

Utilizing Architecture Design to Solve Structural Engineering Problems with Deep Learning

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Abstract

Before, when there was an existing construction solution service-related project, it would only provide a limited selection of construction services, and contracts would be managed and documented manually. Some applications have caused a noteworthy amount of delays in the huge construction project, and these delays have influenced on the execution of strategic planning. The lack of cash flow and financial difficulties experienced by customers, poor site management by contractors, insufficient contractor experience, a shortage of site workers, and ineffective planning and scheduling on the part of contractors were among the major disadvantages that contributed to a lack of customer trust in this industry. In order to circumvent this obstacle, ArCDEx set a mission to simplify the process of doing business for our customers by providing the whole construction in a single package at competitive prices. From the very beginning to the very end, the goal of this project is to provide a professional service that makes use of expertise, project management planning, and designing. It has a staff of architects, structural engineers, landscape designers, consultants, and professionals who provide services connected to construction. It also provides features and functionalities for managing construction works from the project's inception all the way through to its completion. These features include the ability to monitor the various stages of the construction process, such as the procurement of design services and contractors, construction methods, and the

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management of the construction process.

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Aggregator are some of the keywords to look for.

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1. INTRODUCTION

Our goal is to make the process of building and refurbishment easier and more trustworthy for our customers. Through our study and experience, we discovered that there is a serious trust gap in this industry, and the whole process is extremely unpleasant from the perspective of the client. Because we have always been certain that this problem cannot be solved by just acting as an aggregator, we have moved quickly to improve the whole ecosystem in order to provide the client the most pleasurable experience possible. We offer a comprehensive selection of building services using an approach that emphasizes openness and collaboration. The primary goal of this project is to lessen the workload of end customers, and by utilizing a single platform for all of their building requirements, these customers can also save a significant amount of time [1].

This project's objective is to achieve the highest possible level of customer satisfaction by streamlining the business process for our clients so that they may purchase the whole construction in a single bundle at the most economical price. Customer satisfaction may be measured in a variety of other ways, but on our ArCDEx platform, our primary objective is to give customers the most advantageous discounts and deals.

The primary goal of this project is to bring about a professional service that makes use of expert project management planning and designing from the very beginning to the very finish [2]. It has a staff of architects, structural engineers, landscape designers, consultants, and professionals who provide services connected to construction. The management of a project's costs is a crucial component, and it should be checked on a regular basis. Our one-of-a-kind proposal is comprised of the following four modules: architecture designs, services, turnkey, and payment management. The client is able to examine the design depending on the offerings, Request a price estimate for each specific service package, and you will also be able to make payments, and ask questions about Construction solutions [3].

2. SOLUTIONREVIEW

Everything that has to be done must be done by hand in the system that is already in place, which makes management tough. This procedure is inconsistent, and all of the dealings with the contractors would have to be done manually, taking a significant amount of time and causing the firm to slow down. It was difficult to keep a record of the discount that was offered to the clients. Offline purchases are eligible for discounts. They provide a selectively restricted construction service, and both the handling and recording of contract information were done manually. Keeping the records up to date required a lot of effort and time.

The following are some of the problems with the current system:

- Discounts must be given manually by contractors.
- There is a trust gap.
- Customers report that the whole procedure is difficult and time-consuming for them to go through.
- Customers report that they were not provided any offers.

The ArCDEx system provides a comprehensive answer to all of your requirements in the construction industry. We are an aggregator that brings together on a single platform all of the civil, construction, interior design, architects, artists, and other professionals. Our suggestion is to streamline and standardize the restoration and building process so that it is more reliable. Based on our study and previous experiences, we have determined that there is a significant lack of trust in this industry, and the whole process is rather unpleasant from the perspective of the client [4]. Because we have always been certain that this problem cannot be solved by just acting as an aggregator, we have made great strides toward fixing the whole ecosystem in order to provide the client the most pleasurable experience possible.

Our one-of-a-kind offering includes the following components: architectural designs; construction services; end-to-end service; online contract; payment management and facilitation service; carrier options; and our guarantee [5]. To ensure that you have the safest and most satisfying experience possible, we only work with the most qualified specialists (contractors and renovators) and provide the most competitive rates and savings.

At ArCDEx, we consider ourselves partners with the client for the whole of the project. Our application contributes to this objective by ensuring that the data pertaining to the project is saved to our systems and by tracking the progress of the project in the background alongside our experts [6].

The following are some of the benefits that the suggested system has:

- The experience of building and remodeling was made simpler and more trustworthy.

Why To simplify the process for our customers by providing comprehensive building solutions in a bundled offering at competitive prices; this will allow us to better serve our clients.

- Easily accessible • Plentiful career possibilities
- A simple and accessible platform for sellers to expand their businesses

3. FEASIBILITY STUDY

The application is conceived of and developed with the intention of facilitating communication between the company's clients and its many qualified third-party suppliers. In order to log in and make full use of the application, both the client and the vendor are required to supply an appropriate and active registered email ID. This research is of greater importance to every business in order to accomplish the specified system aim [7]. The primary purpose of this research is to determine whether or not the project will be beneficial to the company within the allotted amount of time and money.

The examination of the feasibility includes many important components and considerations. The following are the components:

1. Technical Feasibility:

Following an examination of the capacity to use the existing level of technology, technical feasibility is something that gives an operational evaluation of the potential for future progress. It is also vital to take into consideration the technical capability of the available technology as well as the technical capacity of the human resource. ArCDEx is a one-stop shop that can meet all of your requirements in the realm of building. This Online construction solution is a web application that was made utilizing open source and cost-free technologies such as Node.js, Angular, Python, and MySQL.

In the older method, the information was recorded by hand, the functionality was very sluggish, and the contracts could not be compared within the allotted amount of time. There must be a significant amount of human involvement; for example, additional personnel were needed to record the data, phone customers, and so on. In the system that has been presented, it is automated to a higher degree, which reduces the amount of human interaction. In comparison to the current system, this one is more secure since the program can only be authenticated by users with the appropriate

permissions. The amount of time spent doing physical labor is decreased. When designing an application, the most important considerations to make are the amount of time allotted and the work that has been completed.

2. **Operational Feasibility:** Our application offers consumers construction solution-based services from a variety of providers in a seamless manner from beginning to finish. The system includes three primary key approaches: offering verified client contracts to suppliers, construction-related solution options, and carrier's prospects. The website serves as a connection point between the consumer mobile application and the dashboard accounts used by the vendor. Customers have the ability to inquire about service or design, as well as seek a quotation for discounts and deals that are produced by the administrator [8].

3. **Economic Feasibility:** The cost analysis involved in this application is really little. The suggested application that we have created has the development costs streamlined. The suggested software will have lower costs associated with its ongoing maintenance. Because the application frameworks that are utilized in its development are open source, the application may be quickly created in a cost-effective way [9].

4. **Schedule Feasibility:** This term refers to the amount of time that has been allotted for the completion of the project. Rather than taking a significant amount of time to make progress, it is always considered to be the best practice to allot the necessary amount of time and finish it within the allotted amount of time. The ArCDEx web application consists of a few different components. A person is responsible for the development of each module. The completion duration for each module is 12 weeks, and during those 12 weeks, every person is required to finish the modules that have been given with the correct functioning of it.

4. DESIGN MODULE

The client is able to examine individual detailed designs in this module. These designs are based on the customer's prior design downloads. The number of downloads is shown just below the design. Customers have the ability to choose Architectural Designs, make a payment, and download those designs based on a variety of categories. They also have the ability to inquire for more customization designs, either in 2D or 3D [10].

1. **Service Module:** Customers have the ability to choose the services they want as well as the suppliers that provide those services. Additionally, they have the option to Request a Quote for

each specific service. The administrator will communicate with the vendor in order to have the task completed for the client.

2. The Vendor Dashboard is a place where the vendor may manage all types of services using data that is updated in real-time. Additionally, he is able to monitor total revenues, accounts, the number of orders, as well as the fact that suppliers may add their new services and new designs.

5. THE FINAL REMARKS

This application makes use of a variety of user-friendly codes and has also included optimizations to improve speed.

Since this Web Application was designed using cutting-edge technologies such as Node JS, TS, and Angular, it is very quick and has a very smooth user experience. All of the data is saved in the MySQL database, which offers a greater degree of flexibility. The application may be tailored to meet your specific needs. The admin may create discounts and offers from inside the administrative interface.

Single Aggregator is a service that our platform offers to all of the construction services, as well as assistance for the advancement of the rural sector.

- Offers employment prospects to everyone looking for work, including freelancers and job seekers
- Provides good exposure to the market for construction employees

A commitment to transparency throughout the building, design, and remodeling processes.

To give the consumer the most pleasurable experience while maintaining cost-effectiveness

The construction industry and its suppliers stand to gain a great deal from this initiative.

6. FUTURE WORK

The research makes it abundantly evident that maintaining positive communication contact between the consumer and the seller is highly crucial. The primary goal for the foreseeable future is to improve the quality of the shopping and selling experiences provided by the program by making it more user- and vendor-friendly. By adding a function to an existing system that allows customers to draw their own architectural design, and also by allowing customers to submit their design as a file format to an application, we may provide customers with the ability to design their own homes. Providing a customer dashboard from which they may check records of their orders, downloads, and payments Customers are given the opportunity to submit feedback and ratings about the quality of the service provided by the vendor. Offering a live chat platform for interaction with the expert.

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