

Aid for Planning Furniture Projects



MDes. Interaction Design,
Project II

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AID FOR PLANNING FURNITURE PROJECTS

Interaction Design Project II

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Declaration

I declare that this written submission represents my ideas in my own words and where others ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all the Principles of academic honesty and integrity and have not misinterpreted or fabricated or falsified any idea/ data/ fact/ source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.



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Approval Sheet

The Interaction Design Project 2 entitled “Aid for planning customized furniture projects” by Sukanya Mudaliar , 126330005, is approved in partial fulfilment of the requirement of

Master of Design course (Interaction Design).

Guide:




Chairperson:



Internal Examiner:



External Examiner:



Abstract

Although the need for customised furniture has always been there, the entire process of commissioning a carpenter has been described by many clients as an anxiety ridden one. This is an event that occurs once in many years for the client. The information on market conditions, material and making charges are not very easily available. Clients are always weary of being cheated in some way or the other.

The project started with interviews of people who had recently commissioned a furniture project and carpenters who took up such projects. The interviews were open ended and helped in compiling the challenges faced by both the parties. Insights showed that there are differences in the way carpenters and clients visualise and communicate their expectations and ideas. Owing to their practice, carpenters had developed a strong spatial sense which may not necessarily be shared by their clients. This has led to many misunderstandings. Thus there was a need for a more concrete visual representation for both parties to come to a common understanding.

Subsequently, personae of clients and carpenters were created to convey the ideas of problems faced by them. Simultaneously, a comparative study of products and service in this domain was conducted to find the need gap in the current scenario.

The final concept of this project provides the client with relevant information at every step, facilitating them from the point of

choosing their furniture and customising it as per their requirements to finding the right carpenter to do the job. Overall, it alleviates anxiety by bringing in transparency and concreteness to the actions carried out.

The final concept is to provide an interface for individuals who may be interested in commissioning custom made furniture, to help them:

- a) Plan custom-made furniture that they may intend to commission a carpenter for making through a furniture planning wizard that helps the user make key decisions like size of furniture, its placement in the room, storage space and structure, materials, embellishments and budgeting. This is done displaying relevant information and available options wherever necessary.
- b) Record relevant details while designing furniture in a way that both the client and the carpenter may understand. This has been through a project summary sheet that records all the specifications of the project and can be used as a reference for discussion amongst clients and carpenters.
- c) Find a suitable carpenter for the job. A portal that connects prospective client to carpenters in and around their locality and also displays portfolios of their past work and feedback from their clients.

The prototype was evaluated through think aloud exercise and user feedback was incorporated into the next iteration.

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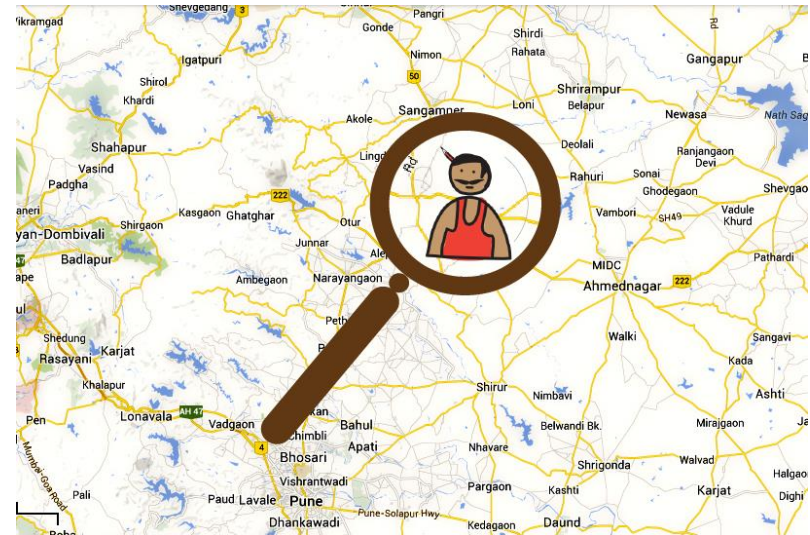
Introduction

Motivation for this project

Earlier, wood was a major part of home and office furnishings. Furniture was made to order, by commissioned carpenters. Today, however, clients face a lot of difficulty in finding a good carpenter who will deliver custom-made furniture as their requirements. Many carpenters, in search of a steady income have taken up employment in larger firms, making ready modular furniture. Traditional carpentry is a skilled profession that encourages self-employment and entrepreneurship. Moreover, it is not easy for clients to avail information about the large variety of options related to material, design and finish that they could choose from in the domain of custom furniture, nor is it easy for clients to visualise furniture that would suit all their needs.

Despite all this, there will remain a demand for custom furniture which suit individual needs and preferences. In the west, there are many firms which offer customisability through tools on their websites. [1] [2] [3]. However, for the Indian context, there is

potential in building a tool that could offer customization and connect the client to traditional carpenters. This project is an effort to address the pains experienced in the transactions and exchanges between carpenters and clients resulting in optimal business activity for carpenters and a smoother, more controllable and transparent transaction for the clients.



How this project was developed



During my internship at Pabal Vigyan Ashram I came in contact with young individuals who had developed engineering entrepreneurial skills through hands on live projects. Impressed with the work and growth of these students, I started with an intention to make some valuable design contribution towards the betterment of such freelancers involved in engineering related businesses, like masonry, carpentry, plumbing and fabrication. Of

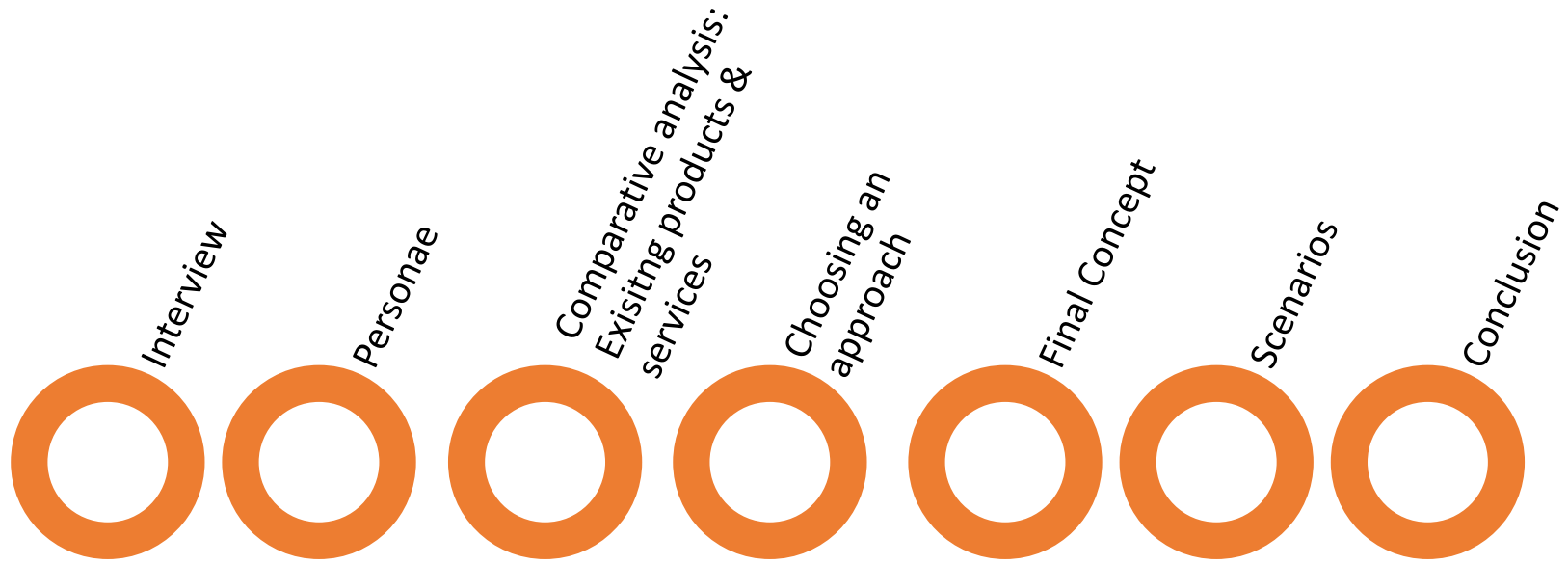
these businesses I zeroed down to studying the carpentry business because I felt that there was scope for design intervention. On the very outset of my study it was evident that maintaining a carpentry business wasn't easy.

Establishing contacts with clients and maintaining a good reputation was crucial to the business. Besides this, the demand for modular readymade furniture was growing and many carpenters gave up their businesses to take up employment under large corporations that sold such furniture.

But on the other hand, the need for personalised furniture still remained. Clients still sought to commission good carpenters to make furniture that suited their personal needs and preferences.

However, the trends of the industry made commissioning carpenters a very difficult process, filled with anxiety and uncertainty. So a platform for clients to find carpenters and clear communication between client and carpenter was designed. It would also give relevant information about furniture design, materials and finishes as and when required.

Design Process



User studies

Informal and open ended interviews were conducted where clients and carpenters were asked to describe the process of executing a customized furniture process. Carpenters who made customized furniture to order and client who had hired such a carpenter in the past 2 years were interviewed.

Carpenters were visited on location and clients, at their home.

Number of carpenters interviewed: 7

Number of clients interviewed: 5

Focus of Carpenter interviews:

- How did they get in touch with their client for the current project? Are there any other ways they have been introduced to clients in the past?
- How have they articulated their project plan to the client?
- How did they client and they arrive upon the current furniture design idea?
- Who are the people they have been coordinating with for this particular project?
- How many projects are they involved in at the moment?

- Have they faced any difficulty in finding clients in the past? What according to them are the pain areas in finding good opportunities and projects?
- What is the agreed method of calculating making charges for this project? Why?

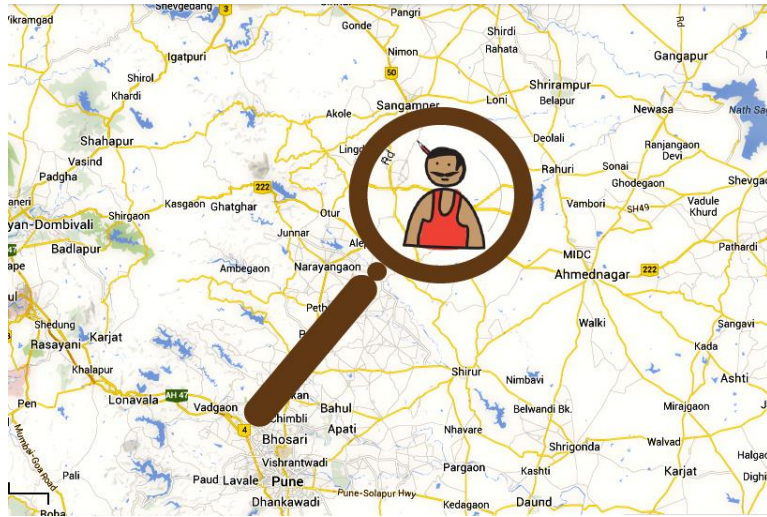
Focus of Client interviews:

- How did they get in touch with the carpenter for the project in question?
- Had they made any plans for the furniture before meeting with the carpenter? Have been any changes in the plans after meeting with him?
- How did they articulate their expectations to the carpenter? Have they faced any difficulty or misunderstanding while communicating with the carpenter?
- How did the carpenter and they arrive upon the current furniture design idea?
- What is the agreed method of calculating making charges for this project? Why?

Insights

Establishing contact

Establishing contact was an extremely critical issue for both clients and carpenters. Clients needed a good, reliable carpenter and carpenters needed a steady flow of projects.

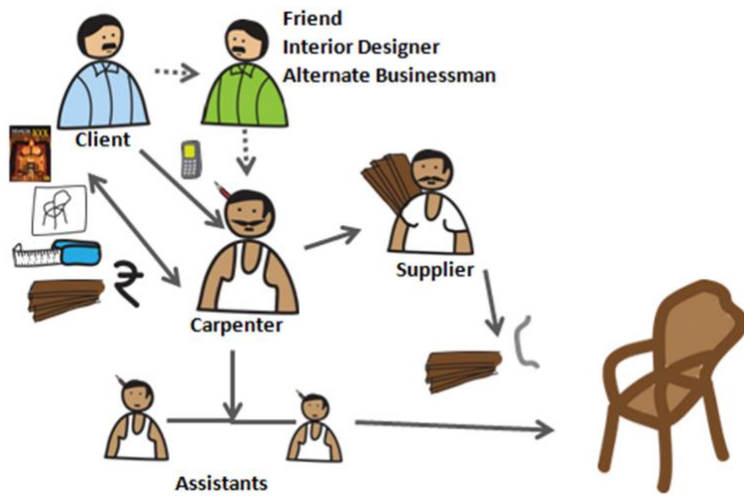


Many of the carpenters maintained contacts with material supplier stores and claimed to receive client calls through these suppliers. This arrangement does not work in favour of clients since the carpenter over-charges them in order to cover the commission that is due to the supplier. Moreover, it is mandatory to buy materials from the same supplier, in such arrangements.

An established and experienced carpenter maintained an understanding with the maintenance offices of residential colonies. Often clients would call the maintenance office for some petty repairs and be directed to the carpenter. These repair jobs would help carpenters establish contacts in the locality. This technique helped this carpenter become popular in a small area. But such efforts took many years to fructify and his reach still remained limited to a very small area. Such arrangements are rare. 3 out of 5 clients mentioned that they had found it very difficult to find good carpenters for repair work. *“Carpenters usually don’t take interest in repairs, they want big projects.”* Said one client.

Young carpenters often take on apprenticeship under such ‘established’ carpenters. Hoping that in the next 10-15 years they would be able to master their trade and simultaneously build their own clientele. Although this process works well.

Clients had been introduced to carpenters through service providers they already knew such as, painters, domestic helpers, and the local hardware supply store. Clients asked relatives and friends and through them got in touch alternate professionals like architects, fabricators, who had carpenters among their professional contacts.



Such hunts have often proven unsuccessful or leading to unreliable finding. Some had established contact with a good carpenter by relying on testimony of an acquaintance. In most cases it was a recommendation given by friends or family.

The success of this method depended on the following conditions:

- a) Finding an acquaintance who had a positive experience with a carpenter
- b) They have the contact details of the said carpenter.

Since the probability of meeting both these conditions is low. It makes the probability of having a positive experience, with this process, low.

Arriving upon the right design

Typically, the carpenter shows a couple of catalogue launched by a certain adhesive producing company. These catalogues have limited designs and are meant to help the client to form a clearer idea about what they really want. These booklets are also used as a reference to aid communication between the client and carpenter.

Communicating needs and preferences

After referring to the catalogues the carpenter and client need to arrive upon a common understanding of the requirement of the project. This meant selecting designs from the catalogue and discussing modifications or iterating upon previously made plans, materials required and cost to be borne. Carpenters drew rough sketches on scraps of paper as and when they felt the need for illustrating what they were talking about. Clients mentioned misunderstanding and multiple iterations to be a common scenario while communicating with carpenters. Despite all efforts there was always said to be a risk of disappointment due to miscommunication of ideas. One carpenter also mentioned that he charged clients extra for any change in plans that were made after the deal was fixed and the work had begun.

Trust

Clients did not commission such projects on a regular basis. When they do, they felt weary of being cheated as could not spend much time in understanding market trends and latest practices in carpentry. 4 out of 5 interviewees claimed that searching for reliable carpenters had been a very difficult task for them. This caused a lot of anxiety.



Choosing and modifying designs as per personal needs and constraints

All clients interviewed claimed that they had wanted to commission a carpenter to make customized furniture because they had specific requirements or preferences. Thus there was a strong need for them to deliberate upon their needs and constraints and carefully plan furniture. This they did by looking through the catalogue and chose furniture that came closest to make their needs and then planning modifications on these designs.

Materials and costing

Clients need to make important decisions about budgeting and selecting materials that would suit the expected shelf life of a particular piece and utility of a particular piece of furniture and fall within the allotted budget.

They do not find reliable sources which would help them in making such decisions.

Costing may often be a highly negotiable affair. Carpenters often made inaccurate estimates of materials required. This would lead to wastage or multiple trips to the material supply store.

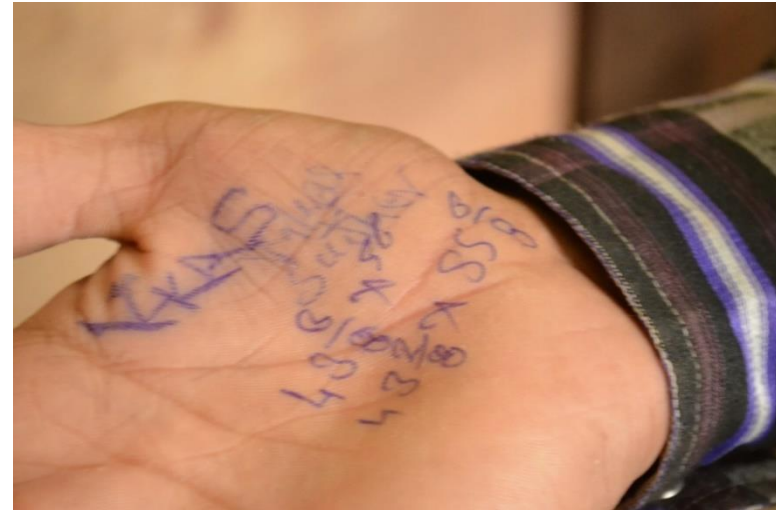


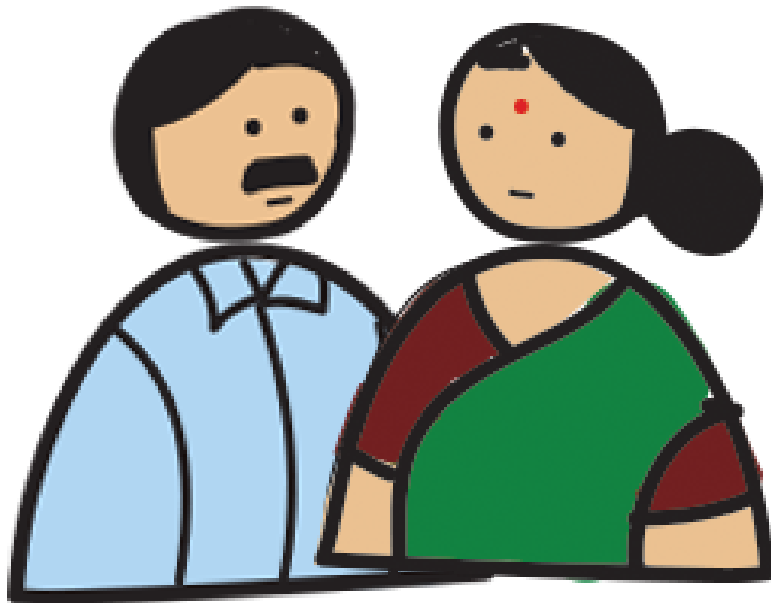
Figure 1 This carpenter makes calculations on the palm of his hand before cutting the material for work.

Some clients had asked their carpenter for advice on materials and later regretted doing so as the final output did not meet their expectations in this respect.

Personas

Clients

Persona 1: The Family



“We need to make enough room within the available space.”

Anubhav and Anubha have been married for 8 years and live with their two children, Anoop of 7 and Anuja of 4 years, in a two-bedroom apartment in Goregaon. Anubhav is a general physician and Anubha is a home-maker with a Bachelor’s degree in Home Science. With their kids growing up, they need to make space for them to keep things comfortable. They are looking for compact furniture with good storage capacity.

Anubhav has a laptop which he carries to his clinic and owns a smart-phone. He uses his laptop to buy things online, but only if there is a cash on delivery option, as he is not comfortable revealing his credit card details online. He also has a desktop and printer at the clinic, which is operated by the receptionist. Anubha uses the PC at home. Both Anubhav and Anubha are comfortable using online services. Recently, both of them have been scouring the net for furniture ideas in their free time. They often WhatsApp photos of products they’ve liked, with each other. Anubha has been asking her neighbours for contacts of carpenters whose reliability and work quality, they may be able to vouch for. So far they haven’t found one whose work and labour costs match their expectations.

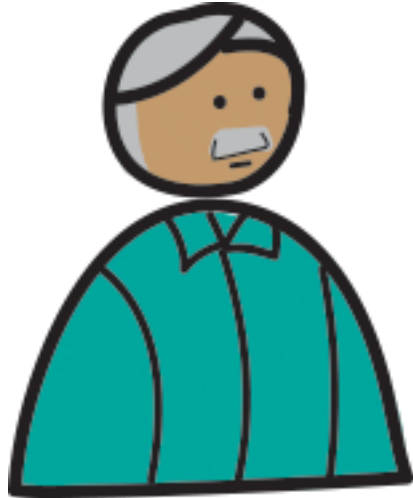
Requirement:

Furniture for home, made as per measurements of available space.

Concerns:

Furniture mustn’t make the home too congested, there should be enough space for children to move freely.

Persona 2: The Service Consumer



“Nothing much... But it’s tough to find carpenters to do it.”

Rustom lives in his ancestral home at Koregaon Park, Pune, along with his wife. He used to own a popular antique store on MG road. 5 years ago he wound up his business to spend time with his family. His son has settled abroad and has two little girls, aged 3 and 5. Rustom visits his son to spend a couple of months with his granddaughters, during their vacations, every winter. He suffers from diabetes and arthritis. This year, he could not go to his son’s

home, owing to his advancing trouble with arthritis. He plans to use this time to carry out various repairs around his home. He definitely needs a carpenter to do a number of small repairs for restoring some pieces of furniture from his father’s times.

He enjoys listening to classical piano, reading novels and periodicals and loves socialising at the local club. Rustom has a desktop computer which he uses to correspond to e-mails, (which he prints and files away, regularly) and make Skype calls to his son and granddaughters. He conducts Google searches and refers to Wikipedia to know anything he may be curious about. Rustom does not shopped online,, as yet. He also has a fixed phone line at his home, which he uses more frequently than his basic feature phone.

Requirement:

A carpenter to do petty repairs, he doesn’t mind paying a little extra. But the carpenter must be patient.

Concerns:

He should be reliable.

He should know his job.

Carpenters

Persona 1: The established businessman

Ramulalji has been in the carpentry business for the past 35 years in Powai area. He coordinates most of his business by making phone calls through his Nokia basic phone. He has around 15 assistants. He is frequently contacted for society maintenance as well as renovation work in residences. Recently he has opened up his workshop near Vikhroli after receiving a large contract for renovating the Haiko Supermarket at Powai.



“Humko yahaan jaante hain. Main agar ek jagah baith bhi jaoon toh business chal jaega.”

Persona 2: The team worker-cum-entrepreneur

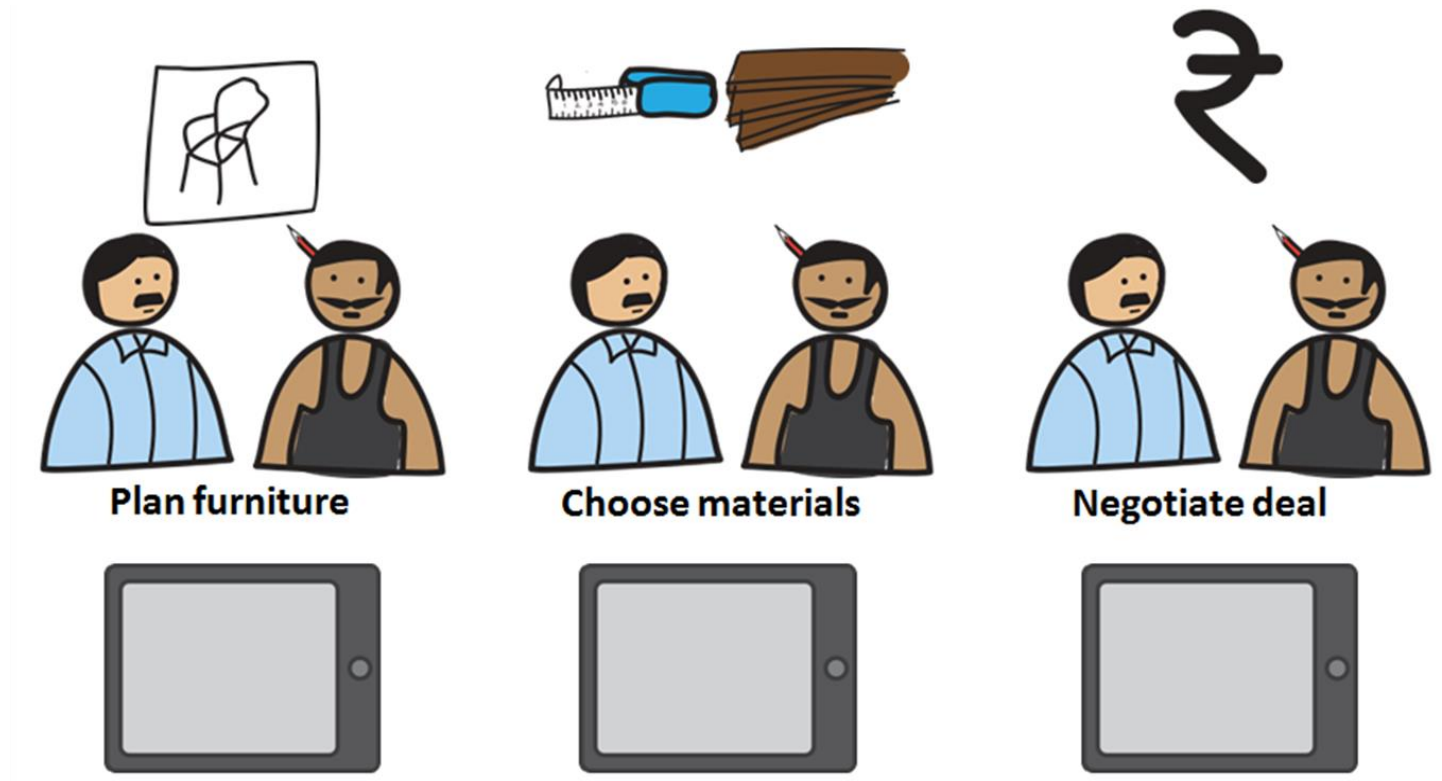


“Yeh business toh trust pe chalta hai...Aur aaj kal toh mall pe zyaada bharosa karte hain.”

Omprakash has been in the business for the past 15 years. He works along with his team on the job. He takes up home renovation, repairs and reuse furniture jobs and also has ties with a few interior designers. He works on site and does not have any fixed workspace. He can be contacted on his mobile phone or through a hardware shop in city's ply market.

Choosing an Approach

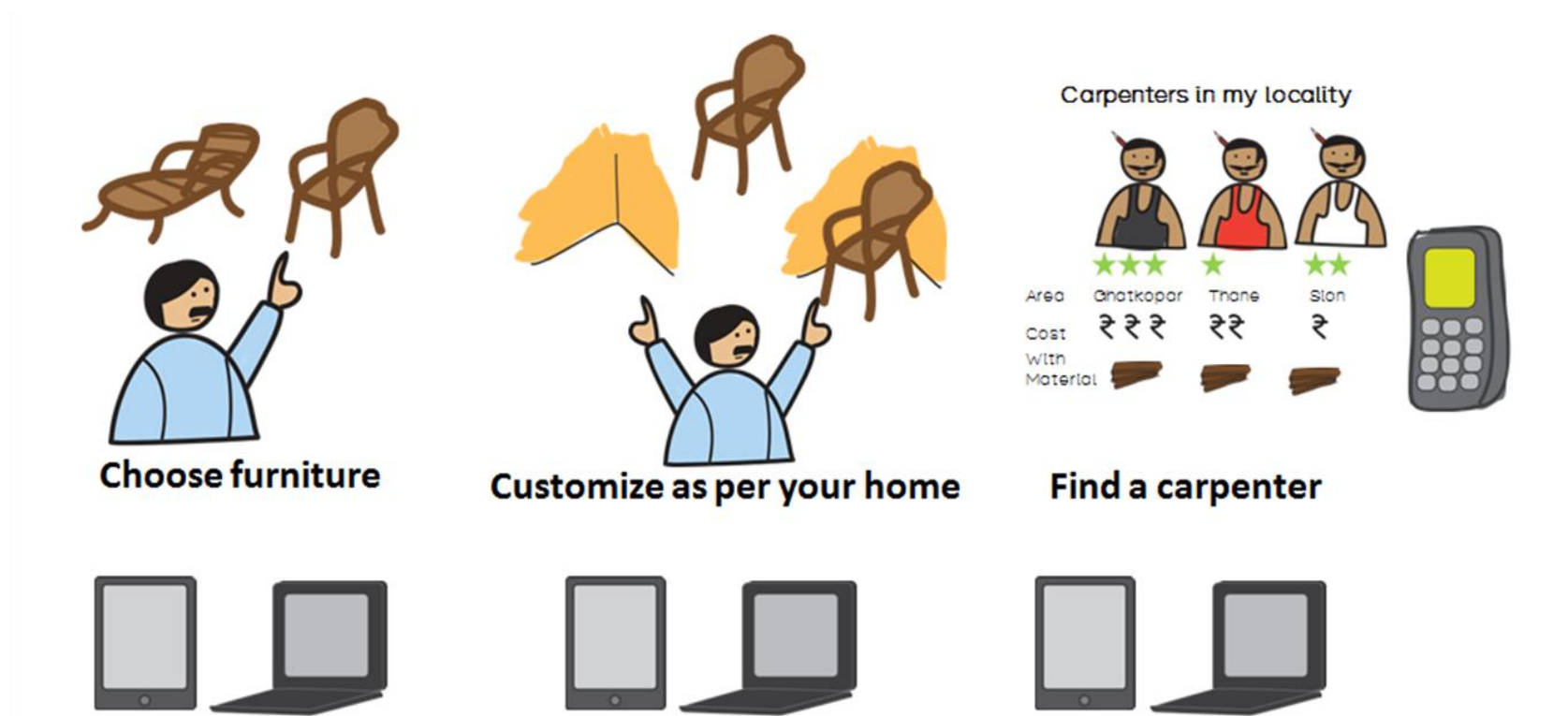
Approach A: A tablet app for carpenters to manage their projects



Carpenters constantly meet client who find it difficult to communicate their ideas and expectations. Software designed for the carpenter to help him communicate with the client. This software could be operated from a tablet or a smart phone.

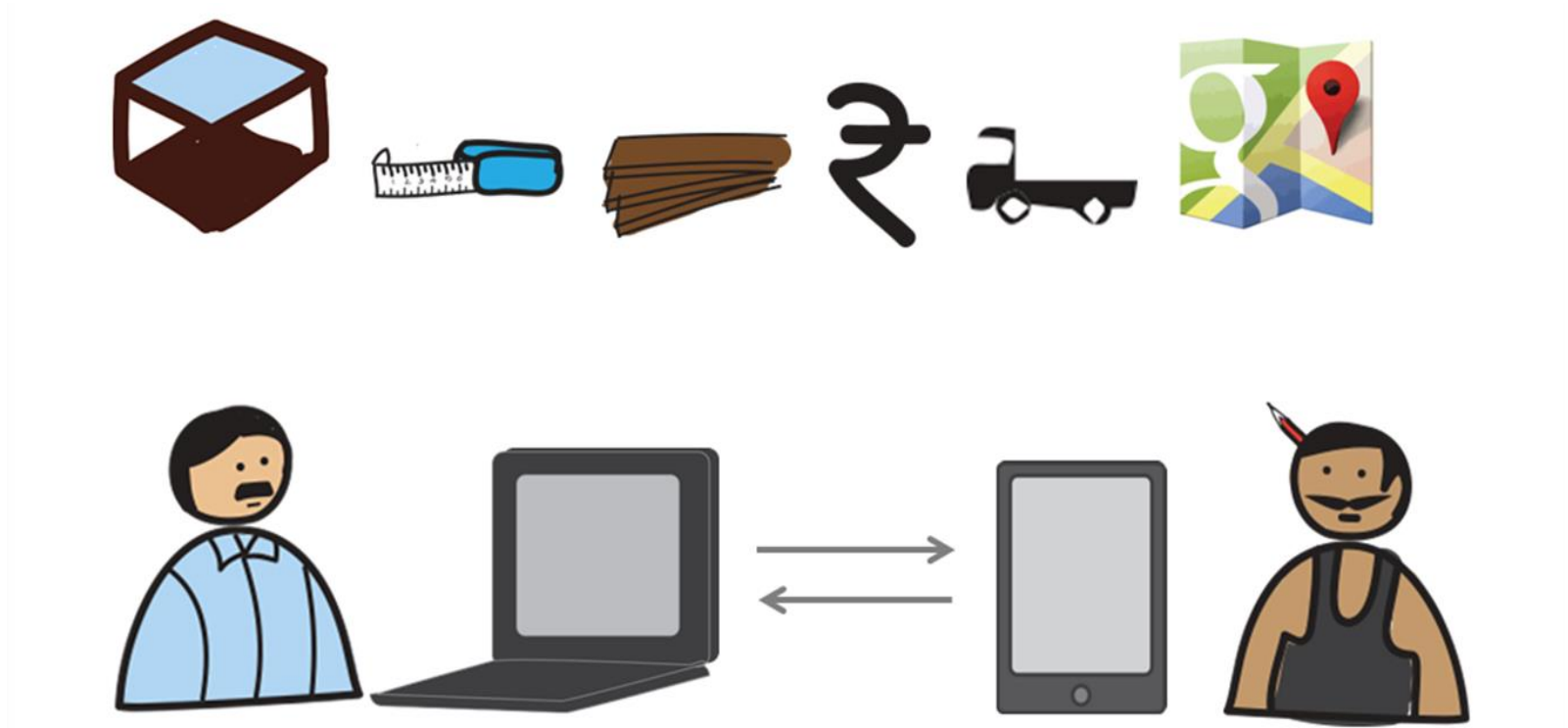
It will have a customisable furniture design software. It will give estimates of material required and current market rates of the material. It will also aid in negotiating the deal as well as maintaining records of the deal.

Approach B: A portal for clients to customize furniture and find carpenters



An interface that facilitates the client to take initiative in choosing furniture, planning their space at home and choose a carpenter as per their requirements. Carpenter receives a call from the client and also hard copies of the plan with all necessary details chalked out.

Approach C: An app which allows carpenters and clients to collaboratively plan the project



A software that has two sides, the client side and the carpenter side. While clients may plan their project, carpenters may add their opinion, share ideas and make suggestions for better design, material options to the client. The client and carpenter collaborate in real time to come to a clear consensus about the outcome of the project.

Analysis

Clients hire carpenters, to make custom furniture in order to ensure that the final product suits their needs perfectly, in terms of size, structure, materials, décor and cost. These needs must be externalised in an effective manner for smooth and successful execution of the project. In order to do this, the client will need access to references, available customization options and may also need time to deliberate upon their decisions.

Clients were almost always new to carpentry and could not spend much time in understanding market trends and latest practices in carpentry. Consequently, they were the ones who felt weary and insecure.

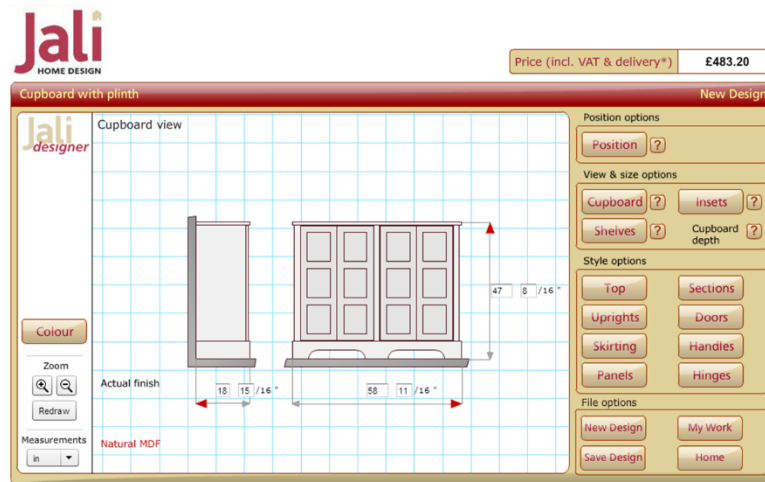
They were also the ones who had warmed up to technology and were more willing to take help from smart devices.

Therefore, it seemed most effective to approach the problem mainly from their end and then bring in the carpenter where he may participate comfortably.

Thus, Approach B: A portal for clients to customize furniture and find carpenters was chosen.

Existing Products

Comparative analysis of existing products



Jali

Jali is a UK based furniture store which allows its clients to customise the furniture online and then place an order for the same? The furniture is then shipped to the client's address. [1]

Notable features

They provide a minimum and maximum limit to many customizable elements like measurements, number of shelves, number of column in a wardrobe, etc.

The customisation options are broken up into smaller categories and clearly classified. They guide the user through all their functions so that the user understands and is able to utilise all the available options.

Breakdowns

User may not be able to make out how the material and finish will actually look.

The interactions are mainly numerical input based. It takes a while to understand what all customisation options are available. There is limited cognitive connection and feedback between the preview and customization options.

The user cannot introduce a change in basic design, e.g. they cannot introduce drawers into a wardrobe which has only shelves.

Take away:

User must be able to make a few basic modifications in the design as long as it does not affect the balance and safety measures incorporated into the entire plan.



Broyhill

Broyhill sells mainly seating furniture online. It has a wizard for customising furniture [4]

Notable features

Users can systematically customize furniture using a wizard approach.

Every element in the design options provided are well rendered, this makes it easier for the user to understand what kind of a finished product they must expect upon delivery and makes it easier for the user to visualize.

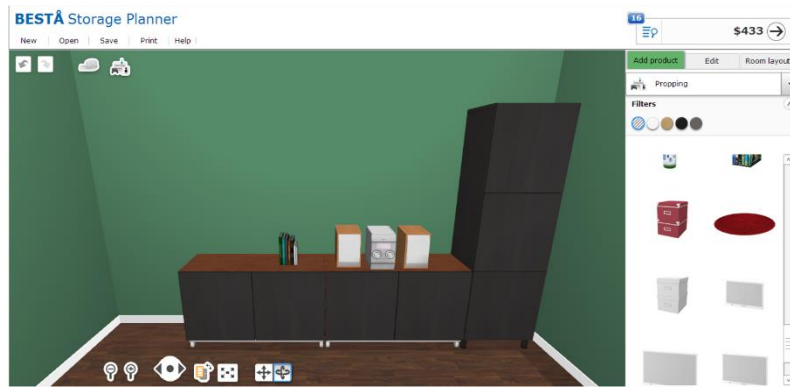
Breakdowns

The interaction is often over simplified as many of the smallest details are incorporated into the wizard, making it seem extremely lengthy. It may feel rigid as user is unable to skip ahead in the process if they already know what changes they would like to make.

The tool can be very heavy on the browser and tends to hang very often. It is difficult to use on low internet bandwidth.

Take away

All customisation options should be visually (not just verbally) identifiable for the user understand what the finished product will look like.



Ikea Beta Planner

The Ikea Beta Planner allows user to plan their own room, with a wide variety of products that they offer for sale. After making all the necessary choices, the client may either email or download a copy of the room along with a floor plan and product list. They are then offered information about Ikea stores near their location, where they may proceed to make the purchase. [5]

Notable features

The website has a clear definition of functionality. It also provides a unique self-aligning feature as part of its default interaction with furniture. Thus the user may lay out an entire room to see where they and how they might want to lay their furniture. The graphics are good enough to relate to and yet not very heavy in the internet bandwidth. This interactive tool also offers pop up objects, which are not for sale but available to help the user better understand how his room and furniture will look once it is in use. Additionally, the

tool also displays a constant update on the bill, as the user selects and drops furniture from their virtual room.

Breakdowns

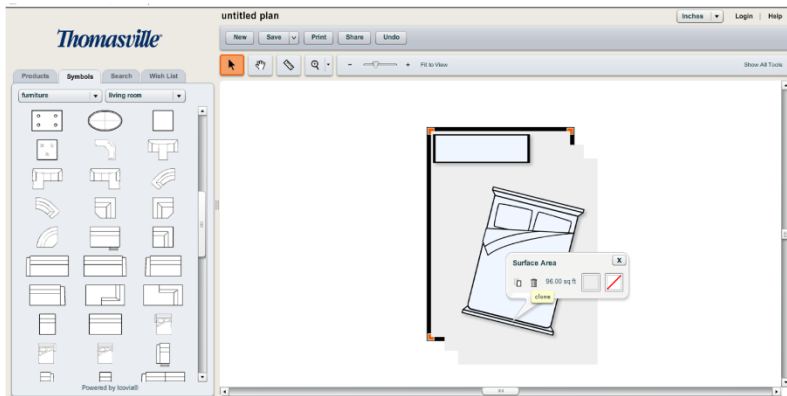
It does not allow customisation in terms of size proportion, structure and other elements.

All customization options available for any of show up on the menu even if such options may not be available in the current product, this confuses users.

Furniture needs to be collected from the store and cannot be ordered online.

Take away

The Self-aligning feature is a refreshing and innovative. The product would definitely benefit users if it is not heavy on internet bandwidth requirement since in India high speed internet is not pervasive. The product should always updates the bill amount to the user. An option for online order should be there, since its common today to order products online.



Thomasville - Icovia Room planner

A room planner, offered by a furniture store. It allows the client to plan their furniture according to space in their room and then they may share their plans with friend, they may download a PDF of the plan. [4]

Notable features

One could modify the size and shape of the room simply by dragging the handles provided on the objects.

The manner of displaying various options and interaction of placing objects was very similar to Ikea Beta Planner (viz drag and drop from side menu).

Breakdowns

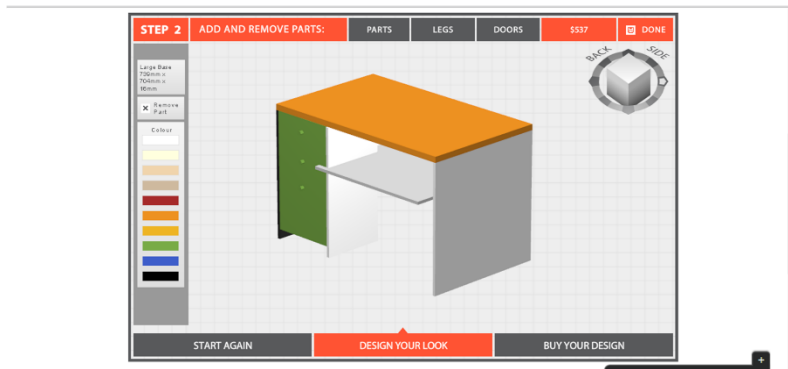
The service offers only plan view. It cannot customise furniture. The models sharing through e-mail facility is not safe, there is a possibility of email phishing.

After planning the furniture there was no link or indication to the next action or service that the business could offer. Actually, the user was expected to schedule a personal meeting with Thomasville and this had been mentioned on Thomasville's webpage.

However, when the users finished using the Icovia room planner, they expected to be guided towards their next course of action and that did not happen.

Takeaway

The product should have simple UI to modify shape and size. Having multiple views is helpful for the users. There must be freedom for the users to customise furniture. At every step there must be clear guidance for the users for the next step.



Evolvex

is an award winning, patent pending furniture design tool for viewing and customising flat-bed mdf furniture. After making their buying decisions, clients may place an order their customised furniture, which they receive in flat boxes and may assemble them on their own. [5]

Notable features

User can change colours of the mdf and view furniture in 3d. There is a facility to add, remove and modify various elements like doors, planks, and legs of the furniture.

Breakdowns

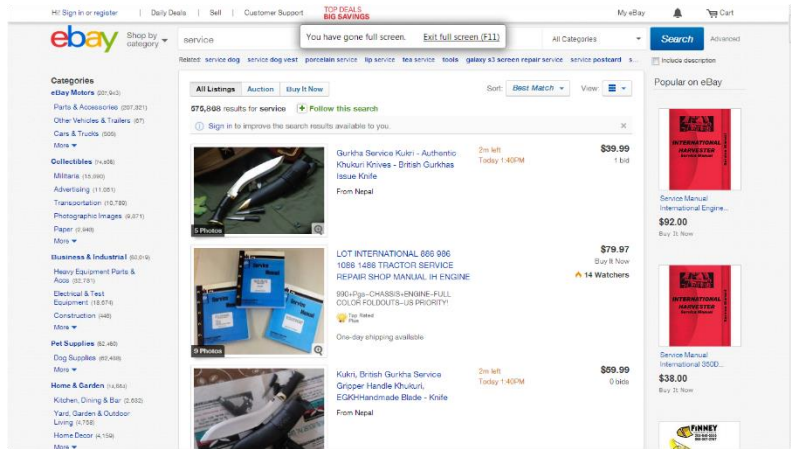
Users can't change measurements and proportions. It offers modular furniture with very limited customisation. There is a dead end in the interaction when user is unable to join loose planks to the furniture in order to make any significant structural change

and the system does not allow any progress without either deleting or somehow join these loose planks.

Takeaway

The worthwhile features are the freedom to change colors of the mdf and view furniture in 3d; to add, remove and modify various elements. Though, users can't change measurements and proportions. Also, the service should have a clear task flow.

All the above mentioned products are run by individual organisations in or to sell their furniture. However, this project aims to develop a decentralised system for commissioning individual carpenters, no particular organisation may claim rights to the designs suggested in them.



E-bay

Ebay is an open portal for buying and selling a wide variety of goods. It acts as a platform for buyers to find what they are looking for and sellers to advertise their ware. They deal in both new and used products. [6]

Notable features

Anyone can set up an account and directly sell anything. There is a bid system available which makes the experience of buying equal to that of winning. It also makes the transaction much more engaging and exciting.

Because the system is for regular use, it can allow the user to learn newer features and strategies to make the most of their presence on E-bay over multiple uses and a sizeable duration off time.

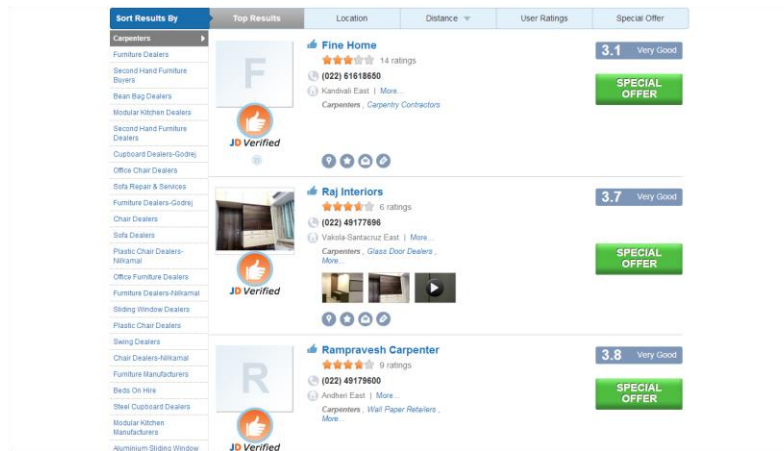
Breakdowns

There is practically no quality control buyers and sellers judge each other's trustworthiness on the basis of the feedback on their profiles.

For the current project, our system also must maintain the role of an unbiased mediator similar to what E-bay plays.

Takeaway

Interesting features like bidding add to the shopping experience. Low entry barrier to market place makes the pricing competitive and diversifies the product range. Though, on the negative there must a mechanism to regulate the quality and customer feedback on the products.



Takeaway

A large database of vendors is helpful for users. But a quality check on the list vendors is as important.

Justdial

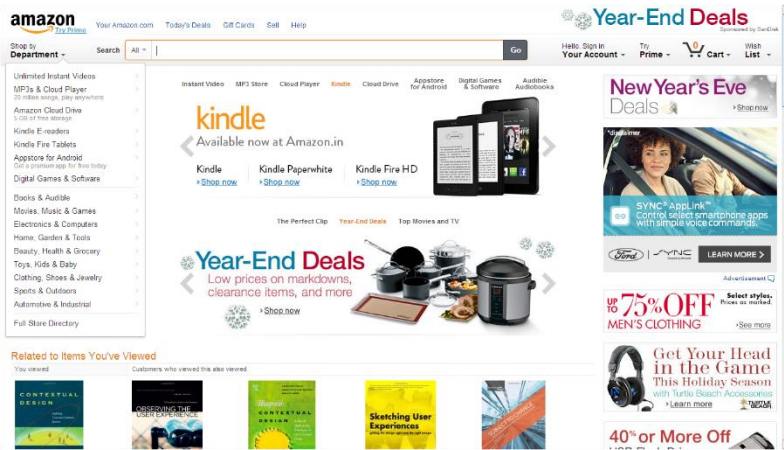
Just Dial is India's local search destination. The company caters to over 57 million unique users in India. It is available on Phone, Web, and SMS. The company bridges the gap between buyers and sellers by helping buyers find the right providers of products and services while helping sellers improve the efficiency of their marketing channels. [7]

Notable features

A large number of businesses are available within small localities.

Breakdowns

It does not maintain any quality control, few of the business have been verified to be real and functioning at the time of registration. However, that does not guarantee anything about its current state.



Amazon

It's a massive online store that curates and sells a goods ranging from books to [6] home appliances.

Notable features

It has a more controlled user experience as compared to Ebay.

It has a dedicated device (the KindleFire) which acts as a pocket store

Breakdowns

It does not support independent sellers. Although the store facilitates a large geography, many of its offline services like 30 minute delivery are limited to a few locations.

Takeaway

A good shopping experience with a diversified product range. The online delivery tracking experience is much better than the others.

Summary of the take away from this analysis:

By analyzing the notable features, breakdowns and takeaways from the above mentioned products and services, the following requirements were chalked out for the final deliverable of this project:

- The final output must include a tool to allow step-by-step customization of furniture.
 - There must be a large number of modifiable furniture designs to select from.
 - It must have a short learning curve and be suitable for one time use.
 - The tools must allow the user to make basic changes in structure of the design without needing to worry about the safety and sturdiness of the final output.
- All customization options should be (not only verbally but also) visually identifiable, to allow the user to easily understand the customization options available to them.
 - The interface must allow users to keep a constant track of the estimated cost of the furniture, based on the estimated material cost and the average rate of making charges that may be prevalent in the market at that point in time.
 - The user must be able to find skilled carpenters in and around their locality. There must be a way to gauge the carpenters' skill and service quality.

Final Concept

What is it?

The final output was a portal that consisted of a furniture customization wizard to allow smooth, one time usage. And a carpenter portfolio section to connect with reliable carpenters whose work and client feedback is available to the user.

For clients:

Help them find different furniture designs

Allows them to make changes to the structure, size, elements, material and finish of the piece.

Find a carpenter who will be able to deliver as per the plan.

Help client be better informed about current trends in the market with regards to furniture design, materials, finish and prices.

It offers transparency and credibility to the process of commissioning carpenters and planning furniture design projects by keeping track of the project and maintaining a contractual agreement between the client and carpenter.

It offers to buy good quality material for the client at retail price or lower.

For Carpenters:

Credibility - The system recognizes and certifies a skilled carpenter, this instills the client's trust in the carpenter.

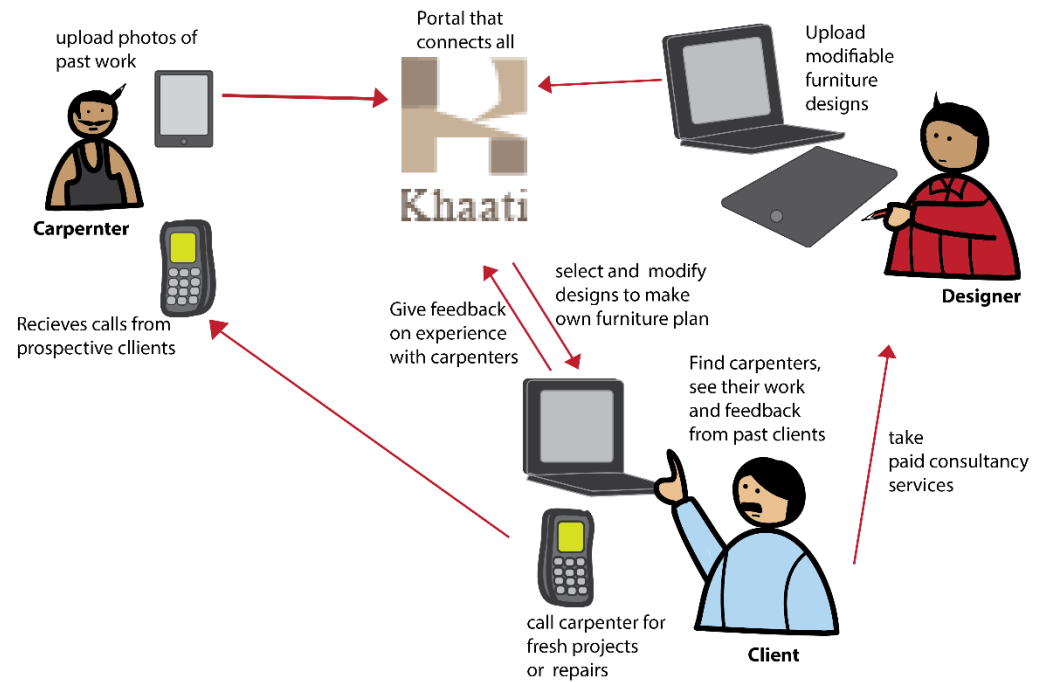
It provides a platform for showcasing them and making contacts with clients.

It attempts to provide a steady flow of work.

A clearer understanding of clients expectations

The primary user for the portal is the client. However two other sections to this portal have been suggested.

- a) Section for Furniture Designers to upload modifiable designs for the user's perusal and for consultation (on chargeable basis).
- b) Section for Carpenters to create their account and upload their projects.



Scenarios

The scenarios were made to illustrate the usage of the portal in a given situation in the life of the client personae.

Scenario 1:

Anubhav spend a leisurely afternoon at the clinic. He decides to use his free time to visit this website which can help him plan for the upcoming home renovation. Upon landing at the site, he finds that the landing page of Khaati serves 3 different user types viz., Client, Designer and Carpenter. It gives information about how the website maybe used by them. The user must choose their type and view information that is relevant to them. As a client he clicks on the option that would let him find "Furniture designs & a carpenter who'll make them" option.



K


Furniture type, name of product

Living Room Bedroom Kitchen Children's room Office

Price Range ▾ Longevity ▾ Material ▾


Login

Compare Products (Click on any two products to compare)




Kenaloo Wardrobe

Price: 15k - 18k Life: 10 - 12 yrs




Spring Cotton Couch (Deluxe 2 Seater)

Price: 20k - 25k Life: 5 - 8 yrs




Glamon TV Set


Price: 20k - 25k Life: 8-10 yrs




TV Leather Couch (Deluxe 3 Seater)

Price: 35k - 40k Life: 3 - 5 yrs







The first page of the 'Furniture designs & a carpenter who'll make them' displays designs by various furniture designers.

He decides to begin with the bedrooms, so he clicks bedroom filter in the menu.

The screenshot shows a website interface for furniture. At the top, there is a dark navigation bar with a logo 'K' on the left, a search bar containing 'Furniture type, name of product', and several category icons: Living Room, **Bedroom**, Kitchen, Children's room, and Office. To the right of these icons are filters for Price Range, Longevity, and Material, and a 'Login' button.

Below the navigation bar is a 'Compare Products' section with the text '(Click on any two products to compare)'. The main content area displays a grid of product cards, each featuring an image of a bedroom, the product name, price range, and longevity.

Product Name	Price Range	Life Span
La zin Low Square Bed (Double)	35k - 40k	3 - 5 yrs
Shayan (Double bed)	55k - 60k	5 - 8 yrs
Kannan (Double bed)	30k - 40k	5 - 8 yrs
Cubic (Double bed)	30k - 40k	9 - 12 yrs
Bachelor's Trunk (Wardrobe)	25k - 30k	20 - 25 yrs

He sees various ideas for bedroom interiors. He's specifically looking for a bunk-bed for the kids, so he runs a keyword search for "bunk-bed".

The screenshot shows a website interface with a dark wood-grain header. On the left is a logo with the letter 'K'. In the center is a search bar containing the text 'Bunkbed' and a magnifying glass icon. To the right of the search bar are navigation links: 'Living Room', 'Bedroom', 'Kitchen', 'Children's room', and 'Office'. Further right are filter options: 'Price Range', 'Longevity', and 'Material', each with a downward arrow. On the far right is a 'Login' button. Below the header, there is a 'Compare Products' button and a note: '(Click on any two products to compare)'. The main content area displays a grid of product cards. Each card features an image of a bunk bed, a title, a price range, and a lifespan. The cards shown are: 'Shipman's bunker' (Price: 20k - 25k, Life: 9 - 12 yrs), 'Daughter's nest (mini bunker)' (Price: 15k - 18k, Life: 3-5 yrs), 'Sleepover bed (bunker)' (Price: 20k - 22k, Life: 3-5 yrs), and another 'Sleepover bed (bunker)' (Price: 20k - 22k, Life: 3-5 yrs). There are also two more images of bunk beds without text labels visible in the grid.

He sees a variety of bunk-beds and clicks on one particular design to see its details.


The screenshot shows a website interface for browsing bunk beds. At the top, there is a navigation bar with a logo 'K' on the left, a search bar containing 'Bunkbed', and several category icons: Living Room, Bedroom, Kitchen, Children's room, and Office. On the right side of the navigation bar, there are icons for 'Price Range', 'Longevity', and 'Material', along with a 'Login' button.


Below the navigation bar, there is a 'Compare Products' section with the instruction '(Click on any two products to compare)'. The main content area displays a grid of product cards for different bunk bed models:

- Shipman's bunker**: Price: 20k - 25k, Life: 9 - 12 yrs
- Daughter's nest (mini bunker)**: Price: 15k - 18k, Life: 3-5 yrs
- Sleepover bed (bunker)**: Price: 20k - 22k, Life: 3-5 yrs
- Sleepover bed (bunker)**: Price: 20k - 22k, Life: 3-5 yrs





Other images of bunk beds are visible in the grid, including a wooden model with a ladder and a canopy bed, but they do not have text labels in this view.

This details page gives Anubhav information about the material he'll require to make this bed, how much it should cost him, details about who designed this product and how many times it has been pinned as favourite so far likes the simplicity of the design but decides to make a few changes to suit his needs. For this he must click on the customise furniture button.






Living Room
Bedroom
Kitchen ▾
Children's room ▾
Office ▾

Login



Deepak Goel's design
4 months ago

Price: 20k - 22k
Life: 3-5 yrs


Light pine kids bunker
Made in pine, this a great piece for preteens' rooms.
[View measurements](#)

Costing*


Material	Rate	Qty.	Price.
Ply	550/sheet	20	11,000
Veneer	110/sq ft	20	2,200
Sheesham	150/cu ft	10	1,500
Fevicol	150	1	150
Other material	200	1	200
Varnish	250	1	250
Making charges	(5000-7000)		
Polishing charges	(1000-3000)		
Total			20,000 & 22,000

* The information above is an estimation as per current prices which may be subject to change.

Similar Furniture



Find Carpenter



Customise this product

This option needs him to log into the system so that he may use a dedicated space for his project.

The screenshot shows the Khaati website interface. At the top, there is a navigation bar with the Khaati logo, a search bar, and category dropdowns for Kitchen, Children's room, and Office. A 'Login' button is also present. A modal window is open in the center, prompting the user to sign up or log in. The modal includes a Facebook sign-up button, an email sign-up button, and a sign-in section with fields for User Id and Password, and a 'Sign in' button. To the left of the modal, a product listing for a 'Light pine kids bunker' is visible, featuring a photo of the bunk bed and the text 'Deepak Goel's design 4 months ago'. To the right of the modal, the product details are shown, including a description, a 'View measurements' link, and a 'Costing*' table.

Light pine kids bunker
 Made in pine, this a great piece for preteens' rooms.
[View measurements](#)

Costing*

Material	Rate	Qty.	Prie.
Ply	550/sheet	20	11,000
Veneer	110/sq ft	20	2,200
Sheesham	150/cu ft	10	1,500
Fevicol	150	1	150
Other material	200	1	200
Varnish	250	1	250
Making charges	(5000-7000)		
Polishing charges	(1000-3000)		
Total			20,000 & 22,000

* The information above is an estimation as per current prices, which may be subject to change.

Similar Furniture

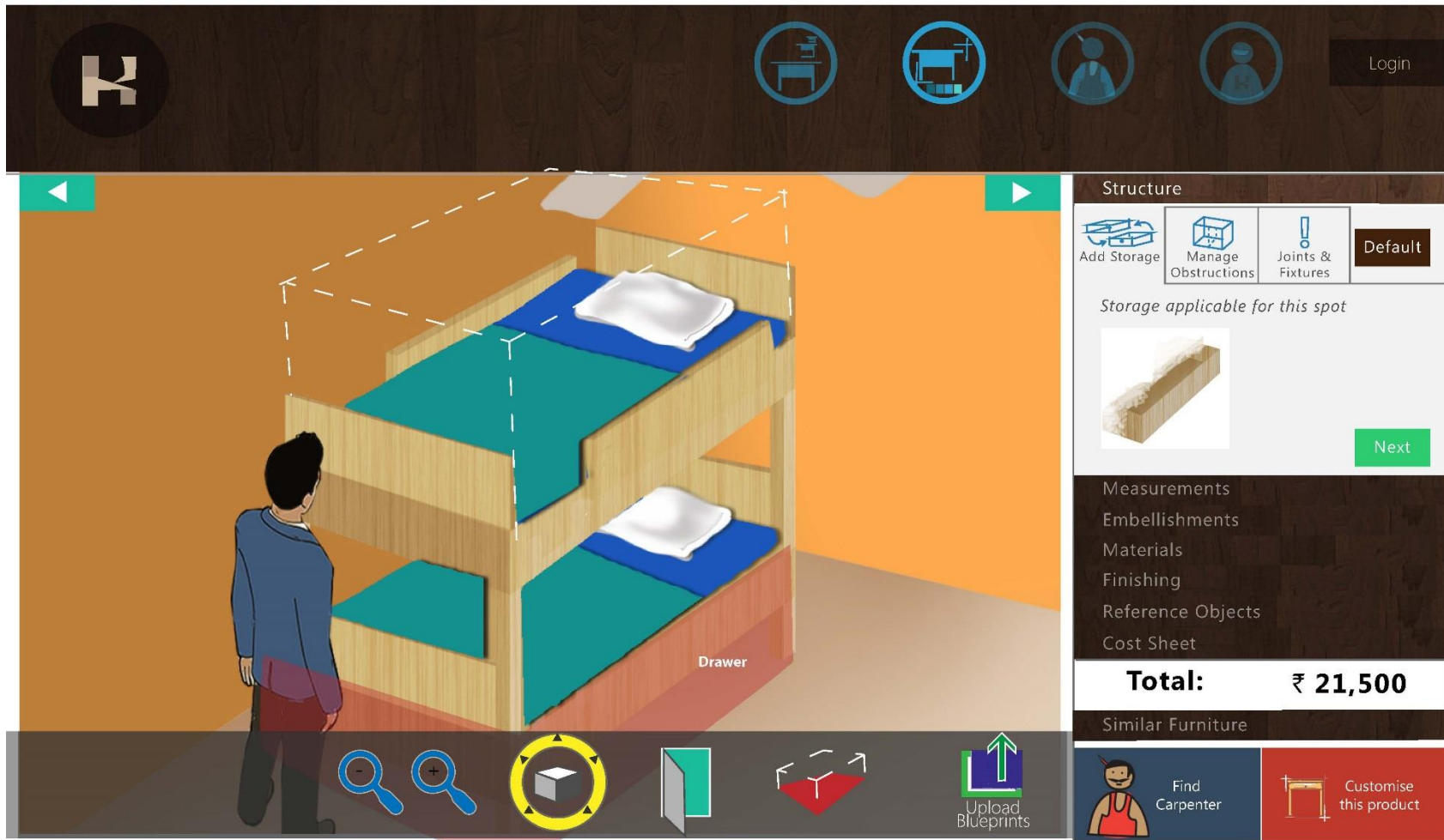
[Find Carpenter](#) [Customise this product](#)

He begins by entering rough estimates of the dimensions of the bed. He has an idea of how much space the current beds occupy and this helps him to plan his new bunk bed

The screenshot displays a furniture design application interface. At the top, there is a dark navigation bar with a logo on the left and several circular icons representing different furniture categories. The user's name, "Anubhav", is visible in the top right corner. The main area shows a 3D perspective view of a wooden bunk bed with two levels, each with a blue mattress and a white pillow. A man in a blue jacket is standing next to the bed, looking at it. The background is a simple room with orange walls and a brown floor. On the right side, there is a vertical menu with options: Structure, Measurements, Embellishments, Materials, Finishing, Reference Objects, and Cost Sheet. Below the menu is a table titled "Cost Sheet" with columns for Material, Rate, Qty., and Price. The table lists various materials and their associated costs. At the bottom of the table, the total cost is displayed as ₹ 21,500. Below the table, there is a section for "Similar Furniture" with two buttons: "Find Carpenter" and "Customise this product". At the bottom of the screen, there are several control icons, including zoom in/out, rotation, and an "Upload Blueprints" button.

Material	Rate	Qty.	Price.
Ply	550/sheet	20	11,000
Veneer	110/sq ft	20	2,200
Sheesham	150/cu ft	10	1,500
Fevicol	150	1	150
Other material	200	1	200
Varnish	250	1	250
Making charges	(5000-7000)		
Polishing charges	(1000-3000)		
Total:			₹ 21,500

He decides to add some storage facility to the bed. He wants to have the storage in the space below the bed. For this he will need increase the height of the legs by 30 inches. So he clicks on the legs of the model in the image. The legs are highlighted and the height of the legs is currently indicated as 10 inches.



However, there is a specific upper and lower limit to make changes to the measurement. This has range has been placed by the designer to maintain the stability and safety of the product. Thus an alert notification is displayed.

The screenshot displays a furniture customization application. On the left, a 3D perspective view of a wooden bunk bed is shown with a person standing next to it for scale. The bed has two levels, each with a blue mattress and a white pillow. Dimensions are indicated with green lines and labels: 30 inches for the width of the lower bed, 68 inches for the length of the lower bed, and 72 inches for the height of the lower bed. The interface includes a top navigation bar with icons for home, search, and user profiles, and a 'Login' button. On the right, a control panel is visible with the following sections:

- Structure**
- Measurements**
 - Height: 15 inches (with a 'Default' button)
 - Width: 30 inches
 - Length: 72 inches
 - A green 'Next' button is located below the length field.
- Embellishments**
- Materials**
- Finishing**
- Reference Objects**
- Cost Sheet**
- Total: ₹ 21,500**
- Similar Furniture**
- Buttons for 'Find Carpenter' and 'Customise this product'.

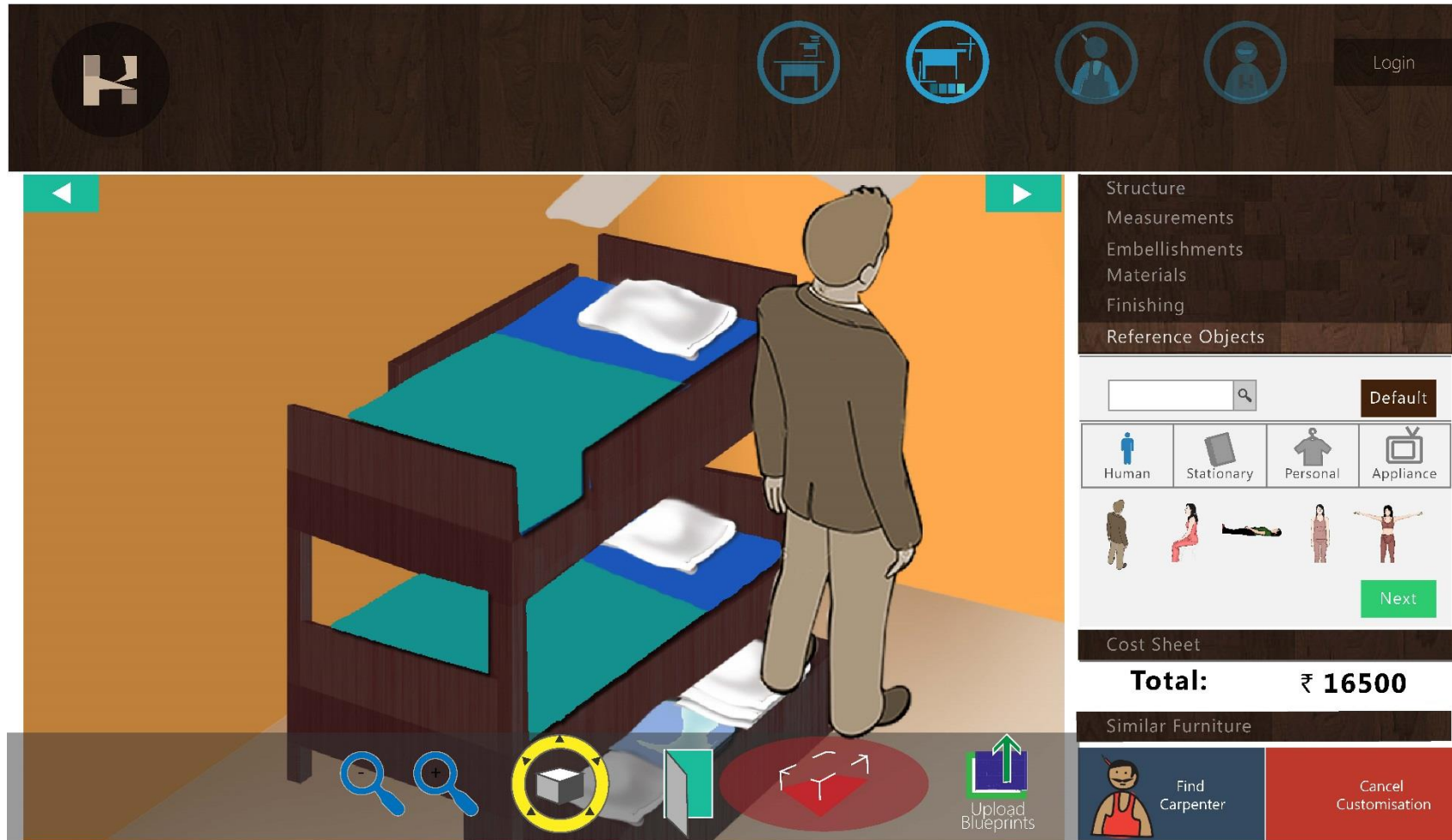
Anubhav then decides to increase the height only by 10 inches. So he settles to create a space of 20 inches high, in order to create a storage facility.

The screenshot displays a furniture customization application. On the left, a 3D perspective view of a wooden bunk bed with two levels, each with a blue mattress and a white pillow. A man in a blue jacket stands to the left of the bed. The bed's dimensions are indicated by green lines and labels: a length of 68", a thickness of 3", and a height of 72". The interface includes a top navigation bar with icons for home, search, and user profile, and a 'Login' button. A right-hand control panel titled 'Structure Measurements' features three sliders: 'Height' set to 15 inches, 'Thickness' set to 3 inches, and 'Length' set to 72 inches. A 'Next' button is located below the sliders. Below the measurements, a list of options includes 'Embellishments', 'Materials', 'Finishing', 'Reference Objects', and 'Cost Sheet'. A 'Total' section shows a price of ₹ 21,500. At the bottom, there are buttons for 'Open Product', 'Upload Blueprints', 'Find Carpenter', and 'Customise this product'.

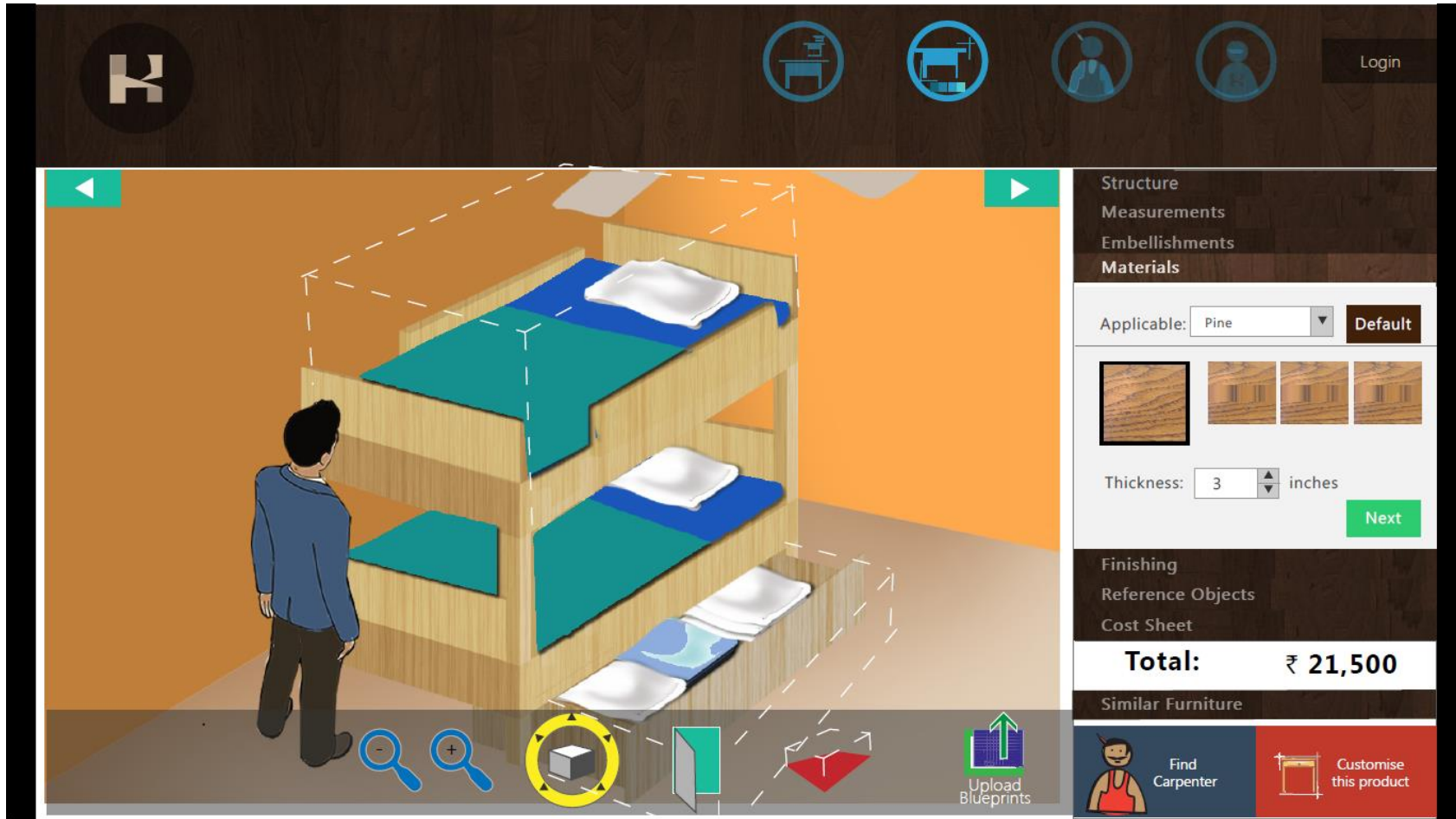
Measurement	Value	Unit
Height	15	inches
Thickness	3	inches
Length	72	inches

Total: ₹ 21,500

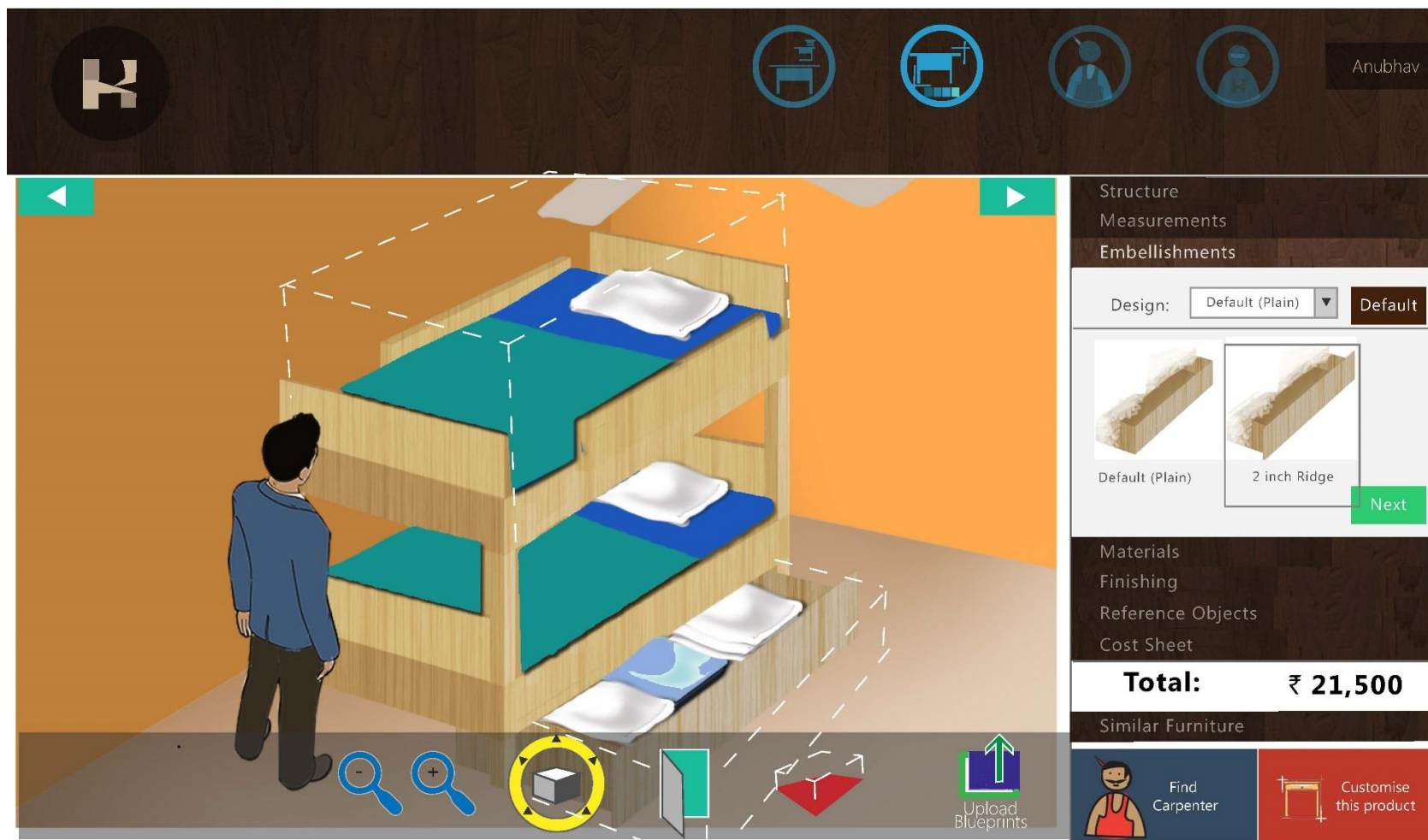
He now feels that he made need a general reference of size to understand the scale of the furniture. So he goes to reference objects option from the menu and places a man as a reference object to better understand the proportions of the furniture.



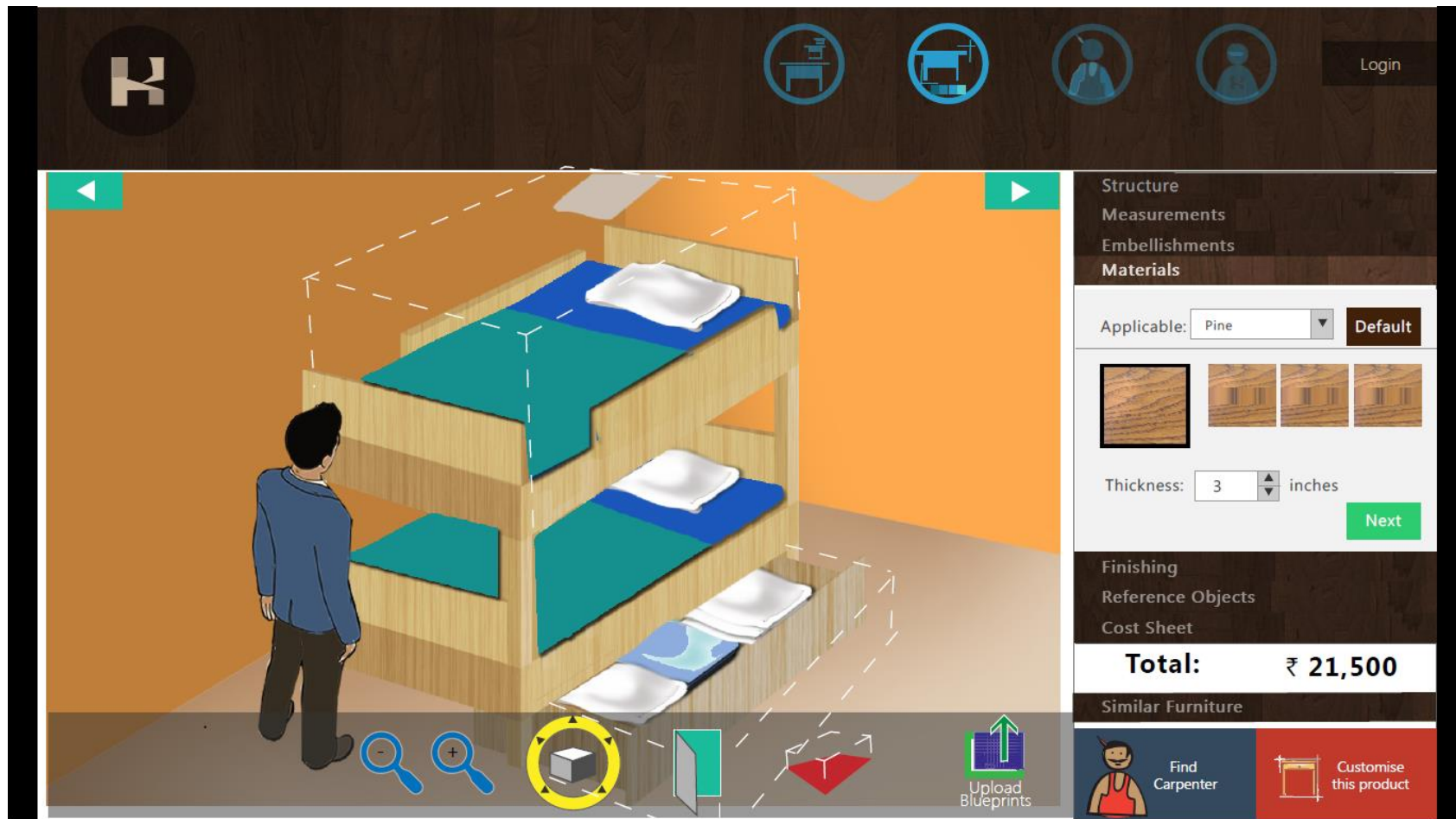
Now he wants to make structural modifications in the design. He selects the leg of the bed again and clicks on structure. In the 'Modify' of the Structure option, he can see all the possible changes that he can make in this area.



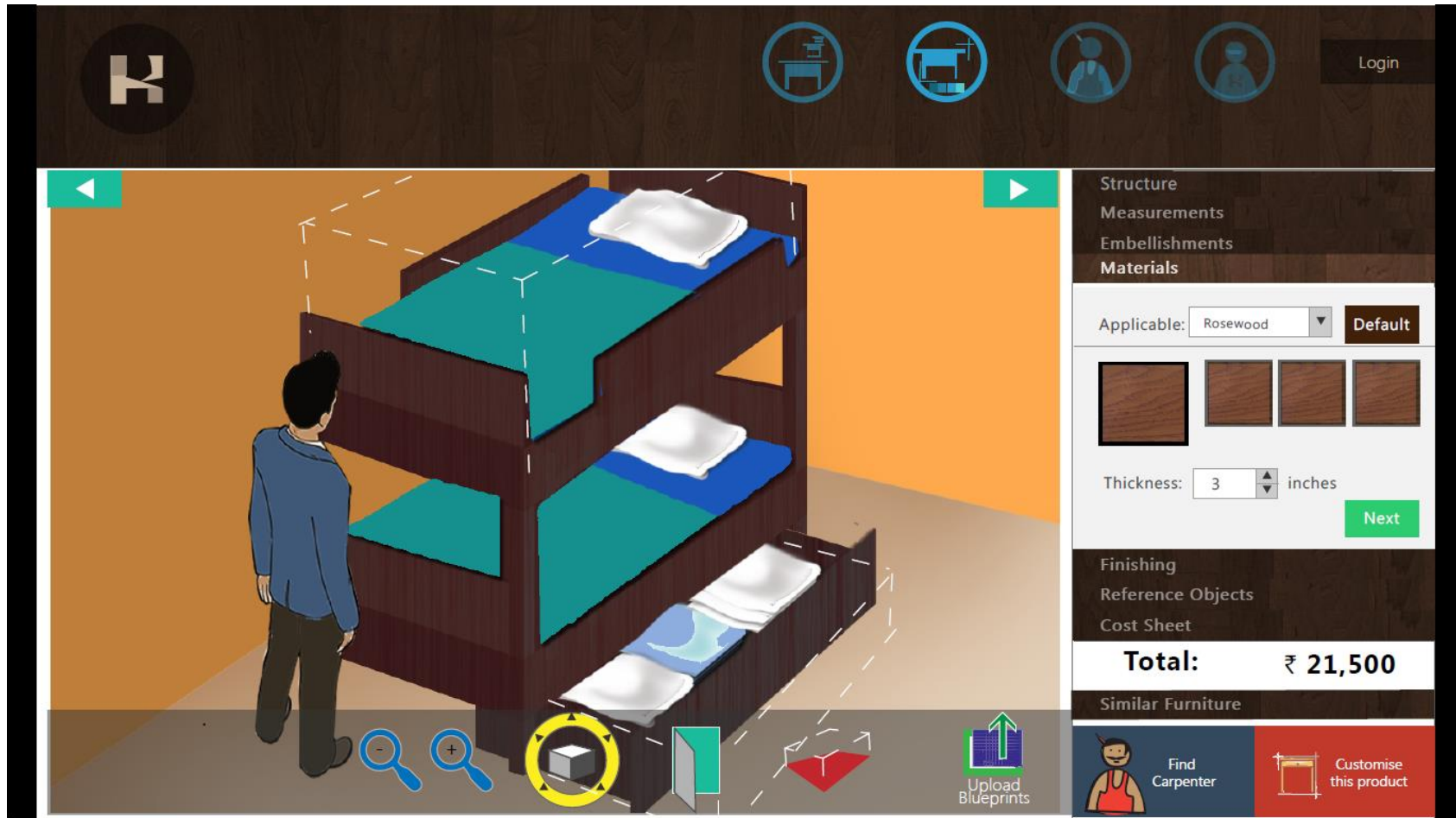
Anubhav had been playing around with other options, such as Embellishments, Material and Finish, as and when he found spare time, between seeing patients. But this had made him lose track of all the changes he had made. At the end of the day he felt he could ask a carpenter to simply go with the original design suggested by the application, with merely a few modifications made to the size and structure. He clicked on the back to default option which is available at every stage of the customisation wizard.



He looks around in the materials menu.



And finally thinks rosewood would be suitable to make a sturdy bed for the kids.



When he is done customising the furniture, he is taken to the carpenter search page where a list of carpenters in his locality is displayed. He clicks on the link of one Ramulal Sutar who seems to have a very good feedback rate.

The screenshot shows a search interface for carpenters. At the top, there is a dark header with a logo on the left and four circular icons representing different carpentry services. The name 'Anubhav' is visible in the top right corner. Below the header is a search bar with the placeholder text 'location, speciality, name'. To the right of the search bar are filter options: 'Filter by: Location', 'Making Charges', 'Repairs', and 'Others', each with a dropdown arrow. The main content area displays three carpenter profiles, each with a star icon, a profile picture, name, phone number, making charges, and feedback statistics.

Carpenter Name	Rating	User Votes	Recommendations	Reviews
Ramulal Sutar	Very Good	30	13	15
Deepak Jindal	Alright	20	25	10
Sangram Shinde	Not so Good	3	0	25

Ramulal's profile page displays information about his past work experience, photos of his work, Client reviews and his making charges.



List of Carpenters >> Ramulal's Profile

☆  **Ramulal Sutar**
📞 9243 08 67 50
Making Charges: ₹₹₹

Very Good 
30 user votes
13 recommendations
15 reviews

My list of carpenter contacts

Info **Photos of his work** **Reviews**

Work Experience: 5 years



Speciality: Maintenance and repairs


Making charges: 15%/ sq. ft material, negotiable

Anubhav notices that Ramulal has made bunk beds before, the photos of his past projects show good work.


Navigation bar with icons for Home, Search, Add, Profile, and a user name "Anubhav".

List of Carpenters > Ramulal's Profile

  **Ramulal Sutar**
9243 08 67 50
Making Charges: ₹₹₹

Very Good 
30 user votes
13 recommendations
15 reviews

Info | Photos of his work | Reviews



◀ ▶

● ● ● ● ● ● ● ● ● ●



My list of carpenter contacts

Khaati.com (c) all rights reserved.


His user reviews also are very encouraging. Anubhav star marks Ramulal. Ramulal's contact details have now been saved to Anubhav's project to appear first on a list of carpenters that Anubhav might want to contact and meet to discuss his project. Anubhav looks at other carpenter profiles and shortlists a couple of other carpenters. He calls these carpenters and fixes up appointments to meet them separately, at his home.




List of Carpenters >> Ramulal's Profile





Ramulal Sutar
9243 08 67 50
Making Charges: ₹₹₹

Very Good 
30 user votes
13 recommendations

Info **Photos of his work** **Reviews**

	Work quality is good, and he's an honest fellow.	19th Nov
	We got repairs done from him, he was very good.	19th Nov
	Go ahead with this guy.	19th Nov

My list of carpenter contacts



Ramulal Sutar
9243 08 67 50
Making Charges: ₹₹₹

Before leaving for home, Anubhav took a print out of his project plan, which he would hand over to the carpenter he found through the application. He had also shared a copy of the plan with Anubha so that she could look through it and they could together meet with the carpenters.

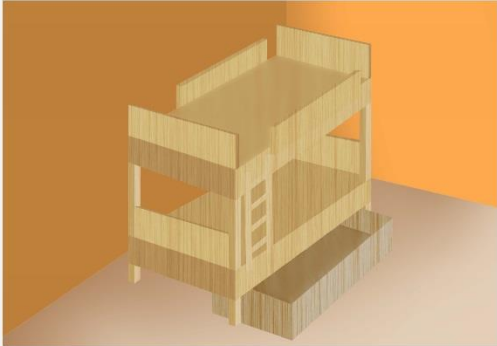
Anubhav's Bunker bed Details

Product Description
Kids Bunker bed set
Veneer Finish


Costing

Material	Rate	Qty.	Cost
Ply	550/sheet	2	1100
Veneer	310/sq ft	20	6200
Sheesham	250/cu ft	10	2500
Fevicol	150	1	150
Other material*	200	1	200
Varnish	250	1	250
Making charges	20% of mat.(neg.)		2800
Polishing charges	₹50/sq.ft.		600
Total			13800


Attachments



SK4323_Bunker_
bed_Side




SK4323_Veneer
Warm Pine C/119



SK4323_Polish color
pine cream UB4119

Print



Cancel

Meetings and negotiations:

Anubhav meets carpenters and they discuss the cost, material, design details, Anubhav shows them where the bunk bed will be placed he is able to clearly express how he wants the bed to be by showing them the project plan and summary. Ramulal seems most suitable, reasonable and willing to take up the project.

The Agreement:

Anubhav downloads the project plan and agreement form from the site. They fix up and fill in the making charges, various phases of the project and deadlines by when they shall be completed.

Anubhav opts to pay the money in installments, he is expected to pay an installment before the commencement of every stage.

Finally they both sign this agreement and Ramulal submits the agreement and the project summary to his local Khaati representative.

Project Completion and Feedback:

Only those projects that have been completed in partnership with

Khaati may be displayed on the Khaati profile of the carpenter.

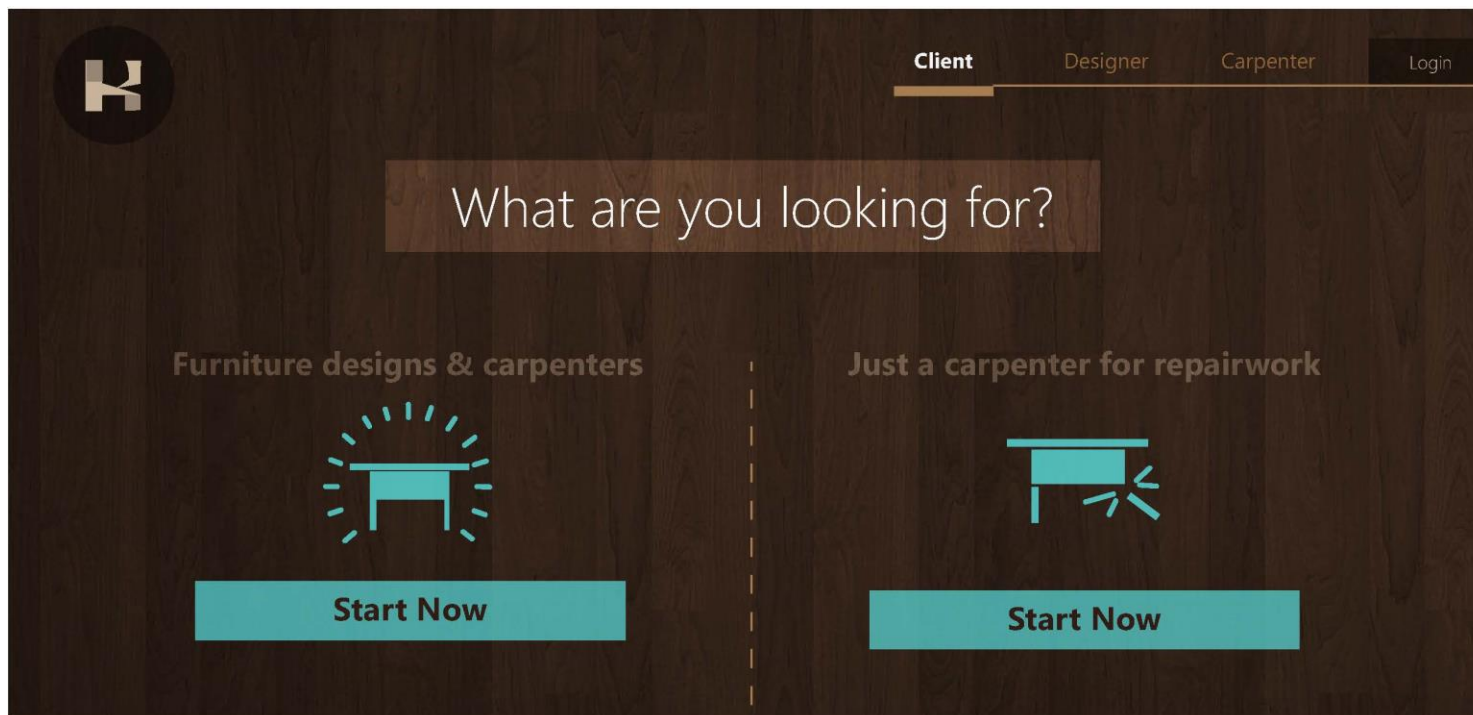
This makes the data more credible and ensures that the carpenters participate in the system with interest. Upon the completion of the project the carpenter takes pictures of the project for uploading onto his profile. When the Ramulal successfully completes 5 projects with Khaati, he is awarded a bonus, part of which is proportionate to the client feedback ratings he has received across projects. The timeline plan helps carpenters manage their projects better. The feedback system also is strong enough to discourage carpenter from malpractices and expose them if they still insist on sticking to any.

When a carpenter consistently performs well across projects, Khaati arranges for him to receive recognition in professional circles by publishing about him in Interior Design or Furniture design magazines and so on.

Scenario 2:

Rustom just received a Skype call that, since he wouldn't go to his son's home this year, his granddaughters would be coming to his home to spend their winter vacations. Rustom is really concerned about the broken boards and exposed nails on the old furniture in the house. He'll need to find a carpenter to fix them before his grandchildren arrive, which is, by next fortnight. He runs a Google search to find carpenters for repair-work in Pune. He comes to Khaati.

Rustom clicks on "Just a Carpenter to do some repairs" option.



Browse furniture Designs

Select from a wide variety of home furniture carefully



Choose **Type** of repair you want done

Khaati selects skilled furniture repairmen and polishmen

It leads him to a page with a list of carpenters all of whom are willing to take up repair work.

The screenshot shows a web interface for finding carpenters. At the top, there are three main categories: Furniture, **Carpenters** (underlined), and Material Supplies. Below these is a search bar with the placeholder text "location, speciality, name" and a magnifying glass icon. To the right of the search bar is a "Filter by:" section with four checkboxes: "Location" (checked), "Making Charges" (unchecked), "Repairs" (unchecked), and "Others" (unchecked). Below the filters, there are three carpenter profiles, each with a star icon, a profile picture, a name, a phone number, making charges, and a rating with a corresponding smiley face icon.

Name	Phone Number	Making Charges	Rating	User Votes	Recommendations	Reviews
Ramulal Sutar	9243 08 67 50	₹₹₹	Very Good (Green)	30	13	15
Deepak Jindal	9243 08 67 50	₹₹₹	Alright (Light Green)	20	25	10
Sangram Shinde	9243 08 67 50	₹₹₹	Not so Good (Yellow)	3	0	25

He places filter to find carpenters within his locality. This narrows down the search. The contact information is available. He calls a carpenter that he felt might be suitable.

Conclusion

User testing feedback: the prototype was tested with 3 users. User Feedback has been incorporated in the current design.

Feedback was as follows.

- A) Landing page needs to be more comprehensive.
- B) Upon reaching the landing page, 2 out of 3 users could not identify what all they would be able to do on the portal.
- C) All 3 users were able to follow the wizard interface.

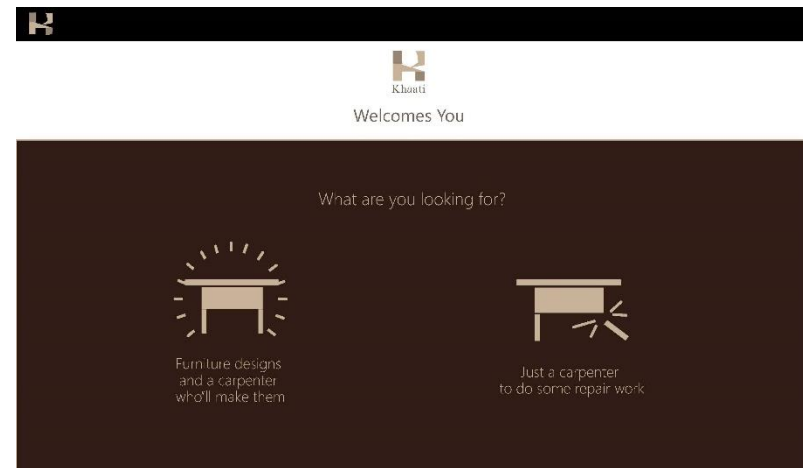
Jury feedback:

Jury members felt that the designer side of the prototype could also have been explored.

The execution of visual design of the interface could have been more refined.

The service design approach can make might help make the output a more holistic solution. This feedback was attempted but was later dropped as it was complicating the user journey process and not aligning with the overall solution.

Reflections: User testing could have been more repeated with new iterations. A business model needs to be designed around this system.



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