Researching the Demand of a New App That Reinvents the Way General Contractors and Subcontractors Communicate

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This is a research study on the need for a new service that increases efficiency and profit for commercial construction companies. Contractors need an efficient way to hire subcontractors; through detailed and thorough research, we have found a way to make that possible. The research methodology used for the duration of the project is presented. This included contacting general contractors, subcontractors, and owners and discussing in detail the demand for a service like the one proposed. From these discussions, themes like credibility, understanding the market, and finding the right audience were recorded. The results that were obtained reassured us that there is a market for this idea; however, it may take time to find the best audience to set the foundation for this service. As the world moves toward a technologically dominant era, it is a matter of time before a service like this is brought to market.

Key Words: Construction Technology, Applications, Communication, Credibility, General Contractors, Subcontractors, Construction Management.

Introduction

Communication is one of the fundamental building blocks of any business, and we rely heavily upon it in construction. Much like in other industries, communication can make or break the job. It is a simple idea, yet it is more challenging than not. New ways to communicate with your peers, coworkers, and family emerge constantly. The world is always looking for ways to increase efficiency within communication methods. Fax machines were created with that in mind; now, we have Apple watches. Both attempt to connect you with the other party as
effortlessly as possible. The industry is constantly changing the methods in which it communicates. So why hasn’t the construction industry itself changed with it? One of the biggest reasons is that the people who make up the industry are old. “Over the next 10 years, almost 20% of the construction industry workforce will retire” (Price). People within the industry are set in the methods they have been performing for years. At this point, they do not see a need to change. It is understandable but not acceptable.

Creating a new platform for communication between general contractors and subcontractors is long overdue. Not only will a new method of communication between general contractors and subcontractors help with the ease of the project, but it will also save money. “Poor communication and poor project data account for 48% of all reworks on U.S. construction projects” (McCallen). An innovative communication platform built for general contractors and sub-contractors is needed in the industry. This platform’s financial benefits and dramatic increase in overall efficiency would be beneficial. It is time to innovate and grow for the next generation.

Literature Review

Due to its high importance, research has been abundant regarding communication issues in the construction industry. Communication is vital if you want your business or project to succeed financially and obtain the quality of work it set out to perform. “Poor communication is potentially costing the US construction industry $17 billion per year while poor project data is representing $14.3 billion per year. That’s a total of $31.3 billion annual losses” (Charlott). The lack of communication on a project generally means that the parties involved are inconsistent with their communication strategies. This, unfortunately, translates to financial loss. Strengthening communication strategies within this industry should be a priority. Project data in construction are the analytics and resources that assist in the execution of the project. Accurate project data allows you to identify safety issues and hazards before accidents happen. On a job site, it is crucial to have adequate project data. As referenced previously, poor project data is to blame for yearly losses of $14.3 billion. Reinventing the way construction companies communicate will save both money and lives.

Businesses may want to introduce new systems, but they have been met with resistance from employees. Construction companies, specifically, have yet to welcome many new technology services. “Only 18% of [companies] use apps or software other than email, spreadsheets, text, and phone calls to retrieve and access project data or to collaborate with project members and stakeholders” (Charlott). This may be due to the relatively high average age of workers in the industry, but proper management and software can quickly increase the percentage. Not having the right resources is not a legitimate excuse either. In a survey sent out to construction companies around the country, “75% furnish their project managers and field supervisors with mobile devices” (Charlott). Most construction professionals know software or applications that can help speed up their projects. However, there is still a lack of use for these
applications. According to Lew Jia Chun, “Most of the construction professionals are aware that the existence of construction apps but the usage of construction apps is almost silent” (Utilisation). There is not a lack of resources, just a lack of motivation.

Multiple studies have observed the demand and response to new applications within the construction industry. Students in New Zealand studied the rise of new construction apps. One of their significant findings was that upper management “expressed interest in apps usage at a strategic level, such as improving long-term client relationship management and satisfaction” (Liu). The key takeaway in their findings was that upper-level and mid-level management had very different perspectives on new applications. Upper-level management wants to use apps to better communication skills with other parties in the building process.

In contrast, mid-level management wants to see apps that can benefit them on a tactical level. There is a demand for apps that are catered to the construction industry. Apps that can improve internal and external communication and relationships would be industry-changing. It sounds easy, but it is unfortunately far from it. Salman Azhar, a professor at the School of Building Science at the University of Auburn in Alabama, composed a review and analysis of apps in the construction industry. In his study, Azhar noted that “the majority of apps currently used by construction managers are not construction apps” (Azhar). We understand that there is a significant demand for construction apps specifically designed for the construction industry, so why aren’t the apps used catered towards construction?

Smartphones have significantly helped the industry through the ability to send instant messages, review plans, coordinate deliveries, and even model future structures with BIM. Dr. Anoop Sattineni researched mobile devices and applications’ impact on construction job sites. Dr. Sattineni found, “It’s imperative for the commercial companies in the construction industry to invest in mobile devices and their software capabilities because of its practicality and the competitive edge it conveys” (Sattineni). Construction apps must be continuously improved for commercial companies to utilize the software’s capabilities. Apps in this industry have an impact that goes beyond what many realize. They do not just affect job performance; they also affect corporate performance. Having the proper apps in place can “contribute to improving the dwindling productivity trend in the industry and achieving the national agenda of 20% productivity improvement” (Mbachu). With the right apps in place, companies can grow significantly. However, figuring out how to solve the industry’s problem with an app is the challenge.

In 2006, a team of three authors, Mieke Hoezen, Isabelle Reyman, and Geert Dewulf, published a research analysis titled, The Problem with Communication in Construction. Their research project aimed to identify the problem and how it can be improved. Through interviews, they found that a lack of communication in construction wastes significant time. For example, errors in the early stages of construction that were missed had to be solved at a later stage. The project results found that “Making adjustments in the latter stages of the building process usually costs extra money. Interviewees think that improved communication would probably lead to fewer delays and lower expenses” (Hoezen). New technological systems and applications that increase communication have the potential to save both time and money. Research has shown
that this industry demands a service that can do both, so why isn't there a universal application yet?

**Methodology**

The information collected was through interview questions regarding interviewees’ opinions on a new communication application. This made it a qualitative process. Information about the demand for a new service that could bring value to the industry was requested and provided. Before the interviews, primary and secondary sources were analyzed to assist in background knowledge. This was key to preparing an interview script better and asking specific follow-up questions. The interviews themselves consisted of around 10-15 questions. It varied depending on the answers given and whether the answers led to follow-up questions. The range of duration of the interviews was anywhere from 5 minutes to 45 minutes. Most interviews were conducted in person, but there were a few phone conversations and emails. The people interviewed were chosen based on their occupation, industry experience, and knowledge of communication methods within construction. Vice Presidents, Senior Project Managers, Project Managers, Superintendents, Assistant Superintendents, Project Engineers, Field Engineers, HR representatives, and Estimators representing general contractors and subcontractors were all interviewed.

**Interview Questions:**

1. **What is your role in this company?**

2. **Are you ever involved in the process of hiring subcontractors?**
   a. Yes?
      i. **What is your role in hiring subcontractors?**
      ii. **How do you find them?**
      iii. **What have been your biggest challenges with finding/hiring subs?**
      iv. **Do you contact general contractors who have worked with them for a review?**
      v. **How do you vet them?**
      vi. **Do you have a sub-log that you can use for future reference?**
      vii. **When you have a bad experience with a sub how do you make sure that other offices do not pick them up?**
   b. No?
      i. **Do you know how your company finds subs to use?**
      ii. **When you bring on new ones, how do you vet them?**
      iii. **Do you have a sub-log that you can use for future reference?**
iv. Do you notice any challenges with the process from an outside perspective?

v. When you have a bad experience with a sub how do you make sure that other offices do not pick them up?

3. Are you involved at all with the bidding process at all?
   a. Yes?
      i. When you see who the owners and architects are, how do you vet them?
      ii. Do you contact other contractors who have worked under them?
      iii. Are there ever times when you do not bid on projects because of owners’ reputation?
      iv. Do you keep a log of feedback and reviews of every owner’s representative for future use?
   b. No?
      i. Do you know if your company vets owners or archs before they bid?
      ii. Do you ever contact other contractors or people who have had prior experience with this owner?

4. Do you think that a website/application that contained all this information would be useful for contractors? For example, this website would have a list of every subcontractor in your area sorted by trade. Under each sub, it would include an overall rating with reviews. It would include a list of their past projects with contact information for the contractor on that project. Also, would include photos of their work. Any information on them would be included if they are union or not and so on. You would also have a section for owners’ representatives and architects. This application would completely change the way that each party communicates and connects.
   a. Do you think that there is a demand for this product?
   b. One of the biggest pushbacks that I have gotten is making it reliable, as it is hard to get companies to just jump on a random website. Do you have any ideas to increase immediate interest?
   c. Another example of pushback I have received is that the industry is very traditional. Do you think that this will impact the application?
   d. Are there any additional features you would like to see on this application?
   e. Finally, would you be a part of this application?

Interviewees:
2. Nathan Contreras, Senior Project Manager, Layton Construction.
3. Mike Messick, Project Executive, DPR Construction.
4. Chuck Kluenker, Vice President, Vanir Construction Management.
5. Chris Bizot, Project Manager, Decker Electric.
7. Torrie Peth, Project Manager, JB Project Manager
8. Chris Forster, Vice President of Operations, Largo Concrete.
11. Jude Kavalam, Software Engineer, Microsoft.
12. Will Brooke, President, KOA.
13. Peter Brooke, Manager, KOA.
17. Doug Kim, Owners Representative, Iron Gate.
18. Lori Kiyota, Owners Representative, Iron Gate.
19. Matt Heintz, Senior Project Manager, Level 10 Construction.
20. Kara Overaa Gragg, Vice President, Overaa Construction.
21. Vince Baldwin, Project Manager, City Building.
22. Rafael Rodriguez, Project Executive, Anning-Johnson Corp.
23. Klay Adair, Superintendent, Mortenson.
24. Jeff Lovitt, Senior Project Manager, Rodan Builders.
25. Dan Oliver, Chief Financial Officer, Rodan Builders.
26. Bruce Daseking, Executive Vice President, McGuire and Hester.
27. Tyler Lee, Project Manager, Anning Johnson Company.
29. Willford Fakosita, Project Manager, Layton Construction.
30. Bryan Horvath, Assistant Project Manager, Layton Construction.

Results & Analysis
The interview’s purpose was to gauge whether there is a demand for a service like the one proposed. The discussions tasked the respondents to provide various problems regarding communication in the construction industry. From there, they were able to decide if a new app or website could be a possible solution. It was a test run to see if this new service would be a positive addition to the industry and if it could survive in this market. The understanding of the results of the interviews is that few general contractors would see a real need for this app. Most general contractors have already found ways to improve their communication internally. Another flaw that was pointed about regarding this app was that companies rarely turn to databases outside their databases for bidding. Trust is a significant element in business, and construction companies prioritize working with someone they have worked with and trust immensely.

General contractors brought up numerous times an additional issue: a public ranking of companies, specifically sub-contractors, is problematic. This program would make it very challenging for sub-contractors to stay in business after a bad review. Naturally, you will not want only to hire someone at the low end of the list, even if they are there by mistake. The interviewed project executives stated that it is safer and more ethical to individually rank sub-contractors on finances, bonding rates, and safety records. This way, the rates are from data and are all factual.

When communicating with sub-contractors, they had a similar perspective. Sub-contractors are generally smaller than general contractors, so they are usually more localized. Some sub-contractors have multiple offices, but they rarely venture into various states. Because of this, sub-contractors know the major general contractors in their area and do a lot of repeat work. Of the sub-contractors interviewed, the majority said that almost 100% of their work is with repeat clients. Unless they are opening an office in a new location, which is very rare, sub-contractors expressed that they would not want to establish business with general contractors through this app.

Furthermore, sub-contractors said they would need help disclosing their financial information for this website. Because financials are usually not public record, companies would not want to publish them for the world to see. This is mainly because competitors would be able to understand their capacity and have an advantage over them during the bidding process. There were also logistical concerns about how the app would contain project photos. In most cases, unless the sub-contractors buy-in, the pictures of projects would be the ones from the company website and would not be in-depth. Companies that were interviewed stressed the importance of how necessary it is that sub-contractors fully buy into this service; it cannot be successful without the participation and trust of sub-contractors.

Another primary reason all parties interviewed would be hesitant to participate in this new app is that many said something similar already exists. The program is called Building Connected. According to its website, Building Connected is the “largest real-time construction network that connects owner and builders through an easy-to-use platform to streamline the bid and risk management process” (Buildingconnected.com). Building Connected is an Autodesk company, one of the country's biggest engineering software companies. Through support from Autodesk, Building Connected has grown significantly and advanced its software as its user base
continues to grow. Building Connected has over 1 million users and is not showing any signs of slowing down.

Research on Building Connected before the interviews were critical because it allowed further insight into their flaws and weaknesses. Through this research, interview questions were created that focused on the strengths of our new app that we knew Building Connected lacked. For example, one of the most significant selling points of this app is the rating system. As of now, Building Connected does not have a rating system for its subcontractors. Interviewees were very interested in the idea of a rating system but also outlined issues and factors that would make it problematic.

The issues, as mentioned previously, of a rating system were that it could destroy businesses and would need to be based on a multitude of data that would be hard to obtain. Even though there are many flaws regarding the rating system, it was the most exciting feature among interviewees. Because this feature received the most attention, it must be what sells the app. For the app to succeed, it must have a solid rating system that can give construction businesses something new. It will never be successful if it launches with an undeveloped rating system or no ratings because Building Connected already dominates that market. An in-depth, detailed, and factual rating system would separate it from possible competitors like Building Connected and would allow growth in a new market.

Through a deep analysis of the data gathered from industry professionals, we understand that there is a communication issue in the construction industry. We can also infer that there is a demand for a solution or new way to improve communication among general contractors and subcontractors. Programs and companies developed to enhance communication in the construction business have only come so far and have yet to solve the everlasting issue fully. Focusing on what the industry needs from a communication point of view can help create a service that can solve the problems. Professionals in the industry have stated that there is a need for a new app that reinvents the way general contractors and subcontractors communicate. How the app has been marketed to the interviewees needs to be fixed and revised. However, through further testing and research, a new app like the one proposed can make a permanent difference that improves the construction industry.

**Conclusion**

The interview process revealed a facet of the industry that needs more attention and focus than it currently receives. As hypothesized, communication standards among construction companies have tremendously hurt companies both financially and physically. Monetary losses and injuries continue to occur while the search for a solution remains. The proposal of a new app that changes how general contractors and subcontractors communicate produced significant interest from the interviewees. However, certain parts of the idea received partial hesitation and resistance. The main component that developed some concerns among those interviewed was the
rating system. The concept of a rank of subcontractors worried some that it would cut-off subcontractors entirely from future work.

Industry professionals were also troubled by including financials within the subcontractor description. The reason including financials is a questionable addition is that they are private and can be too revealing. Responses from the interviewees regarding the idea of including the company’s financials essentially stated that most subcontractors would not hand over the financials. This alone would significantly hinder the app’s success. Despite the addressed flaws and potential faults with this app, there is still no question that there is a demand for a similar service. The construction industry is incredibly traditional, and naturally, there will be a force of temporary resistance to any new service brought forward. However, an app that can completely change the industry and set the company up for long-term success is vital.

In terms of future research, many voids relating to the app need to be filled. Finding a new way to sort subcontractors without completely running the bottom companies into the ground is crucial for this app’s success. Furthermore, landing a method for incentivizing companies to include their financials on the platform would significantly improve the success and capabilities of the app. Overall, there is a need for an app or website that improves communication in the construction industry. It is only a matter of time before general contractors and subcontractors use one app universally. The data shows a need for a reinvention of communication methods; it is now in the hands of the developers.

Data
Figure 1: Is There a Demand for an App that Reinvents Communication Strategies in the Construction Industry?

Figure 2: Do You Think that An App Like This Would be Beneficial for Your Company?

Biggest Issues Regarding New App

<table>
<thead>
<tr>
<th>Issue</th>
<th>Number of People Who Raised Issue</th>
</tr>
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<tbody>
<tr>
<td>Trust With Finances</td>
<td>20</td>
</tr>
<tr>
<td>Cancelling Businesses</td>
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<tr>
<td>External Database</td>
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<td>Similar App Available</td>
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<tr>
<td>Rating System Flaws</td>
<td>18</td>
</tr>
<tr>
<td>Reliability</td>
<td>16</td>
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</tbody>
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Resources


Hoezen. *(PDF) the Problem of Communication in Construction*. Researchgate.


*Utilisation of Construction-Related Mobile ...* - Bic.utm.my.