

AEIOU Summary:

Group ID: 462442

Date: 04/12/2023 Version: 1

Domain Name: Furniture Innovations & Digital Store

Environment:

- Virtual Showrooms
- Domicile

- Schools & Colleges

- Private & Government Offices

- Hospitals & Restaurants

Activities:

- Inventory Management
- Product Listings

- Payment Processing
- Order Processing

- Logistics & Shipping
- Order Tracking

- Database Security & Privacy

Interactions:

- Marketing Manager

- Manufacturers & Suppliers

- Customer Engagement
- Customer Feedback

- Logistics Coordination
- Ecommerce Implementation

Objects:

- Mobile Phones

- Laptops / Computers

- Search Engine Optimisation
- (SEO)

- Internet

Users:

- Customer Registration
- Add to Cart (Shopping cart)

- Marketplace & Platform Partners
- Financial team

- Content Creators
- Web Administrators

- Legal framework & Compliance team
- Data Analysts

- Customers

- Suppliers & Manufacturers
- Logistics team

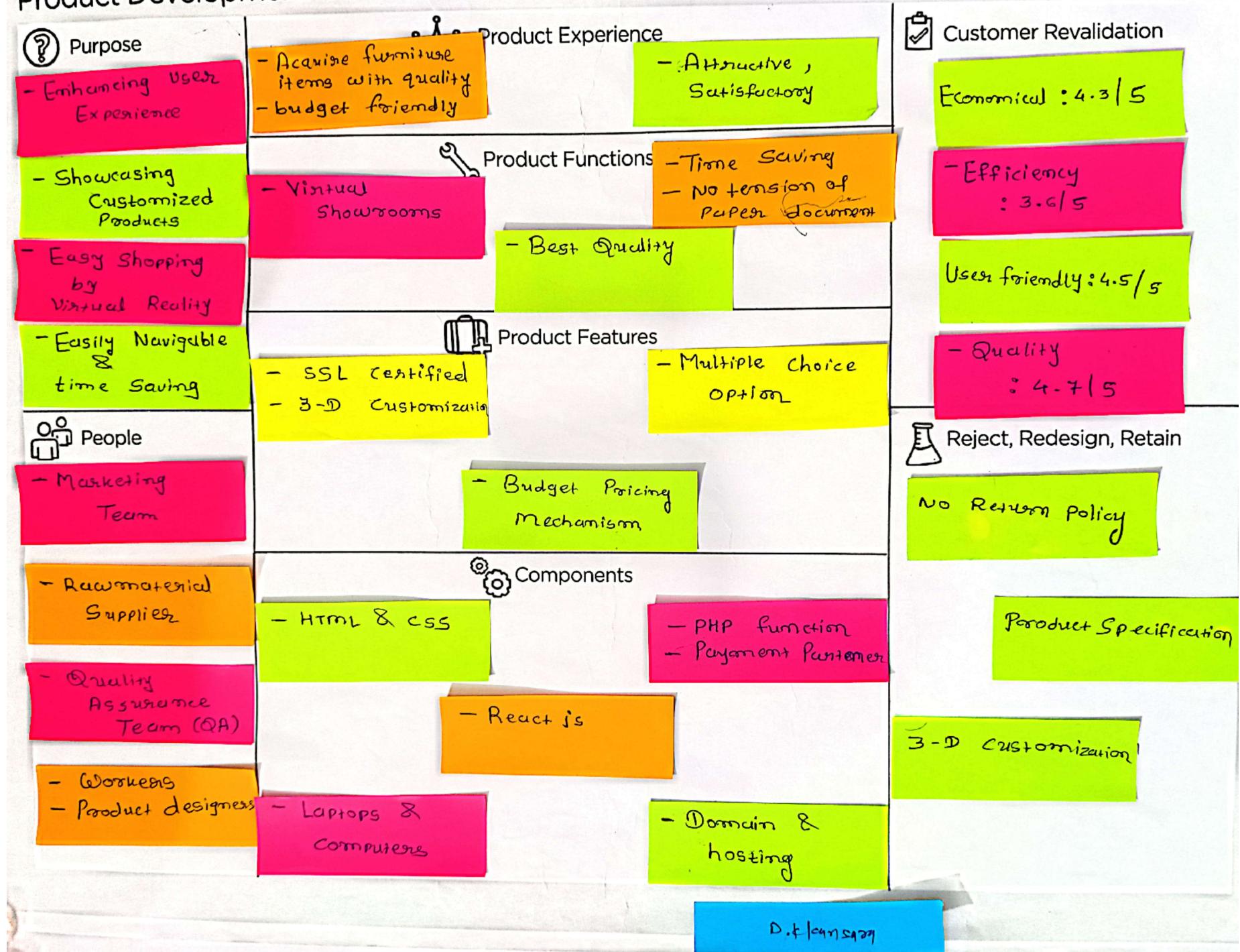
- Customer Support Representatives

D. I. C. | 1000

Product Development Canvas

Team/Date/Version:

10/4/2023 1



The Ideanaut: Ideation Canvas

Project:

Team:



People

- Schools & Colleges
- Students

- Employees

- Government & Private officials

- Hospital Patients



Activities

- Product listing

- Payment Processing

- Returns & Refund Service



Situation/Context/Location
(What / When) (Why) (Where)

- Poor economical condition

- Absence of Physical Showroom

- Underdeveloped areas

- Laptops / Computers



Props/Tools/Objects/Equipment

- HTML & CSS
- Javascript

- Internet

- Search Comsble

Design For

Date : 4/12/2023

Design By

Version 1

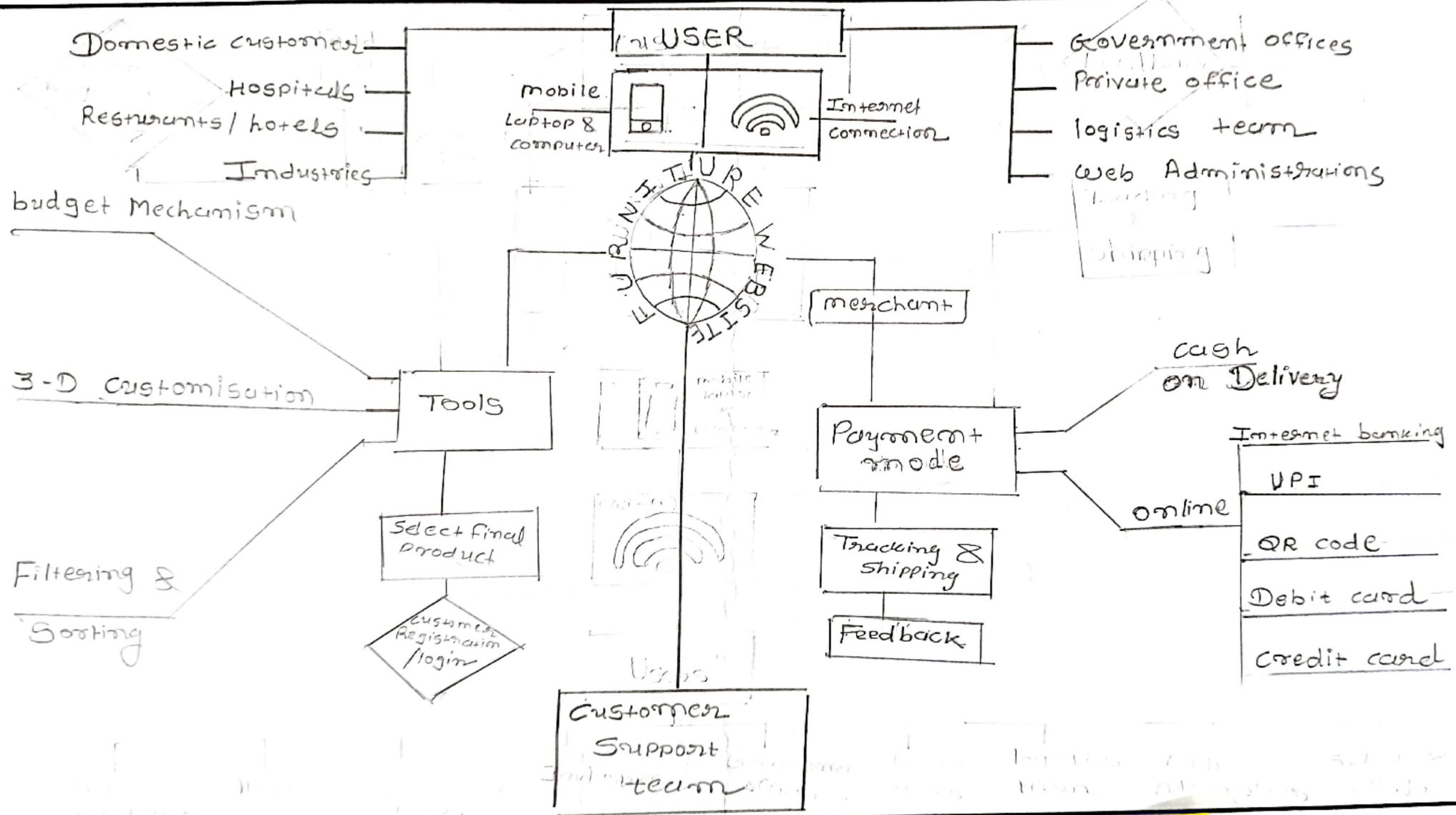
User	Stakeholders	Activities	Story Boarding
<ul style="list-style-type: none">- Suppliers & Manufacturers- Customers	<ul style="list-style-type: none">- Investors & Financial Supports- Logistics team- Web Administrators	<ul style="list-style-type: none">- Inventory Management- Product listing- Budget Pricing Mechanism for Buy/Sell <ul style="list-style-type: none">- Database Security & Privacy- Logins & Shipping - Order tracking- Returns & Refund Service.- Payment Processing - Order processing- Feedback/ Ratings	<p>HAPPY</p> <p>→ When we visit the furniture Digital Store , we were amazed by the welcome animation & lively home page . The experience of purchasing the product listed on the website made our life easier.</p> <p>SAD</p> <p>→ As per our requirement , on visiting the website , we could not find the specific product at hard limited information and previous lack of instant customer support.</p> <p>SAD</p> <p>→ The checkout process was little bit complicated as it involved asking for unnecessary information and also felt insecure about the website security.</p>

Mind Mapping Canvas

Group ID : 462442

Date 04/12/2023 Version 01

Domain Name Furniture Innovations & Digital Store.



Dileshwar

Shipping products
Packaging

Support and
Client feedback

To measure
Digital payment
Ability

Same
Payment
Ability to
Access

Contract
digitizing
signing

Quality control card
listing Q of products
on website

Customization
choose by
final product
customer
offer after
modification

Client is
ready to
purchase

Upholstery and
Fabrication edge
banding

Cutting and
Sawing
Card cutting,
Shipping
Thick message
and Billing

Quality of
raw materials
and
specification

Receipt of raw
materials

Prototype

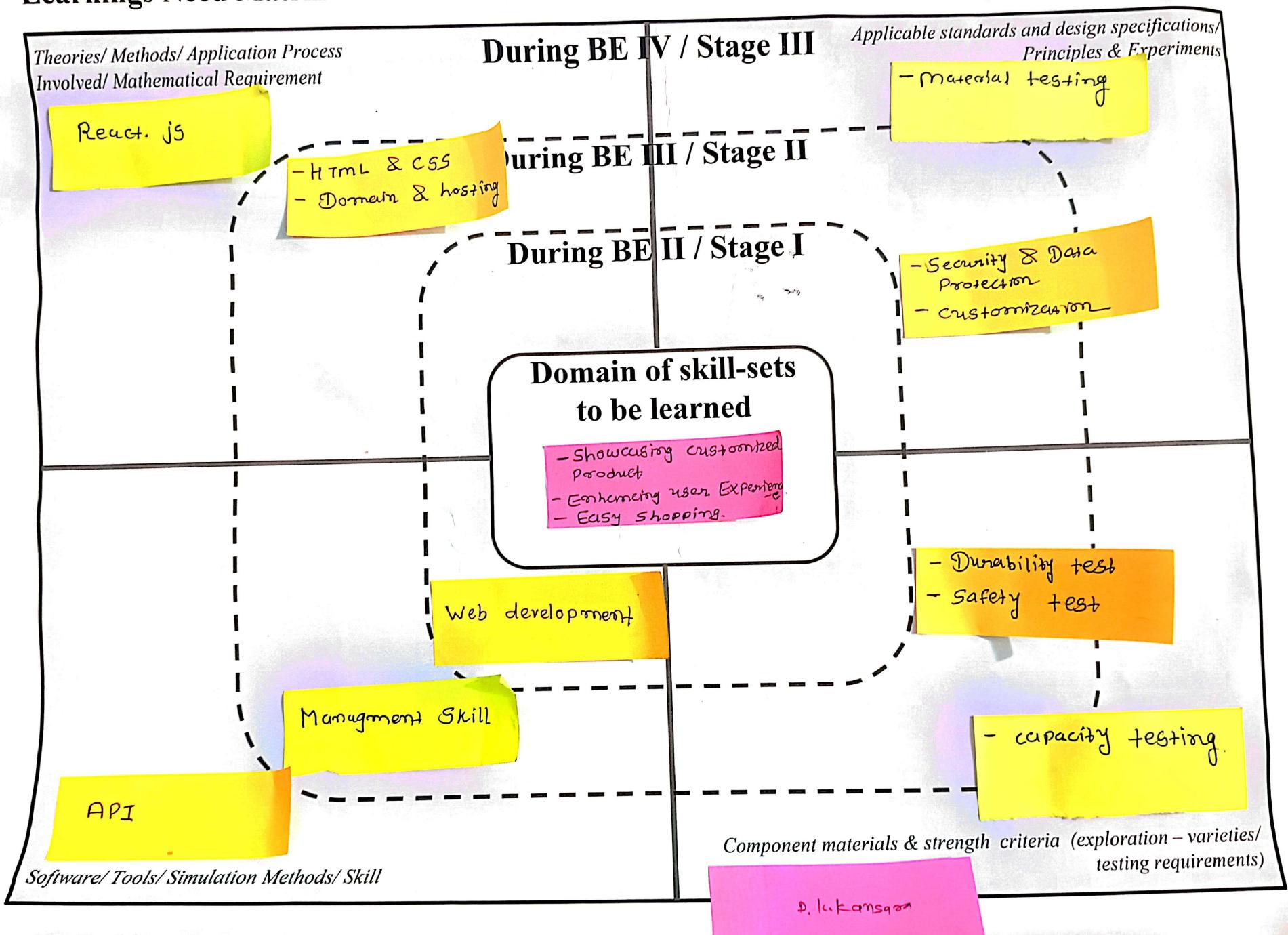
Raw

Digitalization

Learnings Need Matrix

Group ID: 524528

Date: 13/04/2024



GUJARAT TECHNOLOGICAL UNIVERSITY
Chandkheda, Ahmedabad
Affiliated



NEW L J Institute of Engineering and Technology

A
Project
Report On
“Furniture Innovation & Digital Store”

Under subject of
DESIGN ENGINEERING – 1B
B. E, Semester – IV
(Computer science and
Engineering)

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Ms. Aditi Kinkhabwala
(Head of Department)

Academic year
(2022-2023)

New L.J Institute Of Engineering and Technology

CSE

2023 - 2024



CERTIFICATE

This is to certify that project work embodied in this report entitled “**Furniture Innovation and Digital Store**” was carried out by below mentioned students at department of Information Technology, New L.J. Institute of Engineering and Technology, Ahmedabad for partial fulfillment of the subject design engineering 1B. This project work has been carried out under my supervision and is to the satisfaction of the department.

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INTERNAL GUIDE SIGN

HOD SIGN

COLLEGE SEAL

ACKNOWLEDGEMENT

I cannot express enough thanks to my support members for their continued support and encouragement: **Ms. Aditi Kinkhabwala (HOD)**, **Ms. Dhara Kamsara**

I offer my sincere appreciation for the learning opportunities to my support members.

The completion of this project could not have been accomplished without the support of the team members. A special thanks goes to my team members. They helped me to assemble the parts and gave suggestions about the project.

Besides, we would like to thank all the teachers who helped us by giving us advice and providing the material required. I would like to thank my family and friends for their support. Without that support we couldn't have succeeded in completing this project. In the end, we would like to thank everyone who helped and motivated us to work on this project.

ABSTRACT

The furniture retail industry is undergoing a profound transformation driven by advancements in digital technologies.

In recent years, the integration of augmented reality (AR) and virtual reality (VR) technologies has emerged as a game-changer in the furniture retail sector.

By leveraging AR applications, customers can virtually place furniture items within their living spaces, enabling them to visualize how products will look and fit before making a purchase.

VR technology takes this a step further by providing immersive showroom experiences, allowing customers to explore virtual environments and interact with products as if they were physically present.

AI-powered chatbots and virtual assistants provide personalized recommendations, assist with product inquiries, and facilitate seamless transactions, enhancing customer engagement and satisfaction.

These technologies not only enhance the shopping experience but also alleviate concerns related to online purchases, leading to increased customer confidence and satisfaction.

The digitalization of backend processes is another significant aspect of furniture innovation in retail. Internet of Things (IoT) devices embedded in furniture pieces enable retailers to track inventory levels, monitor product performance, and optimize supply chain operations in real-time.

Influencer marketing has also become increasingly prevalent, with furniture brands collaborating with influencers to promote products and reach new audiences. The convergence of digital innovation and furniture retailing is driving significant changes across the industry.

By embracing these innovations, furniture retailers can stay competitive in an increasingly digital-centric marketplace and meet the evolving needs and expectations of consumers.

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Chapter 2: Introduction

Project Title: Furniture Innovation & Digital Store

1. Project Summary

- Our Furniture Innovation & Digital Store serves as a comprehensive resource for furniture retailers looking to navigate the evolving landscape of digital commerce and design innovation. We delve into emerging trends in furniture design and digital retailing, highlighting the integration of technologies such as augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) to enhance the customer experience.
- Through real-world case studies, we showcase successful implementations of digital strategies by leading furniture retailers. These case studies offer practical insights into how innovative technologies and design principles can drive business growth and customer satisfaction.
- To enhance user engagement, our website features interactive elements such as budget mechanisms , price calculator, virtual showroom, etc experiences. These interactive features allow visitors to explore digital innovations in furniture retailing in a dynamic and immersive way.
- We provide product description and product photos from industry professionals, designers, and technology experts, offering diverse perspectives on the challenges and opportunities facing the furniture retail industry in the digital age.
- Overall, our Furniture Innovation & Digital Store project website aims to empower furniture retailers with the knowledge and resources they need to thrive in an increasingly digital marketplace.

2. PROJECT PURPOSE

- The Furniture Innovation & Digital Store project revolutionizes furniture retail by prioritizing customer experience through virtual exploration and augmented reality.
- It fosters design innovation with 3D modeling, streamlines supply chains via IoT sensors, and emphasizes sustainability with eco-friendly practices.
- Collaboration is encouraged among designers, manufacturers, and customers, enhancing customization options.
- Data-driven decisions inform product development and marketing strategies, ensuring alignment with consumer preferences and market trends.
- Adaptable to evolving tastes, the project remains competitive and relevant.
- Ultimately, it aims to redefine the furniture retail experience by offering value, convenience, and innovation while promoting industry growth and sustainability.

3. PROJECT SCOPE

- The Furniture Innovation & Digital Store project scope entails creating a user-friendly digital platform with features such as a virtual showroom and customization tools.
- Collaborating with designers, it fosters innovative furniture designs and integrates IoT sensors for supply chain optimization.
- Sustainability is prioritized in material sourcing and manufacturing, while customer engagement is facilitated through co-creation opportunities.
- Data analytics inform decision-making, and digital marketing strategies expand market reach.
- Staff training ensures smooth operations, while continuous improvement mechanisms and partnerships drive innovation and growth.
- Ultimately, the project aims to redefine the furniture retail experience by offering convenience, sustainability, and customer satisfaction through a seamless blend of digital technology, innovative design, and eco-friendly practices, catering to the evolving needs and preferences of modern consumers.

4. PROJECT OBJECTIVE

- The Furniture Innovation & Digital Store project aims to transform the furniture retail landscape by prioritizing customer experience, design innovation, and supply chain efficiency while emphasizing sustainability.
- Through co-creation opportunities, customers actively participate in the design process, fostering engagement and personalization.
- Data analytics drive informed decision-making, providing insights into customer behavior and market trends to guide product development and marketing strategies.
- Digital marketing initiatives expand market reach and enhance brand visibility, while staff training ensures seamless operations and exceptional service.
- Continuous improvement mechanisms are integrated to adapt to evolving consumer preferences and technological advancements, ensuring the digital store remains at the forefront of innovation.
- Strategic partnerships with technology providers, designers, manufacturers, and sustainability organizations facilitate collaboration and drive growth.
- By redefining the furniture retail experience to offer value, convenience, and sustainability, the project aims to establish itself as a leader in the industry, setting new standards for innovation and customer satisfaction while remaining responsive to changing market dynamics and consumer expectations.

Chapter 3

AEIOU Canvas

- AEIOU canvas is a design tool that helps capture the Activities, Environment, Interactions, Objects, Users involved in system or process.

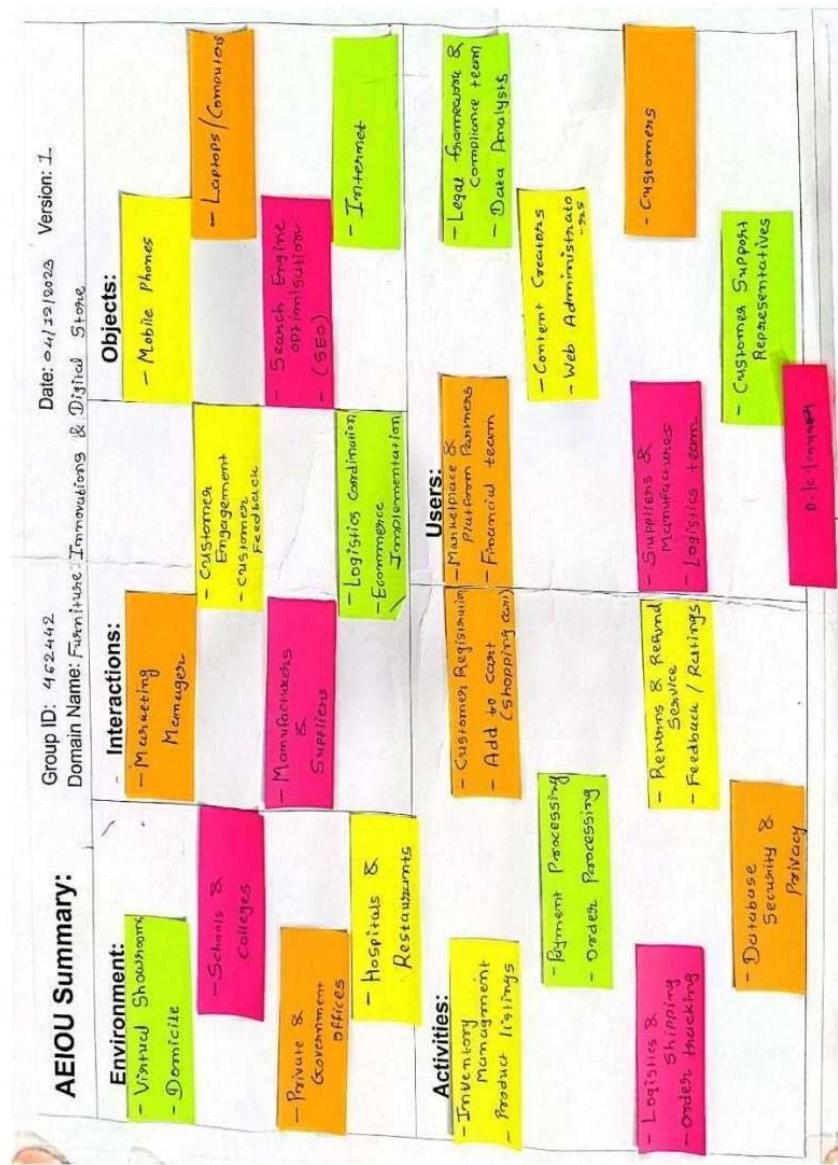
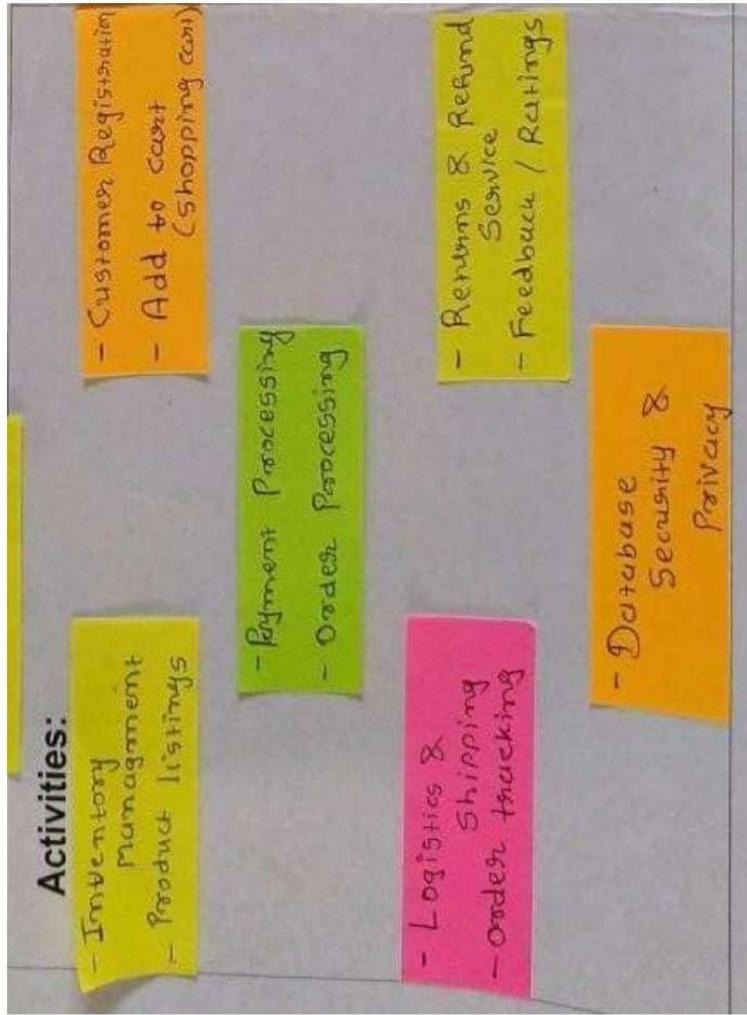


Fig. 3.1 AEIOU Canvas

(3.1) Activities:

We describe general Impression, elements and summary of activities. In general impression we have describe that what is going on the site. Here people are engaged in some activities, some of them is mention below:

- 1) Inventory Management
- 2) Product listings
- 3) Customer Registration
- 4) Add to Cart (Shopping Cart)
- 5) Payment Processing
- 6) Order Processing
- 7) Logistics & Shipping
- 8) Order Tracking
- 9) Returns & Refund service
- 10) Feedback/ Ratings
- 11) Database security & privacy



(3.2) Environment:

It includes the entire arena where activities take place.

- 1) Virtual Showrooms
- 2) Domicile
- 3) Schools & Colleges
- 4) Private & Government Offices
- 5) Hospitals & Restaurants



Fig 3.1.2 Environment

(3.3) **Interactions:**

It shows how people are interact with others. In general impression we describe.

- 1) Marketing Manager
- 2) Manufacturers & Suppliers
- 3) Customer Feedback
- 4) Logistics Coordination
- 5) Ecommerce Implementation
- 6) Customer Engagement



Fig 3.1.3 Interactions

(3.4) Objects:

- It includes objects are present in their environment.
- 1) Mobile Phones
- 2) Laptops/ Computer
- 3) Search Engine Optimization (SEO)
- 4) Internet

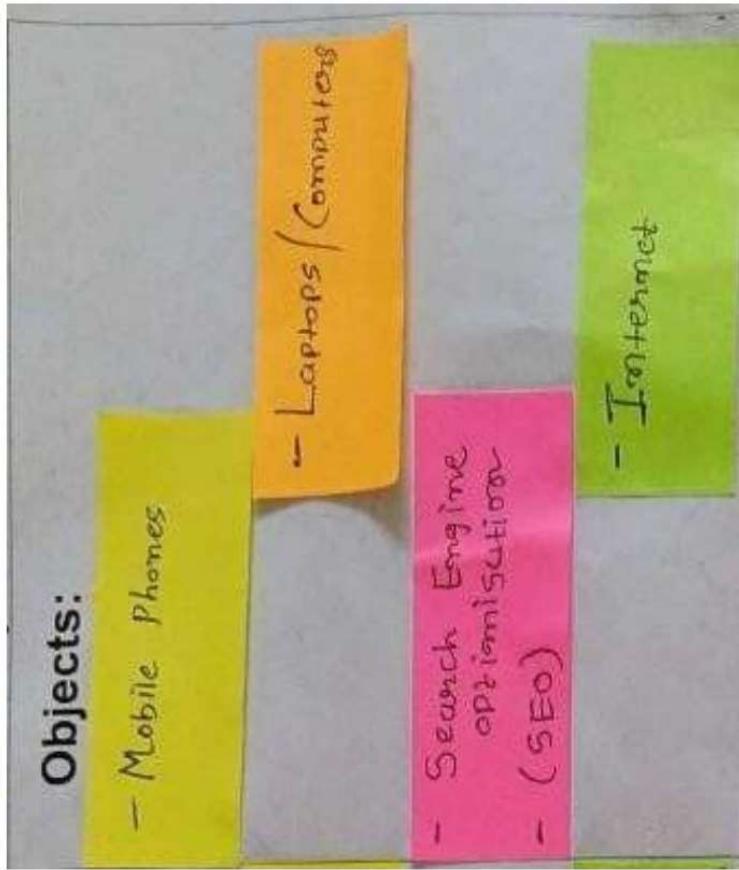


Fig 3.1.4 Objects

(3.5) Users:

Users are the people whose preferences and needs are being observed.

- 1) Marketplace & Platform partners
- 2) Content Creators
- 3) Customers
- 4) Suppliers & Manufacturers
- 5) Customer Support Representatives
- 6) Logistics team
- 7) Web Administrators
- 8) Data Analysts
- 9) Financial Team
- 10) Legal Framework & compliance team

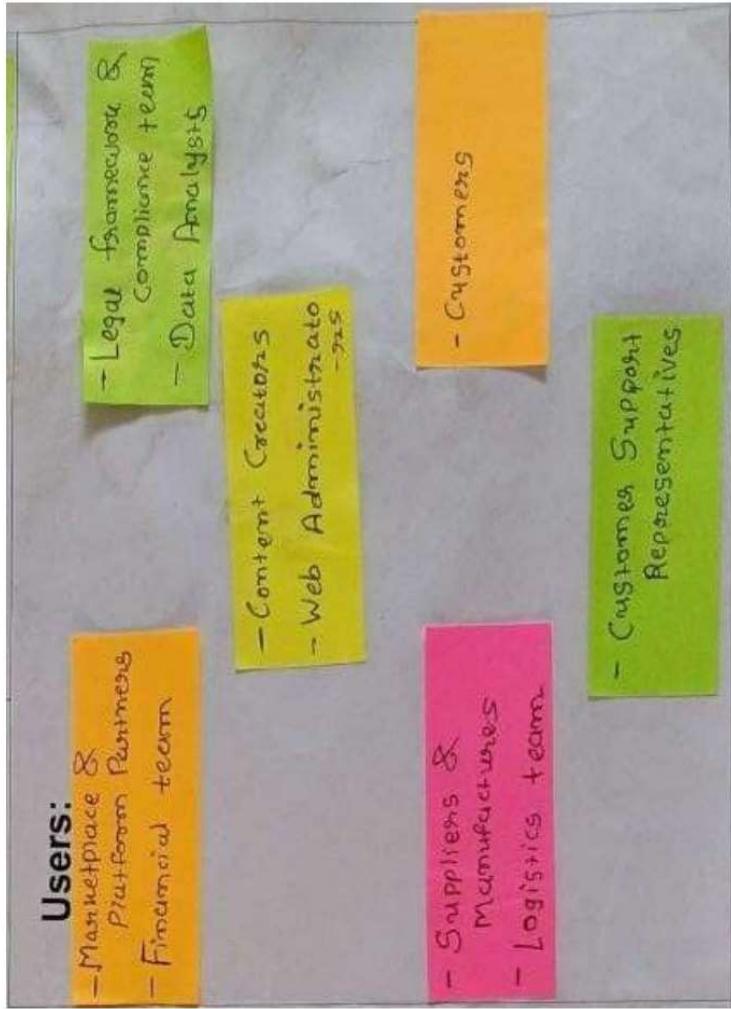


Fig 3.1.5 Users

Chapter 4

Mind Map Canvas

- Mapping is a simple technique to represent the diagrams instead of writing sentences, because mind maps are easy to depict visual representation with the help of diagram than that of linear notes.
- After going through AEIOU framework, we put all our ideas on a chart called mind map. This was carried out so that we could narrow down our concepts and have a clearer and broader idea of our domain “Hostel management”.
- AEIOU gives us a primary idea of our domain, whereas the mind map helps us to clear up our thoughts and concepts and hence help us to give a more constructive solution to the problem statement.
- The AEIOU forms a reference for our mind map as it is because of the observations of AEIOU that we came up with the idea of mind map.

Mind Mapping Canvas

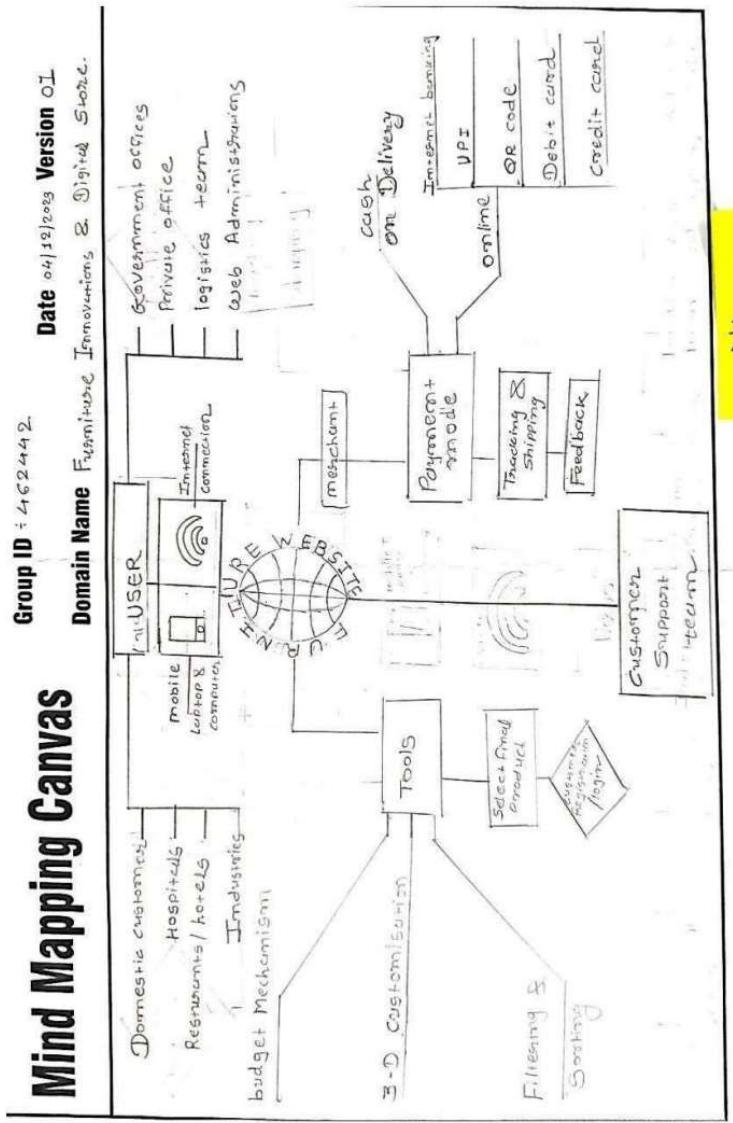


Fig 4.1 Mind-map Canvas

Chapter 5

Empathy Canvas

- The empathy map was created as a tool to help you gain understanding for a targeted person. Thus, you can use it when you want to deliver a better user experience of your product/service.

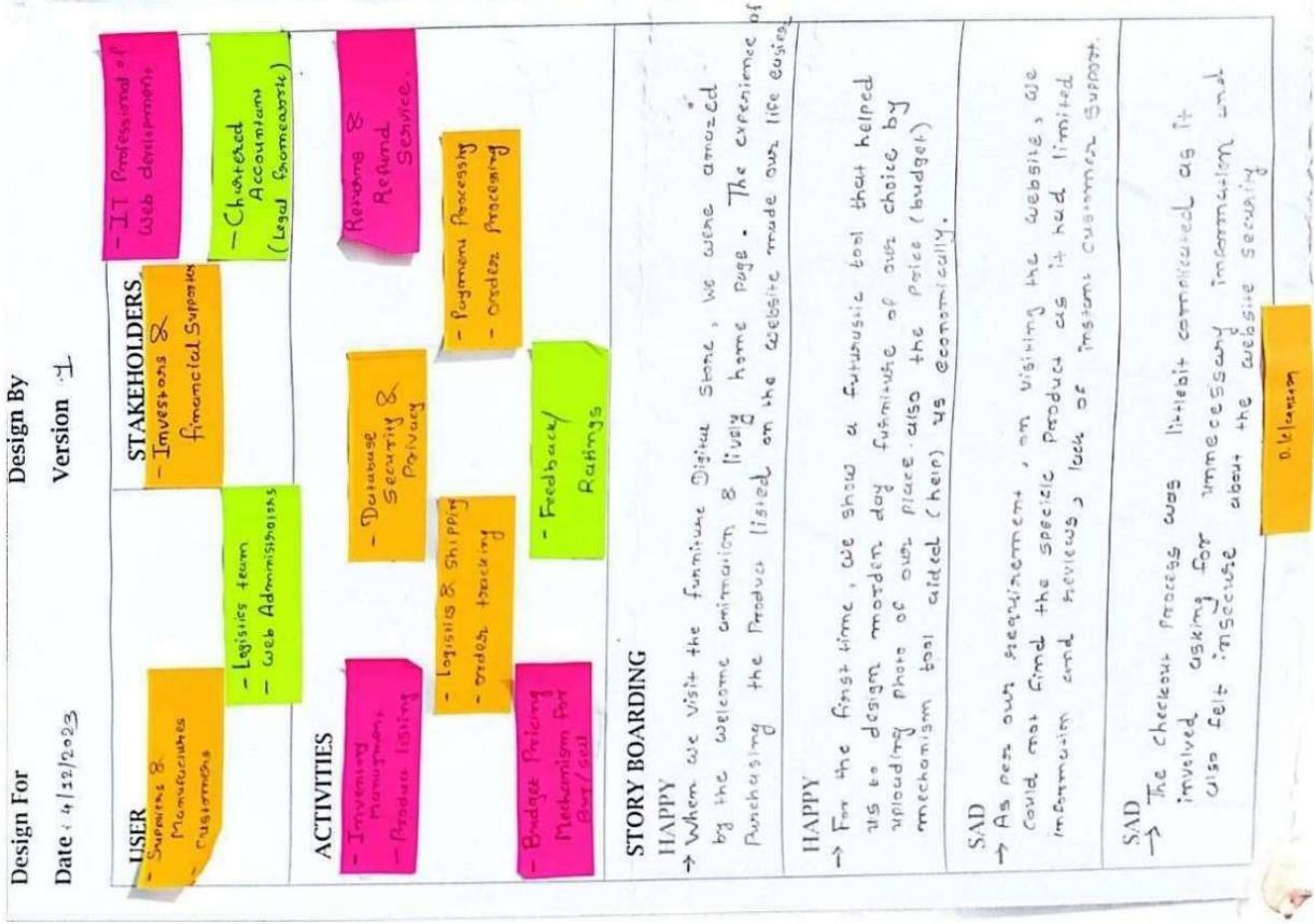


Fig.5.1 Empathy Canvas

Project name : Furniture Innovation & Digital Store

page number: 18

Chapter 6

Ideation Canvas

- An ideation canvas is a rough whiteboard where ideas can be stretched into any limits or dimensions. Ideation session is not aimed at finding solutions to the defined problem, but to define the best possible problem and stretch out its possible scope.
- The ideation canvas is separated into various sections such as: users, activities, situations, props.
- From the AEIOU canvas we came to know about the idea towards Blockchain.
- Hence from the ideation canvas we came to know about the users, activities, situations, props.

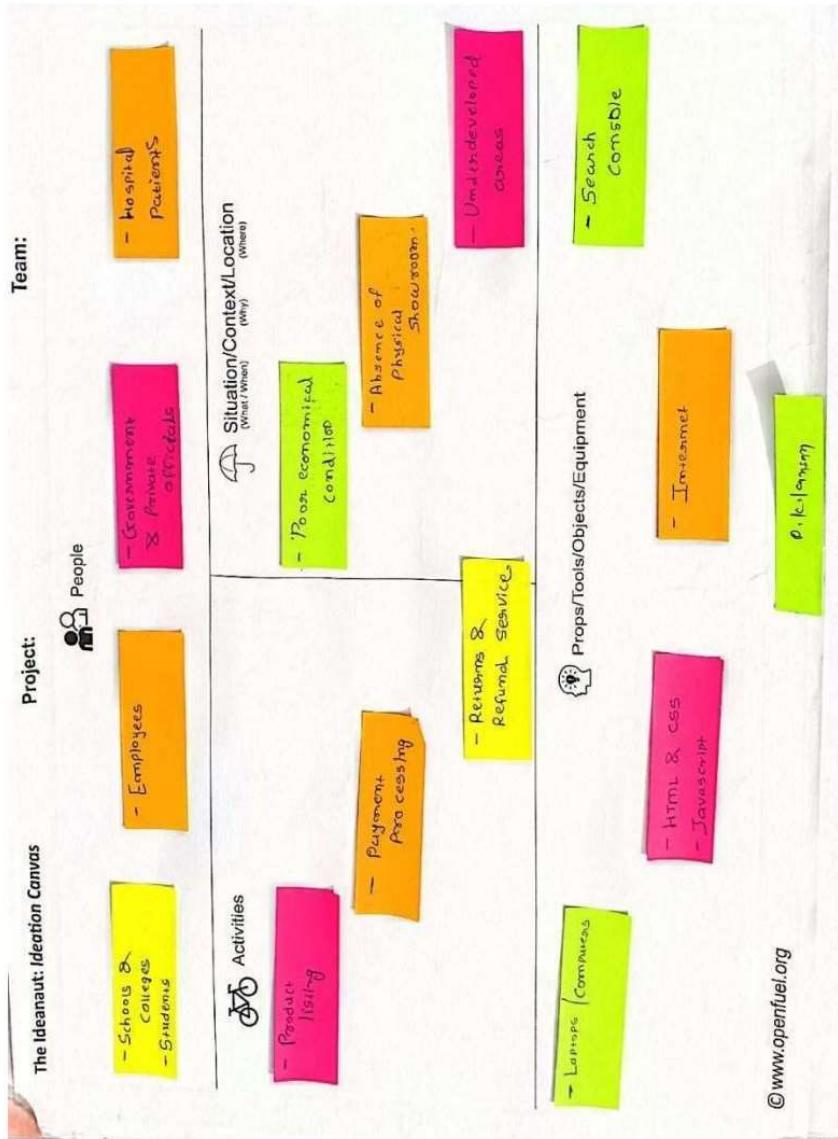


Fig 6.1 Ideation Canvas

Chapter 7

Rough prototype model

- A prototype is an original model, form or an instance that serves as a basis for other processes. In software technology, the term prototype is a working example through which a new model or a new version of an existing product can be derived.

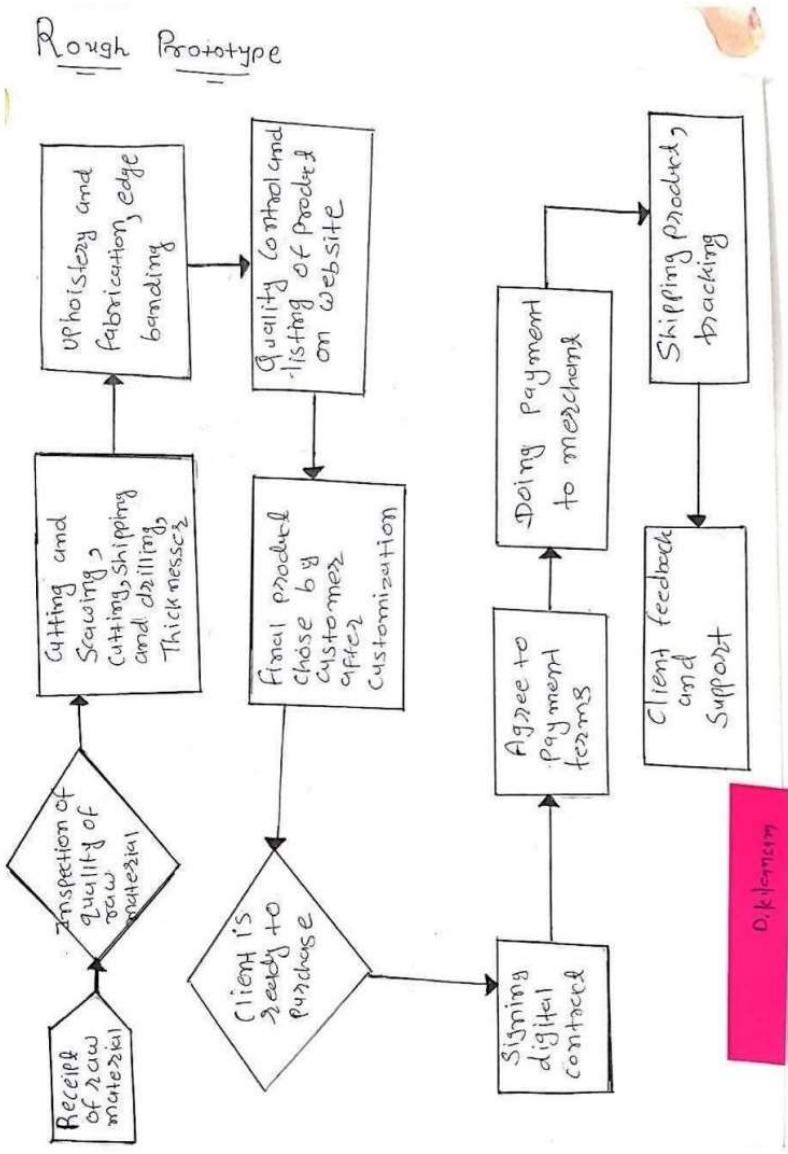


Fig 7.1 Prototype model

Chapter 8

Product Development Canvas

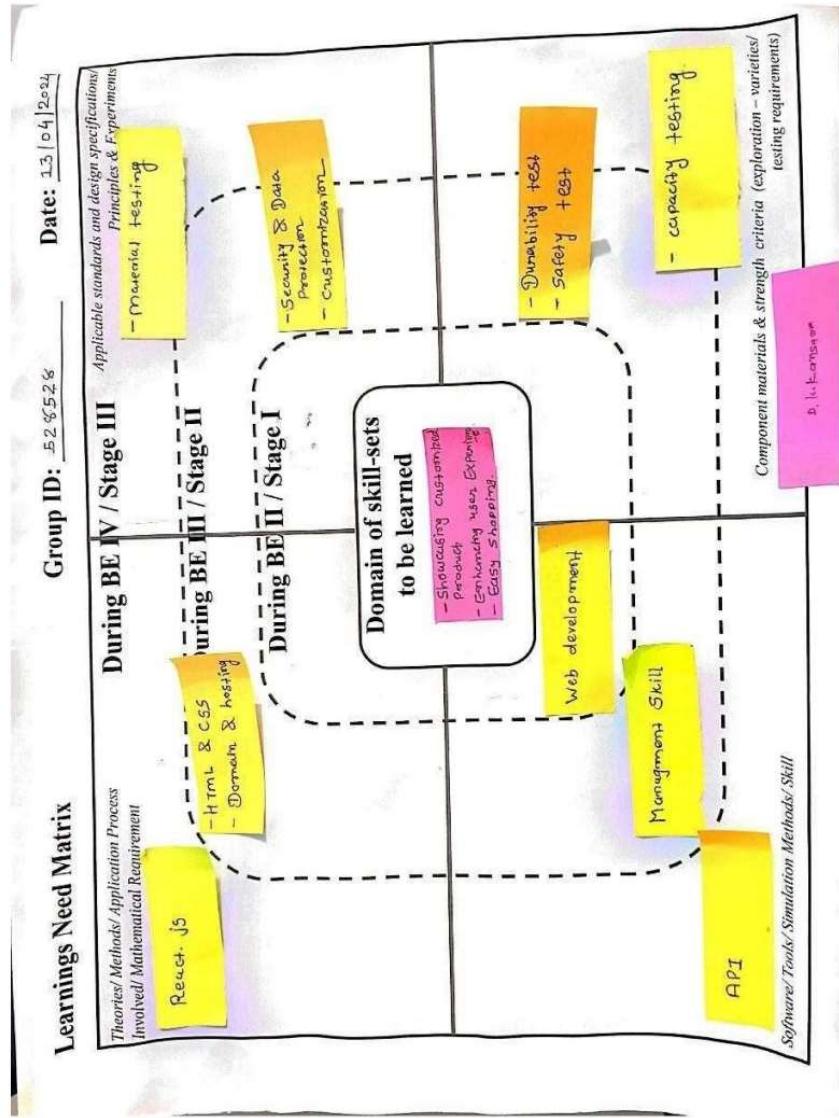
- The Product Canvas is a strategic product planning tool that allows you to quickly capture, describe, challenge, and pivot your product strategy on just a single page.
- The Product Canvas has helped us to identify what are the top customer problems we're trying to solve, the underlying assumptions in our proposed solution, and what we really need to learn from our customers.

- After each sprint, you can respond to the results and issues you may have during the sprint and customize or extend individual information from the separate components.
- This means that your project planning remains flexible 12 and always provides a detailed overview of the course of the development process to your team.



Fig 8.1 Product development canvas

Chapter 9



CHAPTER 10

Design for Use, Reuse and Feasibility Study

1. RESEARCH PAPER

Project Name: The usefulness of an Augmented Reality-based Interactive 3D Furniture Catalog as a Tool to Aid Furniture Store Sales Operations- 2022

The global crisis, that has resulted from the outbreak of Covid-19, influences all aspects of daily life. Due to the people's poor purchasing power, several major stores, such as Furniture Store-XYZ, were forced to close several branches. To counter this, it will be required to adopt unique initiatives that will assist attract visitors and enhance sales while still adhering to the established health protocols. AR-Furniture is the ideal technology to solve this problem. AR-Furniture is an Augmented Reality-based technology that enables a 3D furniture catalog to present a complete picture of a piece of furniture in a virtual form that appears natural and identical to the original. The MDLC development process used in the AR-Furniture Mobile App. According to the study's findings, 100% of respondents agree that AR-Furniture helps to sell and to buy process be done effectively and productively and gives the users innovative ideas. 70% of respondents strongly agree that AR-Furniture makes it easier for users to reach their goals and that AR-Furniture allows users to do whatever they want. 100% of respondents strongly believe that AR-Furniture is helpful and that shoppers can save time while picking the right furniture. Furthermore, AR-Furniture makes it simple for consumers to select preferred furniture without engaging with shopkeeper workers.

Project Name: Applying Modern Interactive Techniques to Interior Designing of Home Furniture Stores-2024

Interactive technologies have recently been used to capture shoppers' attention, encourage their interaction with a product, and create a positive impression of a store being perceived as progressive in setting up new trends. This study examined the role of interactive technologies in developing new trends in the design of home furnishings. A quantitative online survey of randomly selected 526 shoppers in furniture stores in Jeddah, KSA, was conducted and analyzed using SPSS. The findings of the study are as follows: First, the study identified several design issues in home furniture stores that impede meeting the requirements and needs of shoppers; there was support for the use of interactive technologies such as smart applications, VR technology, and interactive screens in the ceilings, walls, and floors of stores home furniture, and these techniques depend on the sense of sight. Second, it was found useful to use modern interactive technologies to provide solutions that contribute to the development of home furniture store design trends, achieve excitement, attract attention, influence the decision to buy products, share and interact, build trust with the shopper, and create a positive impression as well as achieve excellence and uniqueness for stores.

2. REVERSE ENGINEERING

PROJECT NAME: Furniture Innovation & Digital Store

Introduction:

The Furniture Innovation & Digital Store leverages cutting-edge technology to revolutionize the traditional furniture retail experience. Through a combination of innovative design, seamless digital platforms, and sustainable practices, it aims to offer customers unparalleled convenience, customization, and environmental responsibility.

Frontend:

The frontend of the Furniture Innovation & Digital Store comprises a user-friendly website and mobile application, featuring immersive virtual showrooms, interactive product customization tools, and intuitive navigation. Customers can explore a vast selection of furniture options, visualize them in their own spaces using augmented reality, and personalize their choices according to their preferences.

Backend:

Behind the scenes, the backend of the digital store encompasses robust infrastructure, including databases for product inventory and customer information, as well as integration with supply chain management systems to ensure seamless order processing and delivery tracking. Advanced analytics tools are utilized to gain insights into customer behavior and market trends, informing strategic decision-making.

Advantages:

1. Enhanced Customer Experience: The digital store offers a seamless and immersive shopping experience, empowering customers to explore and customize furniture options according to their preferences.
2. Design Innovation: Collaborations with designers and the use of digital tools drive continuous innovation in furniture design, offering unique and contemporary products.
3. Sustainability Focus: By prioritizing eco-friendly practices and material sourcing, the digital store appeals to environmentally conscious consumers, contributing to a greener future.

Disadvantages:

Project name : Furniture Innovation & Digital Store

page number:24

1. Digital Dependency: Reliance on digital platforms may alienate customers who prefer in-person shopping experiences or lack access to reliable internet connections.
2. Technical Challenges: Maintaining and updating digital infrastructure requires ongoing investment and expertise, posing challenges in terms of scalability and cybersecurity.
3. Limited Personalization: Despite the availability of customization tools, some customers may find the level of personalization offered by the digital store insufficient compared to in-person interactions with sales representatives.

3. Feedback Analysis

- Overall, we had a positive experience and was impressed with the level of service and facilities offered.
- Feedback 1: The website on Furniture Innovation & Digital Store is informative and well-structured, offering valuable insights into emerging trends and strategic considerations for furniture retailers in the digital age.
- Feedback 2: However, incorporating more interactive elements and visual content such as image output matching the user's background could enhance user engagement and make the information more accessible and memorable.

Chapter 11

Conclusion

In conclusion, the Furniture Innovation & Digital Store project underscores the pivotal role of innovation in design and digitalization in revolutionizing the furniture retail landscape. Through a comprehensive exploration of emerging trends and case studies, it becomes evident that the fusion of innovative design principles and cutting-edge digital technologies is reshaping consumer expectations and transforming the way furniture is conceived, marketed, and sold.

The project has highlighted several key insights:

1. Consumer-Centric Experiences: The integration of digital tools such as augmented reality (AR) and virtual reality (VR) is empowering consumers to engage with furniture products in immersive and personalized ways, enhancing their shopping experience and fostering greater confidence in purchase decisions.
2. Design Evolution: Contemporary furniture design is undergoing a paradigm shift, with a heightened focus on sustainability, ergonomics, and material innovation. Designers are exploring novel materials and production methods to create furniture that is not only aesthetically pleasing but also environmentally conscious and functional.
3. Digital Storefronts: Traditional brick-and-mortar stores are complementing their physical presence with robust digital storefronts, offering customers the convenience of browsing and purchasing furniture online while still providing the option for in-person experiences.
4. Data-Driven Insights: The adoption of artificial intelligence (AI) and data analytics is enabling retailers to glean valuable insights into consumer preferences and behavior, thereby facilitating targeted marketing strategies and product recommendations.
5. Challenges and Opportunities: While the digitalization of furniture retail presents numerous opportunities for growth and innovation, it also poses challenges such as cybersecurity risks, the need for upskilling employees, and ensuring inclusivity in digital experiences. Addressing these challenges will be crucial for the sustained success of furniture retailers in the digital era.

In essence, the Furniture Innovation & Digital Store project underscores the imperative for furniture retailers to embrace innovation in both design and digitalization to stay competitive in an increasingly dynamic and tech-driven marketplace. By leveraging these transformative trends, furniture retailers can not only meet the evolving needs and expectations of consumers but also drive sustainable growth and differentiation in the industry.

References:

- Reference 1: [Yoon_VR_furniture-libre.pdf \(d1wqtxts1xzle7.cloudfront.net\)](https://d1wqtxts1xzle7.cloudfront.net/Yoon_VR_furniture-libre.pdf)
- Reference 2:
[\(d1wqtxts1xzle7.cloudfront.net\)](https://d1wqtxts1xzle7.cloudfront.net/furnished_an_augmented_reality_based_approach_IJERTV10IS050253-libre.pdf)
- Reference 3: [Future Internet | Free Full-Text | A Multi-Sensory In-Store Virtual Reality Customer Journey for Retailing: A Field Study in a Furniture Flagship Store \(mdpi.com\)](https://www.mdpi.com/2073-4336/13/10/3333)