TECHNOLOGY AND INFORMATION SYSTEM

GROUP 4 SECTION 6

DESIGN THINKING REPORT

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INTRODUCTION

The challenge within the industry, emanating from a constrained understanding of user needs and preferences, poses a critical obstacle to the development of successful and market-aligned products. In an environment characterized by rapid technological advancements and evolving user expectations, companies often find it challenging to obtain comprehensive insights into user behavior. This limitation hinders their ability to accurately anticipate and address the nuanced requirements of their target audience. As a consequence, the resultant gap between product offerings and actual user expectations can lead to the creation of products that fail to resonate with the market, resulting in reduced user adoption, customer satisfaction, and overall business success. To overcome this challenge, companies are increasingly recognizing the importance of user-centric design, user feedback mechanisms, and data-driven analytics to iteratively refine their products, ensuring they align closely with the ever-changing landscape of user needs and preferences.

To address the challenge of a limited understanding of user needs and preferences in the industry, we have decided a viable solution involves the development of specialized analysis software. This sophisticated software should seamlessly integrate advanced data analytics tools, user feedback mechanisms, and machine learning algorithms. By harnessing the power of these technologies, companies can delve into intricate user behaviors and preferences, culminating in the creation of comprehensive user personas. This user-centric analysis software serves as a strategic asset, enabling continuous refinement of products based on real-time user feedback and emerging market trends. The incorporation of machine learning allows for adaptive and predictive insights, empowering companies to proactively anticipate user requirements. Ultimately, this approach fosters a more tailored and responsive development process, ensuring that software solutions align closely with evolving user expectations, thereby enhancing user satisfaction and the overall success of the products in the competitive market landscape.

DESIGN THINKING

The process of coming up with fresh, creative ideas and finding solutions to issues is called Design Thinking. It is not necessary for Design Thinking to be limited to a particular field, it may be used in technology, education, and business, among other areas. It will identify practical ways to satisfy human needs while keeping a focus on those needs. By examining the environments in which products function and evaluating and comprehending how people engage with them, it can also enhance the items. The five stages of the Design Thinking method are Empathise, Define, Ideate, Prototype, and Test.

EMPATHISE

In the Empathise phase, our data collection process involved a series of nuanced questions designed to elicit insightful responses from participants. The survey delved into various challenges and experiences related to market dynamics and information accessibility. Participants were asked to share their perspectives on issues such as dealing with vast amounts of data, making informed choices amidst market complexity, and understanding competitor strategies.

The questions were carefully crafted to uncover potential struggles in assessing and mitigating risks associated with market fluctuations, staying abreast of rapidly changing market conditions, and comprehending evolving consumer preferences. Additionally, participants were prompted to express any difficulties in accessing comprehensive and up-to-date market trend data for academic and research purposes.

These inquiries served as a foundation for understanding the diverse concerns and needs of the participants, providing valuable insights that guided the development of a user-centric solution, much like the process undertaken for designing a fitness app in the previous Empathise phase.
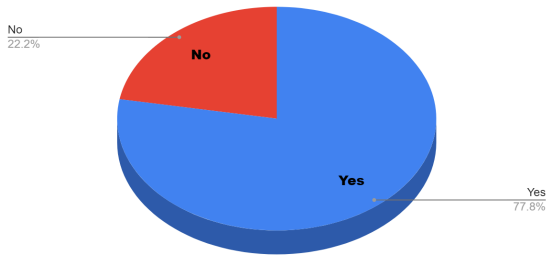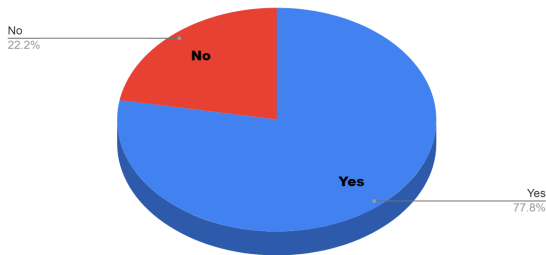
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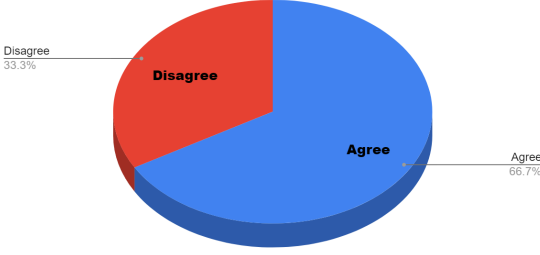https://docs.google.com/forms/d/e/1FAIpQLScK2a4wpWi_r0hTfq-p1XGwQP-7GI5LNrMtiv5L
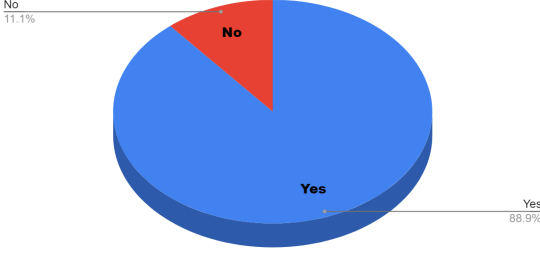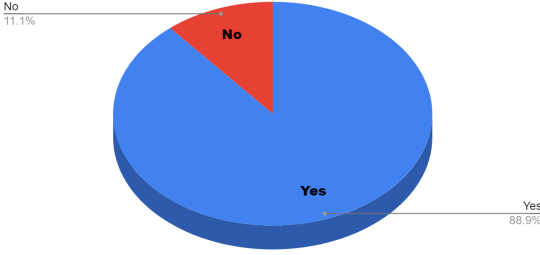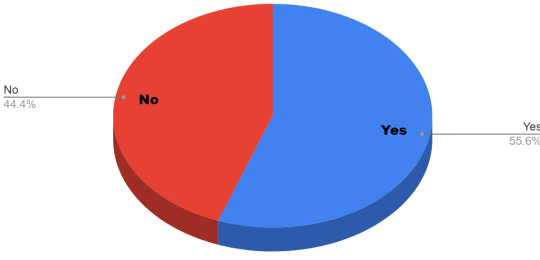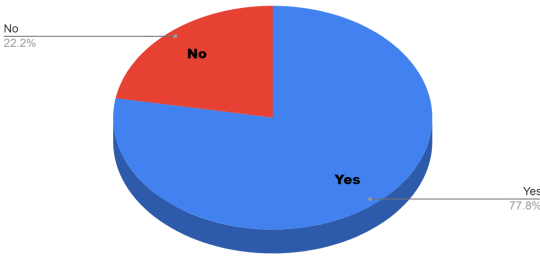CXRcpcMEiA/viewform

List of respondent:

What is your age?	What is your occupation?	Are you often faced with	Have you ever struggle t	Businesses may lack con	Have you ever find it cha	Have you ever struggle t	Have you ever face chall	Are you lack access to co
18	student	Yes	Yes	Agree	Yes	Yes	Yes	Yes
19	Student	Yes	Yes	Agree	Yes	Yes	Yes	Yes
20	Student	Yes	Yes	Disagree	Yes	Yes	No	Yes
23	Student	Yes	Yes	Agree	Yes	Yes	No	Yes
40	Investor	Yes	Yes	Agree	Yes	Yes	Yes	Yes
39	Marketing advisor	No	No	Agree	Yes	Yes	No	Yes
28	Supplier	Yes	Yes	Agree	No	Yes	Yes	No
45	Manufacturer	Yes	Yes	Disagree	Yes	No	No	No
22	Student	No	No	Disagree	Yes	Yes	Yes	Yes
24	student	Yes	No	Agree	Yes	Yes	Yes	Yes

DEFINE

In the Define phase of our design thinking process, we have precisely identified and articulated several key problems faced by our users. These insights were gleaned through empathetic interactions and surveys, allowing us to distill user experiences into clear problem statements. The problems identified are as follows:

Problems	**Descriptions**
Dealing with Vast Amounts of Data SURVEY ON THE PROBLEMS No 22.2% No Yes Yes 77.8%	Our users face a daunting challenge when dealing with a large volume of data. The sheer amount of information makes it hard for them to extract relevant insights, leading to decision-making difficulties and a sense of being overwhelmed. We aim to simplify this process and make it more manageable for our users.
Making Informed Choices Amid Market Complexity SURVEY ON THE PROBLEMS No 22.2% No Yes Yes 77.8%	Users in our ecosystem grapple with a significant challenge when it comes to making informed choices in the ever-evolving landscape of market trends and industries. The intricacies and constant changes within various sectors create a multifaceted obstacle, impacting their decision-making processes.
Lack of Comprehensive Insights into Competitor Activities	One significant challenge faced by users revolves around the limited visibility into their competitors' activities. The absence of

	detailed insights into competitors' strategies, product launches, and market positioning creates a gap that can impact the competitiveness and strategic decision-making of a business.
SURVEY ON THE PROBLEMS Disagree 33.3% **Disagree** **Agree** Agree 66.7%	detailed insights into competitors' strategies, product launches, and market positioning creates a gap that can impact the competitiveness and strategic decision-making of a business.
Assessing and Mitigating Risks Amid Market Fluctuations SURVEY ON THE PROBLEMS No 11.1% **No** **Yes** Yes 88.9%	Users are grappling with a significant challenge in the realm of risk management, particularly when it comes to navigating market fluctuations and economic uncertainties. The dynamic nature of markets introduces complexities that make it difficult for businesses to effectively assess and mitigate potential risks.
Staying Up-to-Date with Rapidly Changing Market Conditions SURVEY ON THE PROBLEMS No 11.1% **No** **Yes** Yes 88.9%	Users are facing a significant hurdle in keeping pace with the fast-paced nature of market conditions. The dynamism and speed of changes in the business landscape make it challenging for organizations to stay consistently informed, resulting in a risk of overlooking critical information.
Understanding Evolving Consumer Preferences and Behavior	Users are encountering a noteworthy challenge in keeping pace with the constant evolution of consumer preferences and behavior. The dynamic nature of consumer trends and expectations presents difficulties for organizations to gain accurate insights, hindering their ability to align products and services with changing consumer demands.

No
44.4%

No

Yes

Yes
55.6%

Lack of Access to Comprehensive Market Trend Data for Academic and Research Purposes

No
22.2%

No

Yes

Yes
77.8%

Students and researchers are facing a substantial challenge in obtaining comprehensive and up-to-date market trend data to support their academic pursuits and research endeavors. The current limitations in access hinder their ability to conduct in-depth analyses and draw meaningful insights from the latest market trends.

IDEATE

As we delve into the Ideation phase of our design thinking, the goal is clear: to generate inventive solutions that tackle the challenges unearthed in Chapter 3: Programming Software & Malicious Software. Three major problems had been found during the brainstorming session.

Evidence of brainstorming session:

However, going through the define and emphasis process, we noticed one major hurdle is the difficulty people face in identifying market trends.

Going deep into the problem, we broke the problem down into parts with solutions:

1. Dealing with Vast Amounts of Data:

- Smart Data Filters:
    - Allow users to apply intelligent filters to prioritize and focus on relevant data.
- Visual Summarization:
    - Provide visualizations and summaries for large datasets to enhance data understanding.

2. Making Informed Choices Amid Market Complexity:

- Competitor Analysis Tools:
    - Integrate tools for real-time competitor analysis and strategy assessment.

3. Assessing and Mitigating Risks Amid Market Fluctuations:

- Dynamic Risk Dashboards:
  - Create dashboards displaying real-time risk assessments based on market fluctuations.

4. Staying Up-to-Date with Rapidly Changing Market Conditions:

- Automated Market Updates:
  - Push notifications for real-time market updates to keep users informed.

5. Understanding Evolving Consumer Preferences and Behavior:

- Consumer Sentiment Analysis:
  - Integrate tools for sentiment analysis on social media and online platforms.
- Predictive Consumer Surveys:
  - Include features for conducting predictive surveys to understand changing preferences.

6. Lack of Comprehensive Insights into Competitor Activities:

- Competitor Crowdsourcing Platform:
  - Develop a platform for businesses to contribute anonymized competitor data.

7. Challenging to Assess and Mitigate Risks Associated with Market Fluctuations:

- Integrated Risk Analytics:
  - Provide an integrated platform combining market analytics with risk assessment tools.

PROTOTYPE
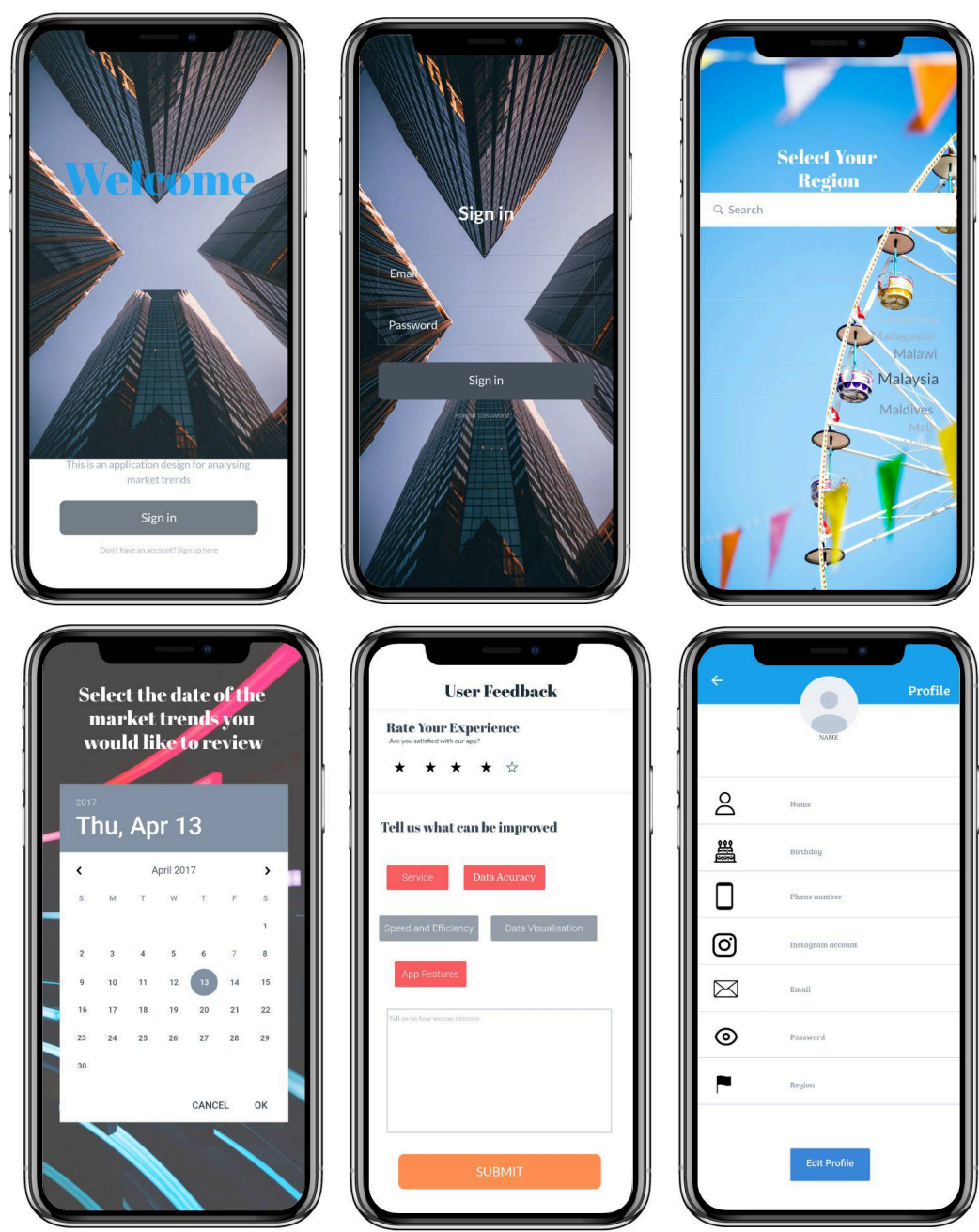
The prototype aims to assist businesses in better understanding and satisfying customer needs. It offers a strong platform by fusing machine learning, user feedback tools, and advanced data analytics. Businesses can use this software to iteratively improve their products by using market trends and real-time feedback. By carefully examining user behavior, it generates precise user personas.

The application of machine learning for adaptive insights is an interesting feature that aids businesses in predicting and proactively meeting user requirements. Through user interactions, the software learns and adjusts to changing user expectations. The interface of the prototype is designed to make it easy for companies to navigate and engage with feedback mechanisms and analytical tools. It offers practical insights that facilitate wise decision-making and efficient iteration of the product.

The feature that we implemented into this prototype is a robust user authentication system that enables businesses to securely sign in and streamline their platform interactions. This allows the software to customize its insights and recommendations based on specific user preferences and historical data, while also guaranteeing data privacy and confidentiality. The additional features that allow for the selection of particular dates and regions for market reviews improve the accuracy of the analytics and give businesses a targeted understanding of user requirements in certain situations. Furthermore, by displaying risk percentages and market distribution, this feature gives businesses insightful information about possible obstacles and opportunities, enabling them to take proactive measures to address market dynamics and make well-informed decisions. The prototype's goal of giving businesses a

strong platform to thoroughly analyze, adapt, and successfully meet customer needs is greatly aided by this feature set's variety.

In summary, this prototype is essentially a creative way to deal with the problem of having a poor grasp of user needs. It combines analytics, user input, and machine learning to enable businesses to develop products that genuinely connect with their target market, resulting in happy customers and success in a competitive marketplace.

TEST

We organized to interact with participants during the testing phase of our analysis software prototype in order to obtain insightful input and refine the design until we reach the best possible outcome for users. One respondent expressed concerns during the first test that the prototype's features were insufficient and incomplete. We make the necessary adjustments and improvements after considering the feedback. Tests later on will try to resolve these preliminary issues, guaranteeing a more thorough and user-friendly experience. We hope that after continuous iterations, users will recognize the value of the software in offering comprehensive insights into user behaviors and preferences. Our goal is to create a refined prototype that not only meets but exceeds user expectations, ultimately resulting in a product that effectively addresses the challenges faced by companies in understanding and meeting user needs within the dynamic market landscape.

TASK DISTRIBUTION

CONTENT	MEMBER
INTRODUCTION	MUHAMMAD FATHURRAHMAN BIN AYUB
DESIGN THINKING PHASES	HUANG BOSHENG
EMPHATISE	TEOW ZI XIAN

DEFINE	CHU CHENG QING
IDEATE	CHU CHENG QING
PROTOTYPE	CHU CHENG QING MUHAMMAD FAIZ AIZAT BIN MD SUKERI
TEST	MUHAMMAD FAIZ AIZAT BIN MD SUKERI
REFLECTION	ALL MEMBERS

REFLECTION

Group members	Reflection
Chu Cheng Qing A23CS0218	In the pursuit of my academic goals, my overarching dream in this course is to immerse myself deeply in the working environment and industries that I aspire to be a part of in the future. The design thinking project has been a pivotal journey, offering me a unique opportunity to delve into market demands and conduct thorough research on companies that align with my career aspirations. Through this process, I've gained valuable insights that have crystallized my professional direction. The project has provided me with a clearer understanding of the market landscape and has helped shape a defined career aim. Armed with this newfound clarity, I am committed to continuous improvement and growth to enhance my potential in the industry. To achieve this, I am dedicated to exposing myself to diverse environments, broadening my horizons, and actively seeking opportunities to develop both hard and soft skills. Recognizing the competitive nature of the

	corporate world, I understand that these actions are essential for me to not only survive but thrive in the industry I envision myself in
Faiz Aizat A23CS0126	Working on this design thinking project taught me a lot about problem-solving and comprehension. I was able to see the difference between what users want and what is currently available after I defined the problem. During the Ideate phase, coming up with ideas was enjoyable and challenged my creative thinking. I could see the potential for a software solution that could truly change things when it came time to build the prototype. As we enter the Test phase, I see how crucial it is to gather input from actual users. This project has taught me how important it is to be creative, attentive to users' needs, and always improving in order to provide a solution that truly fulfills their expectations.
Muhammad Fathurrahman A23CS0129	In my pursuit of advancing my skills in the software engineering course, I am placing a significant emphasis on exploring the intricacies of web development. This involves a comprehensive understanding of both front-end technologies, such as HTML, CSS, and JavaScript, as well as back-end technologies encompassing server-side scripting and databases. Inspired by the insights gained from engaging in design thinking projects, I recognize the transformative impact of creative problem-solving in the realm of software engineering. Leveraging design thinking principles, especially those emphasizing creativity and divergent thinking, I aim to infuse innovation into my approaches to software design and development. A pivotal strategy in achieving this goal involves actively participating in hands-on experiences and undertaking the development of real-world projects. This not only serves to

	solidify and apply the theoretical knowledge acquired but also results in the creation of a tangible portfolio, providing a concrete demonstration of my capabilities to potential employers. This iterative process of learning, exploration, and project creation is poised to not only deepen my expertise in web development but also equip me with a dynamic and innovative mindset to address the challenges inherent in software engineering.
Huang Bosheng A22EC4032	Through Design Thinking, I have learned a multitude of valuable knowledge and skills that are immensely important for my personal and professional development. Firstly, the course taught us how to customize software according to customer needs. This process is not just about technical implementation, but also a challenge to our social skills. We learned to conduct thorough investigations into user needs and preferences, which helps us understand our target user groups. By analyzing the user interfaces of other software, we learned how to design interfaces that are both appealing and meet user needs. This experience has profoundly made me realize that the success of a software product relies not only on technological innovation but more importantly on a deep understanding of User Experience. This emphasis on UX not only improves product quality but also has directed the path for my future career. During this process, I also recognized the importance of teamwork. We need to work collaboratively, integrating each person's ideas and skills into the project, to create superior software solutions. In the future, I plan to further strengthen my teamwork abilities and technical knowledge so as to develop truly excellent software products. This Design Thinking course has not only enhanced my technical capabilities but also helped me build effective team collaboration and a deep

	understanding of user needs, which is undoubtedly a great asset to my career.
Teow Zi Xian A23CS0279	As a year 1 university student, my academic journey is fueled by a desire to deeply engage with industries aligning with my future aspirations. The design thinking project has been transformative, offering insights into market demands and helping shape a clear career aim. This experience has provided valuable clarity about the market landscape, fueling a commitment to continuous improvement. I aim to thrive in the competitive corporate world by exposing myself to diverse environments, broadening my horizons, and actively developing both hard and soft skills. In summary, the design thinking project has been instrumental in crystallizing my professional direction, and I'm dedicated to a path of continuous growth to excel in my envisioned industry.