FDE 1 (BUSA 161 A)

DESIGN PROJECT ASSIGNMENT

COHORT C

TEAM FOUR – AYA

PROBLEM: LACK OF INFRASTRUCTURE IN THE AGRICULTURAL SECTOR.



**TEAM MEMBERS**

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**Problem Space Mapping**

**A picture containing graphical user interface

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My team used The Tree Diagram and The Spider Diagram as our two principal space mapping tools. We utilised the ‘roots’ of the Tree Diagram to causes of our problem. The Tree diagram gave a comprehensive outline of the problem space. It was also easy to understand information represented using the tree diagram. The spider diagram was very efficient because we had a lot of information to put down. The spider diagram helped us to thoroughly traverse the problem space, while still employing imaginativeness and clarity.

* **Initial problem tweet:** The lack of agricultural infrastructure intensifies the effects of climate and climate change and has prevented economic growth in Ghana. It will continue to do so unless it is fixed. **Reframed problem tweet:** The lack of infrastructure has intensified the effects of climate and climate change on agriculture and has prevented economic growth in Ghana. It will continue to do so unless it is fixed. The lack of prescribed storage facilities for farm produce results in the loss of ten to forty percent of all vegetables produced in the Upper West, Upper East, Savannah, North East and Northern Regions. From common farmers to governmental bodies, all parties have a stake in this canker.

Our initial problem tweet was broad and less detailed. It viewed the problem from too far a standpoint and be overlooked essentials such as relevant stakeholders and statistical data. We had to reframe the tweet using the helicopter view. The Helicopter view allowed the problem to be analysed without omitting essential factors. Our reframed problem tweet included the relevant stakeholders, vital statistical data and showed the intensity of the problem.

**RESEARCH PROTOCOL**

A picture containing timeline

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Our team’s research protocol was efficacious in enabling us to obtain first-hand information from our users and empathise with them while conducting our research in a respectful and organised manner. We used the most convenient ethnographic research method, interviews to fit our time schedules. By using the 4R’s (Rigour, Right-size, Relevance and Respect) in our research process, we were able to earn the trust and participation of our respondents, focus on relevant areas and provide valuable research information to our users.

**CARD SORTING**

Timeline

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The card sorting exercise helped us to make sense of the data we had gathered from the research we had conducted. The groupings we came up with are: Negative effects of climate change on agriculture, Positive effects of technology in agricultural production, Neglect of the government in relation to the problem, Positive contributions of stakeholders to the problem, and Sentiments of stakeholders concerning the problem. We created a parking lot for posts that did not seem to fit in any category.

**ANALYSIS FRAMEWORKS**

Diagram

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Graphical user interface, website

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**Diagram, timeline

Description automatically generated2X2 MATRIX**

**Timeline

Description automatically generatedVENN DIAGRAM**

Diagram, venn diagram

Description automatically generated

Our team used five different frameworks to provide short summaries about our users. The frameworks made it easier to empathize with our users and to see things from their perspective, not ours. We developed mini POVs from these frameworks. Our team’s mini POVs stated the various needs of our most important users, farmers. These needs include funds, infrastructure, and modern technology for farming. Our POVs also stated the usefulness of these resources in the expansion, promotion and betterment of our users’ farming activities. Our mini POVs were also centred around other workers in the agricultural sector such as business owners.

**Mega POV:** Mr. Oppong, a seasoned farmer who is an active participant of the agricultural sector needs infrastructure to allow him farm year-round and with ease, expand his business and increase productivity to alleviate the constraints climate change have had on his business.

We are satisfied with the mega POV because it gives a brief but satisfactory overview of our users, their need for agro infrastructure and how far the provision of such infrastructure will go to make their work more efficient and worthwhile.

**LOW FIDELITY PROTOTYPE**

A white piece of paper

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HIGH FIDELITY PROTOTYPES

Graphical user interface

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Description automatically generated

Our prototyping journey was in two phases: The development of a low-fidelity prototype (using free-hand sketches) and the development of the high-fidelity prototype. We created digital representations of our prototype and printed 3D models of this sample. To test our prototype, we conducted secondary research to help us identify the grey areas of pre-existing solution concepts which are similar to ours. We also interviewed fifteen different peasant farmers and asked them what they thought about our idea.

**PROTOTYPE TEST PROTOCOL**

Chart, treemap chart

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Our prototype Test Protocol captured concepts and assumptions from our solution concept, the users of our solution (who are mainly peasant farmers). The table also records the research method our team employed to test our prototype, which was in-depth interviews as well as the expected data type.

**Value Fulfilment Blueprint**

Our Value Fulfilment Blueprint captures our persona journey. Farmers lose ten to forty percent of their farm produce to post-harvest losses annually. Peasant farmers are most affected in this regard. Farmers are therefore looking for a way, mainly some type of infrastructure that would help them to store produce, both perishable and non-perishable for a considerable amount of time. Farmers are also searching for a ready and reliable link that serves as a middleman between them and the market.

**Functional requirements:** Our solution provides a trustworthy link between farmers nationwide and the ready market. It also involves the provision of storage units to farmers at practically no cost. The solution seeks to pull together pre-existing labour as a resource and arm this resource with all the infrastructure needed to farm year-round and maximize efficiency and productivity at practically no cost. **Non-functional requirements:** Our solution aims to provide storage units only to our farmers. Our solution does not include the provision of other types of infrastructure such as rainwater harvesters and irrigation systems. This points to the fact that our solution seeks to partially solve or control the high rate of post-harvest losses farmers face.

Front-end actions: The front-end actions include our team providing the storage units to farmers for free. Our daily face-to-face interactions with the farmers also constitute the front-end actions of our Value Fulfilment Blueprint.

Back-end actions: The processes our team would use to find a ready market or ready buyers for the farmers’ produce constitute the back-end actions. This is because the farmers would have no hand in this. Essentially, we will remove the duty of storage and selling from farmers and we would allow them only to focus on farming.

Support systems and processes: Our team would put measures in place to organise some form of mentorship for farmers who agree to work with us. This is to ensure quality of their farm produce.

**Lessons learnt, inspirations, what we plan on doing next**

c. Throughout the semester, we have gained a deeper understanding of our problem space, especially because of the space mapping tool we used (the tree diagram). The tree diagram provided a detailed and simple representation of the chosen problem, its root causes and effects. It also made it less difficult to design a stakeholder analysis map. The use of abductive logic, reframing techniques and the design thinking approach also helped reduce the complexity of our problem space. We received constructive feedback from our lecturers during the problem festival. We were advised to narrow down our problem space. This significant piece of advice helped us to properly organise our thoughts and increase focus on the right areas within our problem space. The ethnographic research method we chose(in-depth interviews) enabled us obtain first-hand information from our stakeholders. Integrating the 4Rs into our research also allowed us earn the trust and participation of our respondents, focus on relevant areas and provide valuable research information to our users. The five analysis frameworks we used helped us synthesize and make sense of the data we had gathered. The use of various ideation techniques such as the Six thinking Hats technique, the worst idea technique and the Disney Three Rooms Technique helped us step out of our box of categories to achieve novelty and generate multiple solution concepts. As a team, we learnt a lot from one another. We learnt to value the diversity we had in terms of our backgrounds and skillsets. We also learnt to constructively criticize or merge our different opinions to create a mega solution.

We also realized that subsequent research we conduct should include more numbers, figures, and statistical data. We drew the conclusion that we had to put in more effort to improve our research methods. Perhaps in our next research, we will allow participants to propose their own questions to broaden the extent of their relevance to them. We will also engage experienced researchers from the FDE faculty or other Ashesi faculty. We also hope to engage more average users like ordinary citizens in our next research to expand the scope of our findings. Our next step is to find ways to make our solution more feasible. We will also refine our final proposed solution for the business world. We also plan to conduct more research and interviews to test our prototype, expand our ideas and find out more about the logistics and requirements to run our business on a daily basis.

We hope to see our solution mature into an effective business which actually solves the problem we are tackling. We are surprised about how much we have achieved so far. The successes we have chalked have made us aware of our capabilities and how much more we can achieve as a team.

**Design Project**

**(Spring 2022)   
Team Assignment Task Questionnaire – Due with final submission**

**ITS ONE FORM FOR THE TEAM (*yes, this design is deliberate*)**

**Please fill out the following questionnaire indicating the percentage of individual effort.**

**You don’t have to allow free riders to claim an equal share of your toil on this assignment. You are encouraged to be assertive and apportion percentages as truthful as you can. If you decide to accommodate free riding, that will be your decision.**

**NB: Your assignment will NOT be graded if this form is not complete**

**PEER EVALUATION TEMPLATE**

*NB: Please note that the spaces above need to be filled by the individual team members.* ***All team members fill only one form****. And the team must agree on the final evaluation submitted.*

|  |  |  |
| --- | --- | --- |
| **Work Output Evaluation (70%)** | | |
| **Name** | **Work Description** | **Percentage (should sum up to 100)** |
| Keren Grant | Facilitated and organized group discussions, contributed to group discussions, typing, research, assignment review | 1 |
| Papa Yaw Wireko Boampong | Contributed to group discussion, assignment review, research | 1 |
| David Dela Nuworkpor | Contributed to brainstorming, aided with research | 1 |
| Glenn Bartels Odoom | Contributed to group discussion, helped group members synthesize views | 1 |
| Emmanuel Agyei | Contributed to group discussion, assignment review, made discussion exciting | 1 |
| Vanessa Nana Aba S. Akwa | Contributed to group discussion, research, assignment review | 1 |
| Innocent Farai Chikwanda | Contributed to group discussion, assignment review, research, facilitated meetings | 1 |

*: Please note that the spaces above need to be filled by the individual team members.* ***All team members fill one form****.*   
The work output evaluation is the same as the usual evaluation you have been doing in FDE-1. You are evaluating each member of the team based on how much of the work (assignment) he/she did. In the end, the total evaluation should sum up to 100%

|  |  |  |  |
| --- | --- | --- | --- |
| **Behavioral Evaluation (30%)** | | | |
| **Name** | **Leadership/Proactiveness Rate each person on a scale of 1-10** | **Team Spirit Rate each person on a scale of 1-10** | **Personal/Work Attitude Rate each person on a scale of 1-10** |
| Keren Grant | 10 | 10 | 10 |
| Papa Yaw Wireko Boampong | 10 | 10 | 10 |
| David Dela Nuworkpor | 10 | 10 | 10 |
| Glenn Bartels Odoom | 10 | 10 | 10 |
| Vanessa Nana Aba S. Akwa | 10 | 10 | 10 |
| Emmanuel Agyei | 10 | 10 | 10 |
| Innocent Farai Chikwanda | 10 | 10 | 10 |

Under Behavioral Evaluation, you are to rate each member on a scale of 1[lowest] - 10[highest] under each of the identified traits.