

Business Ideas for Civil Engineers Startup

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Abstract

The entire construction industry is due for a major technological revolution. Because it is an old science, a lot of what happens is happening because "that's how it has been done since long back". If you can disrupt operations, engineering or planning of construction projects by the introduction of technology (as has been done in FMCG, manufacturing and financial sector), it can lead to both you getting very rich as well as rapid developments in construction. But there are reasons why there are very few obvious disruptions in civil engineering - It requires a deep understanding of civil engineering much greater than what is taught in colleges even at post-grad level.

Keywords: Technology, Ideas, Financial Implications

Introduction

The whole industry is very traditional in the sense that you learn most of what you do on the job instead of at college. The risks are very high ! Financial implications of failure are huge, and more often than not lives are at stake if you make big mistakes. As somebody pointed out here, "bugs" in your program can have pretty dire consequences. More often than not, governments are the ultimate clients in big construction projects.

Objectives of the study

If your clients are archaic, unorganized and do not desire optimization, the value added in short-term by innovation reduces drastically. And short-term is what drives the world! I have gone away too far off the main topic and this answer risks turning into a rant, but it's important to

understand the limitations of any idea before trying to implement it. All that being said, the fact that the industry is primitive and unorganized does provide with some brilliant opportunities to cause disruptions. The amount of money put in infrastructure around the world also makes many ideas in civil engineering hugely scalable. Some ideas which come to mind:

- Automation of execution to achieve much faster turnaround times in construction projects. This is especially applicable to India where construction is painfully slow as compared to the west or even China (I was amazed to know that construction of a huge structure like Millau Viaduct took only 3 years. In India, for such projects, often a year or more can pass even before the full site team and equipment are even mobilized).
- A new material to replace concrete or steel or a new structural concept (like pre stressing introduced in the past by Eugène Freyssinet) can cause a major disruption. But again, significant research is required. A lot of research is already going on in this field though, materials have come up but are not yet feasible to use at a massive scale (eg. Carbon-fiber-reinforced polymer, Fiber-reinforced concrete). Maybe you can look into some of them for inspiration or further development.
- Innovations in engineering and design space, finding new ways to design structures using the tremendous computation power and technology available. But unless what you do is truly revolutionary, what you will end up doing is only adding value to an already working product in an industry which does not care too much about value-engineering. You can develop tools for existing consultants, but scalability would be a problem there, the market of consultants is simply not large enough. But I believe there is room for revolution here (don't take my word, though. It is loaded with personal bias). My simple tips while thinking of a start-up in civil engineering (you seem like a student to me, I am answering from that perspective) - look for scalability and market size, get an experienced (but preferably not too old or retired) co-founder on board (mostly as the CTO) and do a thorough market study (that means actually meeting your potential clients -plural- and collecting relevant data on current alternatives to what you might be doing) before diving into anything. If you have to compromise on any of these tips, it's better to

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work in the industry for a while, gain experience and then come back to your idea.....[1]

Areas Relevant To Business Idea Mongers for Civil Engineers

1. Sustainability by designing
2. Rapid construction
3. Solar powered homes and offices
4. Green construction materials: rice husk, fly ash, etc.
5. Automation of execution
6. Innovation in the designs. I am sure, together we can come up some really workable business ideas that those looking for options can take.

Obvious Disruptions in Civil Engineering

It requires a deep understanding of civil engineering, much greater than what is taught in colleges even at post-grad level. The whole industry is very traditional in the sense that you learn most of what you do on the job instead of at college. The risks are very high ! Financial implications of failure are huge, and more often than not lives are at stake if you make big mistakes. As somebody pointed out here, "bugs" in your program can have pretty dire consequences. More often than not, governments are the ultimate clients in big construction projects. If your clients are archaic, unorganized and don't desire optimization, the value added in short-term by innovation reduces drastically. And short-term is what drives the world! I have digressed too far off the main topic and this answer risks turning into a rant, but it's important to understand the limitations of any idea before trying to implement it. All that being said, the fact that the industry is primitive and unorganized does provide with some brilliant opportunities to cause disruptions. The amount of money put in infrastructure around the world also makes many ideas in civil engineering hugely scalable. [3].

Basic Ideas for Startup

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In starting a civil engineering business, one of the first things you must consider is the existing competitors. Determine if you will be able to provide service with higher standards than those of the existing civil engineering businesses. If you are not a civil engineer yourself, consider hiring civil engineers with very good skills in engineering. Your business name and reputation merely rely on the skills of your civil engineers. They represent your business whenever they service a client. Another thing to put into consideration is your budget. Before anything else, think about how much capital you are able to give out. This will help you in determining if you can afford to hire civil engineers who already put up a good reputation or not. Also your capital will play an important role in searching for your business location or office. Your office should have the usual front desk just like any other businesses to entertain your clients' inquiries. You should also be able to provide a showroom to show your clients with the sample accomplishments of your civil engineers. Use digital cameras to telephotograph of the buildings your civil engineers have designed if there are any.

Insurance is also a thing to think about. Since you are dealing with professional services, shop around for insurance companies who provide professional liability insurance. Shopping around will help you in choosing which insurance company provides the best professional liability insurance policy. If you are still having difficulties in determining which insurance company you would choose, consult an expert. Consult an owner of the same line of business; it does not necessarily need to be a civil engineering business too. Since they have already put up their own business, assume that they already have experienced what you are doing right now and you should ask for recommendations on which insurance company provides the best plan that will go well with your civil engineering business.

Conclusion

But never seek advice from your future competitors; do not expect them to give you a considerable piece of advice because that will be the last thing they want to do unless they want their business to have good competitor, you. Also, put into consideration what sub-discipline of

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civil engineering you will be having area of specialization in. This will give you an advantage over your future competitors. The following are some of the sub-discipline of civil engineering:

- Coastal engineering – this mainly deals with the techniques on how to prevent erosions and floods in areas near the seas.
- Earthquake engineering – this pertains to the capacity of a structure to survive an earthquake.
- Environmental engineering – deals with the biological and chemical waste management of certain structure.
- Transportation engineering – this deal with the transportation of people and goods across places efficiently.
- Structural engineering – this concerns the scheming of structures such as buildings, bridges, tunnels, and flyovers. [2].

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