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Impact of COVID-19 on Communications within the Construction Industry

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The COVID-19 pandemic has significantly impacted the world and has affected all aspects of personal and professional life. Many construction projects were deemed "critical" during the pandemic and were cleared to proceed with increased safety measures in place to protect employees. Many companies have shifted regularly scheduled meetings from in person to video and/or audio conference when practical to facilitate physical distancing and reduce the spread of COVID-19. This shift to virtual meetings has facilitated continued communication among construction stakeholders. This research addresses the changes in construction communication since the onset of COVID-19 along with the positive and negative outcomes associated with these changes. A survey was completed by a variety of construction professionals, including project owners, architects-engineers, subcontractors, and suppliers. Results of the survey include data on changes in meeting attendance, positive and negative outcomes of virtual communication, and recommendations for improving virtual communication going forward. The study focuses primarily on verbal communication during typical construction meetings.

Key Words: COVID-19, construction communication, meeting, virtual

Introduction & Background

The COVID-19 pandemic has significantly impacted the world and has affected all aspects of personal and professional life. The CDC reported that nearly all U.S. states and territories issued Stay-At-Home orders that were consistent with CDC guidelines by May 31, 2020 (CDC, 2020). At the onset of the COVID-19 pandemic, the World Health Organization (WHO), the US Centers for Disease Control and Prevention (CDC), the US Department of Homeland Security's Cybersecurity & Infrastructure Security Agency (CISA), and 50 States issued warnings and provided guidance on how to minimize the spread of the COVID-19. Once guidelines and recommendations were in place, many businesses which were previously shut down, became operational again.

On March 16, 2020, the U.S. Department of Homeland Security's Cybersecurity & Infrastructure Security Agency (CISA) issued an advisory that highlighted the significance of essential critical infrastructure workforce. In collaboration with other Federal agencies, State & local governments, and the private sector, CISA developed an "Essential Critical Infrastructure Workforce" advisory list. The industries that support essential critical infrastructure included: Chemical, Commercial Facilities, Communications, Critical Manufacturing, Dams, Defense Industrial Base, Emergency Services, Energy, Financial, Food & Agriculture, Government Facilities, Healthcare & Public Health, Information Technology, Nuclear Reactors Materials & Waste, Transportation Systems, and Water (CISA, 2020). As such, many construction projects were cleared to proceed. The construction industry responded to the crisis based on the Federal, State and local guidelines, which varied from state to state (CDC, 2020).

COVID-19 shook up traditional business operations and led to the need for modifications to company policy and procedure. Leadership and communication strategies have changed within companies of all sizes in response to the COVID-19 pandemic. According to D'Auria & DeSmet (2020), leaders who are capable of making sound decisions, demonstrate empathy, and communicate effectively should be elevated within the organization in response to the crisis. During a crisis, or stressful situation, emotions make communications more challenging and require a great deal of effort to minimize any misunderstandings (Lindberg, 2020). The importance of effective communication is echoed by other researchers as well. Stewart et al. (2020) calls for leaders to communicate clearly, simply, and frequently during a crisis to repeat and reinforce the information. TSNE (2020) adds that leaders should communicate with empathy and be thoughtful, clear and concise with company messages. The importance of communicating often and being clear in the message is reiterated in other literature (Clark, 2020).

One of the significant changes in the mode of communication for many companies has been the shift to video conferencing for regular meetings. This shift has facilitated continued communication among teams but presents challenges of its own. According to Butler (2020), video conferencing is less interpersonal and more difficult to engage the team compared to in-person meetings. Specific tips for enhancing communication during video conferencing include: ensure proper lighting and centered in video; avoid being monotone; use visual aids when presenting information; keep visual aids simple; and use a script (Dearnell, 2020). The literature presented refers to business communication in general. Nothing was found in the literature regarding construction project management related communication specifically. Research is needed to determine how communication has changed specifically in the construction industry in response to COVID-19.

Research Objective and Methodology

The objective of this research was to examine how changes in business due to COVID-19 pandemic requirements have impacted the way the construction industry communicates in the United States. To accomplish this objective, a survey was written to compare attendance, type and frequency of construction meetings before COVID-19 and during COVID-19. In addition, the survey addressed individual's experiences, observations and perceptions of communication effectiveness both before COVID-19 and during COVID-19. The survey included a number of closed- and open-ended questions. The survey was distributed to a variety of construction professionals, including project owners, architects-engineers, subcontractors, and suppliers. Emails were sent to the 2020 Top 400 Contractors (ENR, 2020) and Top 300 U.S. Architecture Firms (Architectural Record, 2020). In addition, the survey link was posted on social media, including Facebook and LinkedIn. The survey closed on October 17, 2020.

Results and Discussion

The survey was completed by 79 construction professionals with a broad distribution geographically across the United States. Survey responses were also widely distributed among age groups with 43% of the respondents over 50 years old, 31% between 40-50 years old, 23% between 30-40 years old, and 3% under 30 years old. Although 23% of respondents had less than 5 years of construction experience at the time of the survey, the majority of respondents had over 5 years of experience with 14% having 5-10 years, 33% having 10-20 years, 18% having 20-30 years, and 12% having over 30 years. In regard to education, 97% of the respondents have an education level beyond High School / GED. The majority of respondents have a bachelor's degree (58%) followed by graduate degrees (31%), doctorate (4%), high school/GED (3%), vocational/trade (3%), and associate degrees (1%). Breakdown by role includes 35 owners, 11 architect/engineers, 14 general contractors, and 1 subcontractor/supplier.

Meeting Attendance

Meeting attendance was analyzed by type (meeting frequency). Survey results are summarized by meeting frequency in Figure 1.

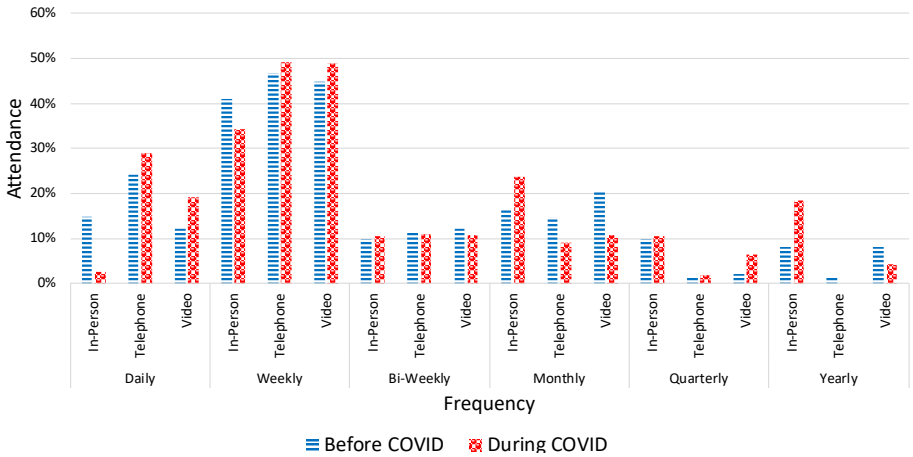

Figure 1: Meeting attendance by type – before and during COVID-19

Survey results revealed that overall meeting attendance, all meeting types combined, dropped slightly during the pandemic compared to pre-pandemic attendance. The survey further revealed that people attended different types of meetings (i.e. In-Person, Telephone, Video) at a different scheduled-frequency (i.e. daily meetings, weekly, meetings, etc.). Figure 1 shows that attendance for in person meetings generally decreased while telephone and video attendance increased for daily and weekly meetings. Attendance stayed about the same for bi-weekly meetings for all three meeting modalities. In person meeting attendance stayed the same or increased for monthly, quarterly, and yearly meetings. This finding could potentially be explained by the importance of those meetings. Perhaps with fewer daily and weekly meetings to attend in person, more emphasis was placed on, and more people were available for, the less-frequent meeting types.

Meeting Effectiveness

Respondents were asked to rate the perceived effectiveness of various meeting types (in person, telephone/audio, and video) before and during COVID-19. The following rating scale was provided in the survey: extremely effective, very effective, moderately effective, slightly effective, and not effective at all. Most respondents (84%) felt that in person meetings were extremely or very effective before COVID-19 while only 52% gave the same responses for in person meetings during COVID-19. Overall, the perceived effectiveness of Telephone/Audio meetings increased during COVID-19, with responses of very- to extremely effective increasing from 28% to 49% (pre-COVID-19 and during COVID-19, respectively). The perceived effectiveness of video conferences also increased during COVID-19 with 33% of respondents rating them very-to-extremely effective before COVID-19 and 55% rating them very-to-extremely effective during COVID-19.

Although perceived effectiveness increased for virtual meetings during COVID-19, the researchers sought to investigate if any factors were still decreasing the potential effectiveness of these meetings. Figure 2 shows the results of this survey question. Nine factors were provided based on the most common meeting challenges found in the literature review while the 10th factor allowed an open ended response to the question, shown as "other" in Figure 2.

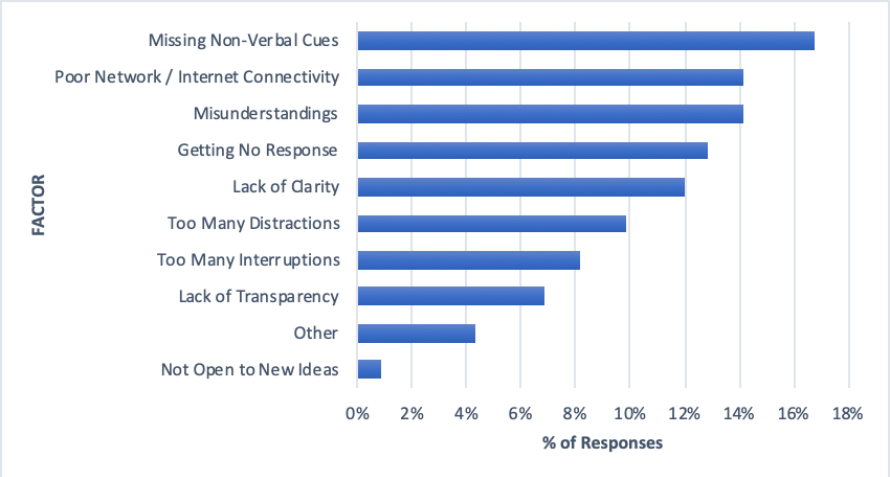

Figure 2: Factors relating to reduced effectiveness of meetings

As shown in Figure 2, the majority of responses were as follows: missing non-verbal cues (16.7%); poor connectivity (14.2%); misunderstandings (14.2%); no response (12.9%); and lack of clarity (12%). Each of the remaining items listed received less than 10% of responses. Each of the individual topics shown in Figure 2 represents a small percentage of responses, the greatest of which is 16.7%. This indicates that there is not a single, overwhelming, perceived challenge with remote meetings, but rather a collection of smaller challenges which all contribute to reducing meeting effectiveness. Each of these perceived challenges can be overcome with process improvement and training to increase the effectiveness of virtual meetings. When analyzing the open-ended responses provided in the "other" category, 6 themes were noted among the responses: virtual challenges; lack of clarity, roles & responsibilities, issues not resolved, COVID-19 site restrictions, and individual fatigue. These challenges were also addressed in response to subsequent questions and are elaborated on below.

Communication Effectiveness

Survey respondents were asked open ended questions regarding communications during COVID-19. The first question asked how communications "got better" during COVID-19 and the second asked how communications "got worse" during COVID-19. The results of these questions were revealing and are summarized in Figures 3 and 4 for communication improvements and declines, respectively.

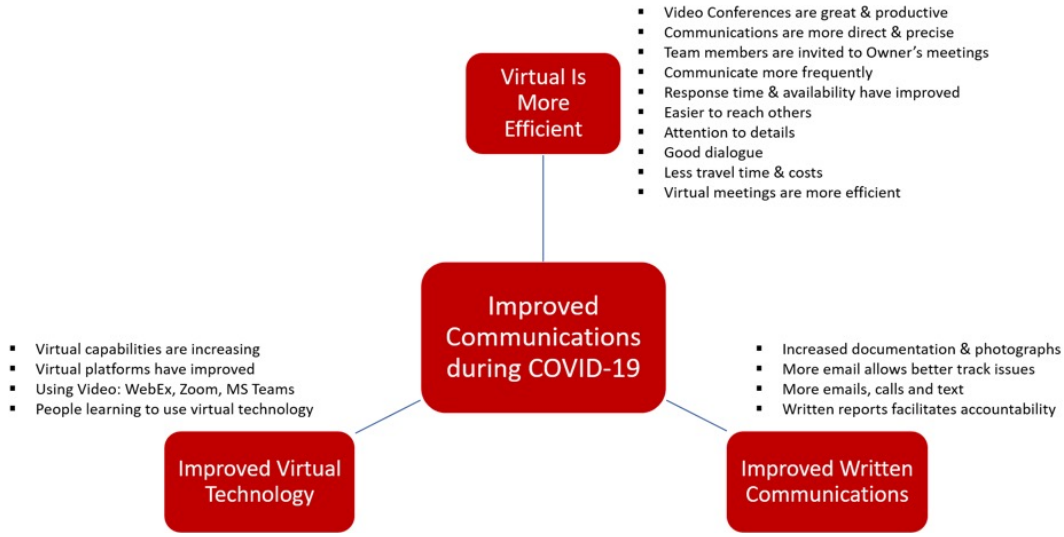

Figure 3: Communication improvements during COVID-19

A major theme of noted improvements in communication during COVID-19 is the increased efficiency of virtual meetings. Some of the more noteworthy examples of improved efficiency include improved response time/availability of participants, less travel time and cost, and more direct/precise communication (i.e. less time spent discussing unrelated issues or engaging in "small talk"). Improvements in virtual technology were also noted. As multiple virtual meeting platforms are available, evolving, and improving, some people are learning to use this type of technology for the first time, thus learning a new skill. Another improvement cited by respondents is the improved written communication process. Project documentation is improving and accountability is increasing as a result of more emails, text messages, written reports, and photographs.

Even with the many communication improvements noted among respondents, there were several areas cited where communication has worsened due to COIVD-19 as shown in Figure 4. Some of these challenges are consistent with the literature, including the absence of physical cues, eye contact, or body language when meeting virtually. Technology challenges such as inconsistent Wi-Fi and bandwidth were also noted along with coordination challenges, lack of accountability/individual performance, and increased misunderstandings in communication.

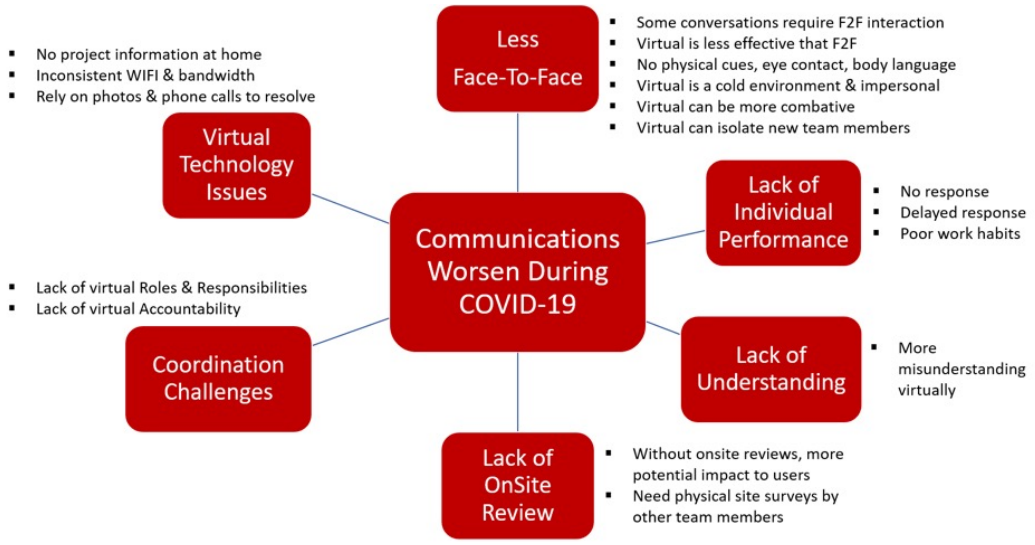

Figure 4: Communication declines during COVID-19

Suggested Improvements

In addition to identifying changes in communication during COVID-19, along with how those changes made communication more or less effective, it is also important to identify how communication effectiveness may be improved. To address this, survey respondents were asked to identify some ways to improve construction project management related communication during the COVID-19 pandemic. Responses to this question were in following 7 themes: 'communication skills', 'issue resolution', 'team', 'meeting with purpose', 'technology', 'time management', and 'values'. Figure 5 provides specific recommendations within each of the 7 noted themes.

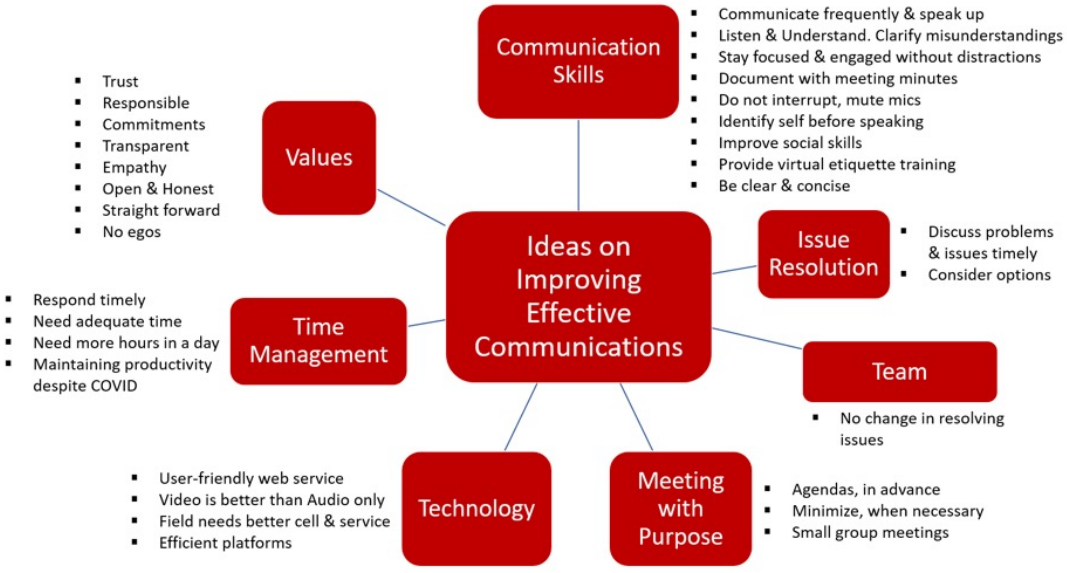

Figure 5: Suggestions for improving communication

Many of the suggestions provided within the communication skills theme involve virtual meeting etiquette, staying focused, and communicating clearly/concisely. Time management and issue resolution themes involve responding to issues in a timely manner and remaining productive. Although these issues were provided in response to COVID-19 challenges, it stands to reason the same issues may have been present before COVID-19. Noted suggestions for technology improvements include using efficient meeting platforms, using video in addition to audio, and improving connectivity issues.

Conclusions, Limitations and Future Research

As the construction industry continues to work during the COVID-19 pandemic, construction teams will continue to communicate in writing and verbally, in-person or virtually. Although many improvements in communication were noted since virtual communication began due to COVID-19, several drawbacks and areas of improvement were also cited. The survey results presented herein represent the attitudes, perceptions, and experiences of 79 construction professionals representing a wide distribution of age, experience, education level, job title, and geographic location. Survey results indicate that, during the COVID-19 pandemic, in person meeting attendance generally decreased while telephone and video attendance increased for daily and weekly meetings. Interestingly, in person attendance stayed about the same or increased for bi-weekly, monthly, quarterly, and yearly meetings. The researchers conclude that with fewer daily and weekly meetings to attend in person, more emphasis was placed on the less-frequent meeting types and more people may have been available for these meetings.

Perceived effectiveness of in person meetings decreased during COVID-19 while perceived effectiveness of both telephone/audio meetings and video conferences increased during this time. This finding could stem from the fact that more people were attending these meetings via phone or video as compared to in person during COVID-19. Ways in which communication efficiency improved with the switch to a virtual environment include improved response time/availability of participants, less travel time and cost, more direct/precise communication, improvements in virtual technology, new skills learned, and improvements in the written communication process. Drawbacks noted with the switch to virtual communication include the following: absence of physical cues, eye contact, or body language; technology challenges such as inconsistent Wi-Fi and bandwidth; coordination challenges; lack of accountability/individual performance; and increased misunderstandings in communication. These challenges can be overcome with process improvement and practice. Respondents provided suggestions to improve virtual communications including improving virtual meeting etiquette, staying focused, communicating clearly/concisely, integrating proper time management, responding to issues in a timely manner, and remaining productive. Noted suggestions for technology improvements include using efficient meeting platforms, using video in addition to audio, and improving connectivity issues.

This study was focused primarily on changes in verbal communication as a result of COVID-19. Further research is needed to address the changes to written communication due to the pandemic. Future research should also address the differences in perceptions among different groups of constructions professionals such as owners, architects, engineers, general contractors, subcontractors, etc. These findings relate to general communication issues within the construction industry resulting from the COVID-19 pandemic. Future research should focus on specific instances in which communication issues are most prevalent (i.e. specific meeting types) and how these communication issues impact the construction project. Additionally, more research is needed to evaluate specific ways in which construction communication can be improved during times of social distancing.

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