

MSc. Design and Technology Futures
Department of Engineering
EM70LT

Interconnecting Competencies with Possibilities for Sustainable Women Empowerment.

Kompetentside ja võimaluste sidumine kestlikuks naiste võimendamiseks.

Masters Thesis

Jannatun Tazri, 195040MADM

Supervisor: Ruth-Helene Melioranski



design&technologyfutures

AUTHOR’S DECLARATION

Hereby I declare that I have written this thesis independently.

No academic degree has been applied for based on this material. All works, major viewpoints and data of the other authors used in this thesis have been referenced. “.....” 2021

Author: Jannatun Tazri

/signature /

The thesis is in accordance with terms and requirements

“.....” 2021

Supervisor:

/signature/

Accepted for defence

“.....” 2021

Chairman of Thesis Defence Commission:

.....

/name and signature

Non-exclusive licence for reproduction and publication of a graduation thesis¹

I _____ Jannatun Tazri _____

1. grant Tallinn University of Technology and Estonian Academy of Arts free licence (non-exclusive licence) for my thesis

Interconnecting Competencies with Possibilities for Sustainable Women Empowerment

Kompetentside ja võimaluste sidumine kestlikuks naiste võimestamiseks.

supervised by _____ Ruth-Helene Melioranski _____,

1.1 to be reproduced for the purposes of preservation and electronic publication of the graduation thesis, incl. to be entered in the digital collection of the library of Tallinn University of Technology and the library of Estonian Academy of Arts until expiry of the term of copyright;

1.2 to be published via the web of Tallinn University of Technology and Estonian Academy of Arts, incl. to be entered in the digital collection of the library of Tallinn University of Technology until expiry of the term of copyright.

2. I am aware that the author also retains the rights specified in clause 1 of the non-exclusive licence.

3. I confirm that granting the non-exclusive licence does not infringe other persons' intellectual property rights, the rights arising from the Personal Data Protection Act or rights arising from other legislation.

_____ 24.05.2021 _____ (date)

[1] *The non-exclusive licence is not valid during the validity of access restriction indicated in the student's application for restriction on access to the graduation thesis that has been signed by the school's dean, except in case of the university's right to reproduce the thesis for preservation purposes only. If a graduation thesis is based on the joint creative activity of two or more persons and the co-author(s) has/have not granted, by the set deadline, the student defending his/her graduation thesis consent to reproduce and publish the graduation thesis in compliance with clauses 1.1 and 1.2 of the non-exclusive licence, the non-exclusive license shall not be valid for the period.*

Master's Thesis Objective & Task

2020/2021 academic year, Spring Semester

Student: Jannatun Tazri,195040MADM

Study programme: Design & Technology Future , MADM

Supervisor: Ruth-Helene Melioranski

Thesis topic:

Interconnecting Competencies with Possibilities for Sustainable Women Empowerment.

Kompetentside ja võimaluste sidumine kestlikuks naiste võimestamiseks.

Sl.	Task Description	Completion Date
1	Literature Research and Analysis	17.11.2020
2	Survey conduction and analysis	01.12.2020
3	Define: Theoretical Framework and Hypothesis	31.12.2020
4	Develop: Conceptual development process	24.04.2021
5	Test: User feedback and modification	30.04.2021
5	Deliver: Finalizing Master's Thesis	24.05.2021

Student: Jannatun Tazri _____ Date:

Phone: +37253928587,Email: jannatuntazri07@gmail.com

Supervisor: Ruth-Helene Melioranski _____ Date:

Phone: +37256603440,Email: ruth.melioranski@artun.ee

Abstract

The gender gap is a phenomenon that exists in the majority of the modern world's countries. While the magnitude of the disparity varies by region, it is clear that women often do not receive the same care as their male counterparts, even in today's world. Quite often, in developing regions of the world, the gender gap is more prominent. Numerous social problems continue to drag women down. Women are sometimes classified as second-class citizens. Women empowerment is a revolutionary philosophy that aims to close the gender gap by addressing social problems affecting women and taking action to address them.

This study examines the current state of gender inequality in a developing nation, Bangladesh. The current state of affairs and how we got here is intended to be discussed.

As part of the study, previous authors' work was examined to identify current issues, and the authors addressed the current issues. Following that, a survey was conducted in the targeted country to ascertain the problems and needs of stakeholders. Following that, expert interviews were conducted to gain further insight into the issues.

A platform named "*Kaze Zai*" is proposed as part of this study. The proposed platform's sole aim is to empower less fortunate women by providing networking opportunities and expanding their financial prospects. The platform recommends features that were determined to be significant during the study. Additionally, this research solicited input from stakeholders on the developed platform. Further, the platform's challenges and future are addressed.

The primary objective of this research is to empower women in Bangladesh by creating unique opportunities through the proposed platform.

Table of Contents

Abstract	5
List of Abbreviations	8
1. Introduction	9
2. Methodology	11
2.1 Literature Review	11
2.2 Extended Understanding of Literature Review	16
2.3 Field Research Survey	23
2.3.1 Analysis of Field Research Survey	24
2.4 Experts Opinions	28
2.4.1 Expert Interview with MONDO	28
2.4.2 Expert Interview with PKSf	29
2.5 Reframing	29
3. Construction of Solution	31
3.1 Theoretical Framework	31
3.1.1. Feminist Theory	31
3.1.2 Liberal Feminism	32
3.1.3 Feminism and Its Reality in Bangladesh	32
3.1.4 Empowerment	33
3.1.5 The Social Dilemma	33
3.1.6 Technological Revolution and Era of Smart Devices	34
3.2 Constructing Hypotheses	35
3.3 Concept of The Solution	37
4. Design of The Solution	38
4.1 Persona Design	38
4.2 Concept Development	42
4.2.1 Proposed Features	42
4.2.2 Simplified Block Diagrams of The Platform	44
4.2.3 Branding	45
4.2.4 Colour Psychology	46
4.2.5 Details of Common Module	46
4.2.6 Details of Member Module	48
4.2.7 Details of Client Module	57
4.3 User Journey	62
4.4 Challenges of Implementation	64
4.4.1 Challenges of Development	64

4.4.2 Handling Transactions	64
4.4.3 Handling Tax	65
4.4.4 Physical Security of Users	66
4.4.5 Unwanted Bias	66
4.5 User Testing and Refinement	67
4.6 Values Provided by The Platform	67
5 . Limitations of The Research	71
6. Future Works	72
7. Conclusion	73
References	76
Appendix 1: Survey questionnaires	82
Appendix 2: Results from the survey	83
Appendix 3: Findings of Initial Research	86

List of Abbreviations

UN	United Nations
EU	European Union
ILO	International Labour Organization
NGO	Non-governmental Organization
SME	Small Medium Enterprises
BBS	Bangladesh Bureau of Statistics
SHG	Self Help Group
UNICEF	United Nations Children’s Emergency Fund
IoT	Internet of Things
IOS	Internet of Services
REST	Representational State Transfer
API	Application Programming Interface
XSS	Cross-site Scripting
CSRF	Cross-site Request Forgery

1. Introduction

It is a well-known fact that there is a notable gender gap that women face in most parts of the world compared to their male counterparts (World Economic Forum, 2020). In developing countries, the gap is seen more prominently (Moghaddam, 2010). Scholars and researchers have done numerous research regarding this issue. In History, there are examples that women have been considered the icons of strength, wisdom, and fury. From ancient times in the Indian subcontinent, we see this representation as the form of goddess “DURGA” or goddess “KALI” (Harle,1963). In reality, this representation often fades out by women being systematically deprived of their rights and subjected to oppression for a long time (Barrett, 2014). With the progression of modern civilization, this oppression and the resulting gaps are discussed, and steps are taken at numerous levels (Grown et al., 2005).

Now I would like to discuss the inspiration for the thesis subject I chose. I am a woman born and raised in Bangladesh, which ranks 135 on the United Nations’ gender inequality index out of 187 countries (UNdata,2021). I have firsthand knowledge of what it’s like to be discriminated against based on your gender. We were often subjected to acts of misogyny. Sexist remarks such as “Good girls don’t go outside after dark” and “Work should never be a woman’s priority; marriage and family should be” were made casually.

While women have come a long way in terms of breaking down gender barriers, the government and various non-governmental organisations continue to work tirelessly on the topic. There is already a great deal of work to be done. And I continued my study to gain a better understanding of the issues and devising ways to energise the process of women empowerment. And the reason I chose Bangladesh as a focus country after much thought is because field data is readily available, and I have a general understanding of social issues.

Growing up as a designer and having that cultural background, I always wondered if my knowledge could be used to make the struggling life of Bangladeshi women a little bit better.

Even if I can contribute a positive effect on one woman's life, it should be considered that it is not a menial task to empower women in countries like Bangladesh, where countless social and religious views often hinder women's progress. Where in rural places, education is still not a common aspect in the older section of women. Empowering these women will not be an easy task. From understanding through analysis, it can be easily seen that efforts have been given and the results, although not impressive but promising. If any intelligent solutions, considering the fact and situations and state of the society, can be found to make them more financially solvent, it would help them and their family and in return will give them a solid base to make their voice heard.

The topic of "Women Empowerment" is very relevant in the context of Southeast Asia, also applicable to all over the world. As per my analysis, there is much work done regarding women's empowerment in rural Bangladesh. But very few of them have taken the preexisting factor of age, society structure, and family pressure of less fortunate women into consideration. Of course, I am not ignoring the importance of education, technical efficiency, and communication capability. But regardless of the situations, if we can inspire women to use their existing skill involved in entrepreneurial activity at minimum effort with an intelligent solution, then by the curious nature of the human mind, they will be eager to gather more knowledge to empower themselves. As a community, it can even accelerate a domino effect where everybody will want to be self-empowered. This research has been divided into the following chapters:

Chapter 2: Discuss existing research on the target topic and analyse the study of the previous author. This chapter also includes an analysis of field research and experts' opinions.

Chapter 3: This chapter includes the theoretical frameworks that shape this research. Derived hypothesis and solution concept is also discussed.

Chapter 4: This chapter is dedicated purely to the implementation ideas and designs. Persona design, user opinions and user journey are also discussed. Challenges of the solution are also discussed.

Chapter 5: This chapter discusses the limitations of this research.

Chapter 6: This chapter includes the plan in future for the proposed solution.

Chapter 7: Provides a conclusion of this research.

2. Methodology

Analysis of target context exposes previously unknown perspectives, situations, and growth opportunities, while also offering greater depth for recognizing and comprehending the context. In this research, the focus was to understand the current context and how we have arrived in the current situations to make a better understanding. The analysis includes historical shreds of evidence, comparisons, current inequalities while also simplifying current situations and improvement measures taken. It also broadens the view and frames of reference, making it easier to link the dots. The material that is visited as background research is generally the history of the gender disparity globally and the interested area. After that, an attempt was given to understand the current situations and the reasons behind the current conditions. “*Women Empowerment*” has already been discussed for a long time by various authors, so this research examines the vital aspect based only on the context and region targeted. This research is not focusing on the entirety of the “*Women Empowerment*” topic. Many academic scholars have posed numerous questions and have discussed various theoretical levels of comprehension and various perspectives. There has been a wide range of experimental, mathematical, physical, and semi-quantitative and quantitative analysis (e.g. literature review, target user survey). This analysis uses the take on previous authors’ understanding by surveying actual target groups and taking advice from experts. Each of the subsequent subsections of this section focuses on the above-discussed segments.

2.1 Literature Review

This section discusses different authors' perspectives and suggestions on the target sense of women empowerment. The objective is to explain how and why women lag compared to their male counterparts, the historical reasons for these disparities, and how the gender divide persists in the world.

Historically efforts were given by authority to keep women excluded from positions of power (Weiler, 1997). Because of the long term exclusions, it is often observed that they are unable to follow the same pattern of career advancement as men (Aisenbrey & Brückner, 2008). With the unequal distribution of jobs and pay, a significant gap between the genders has been noticed worldwide. The gender gap, on the international stage, is almost the same as ever since despite the development and industrial revolution. With countries tending to have a heavy predominance of male leaders, the situation never improves at a good pace (Kim, 2017). Gender pay inequality is also seen in high-wage economies such as Germany and the United Kingdom. In 2014 the average gender wage difference stood at fourteen point two per cent in EU where Germany and Estonia was being in the upper level of the gender gap with almost twenty per cent and countries like Belgium and Luxembourg was being in the lower level with around five per cent (Boll & Lagemann, 2019). Whereas in countries like Bangladesh this gap can be as large as thirty-two to forty-three per cent (Nordman, Sarr & Sharma, 2019). Some countries have a high proportion of female-dominated occupations, which employ a less wage difference between men and women and are often filled with gender reservation salaries (Caliendo, Lee, & Mahlstedt 2017). The criticality of the situation in the developing countries is far worse where most of the world's total helpless people reside who cannot even take care of themselves. One statistics shows that women make up the silent majority of the planet's total poor (ILO, 2016). Although women contribute around fifty percent of the world's total population, women contribute approximately two-thirds of the world's illiterate population. In the developing economies, gender-egalitarian societies, the disparity between male and female is seen to be more significant, and women in the developing societies must overcome more economic difficulties and additional difficulties to be empowered.

While society's perception towards gender roles is improving, situations remain far from ideal. Notable advancements in employment status, especially for women, are not observed or progress is seen slower. There was no major difference in the proportion of working women over the last two decades, which has only marginally reduced the gaped poverty rate (ILO 2016).

Now, when the background of the target demographics is investigated, it is discovered that Bangladesh has significant gender disparities. At the moment, its primary goal towards reducing the gender gap is to enhance women's social conditions and address these inequalities. However,

due to current social and political problems, this commitment has been somewhat unsuccessful. There is a great deal of pressure on NGOs, governments, and other players in the sector to raise awareness and eliminate negative stereotypes about women's positions. However, the demand is not being met adequately.

Additionally, socially described gender roles and the resulting segregation of labour between men and women may have discouraged women from seeking fair representation in leadership positions. Women in Bangladesh face difficulties educating themselves from their childhood. They are restricted from making big life decisions due to family obligations and other responsibilities such as social norms that question their views and thoughts. Public safety is paramount, and their lack of credibility at work is even more concerning (for example, inability to access provident funds). Given that some positions within the South Asian economy's small employment pool have been deemed "informal acceptable" for women, limiting their overall job opportunities, it would be essential to address these specific challenges when attempting to empower women (Sudarshan & Bhattacharya, 2009).

Governments and non-governmental and nonprofit organisations are working diligently to improve women's conditions. Since gender roles in companies disadvantage women, they are far more likely to work in small and medium-sized businesses than large ones. Inequality in income, especially among micro, small and medium enterprises (SME) and family-owned businesses, as well as social pressure, contribute to men owning the majority of small and medium-sized companies (Kabeer, 2012). It is challenging for people to believe when a woman takes the leadership of an organisation, especially one that keeps track of profits and losses. Allowing women to own or run such businesses is often embarrassing for the family, causing households to oppress their female members' businesses. Women run between three to four per cent of all companies in Bangladesh (Ahmed, 2014).

Men and women vary somewhat in the above cases. Additionally, there are disparities in education, health care, workforce participation, financial management, government access, and jobs (Hoque & Itohara, 2008). It is difficult for a woman to be an entrepreneur in Bangladesh because she is often constrained by statute, non-secular family values, and cultural and physical infrastructure supporting the community (Ahmed, 2014). Throughout the culture, patriarchal

mentality prohibits women from engaging in administration and organisation, preferring to keep them at home (Sinha, 2005). Women in socially depressed or economically marginalised areas have a lower idealisation of life quality than women in developed communities (Shoma, 2019). Lack of adequate schooling ties to the problem, and many constraints all contribute to the impossibility of empowerment. The question of knowledge and property rights is also brought up because, unlike their male counterparts, most women in business do not inherit the same proportion of property as their male counterparts.

Additionally, it is observed that it is difficult for most women to obtain advanced training (Fischer et al., 1993; Vossenber, 2014; Nentwich, 2006). It is also seen that there is a significant gap in education in respect to women in Bangladesh (Hossain & Tisdell, 2005). Women even suffer from the worst kind of social gossip for their personal life like having or not having children (Nahar & Richters, 2011).

Now, women make up about half of Bangladesh's population, with eighty among hundred of them living in rural areas (BBS, 2017). Based on measure related to health, marital conditions, educational conditions, jobs availability and security, and social equality, their status has been rated as the less fortunate in the world (NCBP 2000; Hasan et al., 2015; Islam & Jantan, 2017).

Gender disparities are prevalent in Bangladesh's rural and remote areas. Rural women are economically poor, educationally illiterate, and politically and socially marginalised (Islam & Jantan, 2017).

Numerous obstacles confront women entrepreneurs operating SME companies. The existing judicial rules, complicated paperwork and inadequate execution of existing policies, insufficient support programmes, the belief that the male should be in the breadwinner position, conservative principles, existing social constructions, and religious reliance are among the most significant of these. As a result, women confront inequality to get loans, insufficient administrative experience, and technical illiteracy. Both of these factors have a detrimental effect on the development and expansion of women-owned companies (Kabeer, 2012; Hasan et al., 2015).

Nevertheless, data gathered from whatever small portions of women-owned SME businesses in Bangladesh tells a different story. Numerous reports estimate that female-led companies gain

substantially bigger total revenue than male-led firms. However, male entrepreneurs received significantly more loans than female entrepreneurs overall years of SME lending (Coleman, 2007; Chowdhury et al., 2010; Kabeer, 2012).

Less fortunate women also lack the necessary skills and confidence to confront and overcome current inequalities and obstacles. However, social mobilisation requires the presence of a second, complementary element – economic stability – which means that the poor would be unable to mobilise as long as they face economic inequality and subsistence insecurity (Waiswa & Phelps, 2017; Govinda, 2018). The MIDAS–SMEF survey states that most women in Bangladesh do not own fixed assets or property, owing to patriarchal laws banning women from having ownership of land or inheriting property (Shoma, 2019). In Bangladesh, patriarchal heritage rules confines women's access to collateral and, thus, to the approval of loans necessary for entrepreneurship. Between 2011 and 2012, women accounted for 22.7% of landowners in Bangladesh, while men accounted for the remainder. The social system is indeed influenced by religious practices that deny women equal inheritance rights over their parents' or husbands' assets. In most instances, inheritance in Bangladesh is governed by Sharia law (Islamic law) (Sourav,2015).

This connects the dots that women are unable to loan because they lack personal resources; thus, they are unable to accumulate personal wealth. Women are structurally dependent on men due to their lesser economic status and lack of power over assets. Ultimately, this would have a detrimental impact on job creation and overall productive growth for the country (Chowdhury, 2006).

According to a study conducted, forty-eight percent of female entrepreneurs claimed that all of their consumers lived between one-kilometre radius of their operational area where in the case of men this percentage is lessened to thirty percent. This small-scale network may be caused by women's shortage of transportation access (Kabeer,2012).

Women are unequally represented in traditionally male-dominated and often advanced technological fields. This is because systemic forces in the economy work against women's advancement (Kabir & Huo, 2011). Women are often deprived of the opportunity to gain

experience making high-level management decisions, which could be helpful in an entrepreneurial start-up (Chowdhury, 2019).

Numerous scholars emphasised the importance of different techniques for empowering women. One of the most effective strategies for empowering women is creating self-help groups (SHGs), especially among women (Akter et al., 2018). Women who engage in NGOs and self-help groups are more likely to use contraception, give birth to fewer children, resulting in smaller families compared with the women who do not partake in NGOs or SHGs (Akter et al., 2018). Provision of sufficient credit in conjunction with learning and training aimed at creating new income scope and generating income for women members should be ensured through the establishment of a special institutional structure aimed at raising their economic, social, and political knowledge to alleviate poverty and establish empowerment in society (Peter & Mia, 2006). Another group of writers has attempted to elucidate the origins of women's liberation. They gathered data from purposefully chosen members of society through unique queries and discovered that almost all correspondents viewed education as the primary fuel of women empowerment. Additionally, intellect, personality, and the capacity to engage in decision-making are significant sources (Jahan & Mahmud, 2002).

2.2 Extended Understanding of Literature Review

As mentioned in the literature review, many of the authors' discussions contribute to a greater understanding of current events and their underlying logic. Each of these authors has described nearly identical problem spaces associated with gender inequality. While several of them emphasise the importance of education in terms of empowerment, some writers assert that technological efficiency also plays a critical role in empowerment. The following is the understanding and interpretation of the issues raised by the writers mentioned above. A complete detailed picture is given in [Appendix 3](#).

Legal Issues:

First of all, laws protecting women's rights have been poorly enforced (Fig 1). Women are not aware or can not take the benefit of the law because of this poor implementation. The lack of accountability on the part of law enforcement organisations has exacerbated the situation.

Additionally, at times, personal beliefs or religious traditions take precedence over the rules. Protracted judicial systems also complicate the implementation of women's rights. On the other hand, when it comes to property inheritance law, a woman inherits half of her brother's inheritance. This law is practised among the Muslim Bangladeshi population, which is more than ninety per cent of its one hundred sixty million people. Laws like this puts women in a systemic unfavourable position when it comes to gaining financial independence as opposed to their male counterparts.

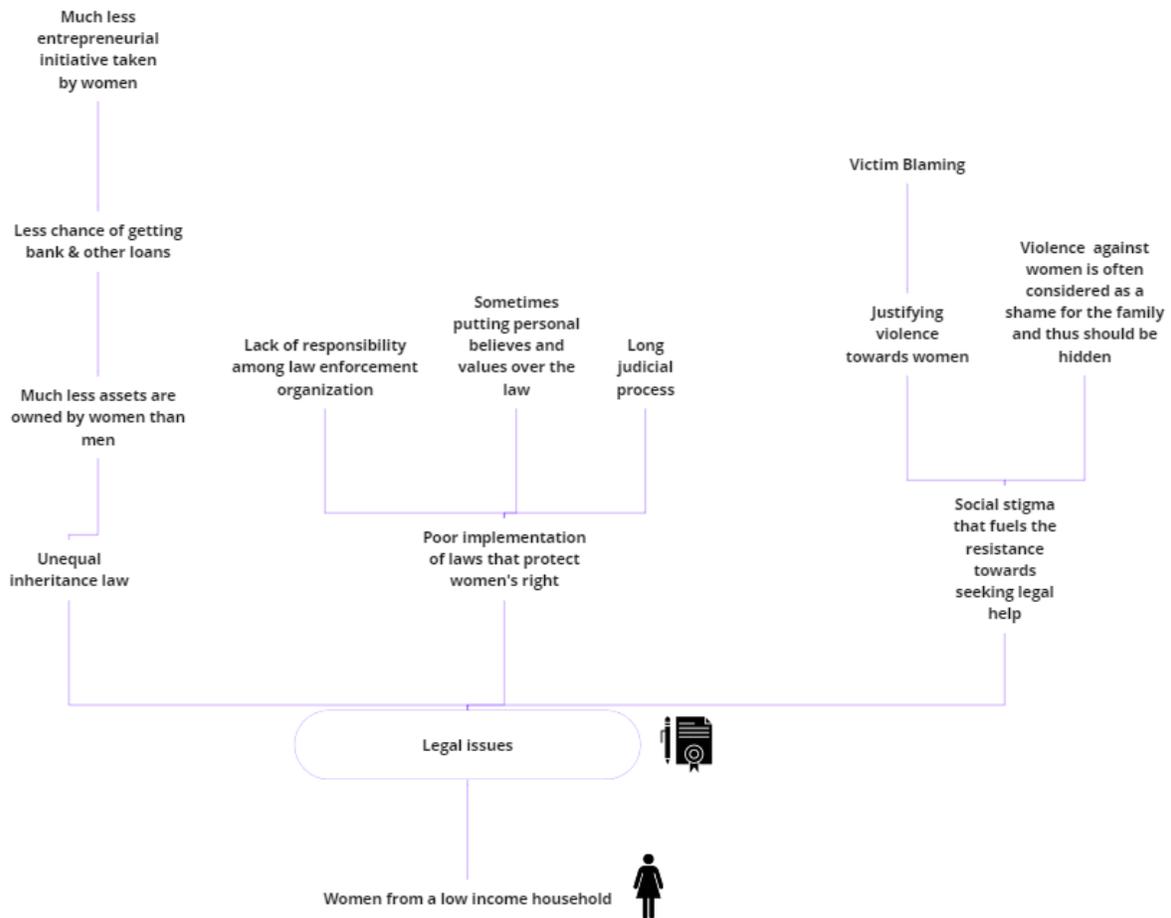


Fig 1: Identification of Legal issues

Due to these unequal inheritance laws, women now own significantly fewer assets than men, reducing their chances of obtaining bank loans. As a result, women engage in considerably less entrepreneurial practices. There are favourable government policies in place, but due to legal constraints, women cannot take advantage of them in the majority of cases.

Additionally, social stigma is seen as a factor in specific individuals' reluctance to seek legal assistance. Violence towards women is often justified and concealed because it is seen as a source of embarrassment for the family. Additionally, victim-blaming is also seen. Women are often getting blamed for the injustice that happened to them, and society usually supports those blaming (Sayem, Begum & Moneesha, 2012).

Hindrance in Education:

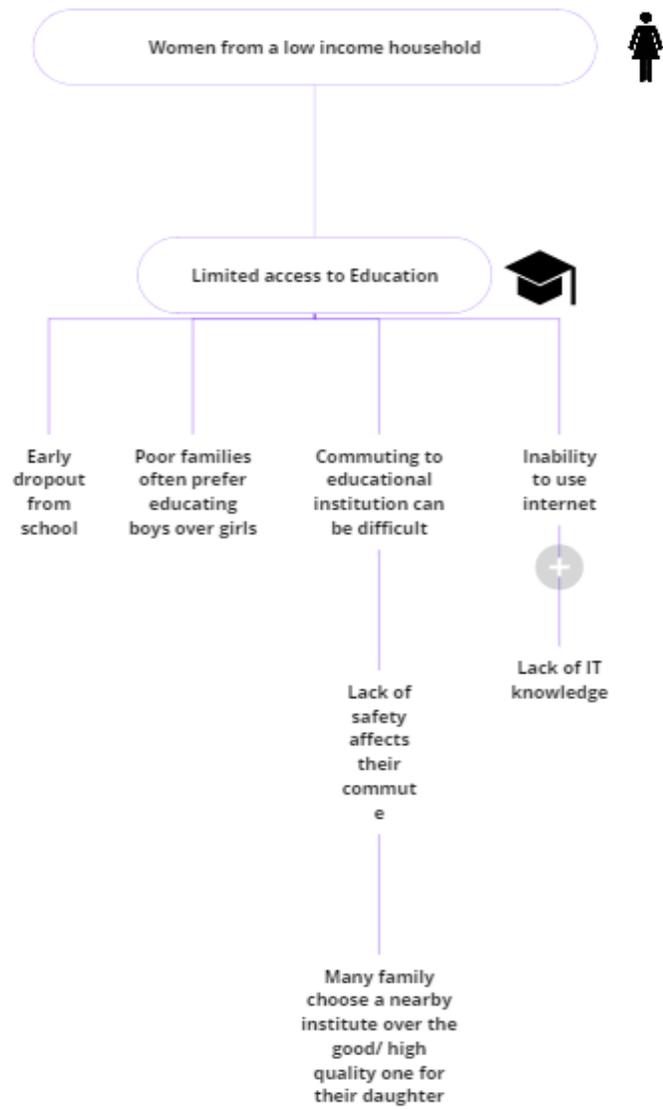


Fig 2: Identification of hindrance in education

Women from less privileged families typically have less to no access to education (Fig 2). Low-income families often tend to educate their sons over their daughters. It is often believed in low-income families that it is beneficial to send the boys to the school. Girls also experience a high rate of early dropout. Occasionally, commuting to educational institutions may be challenging due to a lack of protection. As a result, many families prefer a nearby institute to a good/high-quality institute for their daughter. This educational impediment results in a lack of information technology skills and an inability to access the internet.

Obstacles from family:

In Bangladesh, Patriarchal norms often stop women from seeking a professional career (Fig 3). Taking care of the children is almost always only the mother's job. The responsibility of the extended family is unequally divided and often falls on the shoulders of women in the family. It is considered as some shame for some families if the wives work and earn money.

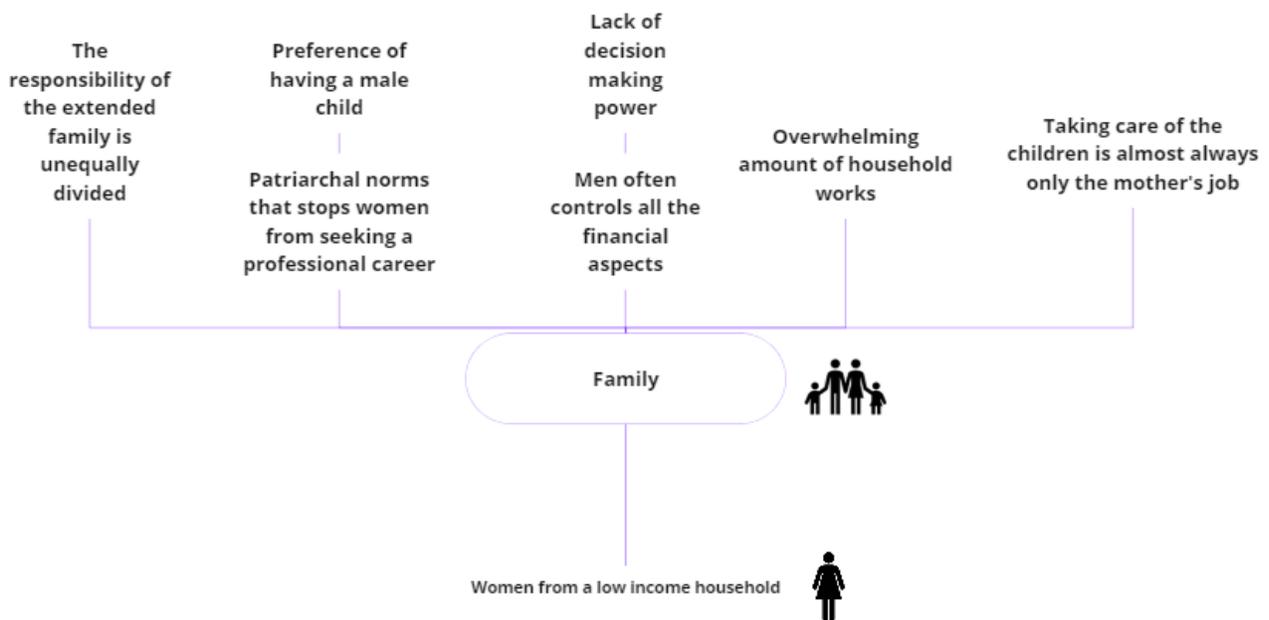


Fig 3: Identification of obstacles from family

So women usually have an overwhelming amount of household work (Ferdous & Mallick,2019). On top of that, men often control all the financial aspects, and women lack the decision-making power. Women in the family married early in many cases, resulting in premature pregnancy and lifelong health issues (Ocviyanti & Wahono,2018).

Obstacles from the community :

The Conservative mindset of rural societies creates a highly gender-segregated society in Bangladesh (Fig 4). In most cases in Bangladesh, the local society imposes a restrictive outlook on women's job choices. This restricts women's employment opportunities. As a result, women will participate less in the large labour market, resulting in highly gender-segregated industries. Additionally, there is a widespread perception that women retain the family's honour.



Fig 4: Identification of biases from the local community

This confines women inside in the name of keeping them safe, thus safeguarding family honour (Zaman,1999).

Unfavourable Social Conditions:

Traditional cultural values are a big constraint towards women empowerment (Fig 5). Due to social pressure, families often marry off their premature daughters. The culture is patriarchal and enjoys gossiping about women. This adds to the burden on women. In a highly segregated male-dominated society, if a woman wishes to engage in business or any other activity that does not fit the narrow perspective, she will face many barriers and questions. This adds to the pressure on women's shoulders.

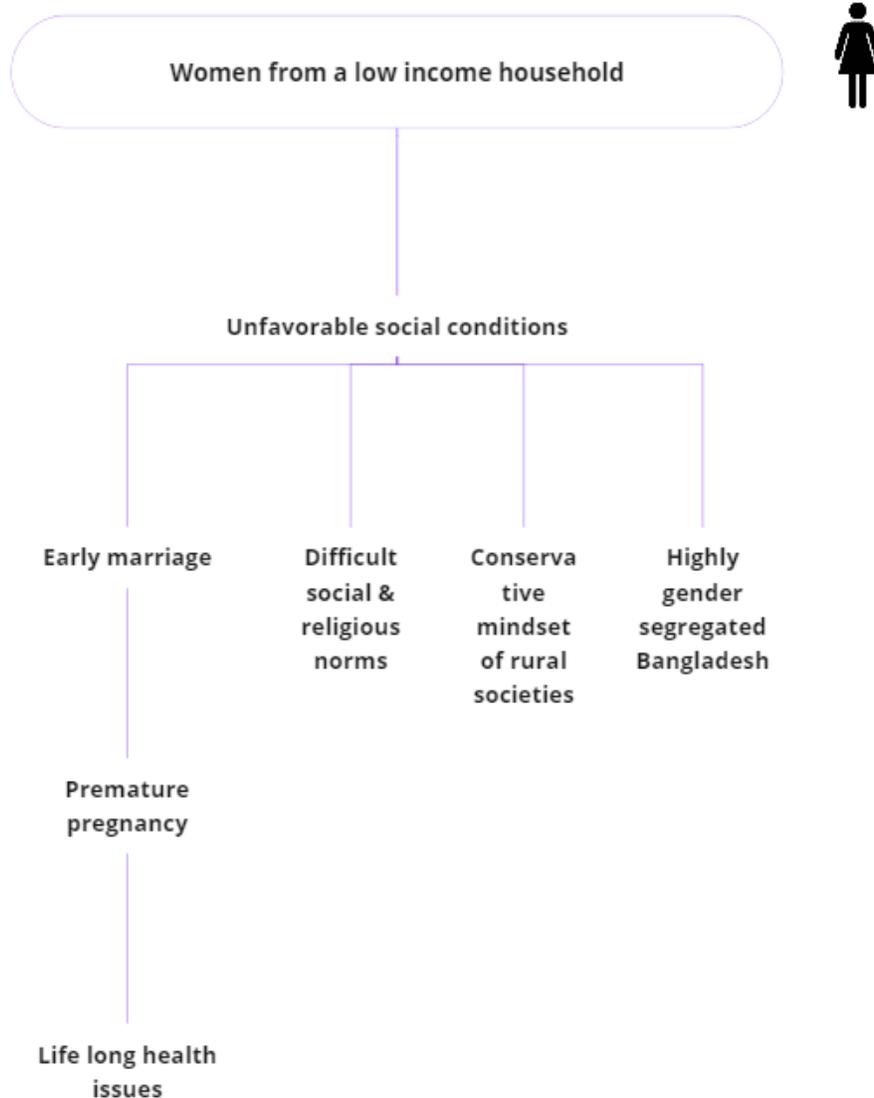


Fig 5: Identification of societal issues

Lack of access to banking services:

Due to a lack of education, the majority of women in Bangladesh remain unbanked. As they are unbanked, they are being excluded from the opportunity of taking loans. This also results in a preference for generating assets rather than saving money to conduct business. This type of saving attitude hinders entrepreneurial opportunity as women are more prone to savings rather than investing (Fig 6).

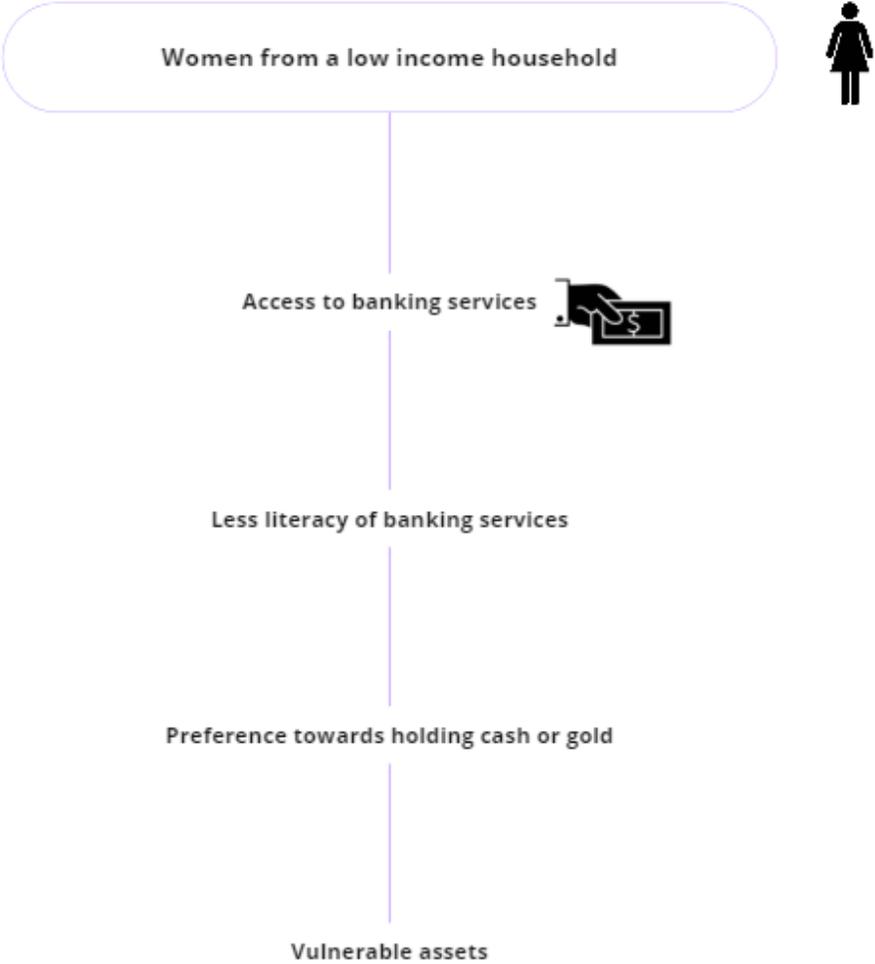


Fig 6: Identification of banking issues

Lack of infrastructure:

Women's empowerment is also hampered by poor road connectivity in rural and semi-urban areas and inadequate electricity/power access (Khandker & Koolwal, 2010). Women's entrepreneurial practices are often confined to a single geographic location. Local segregation generates a plethora of local competitions, which rapidly saturates the market and demotivates women (Fig 7).

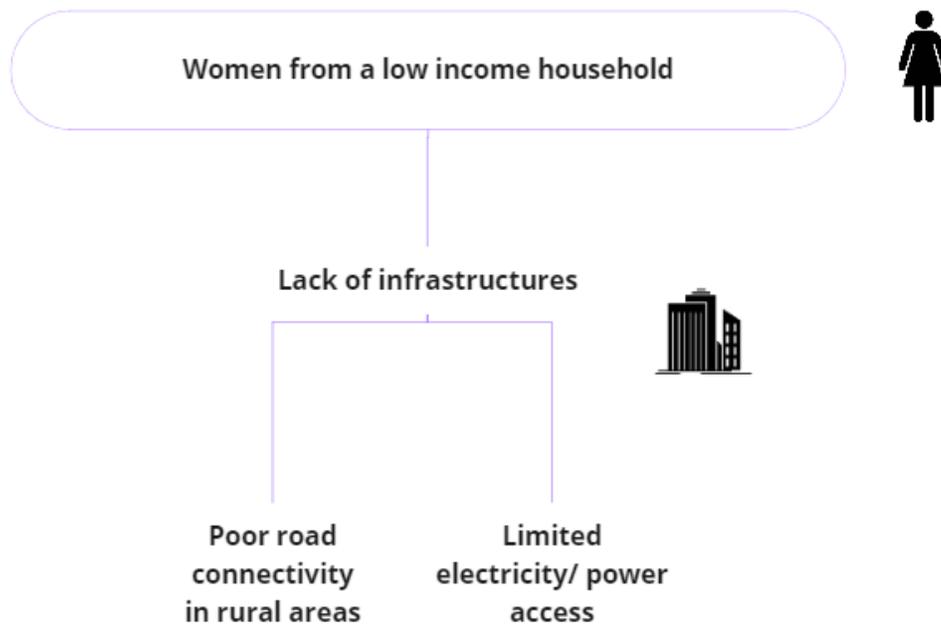


Fig 7: Identification of infrastructure issues

Summary of Understanding:

After analysing the literature from previous authors, it becomes clear that women empowerment is directly related to education, technological performance, and communication. Economic solvency can empower women to take leadership and make decisions in their families, which indirectly gives women a strong voice in society. However, for an extended period, women have been denied fundamental human rights, including education. Therefore, expecting them to become informed and self-aware overnight is too optimistic. Rather than that, the focus should be on a pragmatic approach to empowerment.

With this understanding, I went on to a user survey to gather additional context for the field of interest.

2.3 Field Research Survey

With the understanding gained from the literature review, the next step was a field research survey to gather more insights. One survey has been conducted in an Upazila of Khulna district of Bangladesh. Eighty-six correspondents were asked with questionnaires ([Appendix:1](#)). The

survey questionnaires consist of queries about formal educational level, marital age, professional status, hindrance from family or society, involvement with organisations and purpose, possession of a smartphone, internet literacy, possession of bank accounts and most importantly, their interest in practical training and area of interest. Five volunteers conducted the survey by going door to door and asking the interview questionnaires.

2.3.1 Analysis of Field Research Survey

The first important factor that is analysed and identified is education. When questioned about educational status, more than 25 percent of interviewees have a level 8 or higher educational qualification, more than 36 per cent have a standard five or lower educational qualification, and more than one-fifth percent have no formal education at all (Charts on [Appendix:2](#)).

In terms of marital status, three-fifth of the respondents got married before the age of eighteen (Fig 8).

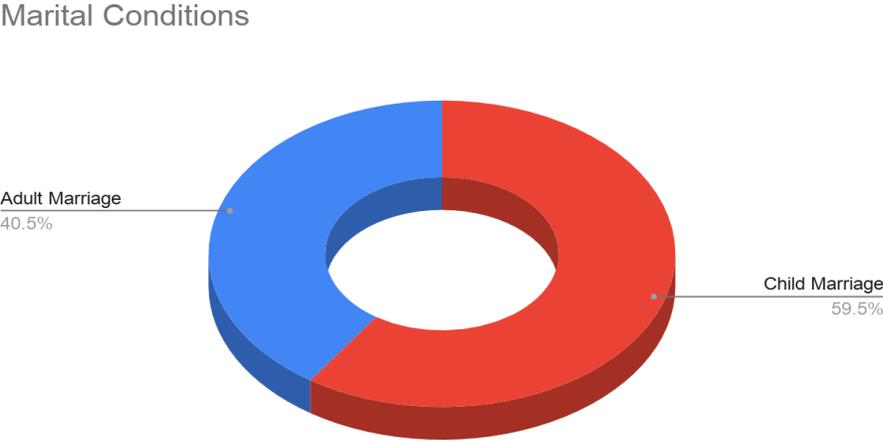


Fig 8: Marital condition chart of the correspondents of the survey

This situation might have been significantly impacting their education, career, incomes, and overall well-being throughout their lives. This scenario matches the discussion done above on unfavourable social conditions that women face in general. This early marriage trend is often the product of a family's financial hardship. Frequently, they view marrying off a daughter as a release, as they are unable to teach her (Kamal et al.,2015). This phenomenon is not unusual

since a young girl may be seen as a financial burden in severe family and social poverty. Marriage of a young girl to a mature , or even old man is a common family survival technique in specific Middle Eastern and South Asian communities (UNICEF, 2001).

When it came to occupations, the survey determined that one-third percent of the interviewees are housewives, while about 30 per cent serve as domestic helpers. Almost two-thirds of the correspondents are currently engaged in some income activity (Fig 9).

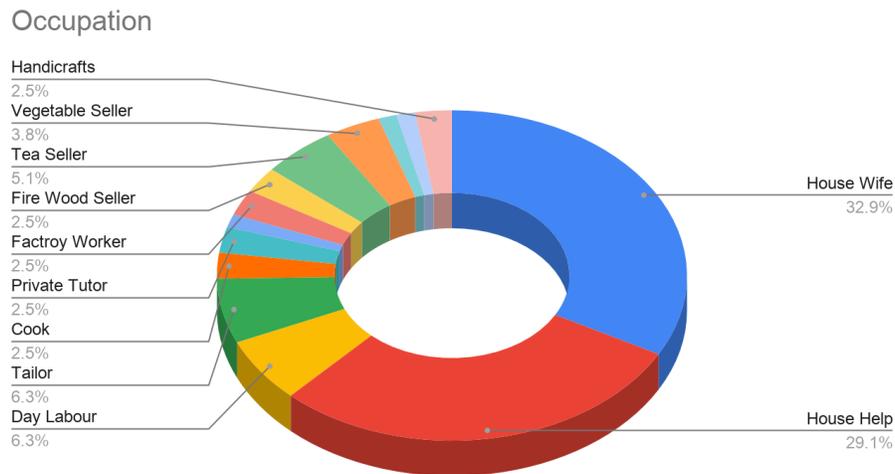


Fig 9: Occupation of the correspondents of the survey

Although the amount they are earning is feeble compared to the standard, they are trying their best. They also show a keen interest in ways that might increase their income.

While asking about any hindrance from family, more than seventy per cent have encountered no obstacles, reflecting a different situation than the initial understanding of the situations. It is entirely possible that the interviewee would prefer to respond positively to project a favourable picture of her family, as this is not unusual in Bangladeshi culture (Naved et al.,2006) (Charts on [Appendix:2](#)).

The survey also inquired about self-help community engagement, as this is a critical component of empowerment (Fig 10).

Association Participation Distribution

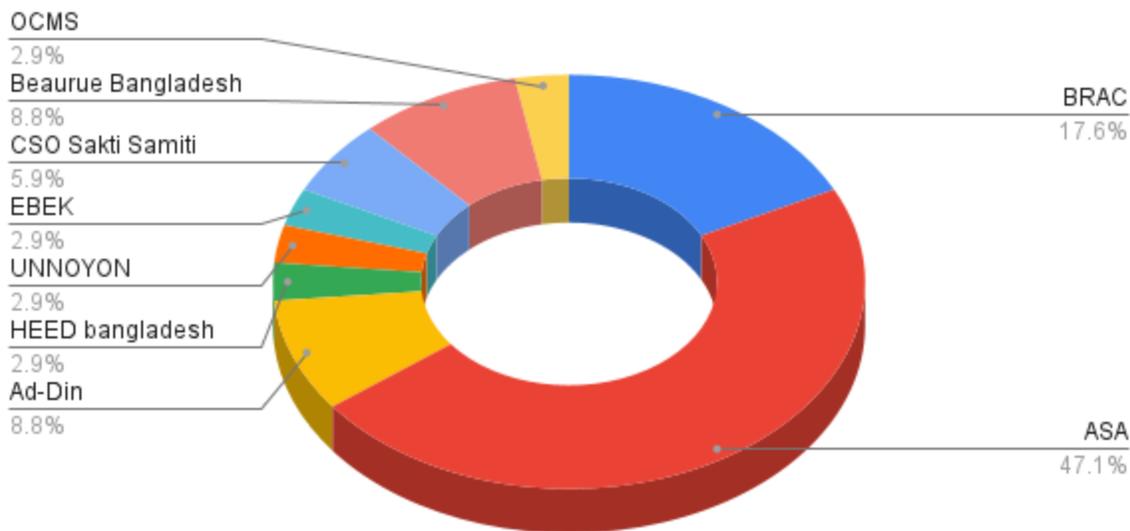


Fig 10: Association or SHG participations

According to the study, two out of five respondents are active members of NGOs or self-help organisations. Most of the respondents reported that they obtained loans from these self-help organisations for disaster relief, shelter, children's education, livestock acquisition and various other purposes. Majority of the participants according to the data is currently a member of ASA (Association for Social Advancement) Bangladesh which is a leading NGO in Bangladesh with 2,958 branches all around Bangladesh (Ahmed & Tinne, 2017) (More Charts on [Appendix:2](#)).

The survey also tried to understand the digital and internet literacy of the correspondents. When asked whether they own a smartphone or a phone with an internet capability, more than fifty per cent of correspondents said they already own a smartphone or will use a smartphone if given the opportunity (Fig 11). This keen interest is very positive, and it is a growing trend, and smartphone penetration is increasing, as statistics suggest (DataRe Portal,2020).

Smartphone Usages

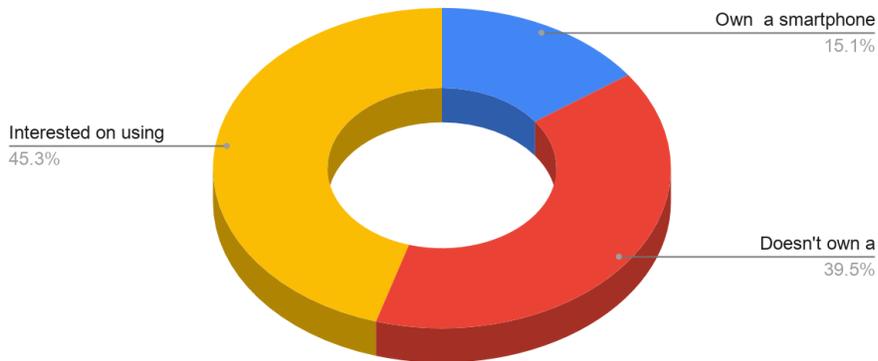


Fig 11: Smartphone usage among the correspondents

Less than a fifth (18.6 percent) reported being able to access the internet. They are most prevalent among younger women in their teens or early twenties. Although this percentage is low now, internet penetration is on the rise in lower-income households also. So it can be safely assumed that over time internet penetration will rise. This situation will change gradually (DataRe Portal,2020) (Charts on [Appendix:2](#)).

Interested Area Of Training

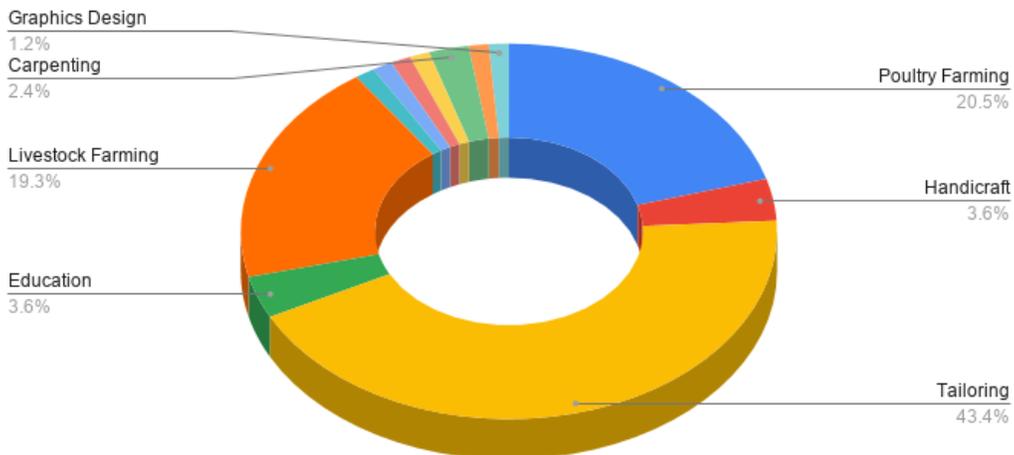


Fig 12: Training area interest of survey correspondents

When asked about their interest in vocational training, most of them showed keen interest in additional training. This data symbolises the keen interest of the women in the low-income household to increase their condition by learning a new skill. They know that if they can learn a new skill, it will surely help them to improve their situations.

The most intriguing field of study is tailoring (Fig 12). Poultry farming is the following most common form of farming, followed by livestock farming. Numerous of them showed an interest in a variety of training areas.

In summary, it is clear that less fortunate women are motivated to change their economic and social circumstances. If given a chance, their enthusiasm can carry them towards more empowering positions. In this matter, it is safe to mention that the survey unearthed more exciting opportunities than preliminary literature analysis.

2.4 Experts Opinions

With the understanding gained from the literature and field research analysis, it seems essential to know the opinion of experts working closely in strategy or field level for women empowerment. Two experts' views have been collected regarding the subject matter.

The first was a face-to-face interview with “*MONDO*”, an Estonian non-profit organisation. The other took place over the phone due to an emergency with an organization working in rural Bangladesh called “*PKSF*”. The data collection method had no questionnaire but more on talking about their understanding while working close to the field.

2.4.1 Expert Interview with MONDO

“*MONDO*” is an organisation running women empowerment projects in different parts of the world. Following understanding and finishing are provided from the experts in “*MONDO*”

1. The global demand for traditional crafts is enormous, and it is rising due to the sustainable movement.
2. Following the start of a project, there is a dearth of oversight.

3. There is a critical need for management and marketing skills among women's organisations. Since they often stray from the project's objectives.
4. Women suffer from a lack of creativity as a result of their restricted access to the internet. They frequently depend on copying what is already available on the market. As a result, the market becomes saturated with identical goods and services. This results in an inadequate earning cycle and, eventually, a loss of motivation.
5. There is an urgent need to diversify skill training to meet the needs of individuals with varying levels of formal education and competencies. As a result, they are willing to continue or even initiate new projects and manage them. Furthermore, this will foster a sense of ownership that would be nearly impossible otherwise.

2.4.2 Expert Interview with PKSF

Another interview was conducted via an online medium with Mr Ashikur Elahee who is working as a Program Officer at “*Palli Karma Sahayak Foundation (PKSF)*” which is a non-profit organization working in the rural area of Bangladesh. His opinion is summarized below:

1. Women who start some entrepreneurial activity are often seen dropping out because of difficulties.
2. Difficulties include financial problems where women can not apply for loans because of not owning any assets.
3. Social pressure is another difficulty women face a lot of time.
4. Any initiative that can help to empower women will be highly appreciated.
5. Handmade items are seen to have increasing popularity.

2.5 Reframing

The literature review and survey study uncovered some promising aspects. It became possible to reframe the questions posed with the aid of this understanding. Things have evolved and taken

on a new dimension, and a new potential area of intervention has been uncovered. The survey uncovers the aspect that despite social and family challenges, women in Bangladeshi showed resilience in the face of various challenges. There is keen interest and enthusiasm seen that can drive towards a more empowering situation. It is understandable that when given the opportunity, women, in general, seek to improve their financial situation. Market saturation often happens due to a lack of experience and less customised strategies that are unique to market needs, demotivating them. This research would target to provide a solution that will focus on addressing these issues.

3. Construction of Solution

In this section after the discussion of the literature and broader understanding gained from the survey, the next focus is given to find a theoretical framework that can assist to construct a hypothesis that can drive towards a solution. After that, the solution concept is briefly mentioned.

3.1 Theoretical Framework

Generating a theoretical framework was difficult at the initial stage. However, after reviewing the literature and understanding the problem space, it was easier to formulate the theoretical framework. Because of the vastness of the topic of women empowerment, it is subject to multiple theoretical aspects that are generic and focused on the target region, “Bangladesh”.

This chapter discussed multiple theoretical frameworks such as feminism in Bangladesh, liberal feminism, the fundamental principle of empowerment, and the context in which existing social dilemmas emerged as a construct of Bangladeshi culture. Later, the effect of the industrial revolution on Bangladesh’s demographics was examined as a concept to understand the situation.

3.1.1. Feminist Theory

In modern research, feminist theory is a groundbreaking theory since it believes that gender cannot be used as an objective variable in any situations. Feminist theory aims to provide alternate modes of thinking that can have significant social and political consequences. The feminist theory has debunked a handful of common belief for man's dominance in the development of western societies. Anthropology serves as an outstanding example. Around 1972, anthropology began to put a greater focus on the status of women. Male hunting habits, according to traditional anthropological models, were a crucial component in human evolution. Men developed essential social skills such as persuasion, teamwork, and tool construction, while

women contributed comparatively little. Feminist views contested the view and strategically demonstrated that women's activities were responsible for human evolution. Historically, women's activities such as collecting, childbearing, and childrearing aided in the growth of social skills such as teamwork, sharing, and tool building (Hurley,1999). The feminist theory believes and talked about equal rights which is an important aspect of reducing the gender gap.

3.1.2 Liberal Feminism

Liberal feminism is considered a subsection of feminism where the definition of feminism has been skewed a little. Liberal feminism focused more on economic freedom. Liberal feminism is an idea centred on public participation, especially in the labour market. The theory agrees that what takes place at home is a private matter for husband and wife to be discussed (Greer & Greene, 2003). Liberal feminism broadly embraces the idea that advanced industrial societies. It believes women as groups are neither inherently competent nor less diligent than men, but that opportunities are excluded because of their gender (Greer & Greene, 2003). In liberal feminism, fair treatment of gender recognises that there should be modest or absent gaps in chances between men and women (Nentwich, 2006). Liberal feminism sees gender inequality as a tool for excluding women from the labour market and the sex-separation of occupations in the labour market (Greer & Greene, 2003).

3.1.3 Feminism and Its Reality in Bangladesh

Feminism or Feminist Movement, at its core, believes and practices equal rights and opportunities regardless of one's gender. Now feminism in Bangladesh is widely considered a negative term. The popular belief defines feminists as an angry group of women who hate men and lack decencies. The term Feminist (NARIBADI in Bengali) is often used as a slang word to ostracise women who dare to ask for equal rights, more precisely wants to have a discussion on women's problems in society So far, one of the most prominent Bangladeshi feminist authors, Taslima Nasrin, was forced out of her country because of her writings (Britannica, T. Editors of Encyclopaedia, 2020, August 21). It can be said that in Bangladesh, the concept of feminism and equal rights in all aspects of life for all genders are reasonably new and rarely discussed concepts. It is mainly reserved for the educated urban middle and higher class table talk. At the

same time, the more significant part of the nation remains silent. The contradiction between Bangladesh's gender-equal law and social practices is vividly evident.

3.1.4 Empowerment

The basic principle of empowerment is strengthening the circumstances of the focus group that are not on an equal footing with the target group. Simply put, empowerment must involve individuals who are not part of the decision-making process (Rowlands,1995). This emphasises people's access to and involvement in economic decision-making through government agencies and centralised decision-making, and access to markets and incomes in the economic sector (Rowlands,1995). According to Eyben and Napier-Moore (2009), empowerment is a result of choice, a decision-making process, an opportunity, a possibility, or a community action. Empowerment is not a natural state of being.

Keller & Mbewe (1991) define women's empowerment as a mechanism by which women can organize themselves in order to develop their self-confidence, to assert their autonomous right to choose and control resources and to question and eliminate their subordination.

From this author's perspective, it is easy to conclude that empowering women needs an appreciation for the value and convictions of the oppressed. Batliwala expresses an astute opinion in this regard -

"By listening to poor women and their movements, listening to their values, principles, articulations, and actions, and by trying to hear how they frame their search for justice. From this, I suspect, will emerge not only a new discourse but also new concepts and strategies that have not yet entered our political or philosophical imaginations" (Batliwala, 2007).

3.1.5 The Social Dilemma

Bangladesh is a Muslim majority nation, generally speaking, but there is a variety of cultural presences (Bhuiyan, 2017). Bengalis and religion, mainly Islam, played essential roles in Bangladesh's development of the Bangladeshi Muslim identity and Bengali nationalism (Ahmed & Sen,2018). In Bangladesh, this poses a problem and preference for women in general. According to Bengali culture, women have traditionally been depicted as resilient and powerful,

symbolising courage and stamina. If anyone examines the past of the Indian subcontinent, which was once part of Bangladesh, we can see direct signs of the reality of the words "Devi". "Devi" is always mystical to women who have adored courage, wisdom and good fortune. The word "Devi" also refers to the honorary way to address any woman of rank and dignity (Chanda, 2020).

Thus, in the subcontinent after the Mughal Empire, conquest and domination (1526-1757) and mass Islamic religious movement and conversion to Islam (Pardesi, 2017). This long-term Islamic mass movement generated a confrontation between beliefs in the subcontinent. Like Islamic values in general, promoting women inside their house and even encouraging public use of the veil. These conflicting convictions establish a separate belief in women in general. In addition, the Western belief was introduced in the Indian sub-continent after the colonial rule of the British Empire for almost 200 years (1757-1947). Western and Western thought rely more on dichotomous gender interpretation. The Cartesian duality between mind and body has affected the connection between men and women, with men and women identifying with corporeality. Therefore, men and women frequently take contrasting roles and qualities within the remit of western thinking (Chanda, 2020). So the scepticism of belief in the people of the Indian subcontinent has dramatically increased since the inclusion of Western belief. After the Indian subcontinent was divided by religious majority, the preference later increased.

3.1.6 Technological Revolution and Era of Smart Devices

The widespread use of new technology such as the Internet of Things (IoT) and the Internet of Services (IOS) has triggered the fourth industrial revolution. Numerous countries have adopted what has been called "*Industry 4.0*" (Manda & Ben Dhaou,2019). Industry 4.0 is currently in full swing, and the western world is credited with launching it (Islam et al., 2018). It has often been found that the industrial revolution initially proceeds at a snail's pace in the developed world. Inadequate ICT technology is a significant impediment to applying industry 4.0 in developing countries. For instance, broadband penetration in developing countries continues to be poor in relation to developed economies (Manda & Ben Dhaou,2019). They are, though, losing ground in the western world. In developing economies such as Bangladesh, mobile/smartphone penetration has been increasing rapidly. Bangladesh had 163.0 million mobile connections in

January 2020, with a population of 165.8 million (DataRe Portal,2020). It has developed to become the world's ninth-largest cell phone market. In the fiscal year 2019-2020, a total of 29.5 million handsets were sold in the domestic market (The Financial Express, November 2020). Thus, it is not overly ambitious to anticipate that almost every woman in Bangladesh will soon have a cell phone in her possession. Bangladesh's internet penetration figure was 41 per cent or 66.44 million users, and it is at a 9.5 per cent annual pace, attracting a whopping 5.8 million people per year (DataRe Portal, 2020). This advancement theoretically allows for greater penetration and reach by more women while still empowering them through digital platforms.

All these theoretical frameworks help to understand the concept of feminism, empowerment and liberal feminism. This research is specifically focusing on the concept of liberal feminism from the discussions of the above framework. The dynamics and demographic of the target region should be considered with high importance if a solution needs to be successful. Creating more economic freedom from the viewpoint of liberal feminism will create a ripple effect on the target demographic where, with more economic freedom, women will be more concerned about their rights, which can pave the way for more empowered women towards an ideal society.

3.2 Constructing Hypotheses

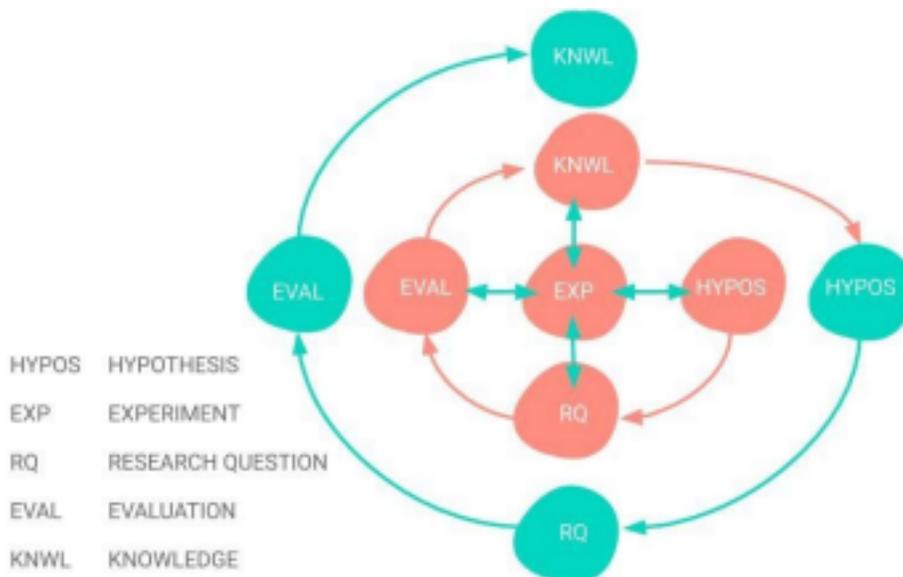


Fig 13: The drive wheel of constructive design research (Source: Markussen, Krogh & Bang,

2012).

According to the paper 'The Role of Hypothesis in Constructive Design Research,' the constructive design research technique enables a designer to generate information based on the potential of the design sector (Krogh et al., 2012) (Fig 13). The research began with personal motivation, a social motivation, and an examination of how the research would relate to the discipline of design thinking.

The first hypothesis is derived from the literature review, followed by an in-depth examination of the research question through experimentation. The study issue aids in the design of the knowledge-generating experiment.

Hypothesis 1: Gender-based social biases, discriminatory laws and a lack of formal education all hinder women from getting equal rights.

Research Question 1: What are the key factors that play a role in making a gender-discriminatory position for women in one society?

The second hypothesis is derived from the user survey, followed by an in-depth examination of the research question through experimentation.

Hypothesis 2: Concurrent technologies can be used in the economic empowerment of women.

Research Question 2: How to optimise the existing competencies of women to navigate them towards a more empowering, sustainable, and self-dependent future?

3.3 Concept of The Solution

After understanding and analysing the problem space, I have realised that empowerment is already happening. If the process of empowerment can be accelerated, it will, in return, have a significant impact on an individual's life and the country's economy as a whole. Possible interventions that have been identified are the ease of use of concurrent technologies considering growing smartphone and internet penetration as per the theoretical framework. Liberal feminism plays a significant role in the initial solution's thought process. The concept is not addressing all social issues rather focused on creating financial gain opportunity driving towards more empowering conditions.

With keeping the vast and rapidly growing smartphone market and internet penetration in mind, designing a mobile-based one-stop platform with an easy to use user interface that gives the opportunity to create more empowered, well networked and economically benefited women via training programs, e-shops, group making and collaborative economic efforts. This platform could potentially become a widespread economic empowerment initiative for women.

The platform may consist of diversified training programs, including management, marketing, and networking training for eligible women. So that every small area can have a women group with all the necessary skill sets to initiate and run businesses, also, instead of pushing out the older generation who are already skilled in different skills, designing a solution that creates a bridge between the younger, more tech-savvy generation with the artisans could be much more effective.

4. Design of The Solution

With the understanding and target scope of intervention identified, the following steps will be designing the solution. This research proposes the platform “*Kaze Zai*” - which means in English “Let’s Go For Work”. The following subsections discussed the components and the ideologies for the proposed platform.

4.1 Persona Design

Creating a persona is a critical component of any design solution. Actual users are nuanced and contradictory in their desires, while personas are well described and explicit, making them a better starting point for design work (Johansson & Messeter, 2005). Based on the results of the conducted survey and after reading through the responses to all the interviews, three personas were developed to help better understand the domain of the problems or the users' potential desires. The following are three personas.

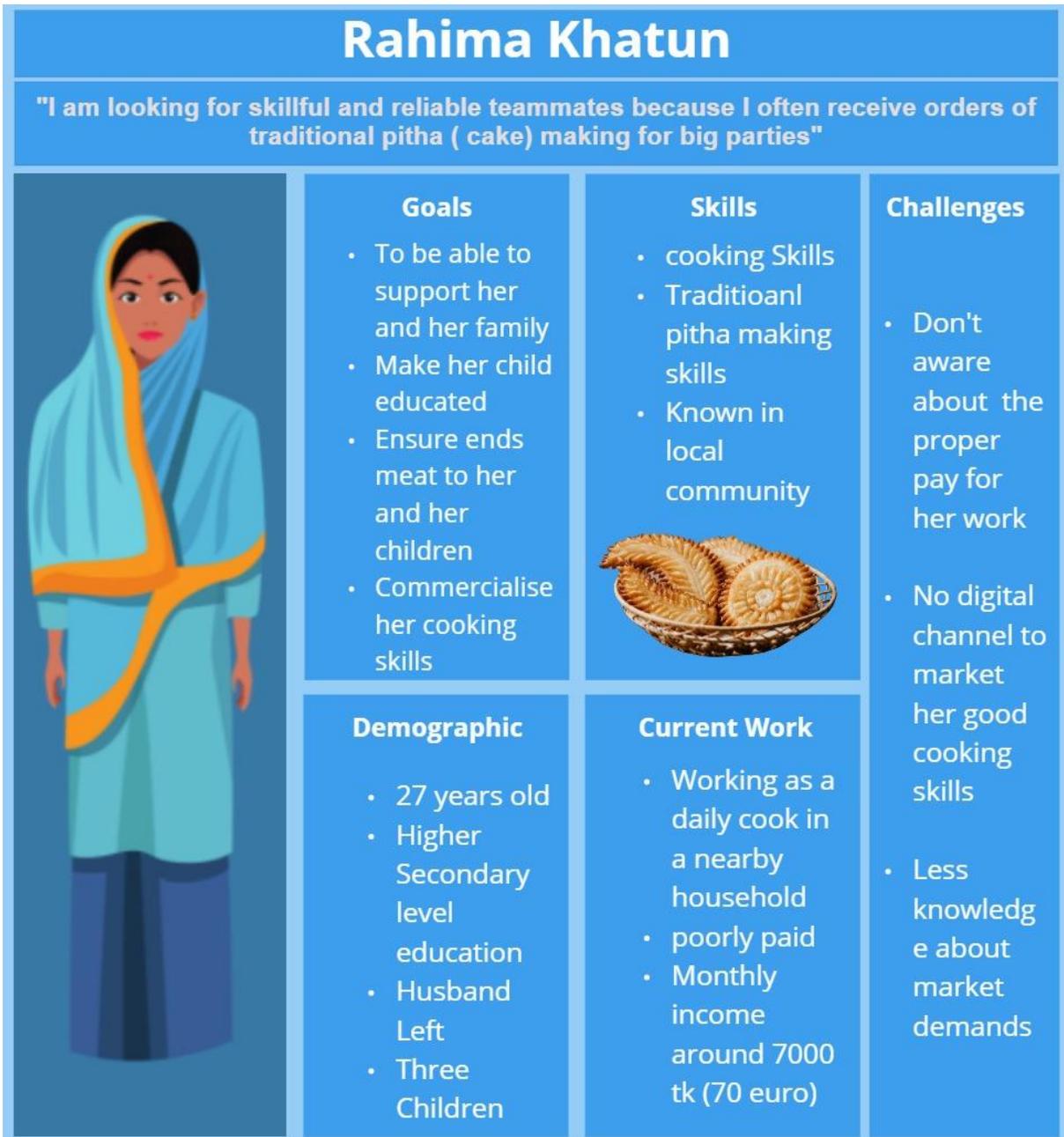


Fig 14: Persona 1

The designated persona number one (Fig 14) is well-known in her community for her excellent cooking abilities and traditional "Pitha" (cake) making abilities. She is unaware of the skills' market value. Despite her desire, she is unable to increase revenue production by accepting large orders due to a lack of resources. Currently, her monthly income is meagre, making it difficult to afford the end's meat.

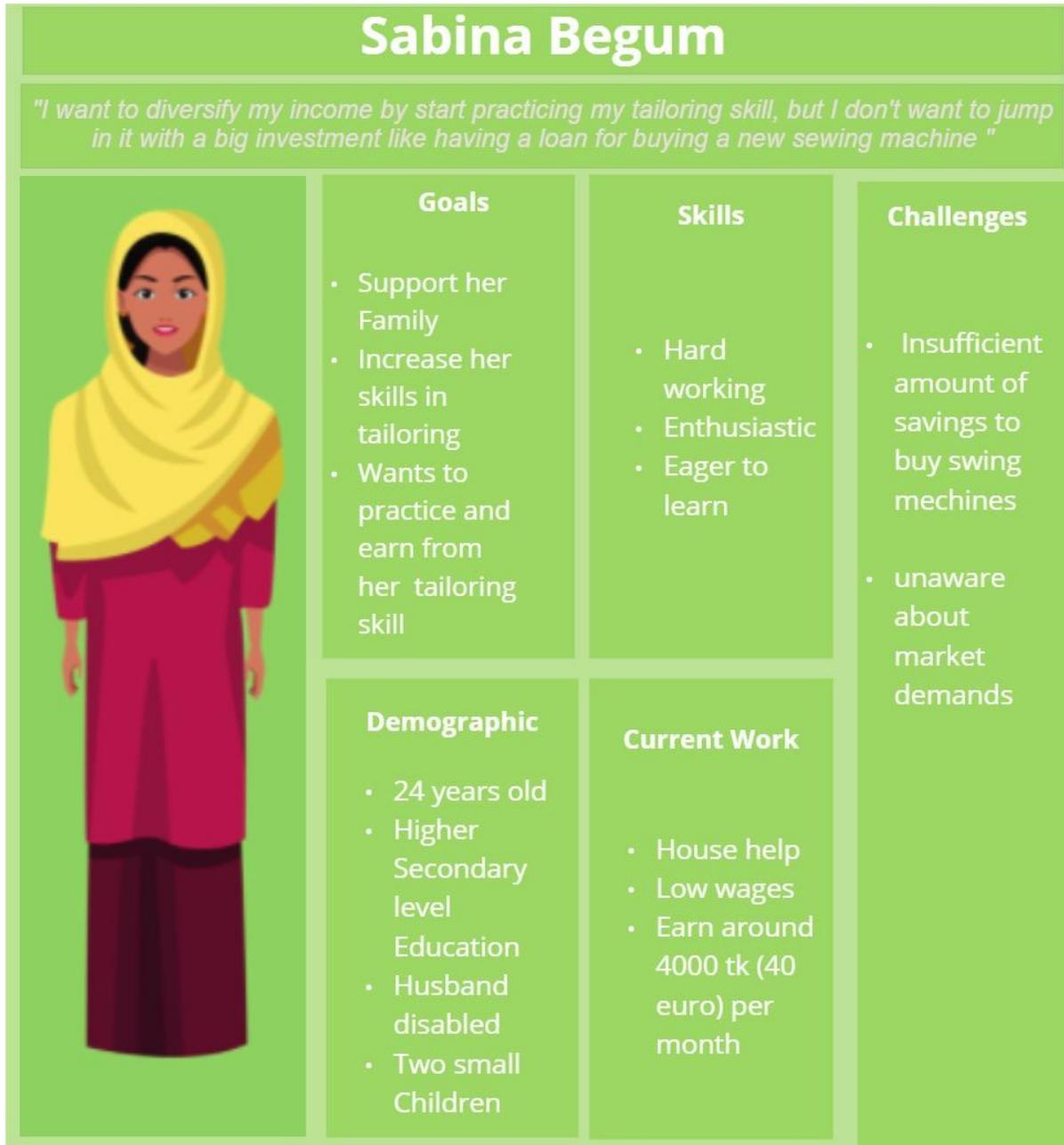


Fig 15: Persona 2

The second designed persona (Fig 15) is currently employed as a house help in a nearby household. Despite possessing fundamental tailoring skills, she lacks the resources to develop them to a professional level to function as a tailor in the future. She is currently unable to take the risk of lending a lump sum of money to purchase a sewing machine. She is looking into a way to increase her income.

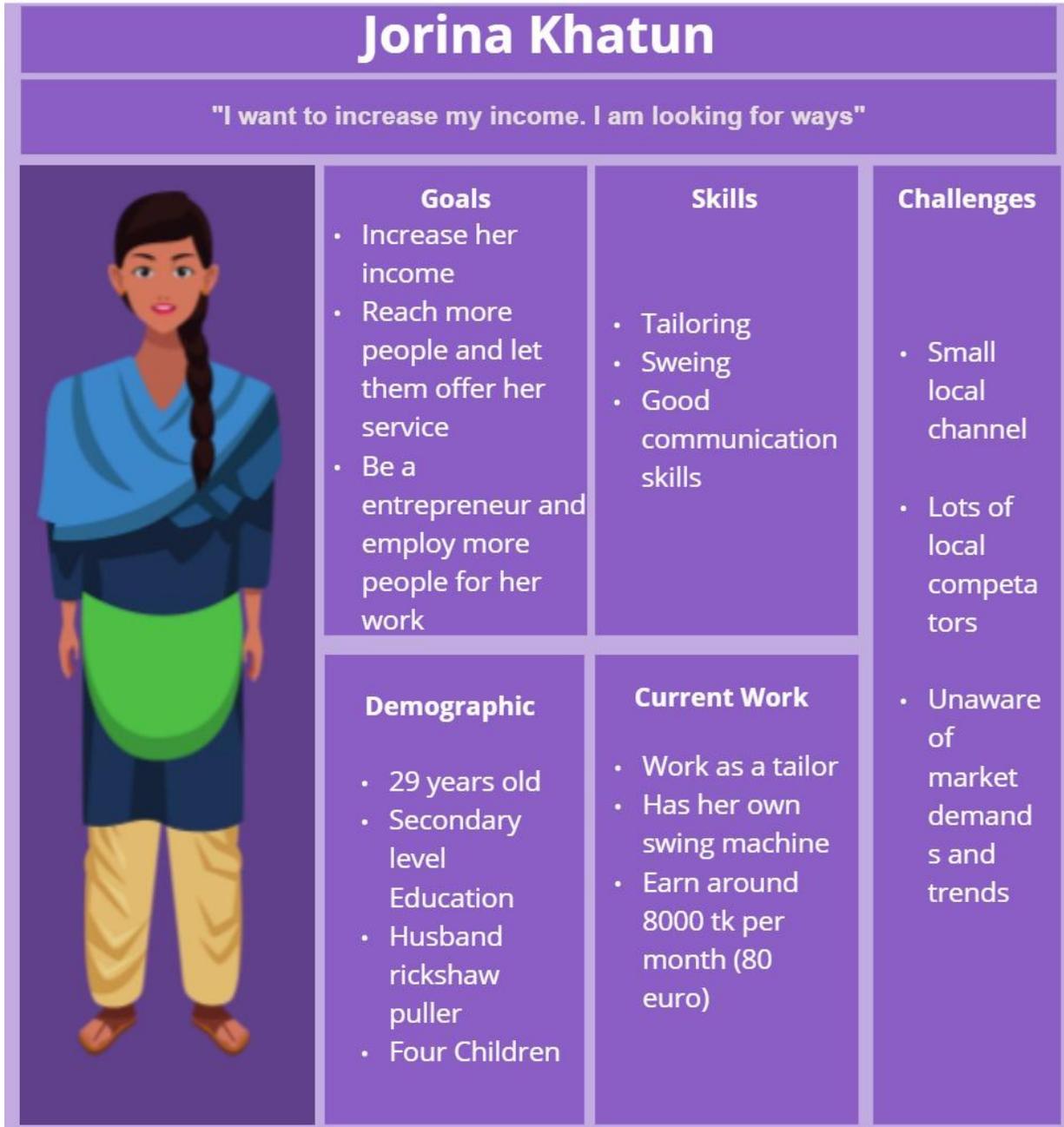


Fig 16: Persona 3

Designed persona number three (Fig 16) is the most prosperous of the three. She is currently employed as a tailor and earns approximately 8000 Tk (80 euros) per month. She wishes to supplement her income through her tailoring abilities. She is interested in using her tailoring skills in a more diversified way. Additionally, she is willing to lend her sewing machine when she is not using it to earn extra cash.

Based on the designed persona and the survey results, it is identified that there is a strong need for a service or platform by which these personas can interact. This type of association enables the persona to improve their chances of financial gain, which results in increased empowerment. Financial independence provides individuals with increased trust in their family decision-making as well as increased respect in society. Thus, the next step is to create a network connecting these personas and a larger market where they can offer their services.

4.2 Concept Development

The solution idea was shaped from a detailed study of the survey correspondents' desires and created personas and also using the analysis of the desktop study.

Now, Bangladesh's smallest administrative subdivision is called "Union." (Mollah,2007). Women have a strong communal bond. They are typically very familiar with one another, and when someone engages in entrepreneurial activities, a pattern involving the same or similar types of activities often develops quickly. These women possess a range of abilities and educational levels. As the world undergoes a technological transition, an increasing number of these women are exposed to the internet and social media. It is possible to create a web-based platform that addresses the target groups' concerns or desires.

With this understanding, I plan to design a platform that will accelerate women's empowerment by providing them with a sense of financial independence through the opening of new markets, more networking and creating more opportunities.

4.2.1 Proposed Features

The platform I propose consists of three primary modules:

- Common Module
- Member Module
- Client Module

The Actors are divided into two main categories

- Member
- Client

Definition of Member and Client:

The platform's actors are described as members and clients. Members are those who will deliver services to the network, while clients are those who will request or receive services from the platform. Consider an e-commerce website such as Amazon for simplicity's sake. As compared to proposed platforms, a member is defined as a user who sells goods through their online stores, while a client is defined as a platform user.

Main Features:

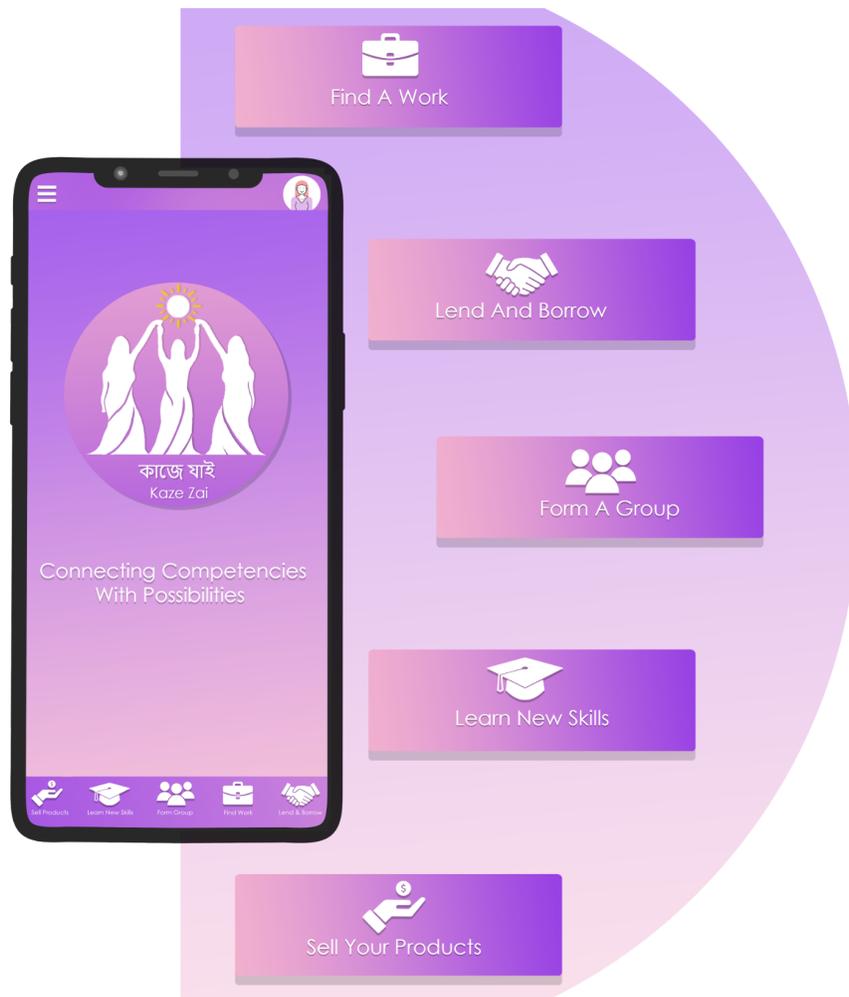


Fig 17: Main Features of Concept Platform

From understanding and gathering all this knowledge I identified that there are unique opportunities to use technological advancement by creating more networking, opportunities for collaboration, creating a digital presence of women to the market. With this thought process, I have identified the following features for the concept platform.

The solution is proposing features where women can look for new opportunities, form a workgroup, lend or borrow items rather than buying them, learn a new skill and also sell their products (Fig 17). The details of each feature are described in the following sections in a detailed fashion.

4.2.2 Simplified Block Diagrams of The Platform

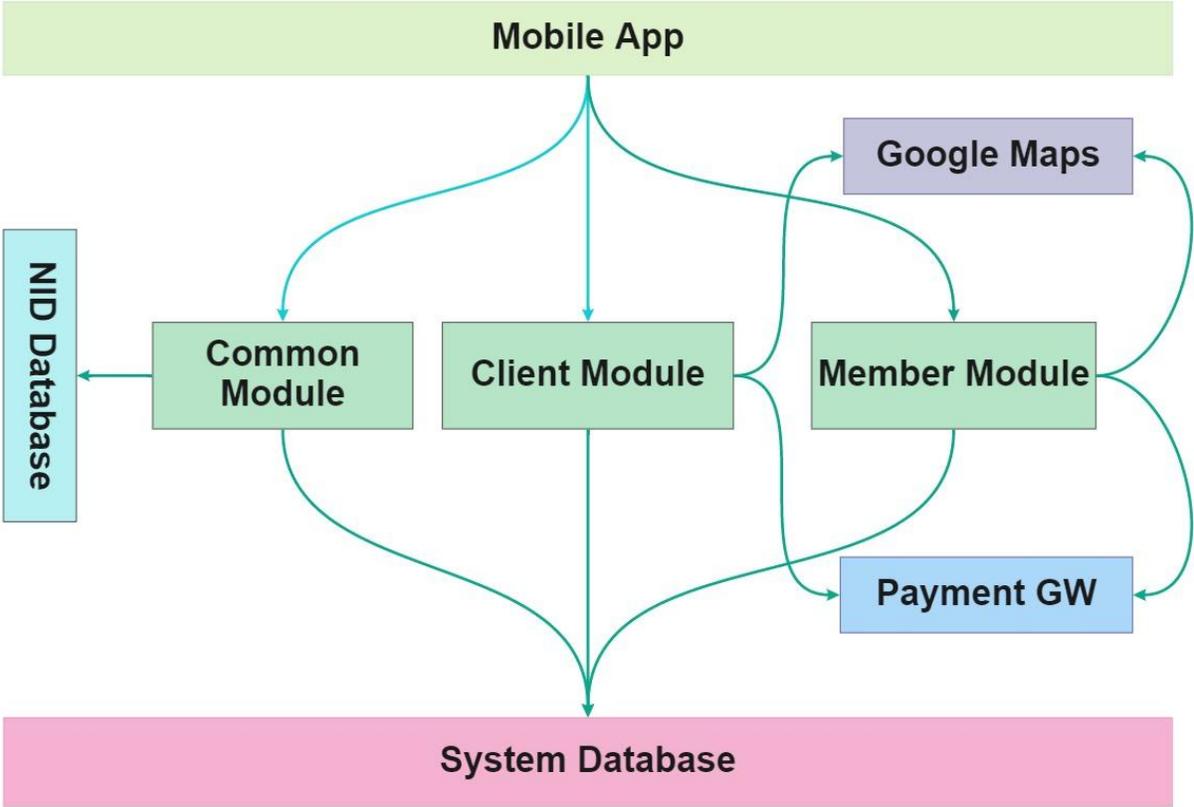


Fig 18: Simplified Block Diagram of the platform

The platform's Simplified Architecture is divided into mobile apps, three different internal modules, and a system database (Fig 18). The mobile app part of the platform will connect to these three different modules via REST API (Li & Chou,2011). These modules are connected to system databases to show and save data. The Common Module of the system is connected to a

third-party NID system. It is necessary for the platform because it will fetch and verify data provided by the user during the registration process. The member module and the client modules are connected to third-party google maps to give the map functionality in the system. The member module and the client module are also connected to various third-party mobile payment gateway (e.g. Bikash, Nagad, e.t.c) to provide payment functionality in the platform.

4.2.3 Branding

Branding is very important for any kind of platform. Branding has a long term effect on the general masses and mind. Brands' logos can symbolise the vision of the platform. With this ideology, the “*Kaze Zai*” platform's logo is designed.



Fig 19: Logo of “Kaze Zai” platform

The logo consists of three women holding their hands together and a rising sun. The women are wearing “*Shari*” which is the national dress for women in Bangladesh (Fig 19). The holding of hands symbolises unity. It is inferring that women as united are more strong than women alone. The rising sun represents a bright future up ahead.

4.2.4 Colour Psychology

The design of the proposed platform uses the bold choice of bright colours for the user interfaces. There is thinking involved behind these design choices. Bright colours are involved traditionally in the various occasions in Bangladesh like the celebration of the Bengali new year (Hossain et al., 2020). People relate brighter colour with festivity and joy (Wexner, 1954). As the sole purpose of the platform is to create more income opportunities for less fortunate women, vivid colour is used to represent the colourful future incoming for their life.

4.2.5 Details of Common Module

The common module comprises the following features that are described below.

Registration and Login

Purpose of This Feature:

The aim of this function is to make the login and registration process more friendly and simple for new users. Consideration has been given to ensuring that the signup and login processes are as simple as possible. During registration, the user will be required to provide only one piece of information: a unique digital smart NID number. Bangladesh's government provides each citizen with a smart NID card that is linked to a centralised database of citizen information. Additionally, the government has a safe channel for accessing publicly accessible information about residents. providing only a NID card number in this manner should theoretically suffice to retrieve the required data to proceed with the sign up/login method.

How It Works:

After providing a smart NID number, users will receive an SMS containing a One-Time Password (OTP) that will allow them to access the system. The phone number will be collected in accordance with the NID issued. If no phone number can be extracted from the NID data, the user will be prompted for one. The following (Fig 20) are examples of the signup UI. Initially the platform considers all users as clients but the user can then easily become a member from profile options (Fig 20).

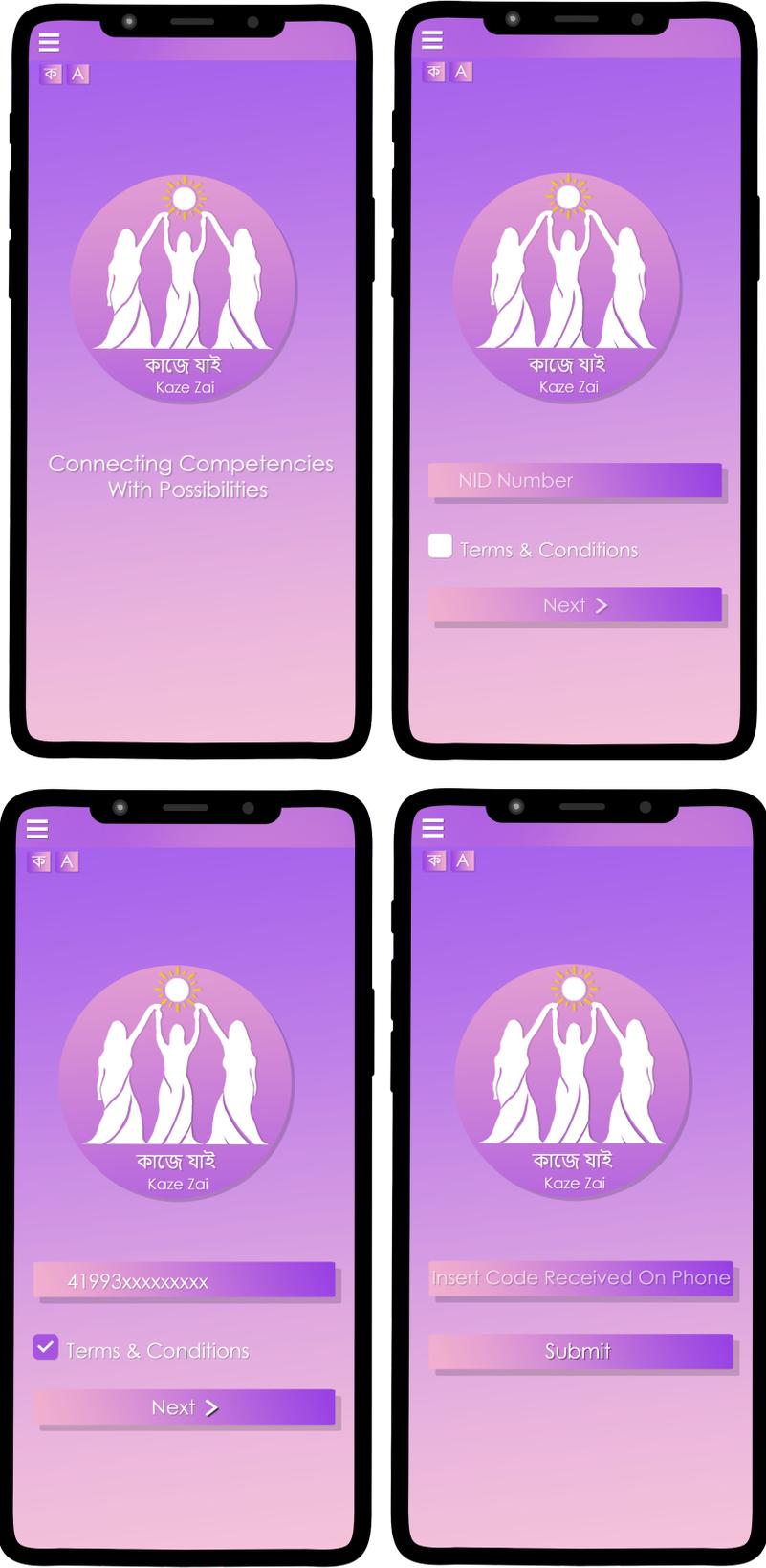


Fig 20: Registration and Login screen

Values Provided:

- Easy to use registration procedure.
- Minimalistic input from the user.

4.2.6 Details of Member Module

This is the thesis's primary objective. The aim of this module is to provide resources to women who will work on the platform as service providers.

This module will have the following features:

Dashboard:

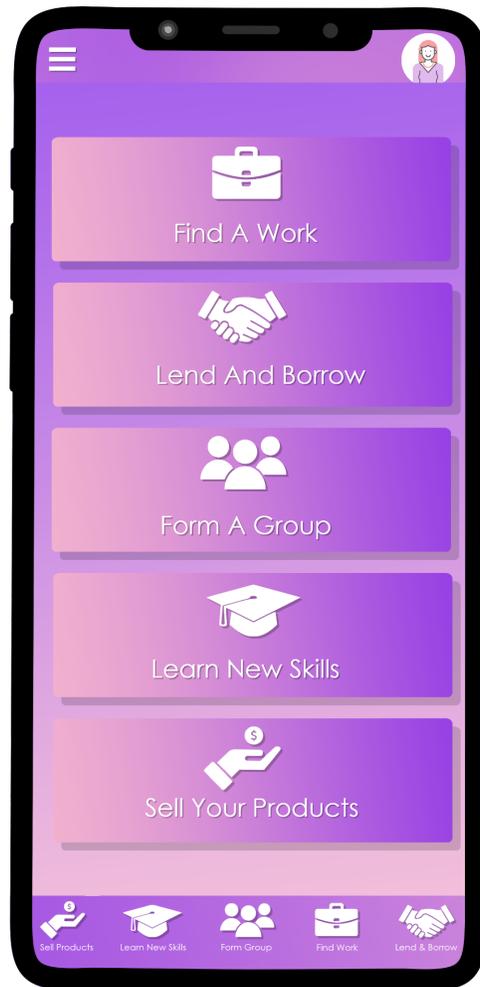


Fig 21: Dashboard of the member

Purpose of This Feature:

This feature is developed as the landing page where the member can see all the different modules she wants to see when she logs in to the platform.

How It Works :

After signing up members can see this dashboard. Members also can browse through the different menu via the bottom navigation options in the mobile platform (Fig 21).

Values Provided:

- A place to easily access all features.

Browse Available work:

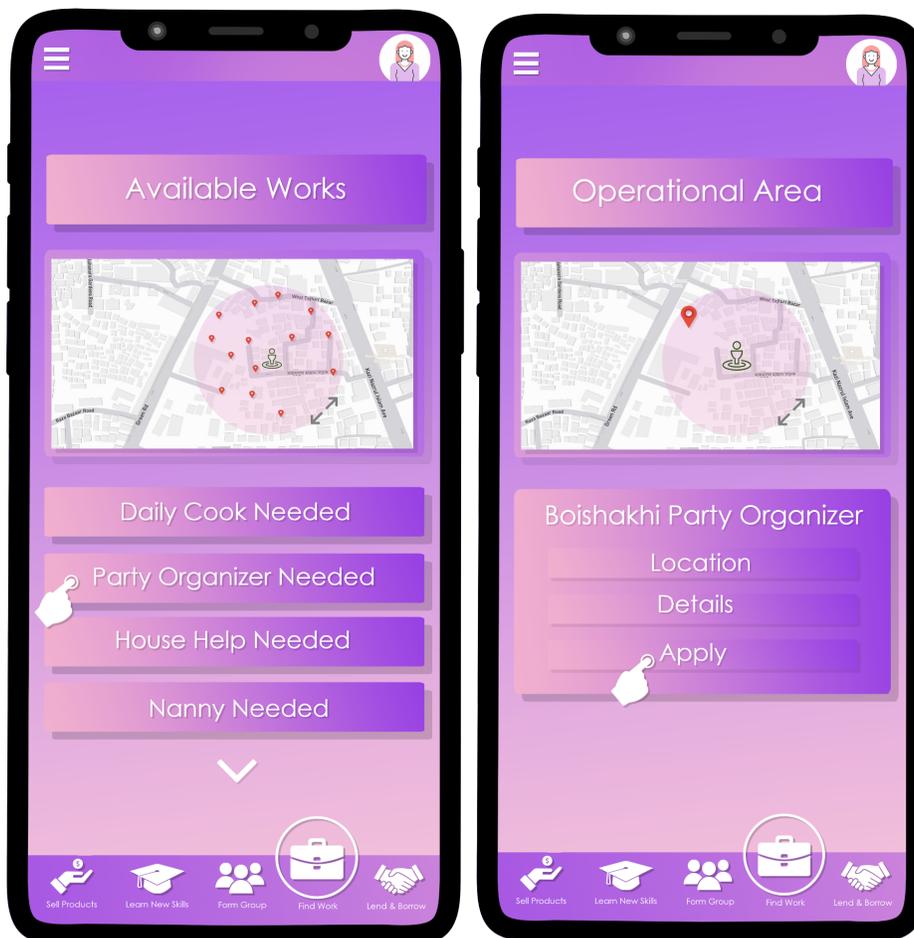


Fig 22: List of available work

Purpose of This Feature:

This becomes clear from the results of user surveys: frequently, women tend to work in low-wage positions or in jobs they dislike but must do. They cannot protect themselves due to their economic difficulties, and they lack the will or means to do so. This function is intended to provide these women with the option and the right to be paid for their actions or efforts.

How It Works:

A simple user interface can display all available jobs for each member in her operational area as a point in the map (Fig 22). By clicking the point on the map or from the list below, members can see additional details. For example, with a radius of 20 kilometres as an operating area, a member can see the available work in her service area in a map or list format and can apply from there. This will create a more engaging user experience in the platform.

Provided Values:

- Provide an easy way to search for work.
- Provide working freedom as a means of empowerment.

Lend and Borrow Items:**Purpose of This Feature:**

According to the survey conducted, women often borrow money from banks or non-governmental organisations. While taking loans to improve their financial conditions is admirable and appropriate, there are occasions when a lump sum loan is unnecessary. For example, we consider two of the designed personas: one who wishes to learn to tailor but lacks the financial resources to purchase a sewing machine. Another persona already owns a sewing machine that she is willing to lend. This type of shared sharing economy can benefit all parties significantly, with one party benefiting financially and the other benefiting in the long run through the acquisition of new skills. This benefit would have a cascading impact on poverty.

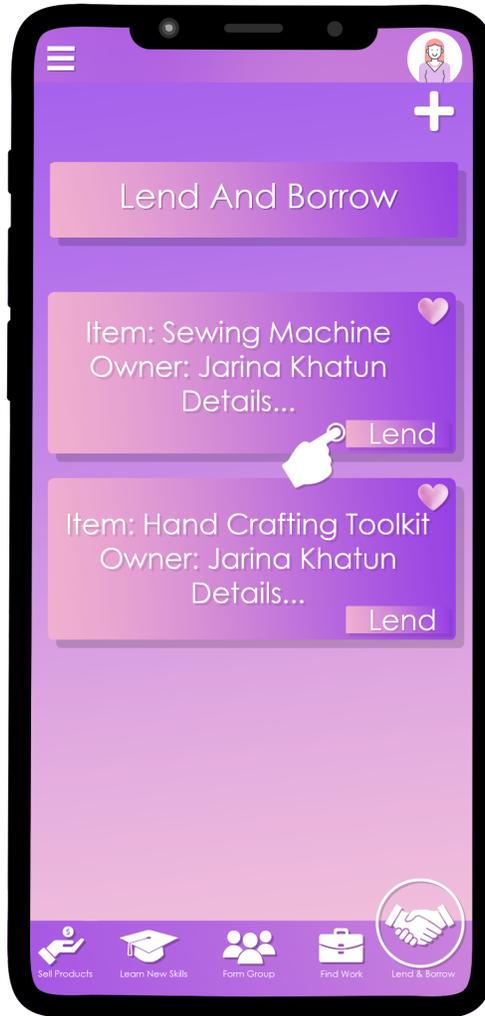


Fig 23: Lending and borrowing options

How It Works:

Members can browse items from the list and place requests to borrow the items. Members can also add items that they wanted to lend by clicking the plus icon (Fig 23).

Values Provided:

- Provide means of learning new skills by borrowing.
- Running a small business with the borrowed item for immediate financial gain.
- Lend owned item for financial gain.

Create Groups:

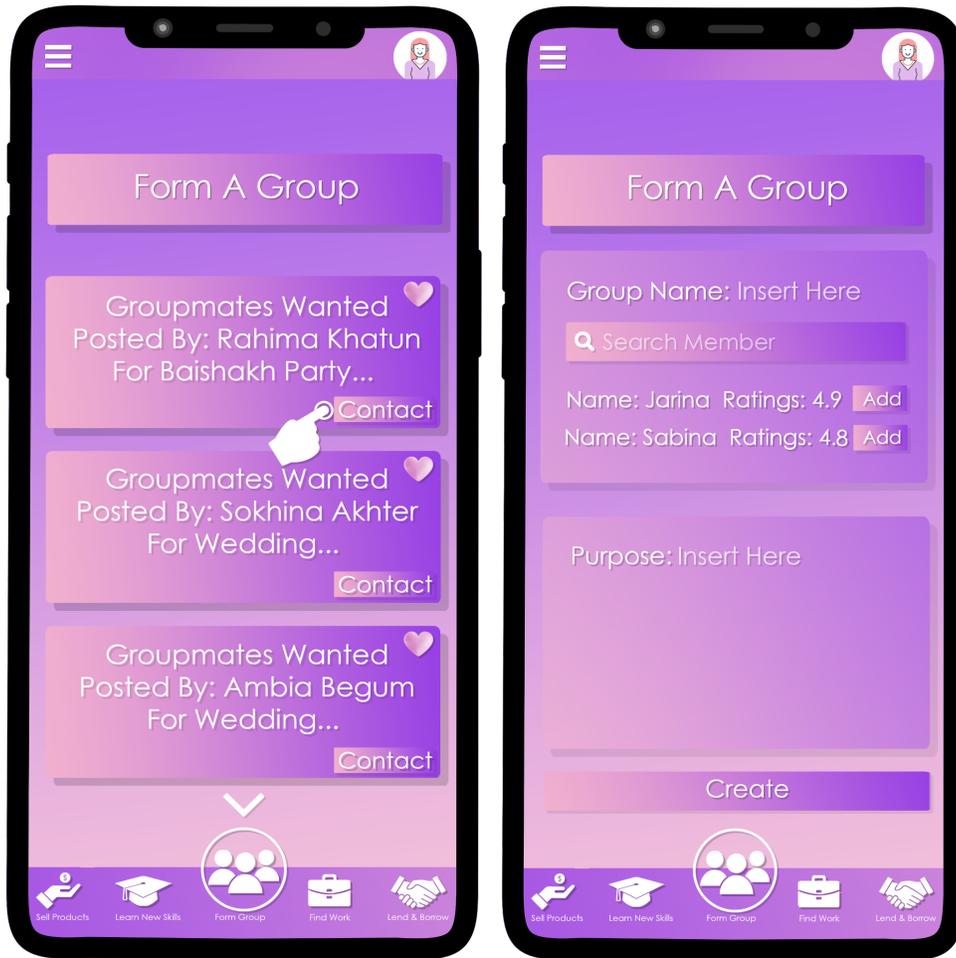


Fig 24: Create groups Interface

Purpose of This Feature:

There are times when the amount of a task is too large for one person to complete (e.g. cooking for a large party). Members may build groups based on similar skill sets or familiarities in this scenario through the platform. They will carry on the job together. Profits will be distributed automatically to the group members according to an agreement.

How It Works :

Members click the form a group option from the navigation pane or dashboard and can see the current groupmate wanted list. Members can also create a new request by clicking the plus icon. Then the members' request will be added to the list, and other members in the platform can

contact her to create the group. After mutual agreement, the requester can create the group by going to create group options and create the groups with the agreed members (Fig 24).

Values Provided:

- Women can form a group and take work that requires more than one person's effort.
- Sharing and collaborative path to financial success.

Learn a New Skill :

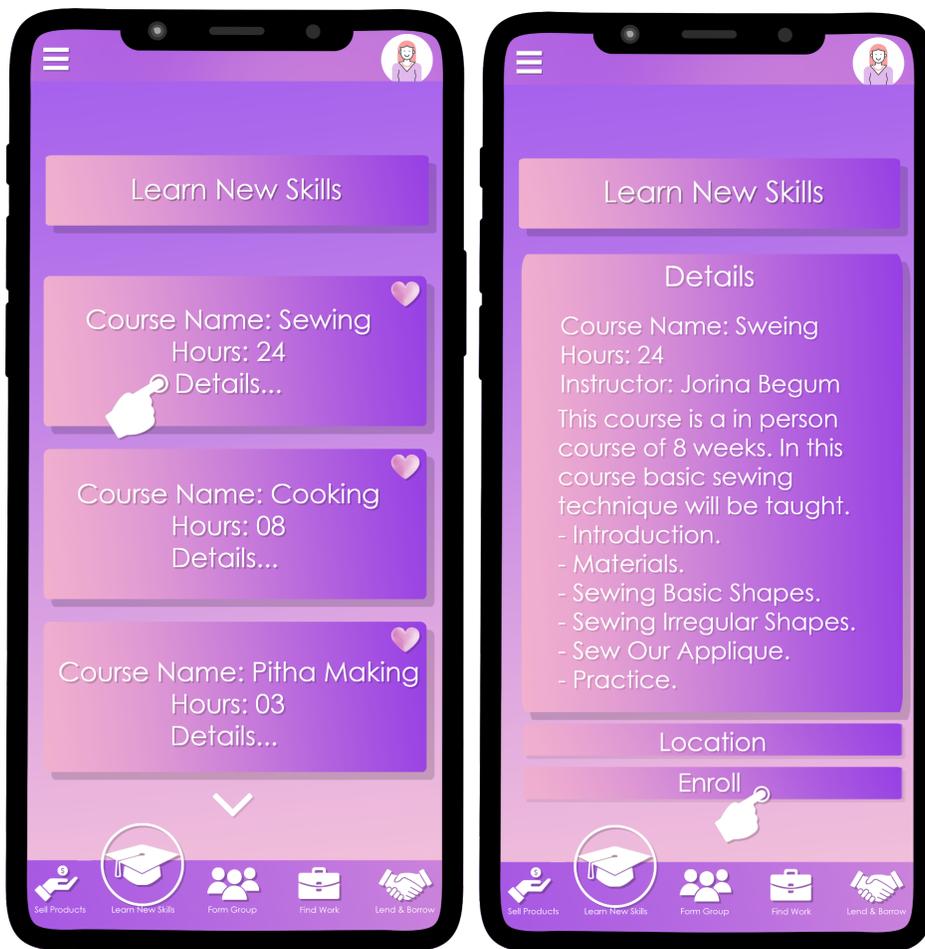


Fig 25: Learn a new skill

Purpose of This Feature :

During the survey's interview, it was found in women a strong desire to acquire new skills and use them to improve their financial situation. Recalling the survey, it was discovered that more

than 95% of respondents expressed a strong interest in acquiring new skills. It is evident from the developed personas based on interviewees that there is a need for skill development. If the platform is capable of providing instruction, users can gain essential skills such as maintaining hygiene and some specialised skills such as tailoring.

How It Works:

Members browse through a list of available training, and by clicking details, members can see the outlines of the course. Members can then simply click the enrol button to enrol in the course if the course is available at the moment. Members can also save/bookmark a course by clicking on the top right save icon (Fig 25).

Values Provided:

- Members can acquire fundamental skills.
- Members can acquire advanced skills.
- By acquiring new skills, members can experiment with changing careers.
- Members will enhance her profile by adding new skills to improve her chances of being employed.
- Members can also offer training to other members.

Profile:

Purpose of This Feature:

This function is an important component of the platform. This feature enables members to add a new ability to their profile. The platform will promote the member if a client is looking to employ someone with that skill set for a specific reason. Additionally, users can update/view their personal information that the platform collects. Additionally, a history of the user's previous work is available. Users can also see the ratings she has received of earlier assignments. This ensures the platform's transparency since the user's cumulative rating is based on each rating.



Fig 26: Member profile

Additionally, members can view her cumulative ratings directly above her name. Manage groups options allow users to manage the groups to which they manage or belong. After the purpose of any groups has been accomplished, members can leave or dissolve any groups that she manages (Fig 26).

Members can also specify the range of their operations area through the option. This gives the member the option of choosing her area of service. Also, members can add/manage products through the choice given in their profile (Fig 27). The added product will be available on the platform's marketplace, and clients will contact the member directly to purchase it.

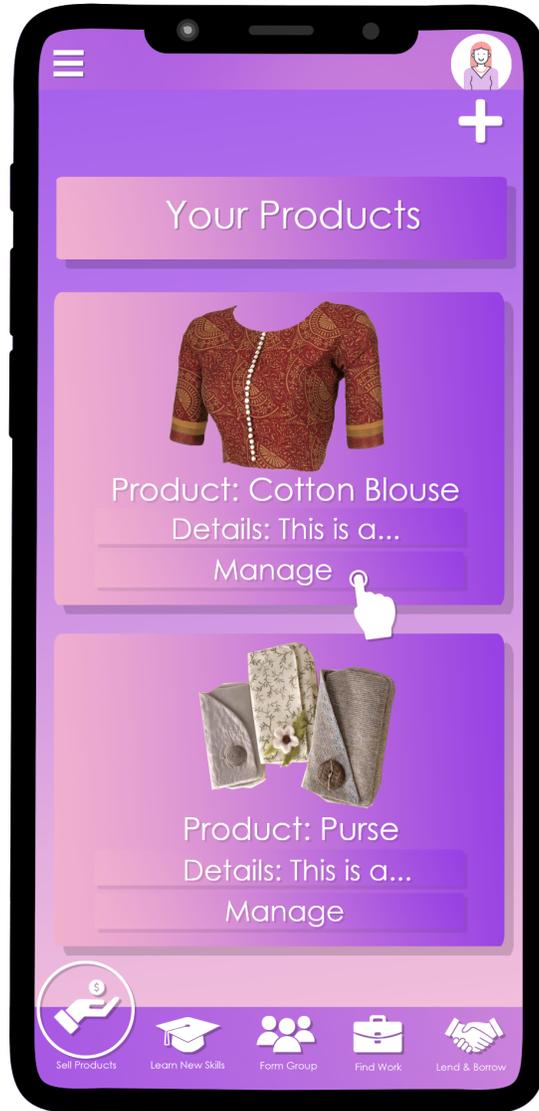


Fig 27: Product manage UI for members

How It Works:

From the profile menu, members can choose different options to trigger different features. Members can also change language from the profile option.

Values Provided:

- Transparency of the platform.
- Adding new skills will increase hiring chances.

- Adding a new product to get financial benefits.
- Managing area of operation for the member.

4.2.7 Details of Client Module

Dashboard:

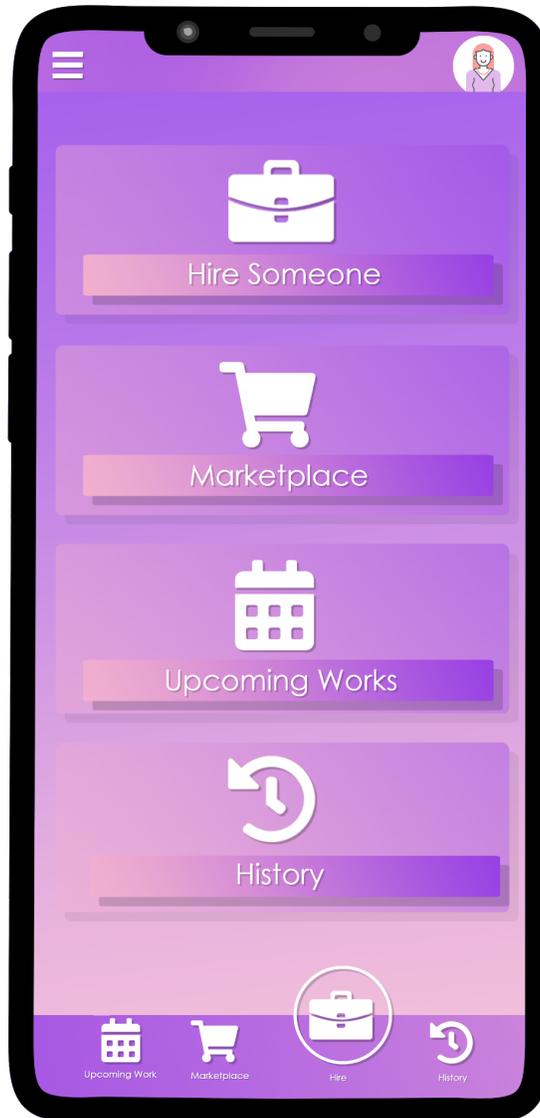


Fig 28: Client dashboards

Purpose of This Feature:

The purpose of this feature is to show the client a list of available services that the platform offers.

How It Works:

After login, the client can see a card layout with various options on the dashboard. The client can then check any of the options to initiate further actions(Fig 28).

Values Provided:

- The client can move to various services straight from the dashboard.
- The client can see upcoming works in the dashboard.

Hire Someone:

Purpose of This Feature:

This feature's primary objective is to link the client to the member. Clients may view available members to hire and recruit them based on their wishes or demands through a user-friendly panel on the platform. If a member has registered as a service provider on the platform, the platform must link them to the market. This feature directly addresses the problem.

How It Works :

Clients can view a list of eligible candidates for hire. The list includes information about the member, such as ratings, feedback, name, image, and contact information. After that, clients will start the hiring process. Additionally, clients can save or bookmark a member for future reference. Additionally, clients can post any work included in the list for the "post a work" function (Fig 29).

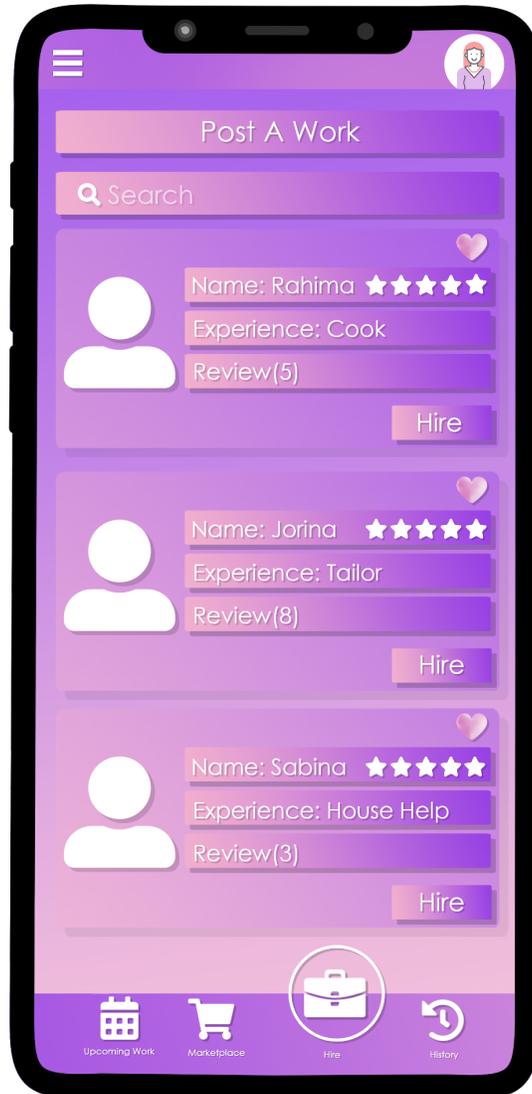


Fig 29: Hire for work

Values Provided :

- The easy and welcoming process to hire for any services.
- Search based on the service that the client wants.
- Post a work if the currently available service provider does not meet the demand for the client.

Marketplace :

Purpose of This Feature :

Numerous traditional handicrafts products are prevalent in many rural areas of Bangladesh (Hossain & Wadood, 2020). While handicrafts such as “*Nakshi Katha*”, “*Shika*”, and murals are in high demand in the market, rural women are frequently unaware of them. As a result, intermediaries take a disproportionate share of the benefit of this market by purchasing this craft at rock-bottom prices from the manufacturer and selling it at very high prices to clients. If there is a way for women to market their products, this can result in increased financial gain for empowerment (Fig 30).

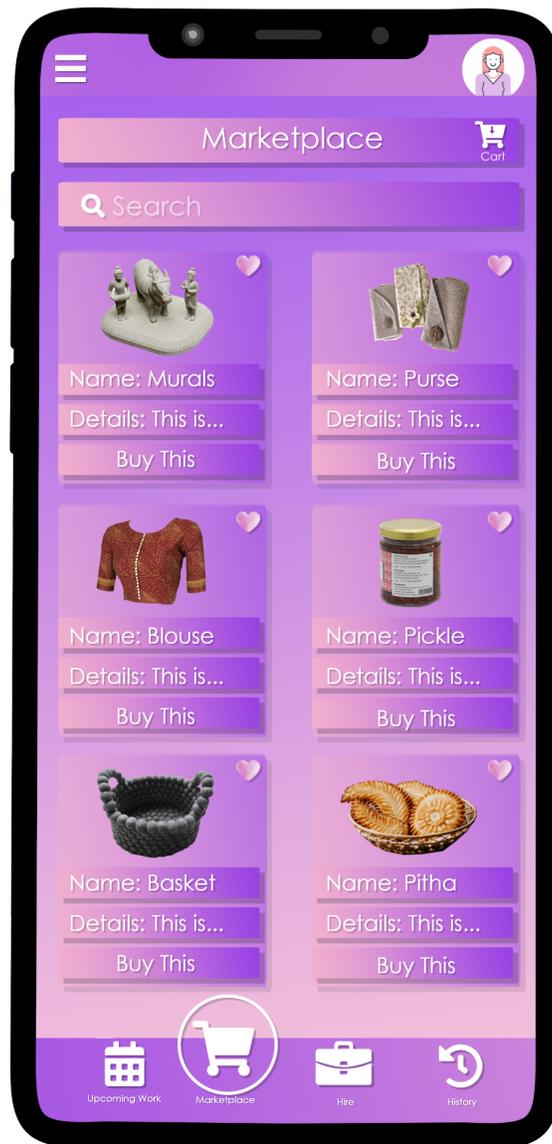


Fig 30: Marketplace feature

How It Works:

Clients can browse items like a typical marketplace. Add to the cart clicking on the heart icon, and then proceed with payment.

Values Provided :

- Increasing the market's accessibility to more women.
- The client can easily purchase handicrafts and other products at an affordable price.

Client Profile :

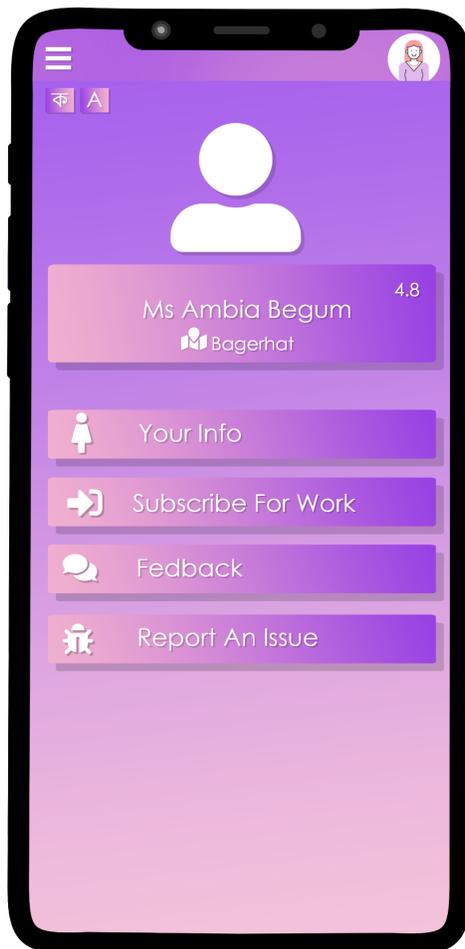


Fig 31: Client Profile

Purpose of This Feature :

The purpose of this feature is to provide clients the option to access and change their info . The client can also request to register them as a member from this option.

How It Works :

From the profile page, the client can initiate various actions (Fig 31).

Values Provided:

- Ability to request to become a member.
- Provide customer support and feedback.

4.3 User Journey

This section describes the user journey in the platform. For demonstration purposes, the designed personas are considered. The designated persona one, *Rahima*, works as a cook in his nearby area. She is also well known for her “Pitha” making skill. On the other hand, designed persona two, *Sabina* is working as a house help and currently struggling to make ends meet. She has a keen interest in tailoring but now does not possess the means of learning. The designed persona three is presently working as a tailor and has her sewing machine. She wants to increase her income.

Before Using The Platform:

These three personas are not known to each other. The common interest among them is the enthusiasm to improve their financial hurdles.

During Using The Platform:

Rahima joined the “*Kaze Zai*” platform. She sets her operational area on the map and starts looking for work. She found a few options. Among them, one caught her eyes. That is the “*Boishakhi*” Party Organizer. “*Boishakhi*” is the celebration of the Bengali new year. Here she faces a problem, and she cannot execute this task alone. She will also need someone for the party

venue decoration with good handicrafts and sewing skills. So she creates a request for group mates on the platform to get the job as a group.

On the other hand, Sabina joins “*Kaze Zai*” to look for different skill training options and found tailoring training and enrolled herself. The instructor of this tailoring course is Jarina. Jarina, a professional tailor, owns her sewing machine and also trains women through the platform. She also lends her items for extra cash via the platform. She also sells her handmade items via “*Kaze Zai*”. When their training sessions were almost finished, they came across Rahima’s Post for Group Mates. As they both now have skills wanted by Rahima, they contacted Rahima and formed a group. After that, they approached the job and got the job. On the day of Boishakh, Sabina & Jarina arrive at the venue and decorate it with all the traditional handmade decoration pieces and cloth curtains. A few hours later, Rahima arrived with tasty snacks and sweets. All the guests arrived and were praised highly for the decoration and the food. The client is happy and gives them good reviews.

After Using The Platform:

Through “*Kaze Zai*”, these three women now have met and arranged a successful Boishakh party using their best skills. They got to know and understand each other while doing teamwork. They realise the importance of teamwork. Long term relationships among them are built through the platform. They gained much confidence to take more work in future as a team as well as individually. More financial gain and more reach via this networking help them and their family. They grew popular and gradually got more work. The client receives a good quality of services and unique offerings via these three individuals. With the newly gained confidence they later applied to organize more parties as a group and became renowned in local areas. After that they have decided to operate as a business. In their business they later employ more women to help them organize events. In this way through “*Kaze Zai*” these three women see the financial freedom for them and their family. This will in long terms have a big positive impact even if the members stop using the platform later time. That’s how the platform can have its direct or indirect positive footprint on these women's lives.

4.4 Challenges of Implementation

The platforms have a handful of challenges. Here are some of the challenges that I have identified and discussed.

4.4.1 Challenges of Development

Each digital platform faces the challenges of capturing initial funding for development. This Platform is not different in this case. Capturing initial funding needs to gain confidence from investors' regarding this platform. Without this it will not be possible to hire the development team. The platform is targeted to work as a non-profit with the collaboration of People's Republic of Bangladesh. The government of Bangladesh is very positive in the adoption of digital platforms (Rahman,2017). It will be possible to capture funding as the platform provides unique values to the government. Also after the development the next challenge is to popularise the platform with proper marketing. Government initiatives can be taken to take good marketing strategies. By doing this it is hoped that the adoption of the platform will be faster as it provides unique values to each type of user that is using the platform.

4.4.2 Handling Transactions

For any service provided, the proposed platform is tasked with collecting payments from clients or consumers of any service (e.g. borrowing) and distributing them to platform members. Payment processing is a risky operation from a security standpoint. As an example, we can recall the 2016 Bangladeshi bank heist. Bangladesh Bank, the country's central bank, was hacked and lost \$100 million. To obtain authorisation, hackers used popular techniques of exploit servers through distant code-based attack techniques (Farah et al., 2016). This example demonstrates that platforms that process transactions are a lucrative target for attackers, and therefore the platform's protection should be strong.

Mobile banking has gained prominence in Bangladesh in recent years. Bangladesh serves as a role model for emerging economies in the area of mobile based financial systems. Since its inception, mobile banking has grown at an astounding pace. According to statistics, mobile banking enables almost everyone with any smartphone to transact, regardless of their location in

the nation (Khan, Akter, & Zeya. ,2019). It allows the unbanked to access the financial system and efficiently transact, resulting in financial inclusion. Financial inclusion refers to providing financial means at a cost effective price to the financially backwards and low-income parts of society, regardless of income level. Bangladesh currently has a plethora of mobile banking service providers. Monthly transactions have also increased significantly over the last four years, reaching Tk 273 million in September 2020, an increase of 132%. (Financial Express, May 2021). Mobile banking systems will be used as the payment medium in this platform. In Bangladesh, mobile banking systems have already established their trustworthiness and security. The pioneer and still the majority shareholder is “*Bkash Limited*” currently (Saniel,2020). There are also some more key players in this market, including one platform, “*Nagad*”, operating under the authority of the Bangladesh Post Office (Amin et al., 2021).

As a third-party contractor handles each transaction for the proposed platform, the platform would enforce security measures such as defence against XSS and CSRF (Farah et al., 2016). The people’s republic of Bangladesh’s data security laws will be followed.

4.4.3 Handling Tax

The proposed platform is tasked with the responsibility of collecting payments and distributing them to members. It is the platform's responsibility to maintain accountability and transparency. One of the platform's challenges is determining how to handle the taxation of individual members. In this regard, we will examine the new taxation regime applicable to citizens of the People's Republic of Bangladesh.

The Finance Minister gave a proposal of raising the tax-free income level for male taxpayers from Tk. two lakh fifty thousand (2500 EUR) to Tk. three lakh (3000 EUR) and for female taxpayers and taxpayers over the age of sixty-five from Tk. three lakh (3000 EUR) to Tk. three lakh and fifty thousand (3500 EUR), respectively, in the recently proposed budget. There was also a proposal to trim the minimum tax percentage for citizens of Bangladesh from ten to five and decrease the overall tax percentage from thirty to twenty-five. (Bangladesh: National Budget for FY 2020-21, JUNE 12, 2020). Thus, it has been made abundantly clear that by increasing tax-free income, the government is attempting to increase female participation in income-generating sectors. The platform's tax duty is intended to ensure accountability by

reminding each member of their annual tax estimate based on their earnings via the platform. The platform will provide tax calculation annually towards each member of their income via the platform if their income is taxable according to the law. Following that, if the tax law applies, it is up to the members to administer those taxes. Additionally, the platform will report to tax authorities on its members' earnings to ensure accountability.

4.4.4 Physical Security of Users

The platform's primary concern is the security of both the platform's members and the platform's client. In this regard, considerations have been made. This platform aims to operate as a non-profit organisation in partnership with the Bangladeshi government. Due to the platform's collaboration with the government, any existing local legislation regarding violations of conduct will apply. Local law enforcement officials will prosecute those who violate the law.

Numerous crowdsourcing sites such as UBER and Airbnb have shown that a rating-based system works. As all members and clients review each other on the website, if either party breaches one or more service agreements or performs substandard service, the parties' combined rating will suffer. Poor ratings would result in decreased platform operation. For instance, members with higher ratings would promote confidence to the clients. This legislation also applies to clients. Any breach of agreement or infringement will result in a warning notice up to and including permanent removal from the site. It is reasonable to assume that users would be committed to adhering to the service agreement for their own good.

4.4.5 Unwanted Bias

There is a probability of creating unwanted biases due to a rating and feedback based system in the platform. Such biases may occur because of targeted attacks to a specific user in the system by a group of people. That can damage the reputation of the member or the client. There should be a way kept for the users in the platform to report if this kind of situation occurs. This type of bias is a social issue, and created bias will be observed, and steps will be taken if reported.

4.5 User Testing and Refinement

After designing the initial platform, The intention was to conduct user testing with real users. It is believed that a solution that is incapable of meeting the needs of the users is useless. With this thought process in mind, two workshops with a minimum of 25-30 participants are planned. However, due to the unfortunate case of a pandemic, the target country, Bangladesh, was put on lockdown. The situation was not improving, and the lockdown continued. The NGO staff with whom the survey collaboration on the initial user survey was done could not organise any workshops. Despite these significant roadblocks, it was possible to communicate with seven correspondents via digital medium. The correspondents were given an explanation about all the features of the platforms and how they would add value to their lives during those conversations. The majority of them were highly optimistic and receptive to the platform. They show a strong interest in the platform as a whole. The following is significant user reviews.

Feedback and Refinement:

Four of the seven correspondents expressed a strong interest in the forum for developing skills. I was hesitant to incorporate this feature into the platform. However, the user's keen interest encourages me to include this feature.

Most correspondents expressed significant reservations regarding the concepts of lending and borrowing. They expressed enthusiasm for the concept but cautioned that if they own large objects such as sewing machines and borrow them regularly, the movement of their assets may have a significant depreciation impact, as certain parts can become lost or destroyed. According to them, this impact would not be significant for small objects. These views were deemed extremely important to me, and I chose to include two lending options. One is to deliver the goods to the borrower's home, and the other is for the borrower to come to the lender's home and rent the item for a while.

4.6 Values Provided by The Platform

It is almost pointless to build a platform without having specific values. The platform attempted to include values based on the findings of the desktop analysis and user survey. Seeing the

difficulties women face today, I tried to provide elegant ideas to solve one or more of these issues. I have classified the platform's ideals into three groups.

Values for Members:

The platform will increase a member's reachability through digital media. This means that women will have more resources. This feature addresses women's entrepreneurial ventures being restricted to the local area due to a lack of reachability. Creating ownership through community formation and collaboration will foster leadership, and this type of leadership will empower women to have a strong voice in family matters (Fig 32).



Fig 32: Values for members

Sharing capital enables the lender to generate additional revenue streams. Borrowers would benefit from increased employment opportunities and financial benefits as a result. Through this process, each of these women will step toward empowerment, both collectively and individually. This would have a cascading impact on society, eventually changing the way women are viewed.

Values for Client :

It is often challenging to locate a unique skill set unless or until the client has solid networking skills offline. The rating-based service provision module with diverse skill sets will assist the client in resolving this problem. Additionally, authentic products sourced directly from providers

without intermediaries ensure product consistency, competitive pricing, and fewer counterfeit items. This will instil trust in digital e-Commerce platforms (Fig 33).



Fig 33: Values for client

Values for Government and State:

The platform's collective economic principles would result in increased money circulation. Increased money circulation results in increased revenue production in the domestic market. This will bolster Bangladesh's already-growing GDP (Fig 34).

Government and State



Well networked and
more empowered
women



More income
generation in
domestic market



Faster GDP growth

Fig 34: Values for government and state

5 . Limitations of The Research

This research has its own limitations. As the research was done during the covid 19 pandemics, fieldwork was challenging, and many works have been conducted via the digital medium. Although the surveys conducted have been done by going to the correspondents' home physically, it was challenging to reach more correspondents due to the crisis situations. Many of the correspondents were simply unable to give interviews because of the crisis they were handling due to the pandemic. It was also challenging to reach out to local authorities as they were busier with handling the pandemic at the root level of Bangladesh. The exception or the outcome of this thesis may possess this limitation of the understanding of the fields. Prototyping the platform and beta testing with real users may uncover some problem areas that the research failed to address. It is also noteworthy to address that all the technical challenges of implementing the platform are not addressed here.

6. Future Works

“A design is not finished until it has been used.” - Brenda Laurel, an MIT designer.

The argument is highly pertinent to every design solution. A designer should be involved in the design's creation. I assume that design is not a one-time event. A little tweaking and updating of the design in response to user feedback are needed for a successful design solution to work. The system's future work may include developing a working prototype based on the proposed design and releasing it for beta testing with real users' feedback. After a certain time has passed for beta testing, a survey of user opinion should be conducted. This also allows for identifying any missing features and the subsequent modification of the platform to make it more mature. Local government participation is also essential for this approach to function. The background and platform suggested in this thesis, in the future, it will be proposed with the government and local authorities as a proposal for a new platform aimed at empowering women financially. This is the overarching objective of this research. In the far future it is possible to even extend this platform to similar demographics like India or Nepal as most of the factors that are mentioned in this research are very much relevant also for those countries.

7. Conclusion

The objective of this study focused on how concurrent technologies can be used to make women empowerment easier by creating ways to more networking and financial benefit. I believe that less fortunate women can grow together via the proposed platform towards a better future. With more opportunities created via the platform, I believe more women using this platform can go towards financial freedom more easily. This will eventually give them a voice in society and the family and make them more self-aware and confident. The keen enthusiasm seen in general for a better future can be a motivating factor in using the proposed platform. The networking effect that the platform can create will also help with issues in their daily life outside the platform. Working together, more women can fight the gender gap and unfavourable social conditions. I firmly believe women are “*Stronger Together*”. Through various opportunities proposed by the platform, more women can positively impact their lives via more networking, entrepreneurial activities, and skill enhancement. The platform’s sole purpose is to assist women in navigating towards that bright future. If planned and implemented properly, the platform will create a positive impact in the lives of women in Bangladesh, and this research is done for that sole purpose.

In the concluding statement, special thanks to my supervisor Ruth-Helene Melioranski. With her regular strategic guidance, it became possible for me to progress in an orderly manner. I would also like to thank the volunteers Sabina Rowshan, Jorina Begum, Sahida Begum, Sefali and Anjira Khatun (Ex women counsellor). Also, I am deeply in debt to all the 86 correspondents of the interview. They have opened up and responded to the survey questions. Even when the covid situations worsened and it was not possible to conduct a user feedback workshop, seven of them still gave their valuable opinion via phone. Lastly, I would like to thank two experts, Ms Diana Tam and Mr Ashikur Elahee, for sharing their valuable opinions with me.

Summary :

The objective of this study focused on how concurrent technologies can be used to make women empowerment easier by creating ways to more networking and financial benefit. Gender gap exists in the majority of the modern world's countries. Quite often, in developing regions of the world, the gender gap is more prominent. Numerous social problems continue to drag women down. Women are sometimes classified as second-class citizens. Women empowerment is a revolutionary philosophy that aims to close the gender gap by addressing social problems affecting women and taking action to address them. This study examines the current state of gender inequality in a developing nation, Bangladesh.

As part of the solution a platform named "*Kaze Zai*" is proposed. "*Kaze Zai*" is a space that connects competencies with possibilities by encouraging sustainable economic activities. It allows its members to share resources and find work opportunities. They can also gain new skills, sell handmade products as well as form workgroups. With "*Kaze Zai*", women will have the chance to grow valuable networks and be empowered as a community.

Kokkuvõte:

Selle uuringu eesmärk keskendus sellele, kuidas samaaegseid tehnoloogiaid saab kasutada naiste võimendamiseks luues neile võimalusi omavaheliste võrgustike loomiseks ja sissetulekute suurendamiseks. Sooline lõhe esineb enamikus kaasaegse maailma riikides. Üsna sageli on maailma arenevates piirkondades sooline lõhe silmatorkavam. Arvukad sotsiaalsed probleemid suruvad naise jätkuvalt alla. Naised liigitatakse mõnikord teise klassi kodanikeks. Naiste mõjuvõimu suurendamine on revolutsiooniline filosoofia, mille eesmärk on kaotada sooline lõhe, lahendada naise mõjutavaid sotsiaalseid probleeme ja rakendada meetmeid nende lahendamiseks. Selles magistritöös uuritakse soolise ebavõrdsuse praegust olukorda ja selle leevendusvõimalusi Bangladeshis.

Lahenduse osana pakutakse välja platvorm nimega "*Kaze Zai*". „*Kaze Zai*” ühendab kompetentsid võimalustega, soodustades jätkusuutlikku majandustegevust. See võimaldab oma liikmetel jagada ressursse ja leida töövõimalusi. Samuti saavad nad omandada uusi oskusi, müüa

käsitsi valmistatud tooteid ja moodustada töörühmi. Kaze Zai abil saavad naised kasvatada väärtuslikke võrgustikke ja olla kogukonnana võimelised.

References

- Ahmed, M.U. (2014). Women entrepreneurship development in Small and medium enterprises in Bangladesh: Prospects, realities, and policies. *International Journal of SME Development* 1(1), 1–32. Website: www.smef.org.bd
- Ahmed, J. U., & Tinne, W. S. (2017). ASA: cost-effective and sustainable microfinance model NGO in Bangladesh. *South Asian Journal of Business and Management Cases*, 6(2), 167-175.
- Ahmed, T., & Sen, B. (2018). Conservative outlook, gender norms and female wellbeing: Evidence from rural Bangladesh. *World Development*, 111, 41-58.
- Aisenbrey, S., & Brückner, H. (2008). Occupational aspirations and the gender gap in wages. *European Sociological Review*, 24(5), 633-649.
- Akter, A., Ahmad, N., Jaafar, W. M. W., Zawawi, D. B., Islam, M. M., & Islam, M. A. (2018). Empowerment of women through entrepreneurial activities of self-help groups in Bangladesh. *Journal of International Business and Management*, 1(1), 1-15.
- AL AMIN, M., SULTANA, N., SAHA, T., ISLAM, S., & KASHEM, M. A. (2021). Customer's Attitude toward Mobile Banking Usage: A Case Study in Bangladesh. *The Journal of Asian Finance, Economics, and Business*, 8(2), 419-426.
- Amin, Ruhul; Yiping Li; and Ashrad U. Ahmed (1996). Women's Credit Programs and Family Planning in Rural Bangladesh. *International Family Planning Perspectives*, Vol. 22, No. 4 (December).
- Batliwala, S. (2007). Taking the power out of empowerment—an experiential account. *Development in practice*, 17(4-5), 557-565.
- Bangladesh: National Budget for FY 2020-21, JUNE 12, 2020, <https://regfollower.com/2020/06/12/bangladesh-national-budget-for-fy-2020-21/> . 15 May 2021.
- Barrett, M. (2014). *Women's oppression today: The Marxist/feminist encounter*. Verso Trade.
- Bhuiyan, J. H. (2017). Secularism in the Constitution of Bangladesh. *The Journal of Legal Pluralism and Unofficial Law*, 49(2), 204-227.
- Boll, C., & Lagemann, A. (2019). The gender pay gap in EU countries—new evidence based on EU-SES 2014 Data. *Intereconomics*, 54(2), 101-105.

- Britannica, T. Editors of Encyclopaedia (2020, August 21). Taslima Nasrin. Encyclopedia Britannica. <https://www.britannica.com/biography/Taslima-Nasrin>. 12 February 2021
- Busch, C. (2016). Crowdsourcing consumer confidence: How to regulate online rating and review systems in the collaborative economy. *European Contract Law and the Digital Single Market*, Intersentia, Cambridge.
- Caliendo, M., Lee, W. S., & Mahlstedt, R. (2017). The gender wage gap and the role of reservation wages: New evidence for unemployed workers. *Journal of Economic Behavior and Organization*, 136, 161–173. <https://doi.org/10.1016/j.jebo.2017.02.011>
- Chanda, K. (2020). The ‘devi’ and the ‘dasi’: Understanding the identity constructions of Indian womanhood in Ismat Chughtai’s “The Homemaker”.
- Chanda, S. K., & Howlader, M. H. GENDER INEQUALITY IN THE LABOR MARKET: A COMPARATIVE ANALYSIS BETWEEN BANGLADESH AND THE CZECH REPUBLIC.
- Chowdhury, N., Minto, N. A., Chowdhury, M. F., & Ahmed, M. (2010). A gender action plan: Minding financing, marketing, technology and mindset gaps. Dhaka: Ministry of Industries, Government of the People’s Republic of Bangladesh.
- Coleman, S. (2007). The role of human and financial capital in the profitability and growth of women-owned small firms. *Journal of Small Business Management*, 45(3), 303-319.
- DataRe Portal (2020), <https://datareportal.com/reports/digital2020-bangladesh#> . 11 January 2021
- Erosa, A., Fuster, L., & Restuccia, D. (2016). A quantitative theory of the gender gap in wages. *European Economic Review*, 85, 165-187.
- Eyben, R., & Napier-Moore, R. (2009). Choosing words with care? Shifting meanings of women's empowerment in international development. *Third world quarterly*, 30(2), 285-300.
- Farah, T., Shojol, M., Hassan, M., & Alam, D. (2016, July). Assessment of vulnerabilities of web applications of Bangladesh: A case study of XSS & CSRF. In 2016 sixth international conference on digital information and communication technology and its applications (DICTAP) (pp. 74-78). IEEE.
- Ferdous, J., & Mallick, D. (2019). Norms, practices, and gendered vulnerabilities in the lower Teesta basin, Bangladesh. *Environmental Development*, 31, 88-96.
- Fischer, E.M., Reuber, A.R. & Dyke, L.S. (1993). A theoretical overview and extension of research on sex, gender and entrepreneurship. *Journal of Business Venturing* 8, 151–68. 9. Robichaud, Y., Lebrasseur, R., Riverin, N & Zinger, T. (2005). A comparison of female and male entrepreneurs – insights from GEM Canada. Paper presented at the GEM second Conference: Hongrie, Budapest, 25 May, 2005.
- Govinda, R. (2018). Unit-2 Empowerment, emancipation and policies in India. IGNOU

- Greer, M. J., & Greene, P. G. (2003). Feminist theory and the study of entrepreneurship. *New perspectives on women entrepreneurs*, 1-24.
- Grown, C., Gupta, G. R., Kes, A., & *Projet Objectifs du millénaire*. (2005). *Taking action: achieving gender equality and empowering women*. London: Earthscan.
- Haque, M. F., Sarker, M., Rahman, A., Rahman, M., & Rakibuddin, M. (2020). Discrimination of women at RMG sector in Bangladesh. *Journal of Social and Political Sciences*, 3(1).
- Hasan, S. S., Hossain, M., Sultana, S., & Ghosh, M. K. (2015). Women's Involvement in Income Generating Activities and Their Opinion About Its Contribution: A Study of Gazipur District, Bangladesh. *Science*, 3(6), 72-80.
- Hoque, M., & Itohara, Y. (2009). Women empowerment through participation in microcredit programme: A case study from Bangladesh. *Journal of Social Sciences*, 5(3), 244-250.
16. Roncolato, L., & Willoughby, J. (2017). Job Quality Complexities: Self-employment within the Low-income Communities Surrounding Cape Town, South Africa. *Review of Radical Political Economics*, 49(1), 30-53.
- Hossain, B., & Wadood, S. N. (2020). Potential Unexplored? Tourism and Economic Growth of Bangladesh. *Journal of Tourismology*, 6(1), 63-77.
- Hossain, M. A., & Tisdell, C. A. (2005). Closing the gender gap in Bangladesh: inequality in education, employment and earnings. *International Journal of Social Economics*.
- Hossain, M. G., & Wadood, A. (2018). Two-Level Logistic Regression Analysis of Factors Influencing Anemia Among Nonpregnant Married Women of Reproductive Age in Bangladesh. In *Issues on Health and Healthcare in India* (pp. 11-19). Springer, Singapore.
- Hossain, M. I., Biswas, M., Akhi, S. K., Moshiur, M. B., Jahan, N., & Toma, K. A. (2020). A Review Report on Traditional Textile Wears in Bangladesh. *International Journal of Progressive Sciences and Technologies*, 22(1), 215-224.
- Harle, J. C. (1963). Durgā, goddess of victory. *Artibus Asiae*, 237-246.
- Hurley, A. E. (1999). Incorporating feminist theories into sociological theories of entrepreneurship. *Women in management review*.
- ILO (2016) *Women at Work Trends 2016*.
- Islam, M. A., & Jantan, A. H. (2017). THE GLASS CEILING: CAREER BARRIERS FOR FEMALE EMPLOYEES IN THE READY MADE GARMENTS (RMG) INDUSTRY OF BANGLADESH. *Academy of Strategic Management Journal*, 16(3), 1-11.
- Islam, M. A., Jantan, A. H., Hashim, H., Chong, C. W., Abdullah, M. M., & Abdul Hamid, A. B. (2018). Fourth industrial revolution in developing countries: a case in Bangladesh. *Journal of Management Information and Decision Sciences (JMIDS)*, 21(1).

- Jahan, Raihana Akter and Reza Hasan Mahmud (2002). Source of Women's Empowerment in Bangladesh: An Analysis. Quarterly Journal of Bangladesh Public Administration Training Centre, Vol. 23, pp. 45-54.
- Johansson, M., & Messeter, J. (2005). Present-ing the user: constructing the persona. *Digital Creativity*, 16(04), 231-243.
- Kabeer, N. (2012). Women's economic empowerment and inclusive growth: Labour markets and enterprise development. Discussion Paper No.29, London: Centre for Development Policy and Research, School of Oriental & African Studies, University of London.
- Kabir, M. S., & Huo, X. (2011). Advancement of rural poor women through small entrepreneurship development: The case of Bangladesh. *International Journal of Business and Management*, 6(9), 134.
- Kamal, S. M., Hassan, C. H., Alam, G. M., & Ying, Y. (2015). Child marriage in Bangladesh: trends and determinants. *Journal of biosocial Science*, 47(1), 120.
- Keller, B. and D.C. Mbwewe (1991) 'Policy and planning for the empowerment of Zambia's women farmers', *Canadian Journal of Development Studies* 12/1: 75-88.
- Khan, S. N., Akter, M., & Zeya, F. (2019). Bangladeshi banking innovations: A case study on mobile banking. In *Business and management practices in South Asia* (pp. 101-124). Palgrave Macmillan, Singapore.
- Khandker, S. R., & Koolwal, G. B. (2010). How infrastructure and financial institutions affect rural income and poverty: evidence from Bangladesh. *The journal of development studies*, 46(6), 1109-1137.
- Kim, E. M. (2017). Gender and the sustainable development goals. *Global Social Policy*, 17(2), 239-244.
- Krogh, P. G., Markussen, T., & Bang, A. L. (2015). Ways of drifting—Five methods of experimentation in research through design. In *ICoRD'15—Research into Design Across Boundaries Volume 1* (pp. 39-50). Springer, New Delhi.
- Li, L., & Chou, W. (2011, July). Design and describe REST API without violating REST: A Petri net based approach. In *2011 IEEE International Conference on Web Services* (pp. 508-515). IEEE.
- Manda, M. I., & Ben Dhaou, S. (2019, April). Responding to the challenges and opportunities in the 4th Industrial revolution in developing countries. In *Proceedings of the 12th International Conference on Theory and Practice of Electronic Governance* (pp. 244-253).
- M. Bittman, in *International Encyclopedia of the Social & Behavioral Sciences*, 2001
- Moghaddam, G. G. (2010). Information technology and gender gap: toward a global view. *The Electronic Library*.
- Mollah, M. A. H. (2007). Administrative decentralization in Bangladesh: Theory and practice. *International Journal of Organization Theory & Behavior*.

- Nahar, P., & Richters, A. (2011). Suffering of childless women in Bangladesh: the intersection of social identities of gender and class. *Anthropology & medicine*, 18(3), 327-338.
- National Association of Women Business Owners. (2010). *Access to capital—still our greatest challenge*. Los Angeles: National Association of Women Business Owners
- Naved, R. T., Azim, S., Bhuiya, A., & Persson, L. Å. (2006). Physical violence by husbands: magnitude, disclosure and help-seeking behavior of women in Bangladesh. *Social science & medicine*, 62(12), 2917-2929.
- Nentwich, J. C. (2006). Changing gender: The discursive construction of equal opportunities. *Gender, Work & Organization*, 13(6), 499-521.
- Nordman, C. J., Sarr, L. R., & Sharma, S. (2019). Skills, personality traits, and gender wage gaps: evidence from Bangladesh. *Oxford Economic Papers*, 71(3), 687-708.
- Ocviyanti, D., & Wahono, W. T. (2018). Risk factors for neonatal sepsis in pregnant women with premature rupture of the membrane. *Journal of pregnancy*, 2018.
- Peter, Jakirul Islam and Idris Ali Mia (2006). Women's Empowerment and Poverty Alleviation: A Study of RD-12 Project under BRDB in Jamalpur District. *The Journal of Rural Development*, Vol. 33, No. 1 (January), pp. 27-43.
- Pardesi, M. S. (2017). Region, system, and order: the Mughal Empire in Islamicate Asia. *Security Studies*, 26(2), 249-278.
- Rahman, S. A., Taghizadeh, S. K., Ramayah, T., & Alam, M. M. D. (2017). Technology acceptance among micro-entrepreneurs in marginalized social strata: The case of social innovation in Bangladesh. *Technological Forecasting and Social Change*, 118, 236-245.
- Rowlands, J. (1995). Empowerment examined. *Development in practice*, 5(2), 101-107.
- Saniel, W. H. K. (2020). Analysis of bKash Limited & Mobile Financial Services Industry in Bangladesh: An Internship Experience Perspective.
- Sarker, A. E., & Rahman, M. H. (2007). The emerging perspective of governance and poverty alleviation: a case of Bangladesh. *Public Organization Review*, 7(2), 93-112.
- Sarker, M. N. I., Wu, M., Liu, R., & Ma, C. (2018, August). Challenges and opportunities for information resource management for E-governance in Bangladesh. In *International Conference on Management Science and Engineering Management* (pp. 675-688). Springer, Cham.
- Sayem, A. M., Begum, H. A., & Moneesha, S. S. (2012). Attitudes towards justifying intimate partner violence among married women in Bangladesh. *Journal of biosocial science*, 44(6), 641.

Shoma, Chowdhury Dilruba (2019). Gender is a Human Rights Issue: The Case of Women's Entrepreneurship Development in the Small and Medium Enterprise Sector of Bangladesh. *Journal of International Women's Studies*, 20(7), 13-34. Available at: <https://vc.bridgew.edu/jiws/vol20/iss7/2>

Sinha, S. (2005). *Developing women entrepreneurs in South Asia: Issues, initiatives, and experiences*. Bangkok: Trade and Investment Division, Thailand.

Sourav, M. R. I. (2015). Unjust land right of women in Bangladesh. *Int Res J Interdiscip Multidiscip Stud*, 1(3), 5-13.

Sudarshan, R.M. and S. Bhattacharya (2009) "Through the Magnifying Glass: Women's Work and Labor Force Participation in Urban Delhi," *Economic and Political Weekly*, 44(48), 59- 66.

The financial Express. (May 2021) . Covid triggers rise in mobile financial services . <https://thefinancialexpress.com.bd/trade/covid-triggers-rise-in-mobile-financial-services-1605325877>. 10 may 2021

UNdata | table presentation | Gender Inequality Index. May 20, 2021. <http://data.un.org/DocumentData.aspx?id=415>

UNICEF (2001) *Early Marriage: Child Spouses*. Innocenti Digest No. 7. UNICEF, Florence, Italy

Vossenber, S. (2014, 8–9 May). Beyond the critique: How feminist perspectives can feed entrepreneurship promotion in developing countries.

Waiswa, M., & Phelps, M. (2017). *Empowering Women: A case study of women's participation in political processes in Nakuru County*

World Economic Forum (2020). *Global Gender Gap Report 2020*. <https://www.weforum.org/reports/gender-gap-2020-report-100-years-pay-equality> . 15 Jan 2021

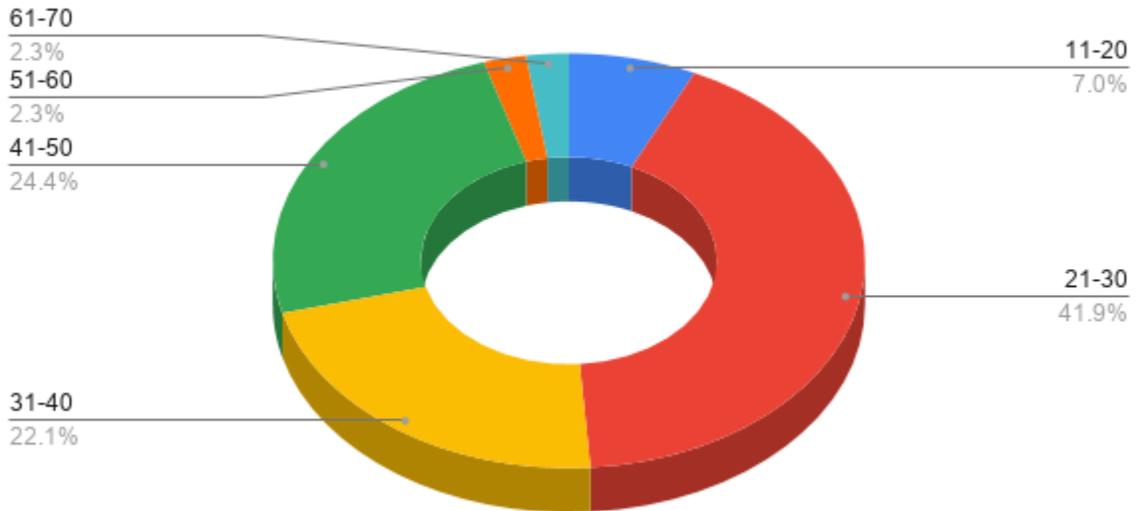
Weiler, K. (1997). Reflections on writing a history of women teachers. *Harvard Educational Review*, 67(4), 635-658.

Wexner, L. B. (1954). The degree to which colors (hues) are associated with mood-tones. *Journal of applied psychology*, 38(6), 432.

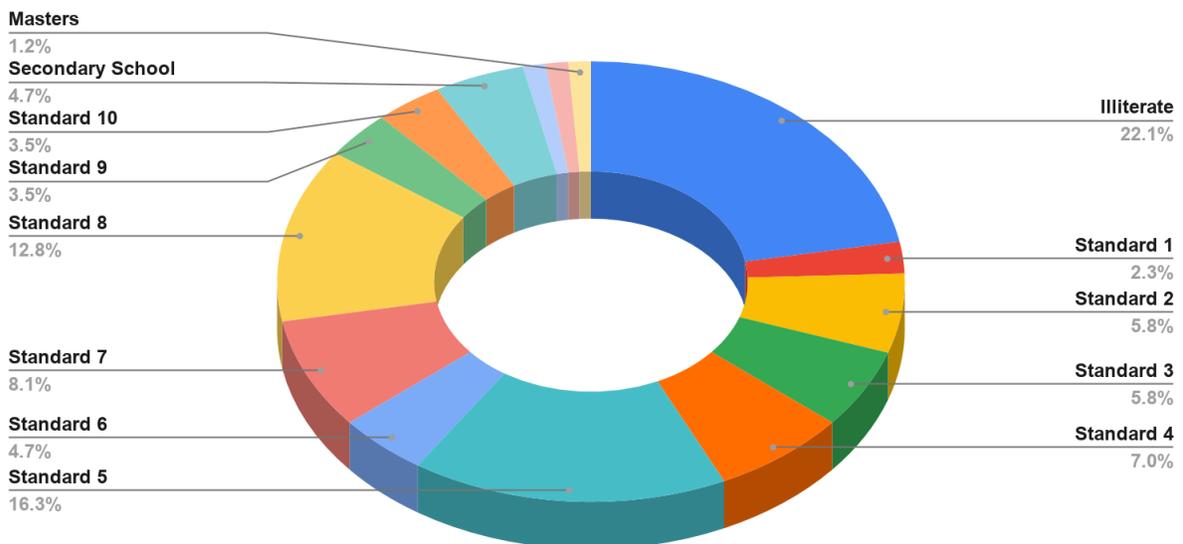
Zaman, H. (1999, January). Violence against women in Bangladesh: issues and responses. In *Women's Studies International Forum* (Vol. 22, No. 1, pp. 37-48). Pergamon

Appendix 2: Results from the survey

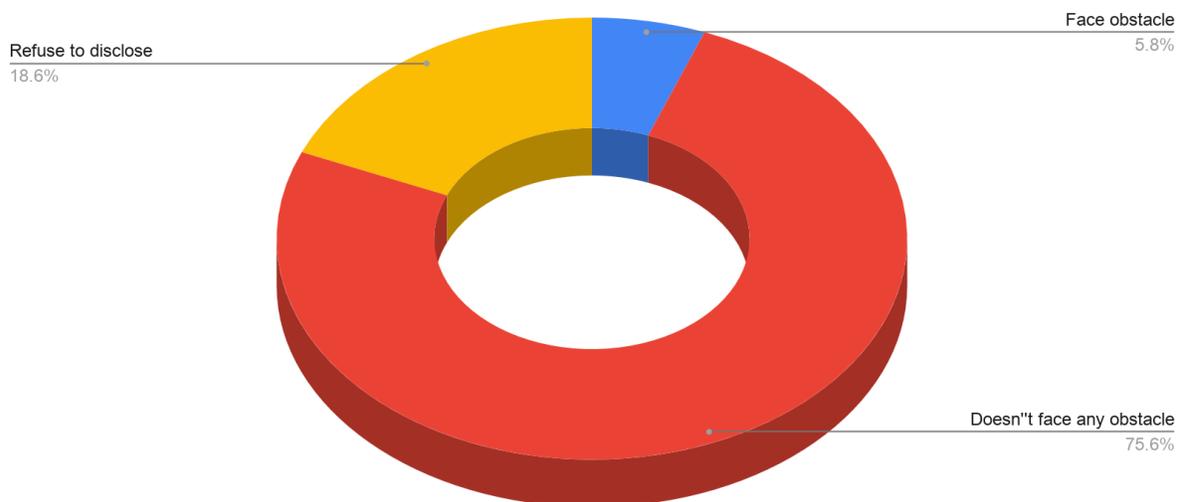
Age Group



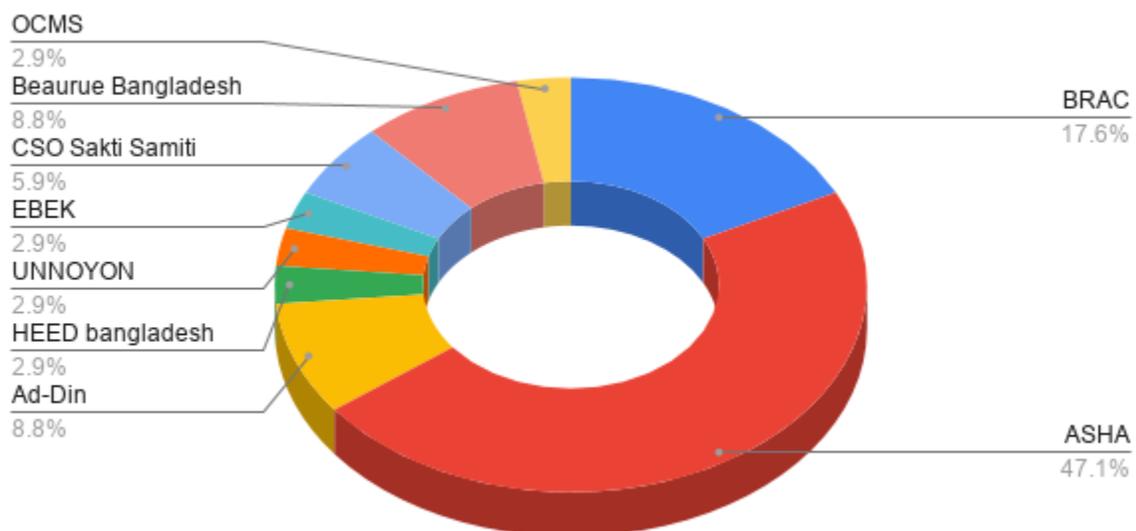
Education



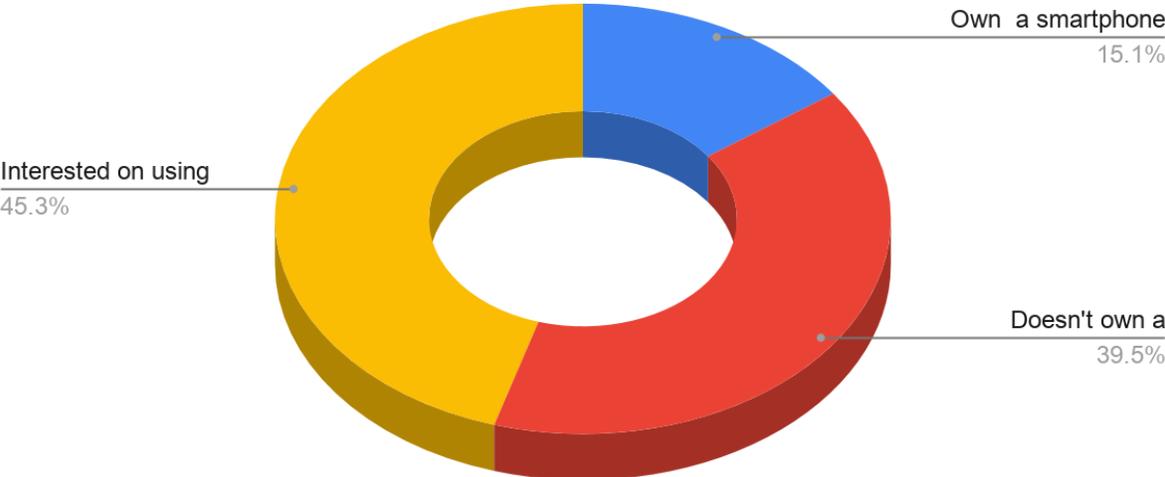
Family Hindrance



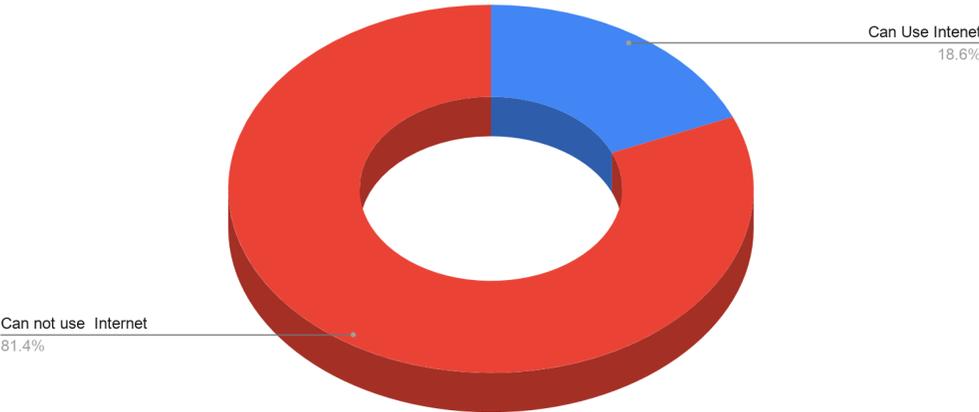
Association Participation Distribution



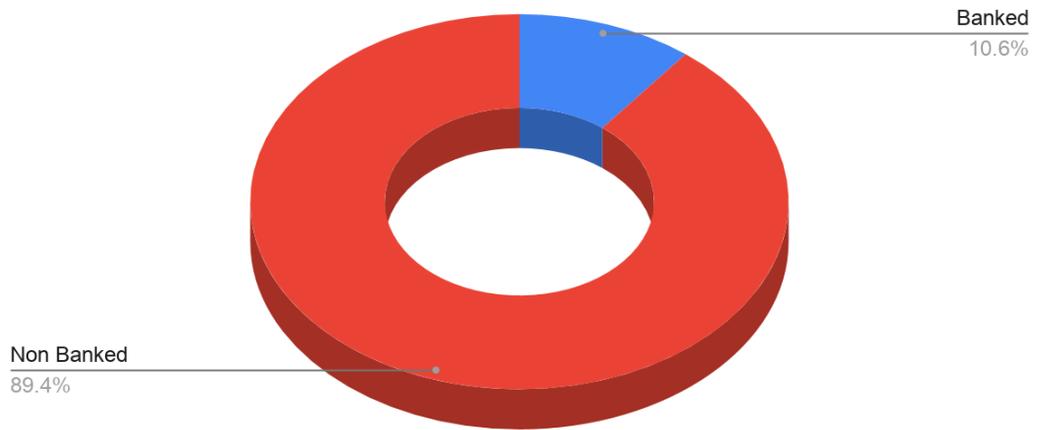
Smartphone Usages



Internet Literacy



Status of Bank Account



Appendix 3: Findings of Initial Research

