-at-home guidelines were forced to close down for a while. The three companies under this study, being multinational companies, struggled greatly with the new directives. As a result, the management of the three companies was left with no alternative but to adopt a new strategic plan to remain stable. This study aimed at finding out the key challenges and benefits associated with virtual team technology. The result of this study is based on a combination of primary and secondary data collection. The primary data collection was obtained via interviews with officials from the three companies. On the other hand, the secondary data was obtained from the comparative analysis of three companies already employing the remote work strategy. This was coupled with the results obtained from past studies in this field. Based on the preliminary results, the new strategy, as predicted, would affect the operations of the company for a while before it is fully embraced. Further, the study recommends that the three companies continue their innovative exercise on effective alternative management strategies to run their projects during this era of coronavirus pandemic and post-COVID-19.

## Keywords

Remote Work, Virtual Technology, Project Management, Construction Industry

## 1. Introduction

### 1.1. Background

Evolving trends, technologies, and tools are rapidly changing the project management landscape. With the adoption of new trends, there is even a more rising need for rigour in risk identification and mitigation to ensure project survival and success. A trend that is increasingly making its way in project management practices is remote working. Instead of attending work in the physical office environment, remote work allows employees to work from anywhere, including their home. The Internet and other digital technologies and smart devices make it possible to connect to work and other employees without being in face-to-face vicinity. Although the remote work trend has been around for a while, its efficacy in project management has rarely been studied. Such studies are even scarcer in the context of the construction industry and the UAE.

According to Overturff (2021), remote working in the construction industry is less common than in other industries, as many tasks require employees to be physically present at job sites. However, remote work in the construction industry has been increasing with the rise of technology. For example, some construction companies use virtual and augmented reality among other technologies, to enable remote collaboration and communication among team members. Additionally, some office-based roles within construction companies, such as project management and design, can be done remotely. Harikrishnan *et al.* further point out that the use of remote work in the construction industry is expected to continue to increase in the future. The purpose of this paper is to conduct a case analysis of remote project management in three construction companies in the UAE: Arabian Construction Company, Civil Engineering & Contracting Co (CIVILCO), and United Engineering Construction Company (UNEC). The study aims to explore how project managers are utilizing virtual teams for various project management areas. It further outlines the benefits and challenges experienced in using virtual team technology for remote work practice.

### 1.2. Case Problem

Many companies in the construction industry are currently struggling to find effective business models to support their operational activities. In industry-wide studies, remote work has been linked with several benefits, including improved productivity, increased global talent pool, increased workforce diversity, and saving time that employees would have been using in commuting to and from work. Studying remote work in construction is interesting because most work is traditionally conducted onsite. Moreover, the onset of the coronavirus pandemic has caused many businesses to adopt telecommuting to curb the virus's spread. Project management areas that do not have to be conducted onsite, for example, stakeholder management, communication management and human resource management, can be done remotely through virtual teams.

This study, therefore, is the first of its kind to determine how project man-

agement organisations in the UAE are implementing remote work, the kinds of risks they face, and how they can utilise virtual teams effectively for project success. The study will identify the root causes of the challenges faced by the UAE companies and develop solutions that can help them improve their business model and increase efficiency. The approach towards the study will be through a combination of primary and secondary methods. The findings will be used to develop a set of recommendations for UAE-based companies to improve their business models and increase their operational efficiency.

### **1.3. Research Objectives**

The general objective of the study is to explore the impact of remote work on project management. The specific research objectives are as follows:

- To find out cost challenges that affect the application and reliance on remote work strategies.
- To investigate performance efficiency in employing remote work for a project under the construction industry in comparison to the physical supervision exercise.
- To investigate the effectiveness of remote work in comparison to the physical office or site supervision in the construction industry.
- To recommend best practices in using virtual project management in the construction industry.

### **1.4. Research Questions**

- 1) Which areas of construction project management are using virtual teams, and at what cost?
- 2) What are the success factors of using virtual project management in construction projects?
- 3) What are the barriers to virtual project management in construction projects?
- 4) What are the best practices of virtual project management in construction projects?

### **1.5. Hypothesis**

- Project managers are likely to apply remote strategies in performing their management functions at a low cost compared to the physical management strategies.
- Remote working has advantages over physical working strategies in terms of cost and time management.
- Construction companies are likely to face myriad hurdles using virtual project tools because of the nature of the main activities.

### **1.6. Research Significance**

This study is beneficial to project managers, especially in the construction in-

dustry, facing a significant shift and requirement to reduce onsite work during the COVID pandemic. The success of a project largely depends on how it is managed, which is further complicated when it has to be done virtually. There are newer risks to anticipate with managing people that the PM is not in close vicinity and over online technology. The insights generated from the three construction company cases analysis will help highlight success factors and challenges in virtual project management. Academic scholars will also benefit by adding to the knowledge about the implementation, success, and failure of remote work in the construction industry.

## 2. Literature Review

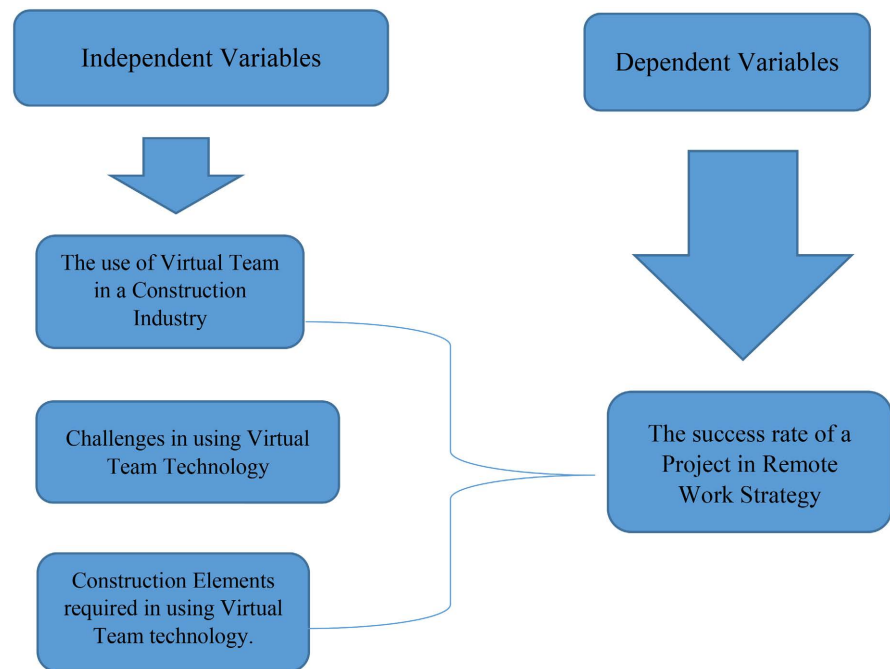
This chapter provides the empirical literature review in line with the objectives of this study. The chapter outlines in **Figure 1** the effects of the independent variables on the dependent variables. The main focus will be the challenges and impact of using virtual teams for crucial project management with the current surge of COVID-19.

### 2.1. Challenges in Using Virtual Technology

Remote project practice is currently a common management practice for many industries across the world. As for the construction industry, remote working strategy is still not fully implemented as the information technology is still working on effective tools for the entire implementation process (Morrison-Smith & Ruiz, 2020). Moreover, the available technology is also not fully utilized because of its complex nature. The industry is having challenges with the new system because it did embrace it before the outbreak of COVID-19. Apart from the technical challenges, remote projects are generally affected by the remoteness of the project itself as there is no close control of management (Morrison-Smith & Ruiz, 2020).

This section, therefore, focuses on the lack of skills, human resources and infrastructure as the key challenges of a remote project. Human resource is generally the employees working at different sites. Most of the engineers are not IT experts, and the lack of extensive IT skills makes it difficult for them to rely on remote practice (PMA, 2020). A rapid calamity, like the one brought about by COVID-19, was found when many have not been trained on the essential IT skills along with the contraction activities. Therefore, the use of remote instead of making work easier for such employees has made it complex, with some joining the meeting close to an end. For a sensitive project like building a skyscraper, a slight miscommunication and assumption by a team member might translate to huge losses (Kaplan, Truex, Wastell, Wood-Harper, & DeGross, 2006). Companies are reporting unrealistic results, not because of poor performance, but because of the miscommunication that occurs in the typical meeting sessions.

Apart from human resource and lack of enough skills, the new strategy also suffers from infrastructural challenges (Morrison-Smith & Ruiz, 2020). Companies



**Figure 1.** Framework showing independent and dependent variables.

may be willing to embrace remote strategy, but the lack of information on effective tools to use remains a significant problem for many project managers (PMA, 2020). Having the right technology and tools available to all members at the right time may be a challenge. As for construction companies, the right tools required may be costly. In relation to the current pandemic, the era found when companies had already formulated their budgets. In this case, the three companies' 2020 budget did not consider the COVID factor; thus, no particular budget was allocated for the IT department. The lack of effective remote strategy tools led to many projects falling out of scope since the team members could not promptly access data. The inadequate technological infrastructure also exposes the companies to security breaches putting internal data at risk.

## 2.2. Best Practices of Virtual Project Management in Construction Projects

The application of remote practice in managing projects, as indicated, is marred with myriad challenges. However, these challenges can be mitigated by employing effective practices. In relevance to the government survey conducted during the lockdown exercise, more than 70% of workers want to perform their duties transparently. Garro-Abarca outlined that people feel motivated when involved in all the activities of the company. It makes them feel part of the company. As a manager advocating for the new change requires taking time and analyzing the project to explain the objectives and the technical aspect of the project (Garro-Abarca, Palos-Sanchez, & Aguayo-Camacho, 2021).

Nevertheless, as indicated above, not all activities within the construction realm can be done remotely, so it is the responsibility of a project manager to

prioritize task and ensure that all the identified task that could be done remotely are visible to all the team members (Garro-Abarca, Palos-Sanchez, & Aguayo-Camacho, 2021). All these should be guided with clear policies set by the organization (Bhata, Pande, & Ahujaa, 2017). Overstepping someone privacy should be prohibited since working remotely would expose someone's house; thus, attracting gossips and unethical behaviours among the employees.

Another best practice is on the communication element. Schiller and Mandviwalla (2007) indicated that miscommunication has been identified as one of the challenges affecting remote practice killing productivity and ultimately results. To mitigate the communication challenges, the project manager should continuously clarify to the team members their roles, project goals, and milestones (Schiller & Mandviwalla, 2007). Construction companies are dealing with sensitive projects where slight mistakes translate to millions wasted. The continuous information should be coupled with the weekly emails on the general information every member is expected to follow (Schiller & Mandviwalla, 2007).

Furthermore, the company should ensure that there is a suitable software tool for remote practice. A low-quality tool would translate to low-quality results. The software tools and setup remain a challenge for remote practice (Kaplan, Truex, Wastell, Wood-Harper, & DeGross, 2006). In a session, one would open more than five software programs but actively using one of the other four remains only distracts the user. Based on the survey conducted by GoTo, approximately 54% of the workers tend to multitask in any given sessions on their laptops. Therefore, the project manager should research effective software tools that are relevant to remote exercise (PMA, 2020). The programs should be able to consolidate collaboration tools. The software should have a comprehensive platform with more tools to avoid distractions on the team members. Other best practices include leading with trust, encouraging effective collaboration, and setting key performance indicators (Morrison-Smith & Ruiz, 2020).

### 3. Methodology

#### 3.1. Research Methodology

This study intends to use qualitative research methodology in the collection of data. The application of the qualitative data is based on in-depth interviews with key informants from Arabian Construction Company, Civil Engineering & Contracting Co (CIVILCO), and United Engineering Construction Company (UNEC). The data collected from the interview process is subjected to an extensive analysis that will compare the information provided by respondents from the three companies. Since there were greater worries about subverting the privacy procedures in the chosen e-library of educational institutions in the seven emirates of UAE (El Khatib, Hamidi, Al Ameeri, Al Zaabi, & Al Marqab, 2022). Moreover, the data obtained from the interview process is treated as primary data providing the study with accurate information on the round. Secondary data includes information obtained from the government and the annual and sus-

tainability reports of the companies. The information collected from these reports is treated as secondary data, which will help in supporting the primary information collected from the interviews. The research questions guide all the data collection process.

### 3.2. Data Collection Procedure

As indicated, the study employs the primary and secondary data collection process. The primary data collection from the interview process is based on structured interview questions. The interviews are conducted through a telephone conversation. The interview process follows all the policies articulated in the Data Collection Act (Novikov & Novikov, 2013). The secondary data collection process, on the other hand, is obtained from the government website and the companies' websites in addition to academic studies. To conform to the three companies under this study, secondary data is also obtained from three companies which had already employed the remote work strategy; two of them are international and one is local. In particular, the study collects data from the annual report of Al Naboodah Construction Group LLC as a local company (Al Naboodah Construction, 2020); one of the renowned local companies in UAE that employs technology in most operations. The analysis of this company provides the study with a platform to identify some of the local challenges that the three companies under this study might face in employing remote work strategy (Al Naboodah Construction, 2020). As for the international companies, the study relied on data from the annual reports of China Communications Construction Company Limited (CCCC) and BAM Construction. Based on their international framework, these companies already employed remote work strategies before the coronavirus outbreak (Yan, 2020). For instance, Chinese enterprises in China have invested \$2.72 billion in China's 48 economies relating to the Belt and Road Initiative (BRI) in January and February of 2019, indicating an increase of 18.3% as reported by the Ministry of Commerce in China (Yan, 2020). The analysis of these two companies provides this study with information on the global challenges affecting remote work strategies and how the challenges can be mitigated. The study assumes that the annual and sustainability reports of the companies represent the overall results of the industry.

### 3.3. Data Analysis

The data collected from both primary and secondary methods are subjected to an extensive analysis process. On the other hand, the secondary data is subjected to a comparative analysis tool, where reports from the three outlined companies are analyzed to develop a clear report on remote work strategy. Under this analysis, the main focus is on the similarity of the information obtained from the outlined reports (Novikov & Novikov, 2013). In a nutshell, all the results obtained from the qualitative analysis are compiled together to form the final results of the study.



## 4. Results & Discussion

The preliminary results of this study focus on the dependent and independent variables. In relevance to the study objectives, the dependent variable is the efficiency and challenges experienced in using the virtual team as a communication tool for a project management exercise. The independent variable includes the challenges and effectiveness projected in using virtual team technology in the construction industry (Garro-Abarca, Palos-Sanchez, & Aguayo-Camacho, 2021). The preliminary results are based on the results obtained from the interview questions from the three companies in relevance to the dependent and independent variables.

### Preliminary Results

The advancement in technology continues to have a significant impact on organizations management structure, with corporations introducing virtual communities of practice. The new practice is becoming a norm with the emergence and continuous surge of COVID-19 (PMA, 2020). Pérez-Escoda et al. (2020) indicated that virtual team is the modern management practice is seen as an effective way of facilitating knowledge sharing and collaboration among employees. Generally, a virtual team refers to as remote working. The beginning of an endeavor is fraught with the most danger. In order to provide competitive bids that meet the project limitations and project success criteria while remaining within the appropriate profit margin, this study examines the risk management techniques of construction businesses (El Khatib, Al Mulla, & Al Ketbi, 2022). It can be defined as a team of employees or organization stakeholders working together from different locations across the world. The converged group must work towards a common project (Pérez-Escoda et al., 2020). The whole process in the modern virtual team is conducted via an online platform applying specific information technology tools with the aim of co-creating. In relevance to this study, the new management practice has gained momentum among the project managers and is seen as a convenient and cost-effective practice compared to the old office meeting practice (PMA, 2020).

As one of the renowned companies, the United Engineering Construction Company (UNEC) was affected by the pandemic. Before the virus outbreak, key personnel could meet to brainstorm for megaprojects, but with the travel control and lockdowns all over, the exercise became futile (Schiller & Mandviwalla, 2007). This was bound to be a short-term mitigation measure to control the spread of the virus, and then the company resumes its regular practice. Unfortunately, the virus is still here; corporates had to change their operational strategies or risk closing down (Wang & Hung, 2019). Based on the interview question, the use of virtual technology is expected to affect the company operations financially since it was an unplanned exercise. The cost challenge will depend on the available resources in the company supporting the new operation exercise. Morrison-Smith & Ruiz (2020) indicated that the cost factor remains the key



challenge for construction companies forced to employ virtual team technology due to COVID-19.

Focusing on the effectiveness of the new technology, the study will consider the activities that can be subjected to virtual technology in the construction industry. In relevance to the Arabian Construction Company, safeguarding employees' health is one of its crucial sustainability values. The challenges of project management stem from questions of decision-making processes and resource allocation (El Khatib, Kherbash, Al Qassimi, & Al Mheiri, 2022). Therefore, in compliance with the COVID-19 protocols, it is projected that the company will employ new strategies in conducting their exercise. Since construction company major activities are complex in regard to COVID-19 directives, some of the activities that are likely to be subjected to virtual technology are majorly administrative work with subsidiary companies left with the physical management task. PMA (2020) consultants, in their report, indicated that construction managers require training requires extensive training on how to adapt to the COVID-19 and the modern technology demand. Like in the case of Arabian Construction Company, its key managers from different locations need to cut cost in conducting physical meetings at the same time complies with the current travel restrictions.

Nevertheless, the available project software tools have made it easier for project managers to work remotely (Morrison-Smith & Ruiz, 2020). For instance, the use of NetPoint by Civil Engineering & Contracting Co (CIVILCO), has created an interactive platform for the construction stakeholders, making it easy for them to contribute to the project planning activities and optimize the management exercise. The new system has its hurdles, but it is considered the most effective (Garro-Abarca, Palos-Sanchez, & Aguayo-Camacho, 2021). The central feature of project management software, which is accessibility, has increased productivity in the construction industry across the world. Comparatively, in the traditional practice, there were many inconveniences as people could be late for meetings affecting the project timeline, especially when the person who is late is an expert whose input must be included in the formulation of the project activity (Bhata, Pande, & Ahujaa, 2017).

Comparatively, the remote work strategy is projected to be successful based on the success rate reports from already practising companies. Al Naboodah Construction Group LLC, as one of the renowned local companies operating in the UAE, was one of the few companies that were quick to adopt a remote work strategy to cut down the cost (Al Naboodah Construction, 2020). Many companies before the coronavirus outbreak practised remote work strategy in their operation activities, majorly conducting general meetings involving top managers (Al Naboodah Construction, 2020). The social distancing directives by the health experts embraced the remote work strategy as indicated by Dino Everts, who is one of the company's project manager whose main role is to look for the off-shore remote location, construction management, international project logistics,

and management of multiple offshore and local suppliers (Al Naboodah Construction, 2020). Based on his responsibilities, it is clear that remote working with effective tools provides employees with a platform to multitask both international and local activities. In relevance to our study, the application of remote work will improve the efficiency of the three companies and reduce the cost incurred in the management structure.

Apart from Al Naboodah Construction Group LLC, both China Communications Construction Company Limited (CCCC) and BAM Construction have also employed remote work strategy in their operations. These two companies secure contracts within their regions and across the world. These distinctive companies have their subsidiary branches in areas they manage to secure contracts (Yan, 2020). They operate like the three companies under this study. Focusing on BAM Construction, remote working is one of the strategies the company is employing to reduce the cost of production and adhere to the sustainable development goals.

According to El Khatib, Nakand, Almarzooqi, & Almarzooqi (2020) “Organizations face formidable obstacles in today’s highly competitive business world as they attempt to manage a wide range of projects.” As indicated by the company Chief Executive, BAM Construction Company continues to develop digital construction innovation and technology to significantly reduce delivery times and risk. Some of the key strategies employed by the company include remote working to reduce the rate of communicable diseases that spread faster in a crowded facility (BAM Construction, 2019). With the coronavirus outbreak, the company have fully embraced remote working in its management strategies. In relevance to this study, as indicated by James Wimpenny, the remote work strategy as a new technology recently applied by the company have myriad advantages to both the company and the general environment. As El Khatib & Opulencia (2015) said “Even though modern businesses are used to addressing a variety of project management difficulties, establishing a sustainable project management strategy has proved to be one of the most crucial.” With the surge in coronavirus cases, based on the reports from BAM Construction, the three companies under this study will significantly benefit by reducing the cost of production and improving efficiency rates.

## 5. Conclusion

The current coronavirus pandemic has affected many industries, but to some extent, it has led to extensive innovative exercise. At the very beginning, when the virus was discovered, people got panicked, leading to the closing down of many companies as a way to mitigate the spread of the virus. As time passes, losses were incurred, especially by the construction companies, as a stay-at-home directive interfered with their activities. As a result, many were quick to adopt new operation strategies to remain sustainable in the industry. The new health directives left companies with one alternative in developing their strategies, and

that was along the IT system to maintain social distancing. Arabian Construction Company, Civil Engineering & Contracting Co (CIVILCO), and United Engineering Construction Company (UNEC), as the major construction companies in the Middle East, employed virtual team technology for some of their activities. Before COVID-19, the employees of three companies conducted some of their meetings virtually but doing all administration works within their respective workstations. The current work at home has come with myriad challenges affecting both the employees and the general performance of the organizations. Implementation cost and resource availability are some of the key challenges pointed out by many companies. The three companies had to purchase tools and conduct formal training for their employees on how to work at home and continue being productive in their assigned duties. According to [El Khatib, Al Jaber, & Al Mahri \(2021\)](#) “one spare and one procurement are proposed as a means to save time, space, and money and facilitate more dynamic and adaptable approaches to issue resolution.” For the economy of the United Arab Emirates to remain competitive, more efficiency is essential.

Moreover, virtual technology exercises like traditional management practices are also faced myriad challenges. The technology can only be applied for specific activities as some of the activities within the construction company requires physical interaction. The double strategy is causing much confusion among managers of these companies leading to poor performance. In relevance to the interview questions and projected findings, the new remote work practice benefits and affects the operation exercise of the company. With an extensive innovation exercise and research development activities, the benefits can outweigh the current challenges substantively. Furthermore, based on the reports from the secondary data analysis of Al Naboodah Construction Group LLC, China Communications Construction Company Limited (CCCC), and BAM Construction, remote work results in a long-term cost-benefit. It also contributes significantly to protecting the environment, as indicated by James Wimpenny.

## 6. Recommendations

Remote work is an effective and efficient management process that many companies are embracing now. However, this new technologically oriented management exercise is also faced with myriad hurdles. As outlined in the preliminary result section, the new remote management exercise was a rapid cane requiring companies to adopt a new system. Most of the companies had not planned or foreseen the immediate change; thus, many faced different challenges ranging from finance, system structure, and technical challenges. Processes of production, high efficiency, and focus on the market are all optimized by the operational excellence system ([Khatib, 2015](#)). To mitigate the outlined challenges from the study, therefore, propose the following recommendations. Under the financial challenge, the study proposes a complete restructuring of the company. The restructuring process should focus on balancing the cost which used to be incurred

in sustaining the physical workstation with the purchase of effective tools supporting remote work. As for the technical challenges, construction companies have found it challenging to comply with the new results. This study recommends a training exercise to empower the staff members to embrace the new technology. The training exercise will cover both the technical skills and the social aspect of it since the actual job is done on a new social spectrum. Focusing on the technical skills, the staff members of respective companies will be trained on how to use different tools used in remote work technology. The social distancing policy has also affected site management activities. The three organizations should, therefore, employ modern management tools. The technological advancement in UAE allows project managers to employ cloud-based time tracking, real-time tracking, and project tracking as the main tool for monitoring and controlling project activities remotely. Finally, the three companies should conduct extensive research on companies that are embracing technology in their operational activities. As per the scope of this study, the analysis of Al Naboodah Construction Group LLC, China Communications Construction Company Limited (CCCC), and BAM Construction remains relevant in mitigating the identified challenges.

### Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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## Appendix: Interview Guide

- 1) How long have you been working in virtual teams?
- 2) Which do you prefer, virtual or traditional setup? Why?
- 3) How do virtual project management and traditional project management compare or differ?
- 4) Which virtual project management tools and practices do you implement in your company?
- 5) What would you say are the advantages of virtual project management compared to traditional approaches?
- 6) As a project manager of a virtual team(s), what challenges or difficulties have you experienced?
- 7) How did you address those challenges?
- 8) What can be done to assist you better in your role as a project manager of a virtual team?
- 9) What should the organization do to create a facilitating environment for virtual project management?
- 10) In your opinion, do you think virtual project management is ideal for construction projects? Why, or why not?
- 11) Do you have any additional comments that you would like to share with me?