NAVIGATE
TOGETHER

Disciplined Decision-Making For
Migration Through A Meaningful
Conversation And Introspection

SARA KASHFI │ 964663

Supervisors:
Professor Margherita Pillan
Professor Stefana Maja Broadbent

You must choose one of the two pains.
The pain of discipline, or the pain of regret.

Jim Rohn

Acknowledgements

I begin this acknowledgment with heartfelt gratitude to my Supervisors Professor Pillan and Professor Broadbent for their valuable guidance and support. Their mentorship and expertise have been instrumental in shaping my research.

I would also like to extend my appreciation to Kamran Rahimian and Valentina Caiola for Their constructive feedback and insights, which have helped me ensure the quality and rigor of this thesis.

Lastly, I want to express my deep gratitude to my husband and family for their constant love, encouragement, and support. Without them, this journey would not have been possible.

Thank you all for your contributions and support, which have played a significant role in my academic and personal growth.

Table of Contents

Abstract

Decision-making about migration from Iran is complex and multi-factored, and recently turned into a social issue due to the economical and political situation of the country. This is particularly true for the country's young workforce and recently graduated university students. In the specific context, if the difficulties faced in the destination country as well as the present circumstances in the home country are not taken into consideration, the result of this decision will not be conscious. The process of gathering the information from reliable sources, one of the six steps of informed decision-making, was the focus of this study. This is due to the dearth of immigration resources that guide users to concentrate on all needs while considering migration.

In this thesis, the most helpful but also inaccurate source for the target audience has been determined, based on the literature analysis and field study, to be immigrants personal experiences. The research is carried out using design and its processes, and its objective is to provide a well-designed guided conversation between Iranian migrants and the target audience, and make them focuse on their internal causes influencing their migration decsion making. Based on the findings from the experiments and validations, the thesis's output is an interdisciplinary service that employs the psychological technique of NVC—nonviolent communication—as a useful way to guide these conversations. It also uses user experience design to create an engaging environment and data analysis to synthesize the information that is received. Last but not least, as a step toward the development of the service, a platform is created and prototyped as a focal point for this target group to discover their needs and create a guided conversation around those needs. Furthermore, the platform utilizes user inputted needs to collect and synthesize data, presenting it in a visual format. Ultimately, the service provides a more structured decision-making process for migration by prioritizing inner needs.

Keywords: Migration, Decision-Making, Personal Experiences, Awareness, Service design, Data visualization, Data Generation , Interaction, Guided Conversations

Il processo decisionale sull'emigrazione dall'Iran è complesso e multi-fattoriale, e di recente si è trasformato in una problematica sociale a causa della situazione economica e politica del Paese. Ciò è particolarmente sentito dalla forza lavoro più giovane del Paese e dagli studenti universitari appena laureati. In questo contesto specifico, se non si prendono in considerazione le difficoltà che si incontrano nel Paese di destinazione e le circostanze attuali nel Paese di origine, il risultato di questa decisione non sarà consapevole. Questo studio si è concentrato sul processo di raccolta di informazioni da fonti affidabili, una delle sei fasi del processo decisionale informato. Ciò è dovuto alla scarsità di risorse sull'immigrazione che guidano gli utenti a focalizzarsi su tutte le esigenze quando prendono in considerazione la migrazione.

In questa tesi, in base all'analisi della letteratura e allo studio sul campo, è stato determinato che la fonte più utile, ma anche più imprecisa per il pubblico di riferimento, sono le esperienze personali degli immigrati. La ricerca è stata condotta utilizzando il design e i suoi metodi, con l'obiettivo di fornire una conversazione guidata ben progettata tra gli immigrati iraniani e il target di riferimento, e di farli riflettere sulle cause interiori che influenzano le loro decisioni sulla migrazione. Sulla base dei riscontri ottenuti dagli esperimenti e dalle validazioni, il risultato della tesi è un servizio interdisciplinare che impiega la tecnica psicologica della comunicazione non violenta (NVC) come mezzo utile per guidare queste conversazioni. Inoltre, il servizio utilizza la progettazione dell'esperienza utente per creare un ambiente coinvolgente, e l'analisi dei dati per sintetizzare le informazioni ricevute. Infine, come passo verso lo sviluppo del servizio, viene creata e prototipata una piattaforma come centro di riferimento del target per scoprire i propri bisogni e creare una conversazione guidata su di essi. Inoltre, la piattaforma utilizza i bisogni inseriti dagli utenti per raccogliere e sintetizzare i dati, presentandoli in un formato visivo. In conclusione, il servizio fornisce un processo decisionale più strutturato per la migrazione, dando priorità alle esigenze interiori.

Parole chiave: Migrazione, Processo Decisionale, Esperienze personali, Consapevolezza, Design del Servizio, Visualizzazione dei Dati, Generazione Di Dati, Interazione, Conversazioni Guidate

1. INTRODUCTION

In this chapter the background of the research will be discussed along with the hypothesis and the research question will be identified.

1.1 Introduction

Being an Iranian girl who migrated from Iran to Italy, the urge to treat the following topics came by as I encountered how painstaking decision making for migration has been for me and my peers. Long discussions, researching through the internet and consulting with experts was not fulfilling our need of clarity whether migration has more drawbacks for us or advantages. and in the end left us with more uncertainties each time.The idea developed over a psychological approach called Non violent communication(NVC) offered by Rosenberg.

" NVC guides us in reframing how we express ourselves .instead of habitual, automatic reactions, our words become conscious responses based firmly on awareness of what we are perceiving, feeling, and wanting.In any exchange, we come to hear our own deeper needs.NVC trains us to observe carefully, and to be able to specify behaviors and conditions that are affecting us. We learn to identify and clearly articulate what we are concretely wanting in any given situation. The form is simple, yet powerfully transformative.(Rosenberg & Chopra, 2015)

Rosenberg made me delve deeper into the problems, motivated me to migrate and look at it more profoundly by considering my needs and feelings and finally helped me decide with a more structured and classified approach. I get to know that sometimes the answer to a question is on ourselves. And by reflecting on it decisions will be made more decisive.

Why and how should designers be tackling social issues?

According to Sleeswijk Visser, a university lecturer in industrial design, over the past ten years, the design profession has focused firmly on problems in everyday life, including social issues, The design discipline has broadened from traditional product design to the domain of social transformations (e.g. transforming healthcare; Jones and van Patter, 2008)

The advantage of designers is their optimism. They always see possibilities and are used to working with what is not there yet.(Sleeswijk Visser & Ernest, 2017) Therefore In the last two decades, design is increasingly addressing complex and social issues. (Nor-

man, 2010; Kimbell,2011; Dorst,2011; Sandersand Stappers,2014; Sustar and Mattelmä-ki, 2017) The high rate of migration in Iran is a social issue that needs to be addressed through New frameworks and ways of applying design methodologies with an academic research basis. (Székely, 2021)

In social design and service design, the domain is often complex, and projects typically involve multidisciplinary approaches. The complexity of design problems expands and the designer's practice is changing. (Kimbell, 2011). designers are now more involved in academic research and it makes the topic of research and design and its relation controversial.

The advantage of designers is their optimism. They always see possibilities, and are used to working with what is not there yet.(Sleeswijk Visser & Ernest, 2017) therefore In the last two decades design is increasingly addressing complex and social issues. (Norman, 2010; Kimbell,2011; Dorst,2011; Sandersand Stappers,2014; Sustar and Mattelmäki, 2017)High rate of migration in Iran is a social issue that needs to be addressed through New frameworks and ways of applying design methodologies with an academic research basis.(Székely, 2021)

In social design and service design the domain is often complex, and projects typically involve multidisciplinary approaches. The complexity of design problems expands and designer's practice is changing.(Kimbell, 2011).designers are now more involved in academic researchers and it makes the topic research and design and its relation controversial.

1.2 Background

The compiled data indicate that the total number of Iranian-born emigrants increased from about half a million people prior to the 1979 revolution to 3.1 million in 2019, corresponding to 1.3% and 3.8% of the country's population, respectively. (Azadi et al., 2020) this made exploring individual decision-making for migration a potential area in this country. Iran's ongoing migration trend can be attributed to the compounding effects of multiple factors. most notably: decades of poor governance, political repression, human rights abuses, bleak economic outlook, corruption, and socio-demographic factors.

(Azadi et al., 2020) however push and pulls factors of migration should be considered and recorded constantly; as for making such a multidimensional decision an inventory of personal wants, needs and feelings should also be considered.(Sleeswijk Visser & Ernest, 2017)

On the other hand, the phenomenon of migration in the country of Iran has been treated as a complex and multi-dimensional phenomenon in a scientific and comprehensive manner, Regardless of the quantitative and statistical look at the community of Iranians abroad, which is still a matter of controversy, unfortunately, few cognitive studies have been conducted on the qualitative characteristics of this community.(Salavati, 2021) Qualitative analysis is important because the rich detail shared by individuals is extremely powerful in thinking through complex systems and can illustrate how the implementation of our programs and policies are working in real life and ultimately lead to change. (Ivan, 2021) As important as collecting qualitative data is the way we communicate it.Today data visualization made possible to encode and reveal a mass of Information that we receive and cannot perceive or even notice every day. Data visualization help to understand the complex reality behind an unstructured sets of information like migration. It's also a plus Being able to tell stories with data as that's becoming ever more important in our world of increasing data and desire for data driven decision making.(Knaflic, 2015)

1.3 Problem

In order to structure and validate the social problem we will be addressing, literature reviews and user research have been conducted. Listed below are the main pain points Migration faces when making decisions.

First, a crucial step in the decision-making process is to clearly define the problem and investigate all the aspects of the decision. As another way of stating this, time should be spent identifying the question to which a solution must be offered, before coming up with different solutions. This step is even more crucial when dealing with complex and multidimensional decisions such as migration. Due to user research, we pointed out that this step would not be adequately addressed, especially in Iran.

Secondly, To make a rational migration decision, a wide range of reliable resources are at our fingertips; however, the variety of resources makes the decision-making process
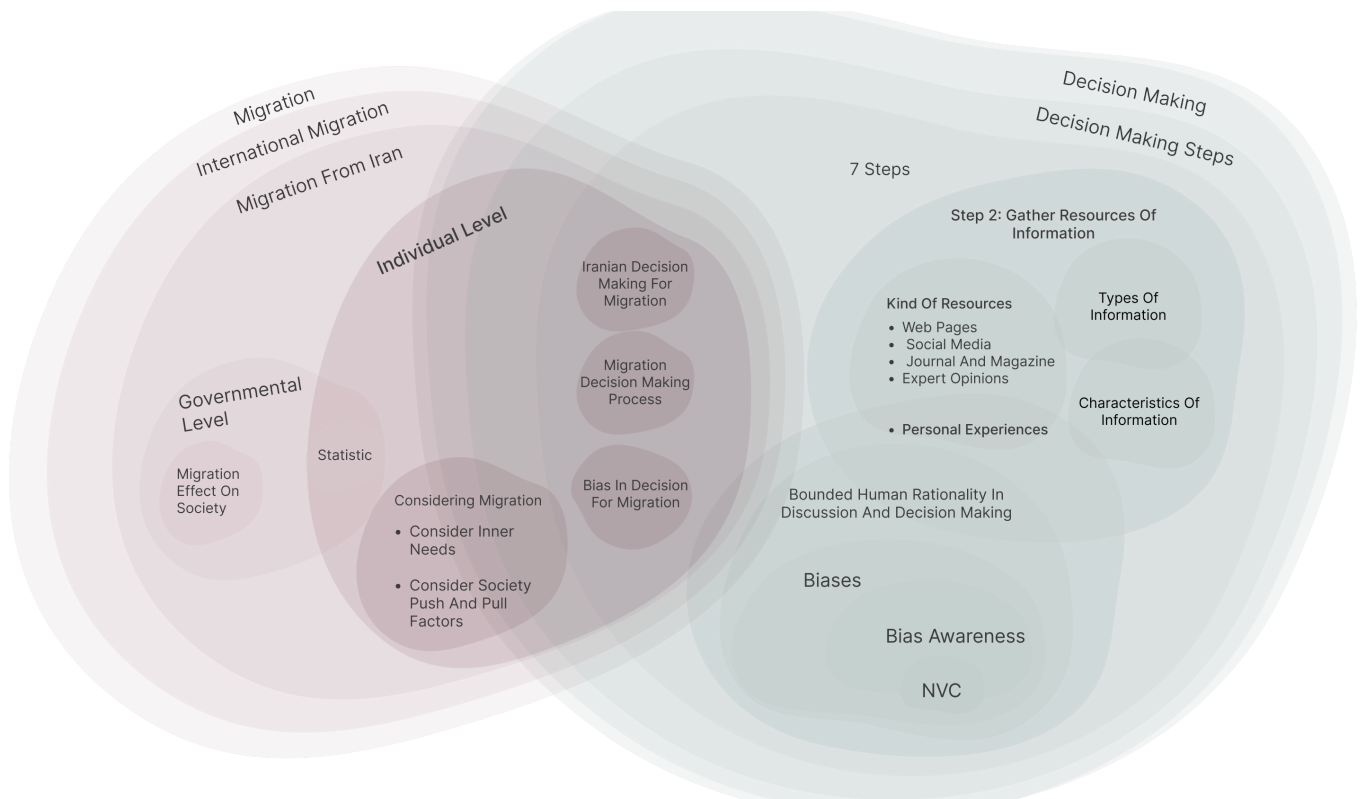
Fig.1 / Research Area

time-consuming and complex. To avoid being lost in the mass of available data, a structured and organized approach should be proposed for gathering data. (Figure 1)

Another problem that a mass of information is creating is that gathering more data won't reduce or resolve ambiguity. (Einhorn, 2020) it will draw our attention to the problem itself with an emphasis on the problems that have been mentioned more in the resources followed. To confront an ambiguous problem, we have to invert our decision-making: Instead of focusing on the problem itself, a decision needs to come from a clear understanding of needs, values, and goals. (Einhorn, 2021)

Another point is that large decisions are made up of multiple smaller decisions. When we try to keep all of those moving parts in our minds, we end up relying on faulty memory and a distracted mind. Our emotions can also get in the way, leading to biased thinking. (Einhorn, 2021)

At the governmental level, unfortunately, few cognitive studies have been conducted on the qualitative characteristics of this community, and therefore this potential resource has remained unused. It can be concluded that the resources of information for migration are not well adopted to help actors reflect on their own needs as they make this complex decision.

1.4 " How Might We" questions:

During a literature review and while defining the problem questions arose that iterated many times. The final How might we questions (HMW) are as follows:

How might we design a process of gathering and structuring information to motivate Actors who want to migrate to reflect on internal factors influencing Their migration decision-making?

The smaller HMW questions are:

• HMW makes a structured resource of information For people who want to migrate.?
• Hmw makes the process of gathering data From immigrants engaging and interactive.
• HMW makes a trustable, accessible, and elegant visualization for people who want to migrate.

1.5 Objective

This thesis will be a back-and-forth effort in trying to provide a valuable and trustable source of information for the one who wants to decide about migration to Iran. We will conduct 3 main investigations in this study:

1. Identify the most valuable set of information to collect in order to facilitate migration decisions.
2. Understanding current sources of information affecting decision-making for migration and examining their advantages and disadvantages.
3. Identify various ways to collect and synthesize data about migration in a more engaging manner.
4. Develop a more reliable, accessible, and elegant way of communicating migration data with data visualization factors.
5- Finding the best medium to share and exchange information about migration with the final target audience

1.6 Hypothesis of Thesis Outcome

The outcomes of the research can come on 5 different levels with impact relevant for different actors. These levels are immediately usable implemented solutions, concepts to be worked out in local contexts; guidelines to develop new solutions; contextual knowledge covering all local projects about how future thinking manifests itself in our society; and finally theoretical knowledge. (Sleeswijk Visser & Ernest, 2017) the outcome of this research is stated below

Outcome	Such as	For Whom
1- KNOWLEDGE	Not Provided	Not provided
2- CONTEXTUAL KNOWLEDGE	Not Provided	Not provided
3- GUIDLINE	We can make better choices if we make inventory of **our personal wants and needs** with a structured and systematic approach of keeping record of them.	**A guide for** Migration consultants with clients trying to decide whether to migrate or not
4- CONCEPT	a process of collect and synthesize migration data that can help who migrated a reflect on their previous path.	**For anyone** who wants to reflect on the decision they made
5- SOLUTION	A Platform that by adding and filtering different variables will share specific migration data set and improve personal information sharing experiences.	For everyone who has migration thoughts or concerns with decision making for migration , and looking for a reliable source of information.

Fig.2 / Thesis Outcome

1.7 Target Audience

To begin introducing the Target audience is worth mentioning that As the inputs to the platform become more diverse, the validity of the output increases. The platform will become more trustworthy and accessible to a broader audience if it gathers data from an array of sources. In this thesis, however, the goal is to make the process of gathering and communicating migration data more valuable and valid. To validate it with less effort and in a shorter period, we restricted our target audience.

The target audience in the stage of deciding on migration

As a result of several factors, the Iranian-born who wish to migrate from Iran was selected as a major target audience, first of all, because migration rates in Iran are high, and secondly, because there are few qualitative data available about migration factors in this region, making it an excellent opportunity to investigate.

Each year, approximately 1.8 million Iranians migrate abroad. However, due to the variety of factors that contribute to migration, we tend to focus initially on those who are at the beginning of their process of migration and want, as desires and values will be considered at this stage, and the actor is assessing the feasibility and desirability of his dreams. in Iran, due to political reasons

The target audience in terms of visa type or aim of migration and age

Migration can have multiple and overlapping reasons; however, What is critical for us is to focus on the ones who have the intention of migrating for the long term and want to apply for a student visa and then change it to any form of permanent residency. Their main intention is to leave their home country due to the political, social, and economic situation in Iran. The student visa was chosen firstly due to its accessibility to these target audiences and also because it is perceived as the cheapest and easiest way of migrating among Iranians, especially for those who already have a bachelor's degree or are getting one.in conclusion, our target audiences are the ones who are considering migration with an age range of 20–34 years old (the age of achieving a bachelor's degree)— due to time and resource limitations in this thesis research. Other variables such as relationship status, migration status, gender, and destination country co are not restricted but will be taken into account as variables in data collecting.

2. LITERATURE REVIEW

In the first chapter. The definition of migration and global migration at the individual level is covered In the following, decision-making will be discussed together with various information sources involved in decision-making generally, their classification, characteristics, and biases. With the introduction of strategies for overcoming biases in decision-making such NVC psychological approach, the relationship between decision-making and migration will be examined at the end of the literature review.

2.1 Migration

The generally permanent relocation of individuals, families, and groups to new geographic places is referred to as "population migration." Migration tends to be across longer distances, either within or between countries, in contrast to shorter-distance residential mobility, which is dominated by housing-related transfers. The majority of people migrate at some point in their life, and the underlying factors that affect migration decisions vary greatly. (Rees, 2009)migration is a phenomenon resulting from the interaction of domestic and international pushing and pulling forces. Therefore, in its analysis and management, the combined effect of these forces should be considered. (Salavati, 2021)

2.1.1 Immigration or Emigration / Choice of words

When talking about migration, the choice of words is important. While immigration means for an individual or a family to move to a new country from their country of origin with due formalities at the embassy, the word migration denotes the act of moving from one place to another, within a country or across borders, for people or birds, and usually refers not to a single individual or family but a larger demographic. In other words, you "migrate from" a place and "immigrate to" another.

2.1.2 Migration types based on location

There are various ways to differentiate types of migration. Here 4 different categories were introduced. Moving within a state, nation, or continent is known as internal migration. Moving to a different state, nation, or continent is known as external migration. return migration is returning to your place of origin and seasonal migration is relocating seasonally or in response to labor or environmental factors. As external migration is within the research area of this thesis it will be discussed more.

External Migration

International migration is the movement of people across international borders for the purpose of settlement. According to the latest available statistics (2021 AD), the world's immigrant population in 2020 AD is 281 million people, which is 3.6% of the

world's population. International migrants change their usual place of residence from one country to another. The United Nations suggests that the degree of permanence of the migration should be measured over a 12-month period so that shorter stays in another country are not classified as permanent international migration. When passengers arrive in a country, they are asked whether they intend to stay for less than 3 months, classifying them as visitors; for between 3 months and 12 months, classifying them as short-term migrants; or for 12 months or more, classifying them as long-term migrants. (Rees, 2009)

External Migration and Student Visa type

As the target audience was chosen among Iranians who want to migrate using a student Visa, Here we will present migration statistics about the Iranian student migration rate and its effect on society. and highlight the necessity of having qualitative data along with quantitative data.

The number of Iranian-born students enrolled in international universities has reached a record high of 130,000 today. While the tendency of students to return to Iran has decreased from over 90% in 1979 to less than 10% today, there has been an increase over the past few decades in the ratio of graduate to undergraduate students. (Azadi et al., 2020). America, Turkey, Germany, Italy, and Canada are the five main destinations for Iranian students in the world.

In another research, The analysis of the statistics received from the Passport Office in the period of 2018 to August 2019 shows 56.6% of the "medal holders in the student Olympiads," 69.1% of the "members of the foundation," and 78.3% of the "one-thousand-thousand-nation-ranked" students have migrated to other countries.(Salavati, 2021) Given the growing political unpredictability and a deteriorating economy, the brain drain from Iran will probably pick up speed in the future. This will create students migrating a potential target audience for this thesis project.

External Migration effect at Individual Level

Emigration is a gray phenomenon that can have many positive and negative effects on the country of origin, destination, and individual immigrant. (Salavati, 2021) In this

research, the effect of migration at the individual level will be examined. Migration at the individual level will raise the issue of migration decision making which will be more discussed in the next chapter.

2.1.3 International Immigration From Iran

The population of Iranian immigrants in the world is 1.8 million people, which is 2.23% of Iran's population, according to the latest available statistics in 2020. (Salavati, 2021) The population of Iranian immigrants in the world was 820,000 in 1990, and this figure will reach 1.8 million in 2020. In fact, in the past 30 years, the population of Iranian immigrants has almost doubled. This makes it a potential area of research. According to the statistics of the United Nations, Germany, Sweden, the Netherlands, and France are the four countries in the European Union that currently host the largest number of immigrants born in Iran. Based on these statistics, in 2020, Germany is in first place with 152,590 immigrants born in Iran.

Drivers of international migration from Iran

People migrate for many reasons, ranging from security, demography, and human rights to poverty and climate change. Push factors are the reasons people leave a country. Pull factors are the reason they move to a particular country. There are three major push and pull factors. The main push and pull factors of migration are Socio-political factors, Demographic, economic factors, and Environmental factors. Here these drivers of the decision will be discussed specifically in the country of Iran.

In this section, we provide an overview of the multitude of factors that collectively shape the environment in which Iranians make their migration decisions and discuss how these structural forces may evolve in the future. a wide range of economic, environmental, demographic, social, and political factors. Depending on how they impact people's migration decisions, the drivers of migration can be categorized into four broad groups, namely predisposing, proximate, precipitate, and mediating (Bakewellb et al., 2018)

Predisposing drivers are structural forces that affect migration decisions but are static or change very slowly over time or multiple decades.. such as income disparities between developing and developed countries, Lack of democratic institutions (e.g., free and multiparty elections), crackdowns on civil society, the mandatory hijab, pressure on religious

minorities, draconian interventions in various aspects of relationships between men and women, and homophobia.

Proximate drivers are those that, compared with predisposing factors, evolve over relatively shorter periods and more directly affect migration decisions. Examples of proximate factors include periods of economic stagnation, chronic environmental issues such as water shortage and air pollution, intensification of social and political repression such as the spread of corruption, and the erosion of social capital over a time period of several years.
Precipitating drivers are those that are linked to specific events that could trigger migration, such as natural disasters, war, financial crises, and government crackdowns.

Another important event that gave rise to the migration of university professors and their families from Iran was the regime's cultural revolution (1980–1983), which was an effort towards the Islamification of universities through academic cleansing and modification of curriculum (Amanat, 2017). Also, the ability of Iranian universities to contribute to the development of the country has been undermined by the short-sightedness of the state's research policies. (Sadeh et al., 2019)

Other precipitating events that are among the causes of large flows of migrants from Iran were the government's crackdown on major protests during the past two decades and also The economic sanctions imposed on Iran in 2012 and 2018 in response to its nuclear program, reducing government revenue, increasing international transaction costs, and, in some cases, disrupting industrial production by interrupting the supply of imported intermediate goods. Sanctions also intensify the sense of hopelessness in society and sporadic financial shocks (Azadi et al., 2020)

Finally, mediating intervening factors that function as the infrastructure for migration, both figuratively and literally. They play an important role in creating aspirations for, and actualization of, migration., such as means of transportation, consular services, and the availability of information about the benefits and drawbacks of migration from family or community networks. (Azadi et al., 2020)

The improvements in the availability, specificity, and reliability of information regarding the various steps of migration and its potential outcomes for the would-be migrants are profoundly transforming the migration landscape and culture in Iran. the stock of current

migrants (the cascade effect) and improved access to means of communication, particularly the internet. the current generation of would-be migrants in Iran have significantly larger networks of friends and family abroad. Figure 3 provides a list of the drivers of migration in Iran for each of the four classes discussed.

Category	Drivers of Migration
Predisposing (evolve over very long term)	Lower per capita income compared to advanced economies
	Social and political repression, violation of human rights, and religious persecution
	Low quality of education compared to the developed countries
	Rise of labor mobility, urbanization, individualism, and secularism
Proximate (evolve over long term)	Economic stagnation, chronic unemployment, and bleak economic outlook
	Decay of the government institutions (state, the rule of law, and accountability)
	Loss of social capital, prevalence of endemic corruption and crime
	Environmental challenges in large cities, particularly air pollution
Precipitating (events)	Iran-Iraq war, 1980–1988
	Academic cleansing program (officially cultural revolution) of 1980–1983
	Government crackdown on dissent in protests of 1999, 2009, 2017–2018, and 2019
	Major economic sanctions imposed in 2012 and 2018
	State's poor response to natural disasters in recent years
	Monetary shocks (bouts of currency devaluation, very high inflation)
Mediating (catalysts)	Increase in internet penetration
	Increase in number of friends and family abroad for potential migrants

Fig.3 / Major drivers of migration from Iran

Research Gaps for the country of Iran

Many years have passed since the topic of immigration became a public and sensitive issue in the country of Iran. However, during these years, the phenomenon of migration has been treated as a complex and multi-dimensional phenomenon in a scientific and comprehensive manner, and its different dimensions are still unknown. This prevents the formation of a theoretical consensus and a constructive discourse regarding the phenomenon of immigration among policymakers, the scientific community, and the general public. (Salavati, 2021) The destructive effects of reproducing the cycle of ignorance, lack of planning, and inaction in the field of immigration, not only do not reduce or eliminate the adverse effects of immigration in the country, Rather, it is due to the loss of all benefits that this phenomenon can bring to the country.

It is true that there are studies showing quantitative data regarding Iranian migration, but

there is a lack of qualitative data addressing the needs and insertion of Iranian migrants on a personal level rather than on a social or governmental level. Studies give a good overview of statistics and trends but do not create enough empathy for the subject matter.

In general, the nature of international displacement and migrations is such that the statistics and information about international immigrants are among the rarest and at the same time the most expensive international data, and in order to access them, many structural and content problems are faced by researchers in the field of studies. Because according to the cross-border movement of people and the change of place of residence, the change of the reason for residence, for example from education to work, the change of the period of residence from temporary to permanent, the change of citizenship status and other changes and developments in this field, the preparation of recorded statistics and information is difficult to be regular in this field.

Why is gathering information for migration is hard and valuable?

It should be kept in mind that reducing the migration management in the country to the preparation and publication of quantitative migration statistics and focusing only on the quantitative increase or decrease of the level of migration from the country and neglecting the quality of the outgoing human resources is another serious damage to this field. following a quantitative approach to the challenge of immigration in the country not only does not help much to solve this challenge in the country, but also deviates from and neglects the necessity of targeted policy making, paying special attention to maintaining quality human resources and also improving the quality and effectiveness of the implementation of such programs. In fact, in addition to quantitative studies, the country needs deep qualitative studies, especially in the field of understanding the root and reasons of migration, the behavior of different immigrant groups, including elites, athletes, artists, doctors, nurses, and other categories of immigrants in the country. Regardless of the quantitative and statistical look at the community of Iranians abroad, which is still a matter of controversy, unfortunately, few cognitive studies have been conducted on the qualitative characteristics of this community. For example, we still have the least information about the cultural, social, and economic characteristics of the first generation of Iranians abroad, and our level of knowledge

Why is it important to gather qualitative data about migration?

about the second and third generations and their vision of Iran is close to zero. Therefore, the huge economic and social capacities of this community of several million people remain unknown and the least help has been received from this community for the territorial development of Iran.(Salavati, 2021)

2.2 Decision-making

The process of choosing a course of action from a variety of options in order to achieve a desired result can be characterized as decision-making. Making decisions serves to guide people's behavior and commitment toward a future objective. It involves dedicating the organization's resources to a specific plan of action that is believed to be adequate and capable of reaching a specific goal. (Ayat, 2019)

The entire decision-making process is dependent upon the right information being available to the right people at the right times. (The Decision-Making Process, n.d.)

2.2.1 Steps of Decision-making

For many years, economists created theories and models based on the idea that individuals make difficult decisions using just logic and reason. Their advice was essential in creating a model of the best decision-making procedure for times when we are presented with crucial options and have the luxury of time to consider them carefully. An optimal decision-making procedure for this important subject is outlined in the next six steps. (Gino et al., 2016)

1. Define the problem: The decision needs to be clearly defined. We frequently make mistakes when faced with a decision by viewing issues too narrowly. We must develop the ability to recognize the bigger difficulties that our choices bring up. For instance, selecting a migration need is a larger choice of where to migrate.

2- Gather information: Before you make a choice, gather some important information about what is required, the best sources of information, and how to obtain it. Both internal and external "labor" go into this step. Some knowledge is internal; you'll look for it by performing a self-evaluation. Other information comes from other sources, such as the internet, books, other people, and other sources.

3 . Identify Alternatives: We often don't take enough time to consider all of the options. Continue looking for alternatives up until the expense of the quest outweighs the benefit of further knowledge. In this step, you will list all possible and desirable alternatives. (The Decision-Making Process, n.d.)

4. Identify relevant criteria and weigh the criteria: You must list all the factors that are important to you for each of your options in order to make the best choice. (Gino et al., 2016) Determine whether each option would satisfy or otherwise address the need that was established in Step 1. You'll start to favor particular options as you go through this challenging internal process—those that seem to have a better chance of helping you achieve your goal. Put the options in priority order based on your personal value system. (Dartmouth, n.d.)

5. Evaluate each alternative on each criterion: By carefully evaluating the potential out-comes of each alternative across the criteria you've specified, you can determine how well your choices will help you achieve your goals.

6. Choose the best choice: choose the option that best fulfills the qualities you value. You can find out which choice you rate the highest by adding the weighted rankings for each possibility.

After defining the decision-making process starts with gathering information. As mentioned in the second step of the decision making Collecting information improves the knowledge position of a decision-maker and increases the effectiveness of the final decision(Voorberg, 2021)to start with some of the resources of information and their characteristics described as follows.

Gather Information

To better undrstand the second phase of decision-making for migration A wide range of Resources is available. Here some resources for gathering information and their types, followed by a list of standards for judging the quality of such resources, will be identified.

Types of Information

There are different categories to define sources of information. When talking about information about migration, it was important to define the characteristics of the information received. different types of information:

• **Factual:** The definition of factual information is information that is based solely on facts. This is a short and non-explanatory statement. Factual information can be found in reference books such as encyclopedias and almanacs. You can also find it in governmental statistics such as the U.S. Census. Example: Mount Magazine is the highest point in Arkansas.

Analytical: Analytical information is the interpretation of factual information. What does Factual information mean? What does it imply? This is the type of information that researchers generate in their studies. Analytical information is mostly found in books and journals. Example: Based on crash statistics, Arkansas State Police designated the road as dangerous.

• **Subjective**: Information that solely comes from one point of view is said to be subjective. Opinions are arbitrary. Subjective information is virtually always available in places where factual information is not. Books, periodicals, websites, and book reviews all contain it. Example: I hate Arkansas' hot, humid summers!

• **Objective:** Information that may be interpreted from various angles and presents all sides of an issue is said to be objective. Finding unbiased knowledge can be done by consulting reference materials. Newspapers with fair and impartial reporting are also unbiased. Both Facts on File and Opposing Viewpoints are excellent neutral databases. Example: Some people enjoy Arkansas summers because they can travel, despite many disliking them.

Resources of Information

There are various sources of information available to help with or influence decision-making. Some of the common ones are namely: (Zongola, n.d.)

1. web pages: Through a browser, the Web enables users to access the majority of on-

line information. information received from these sources of information can be ranged from Factual to objective information. they can be either Factual to objective based on the context.

2. Personal experiences: Personal experience is an individual's first-hand knowledge. Commonly utilized in academic works like essays and research papers, as well as public speaking and interviews, this kind of proof and storytelling. Personal experience and professional experience are often contrasted; however, occasionally they overlap. (Spacey, 2022) Personal experiences are Subjective however if it turns into a two-fold debate it can be objective. We usually seek other person's opinions and refer to them as a source of information when we want to seek advice and consider their situation and compare with ours. And that brings up the topic of social comparison which is defined here briefly.

Social Comparison

One of the reasons we tend to Ask others for guidance and personal experience is due to this tendency to compare ourselves to other people which is called social comparison, and it is a natural way for us to evaluate how we're doing. When we compare ourselves to others who are better off than we are, it is called an upward social comparison. being inherently social creatures, social comparison is common between us. (Markman, 2022) while comparing through sharing personal experiences it is important to who we are comparing ourselves with firstly and secondly which is the content and objective we are comparing ourselves with. While comparing if we address the routes and causes of events such as inner needs, it can be more valuable to compare ourselves with superficial layers of someone else's life.

3. social media: Social media are interactive technologies that facilitate the creation and sharing of information, ideas, interests, and other forms of expression through virtual communities and networks. Social media serves as a vital source of information, as people are willing to share information on social media, and we can mine topic information from user-generated content on social media. (Westerman et al., 2014) different ways of information can be shared through Social media from factual to objective and subjective types of information.

4. Expert opinions (migration lawyer, consultant): A person with substantial knowledge or skill gained via research, experience, or employment in a certain field of study is re-

ferred to as an expert in a broader sense. Experts are consulted for guidance on various topics, although they don't necessarily agree on the specifics of a given field of study. As Expert opinions are based on research it is usually fractal however if personal insight is also integrated with it it can turn into a subjective type of information.

5. Journal and magazine articles: the journal is a collection of articles usually written by scholars in an academic or professional field. Journals and magazines are either factual or analytical sources of information.

Characteristics of information

To be able to measure if a set of information is valuable or not some factors should be considered as measure points. Valuable information has the following characteristics: (Evaluate Information and Its Sources Critically, n.d.)
Subjectivity: The value and usefulness of information are highly subjective because what is information for one person may not be for another.

• **Relevance:** Information is good only if it is relevant - that is, pertinent and meaningful to the decision maker. We can address information being relevant by asking "Do you need this information?"

• **Timeliness:** Information must be delivered at the right time and the right place to the right person. How up-to-date is the information? Can it be used for real-time reporting?
• **Accuracy:** Information must be free of errors because erroneous information can result in poor decisions and erode the confidence of users.
• **Correct information format:** Information must be in the right format to be useful to the decision-maker. Does the information contradict other trusted resources?
• **Completeness:** Information is said to be complete if the decision-maker can satisfactorily solve the problem at hand using that information.
• **Accessibility:** Information is useless if it is not readily accessible to decision-makers, in the desired format, when it is needed.

2.2.2 Bounded human rationality in Decision making

In a perfect world, every time we had to make a significant choice, we would all act rationally. Herbert Simon, however, refuted this notion in 1957 with his theory of bounded

rationality. "The human mind has a very limited capacity for generating and resolving complex issues,".There are two issues to consider regarding the theory of bounded ratio- nality. Firstly As Simon pointed out, the quantity and quality of information we consider while making judgments are constrained by the time and resources we have available, and it affects the decision-making a lot. This makes the second step of decision-making crucial. And secondly, the amount of knowledge we can actually use in our memory is somewhat limited and which brings us to the conclusion that we may have to rely on simple decision-making strategies instead. (Gino et al., 2016)

In the early 1970s, Amos Tversky and Daniel Kahneman introduced the term cognitive bias to describe people's systematic but flawed patterns of responses to judgment and decision problems. The study by Tversky and Kahneman focused on how people decide given their limited resources. These studies, which were motivated by the idea of bound- ed rationality, sought to pinpoint the precise limitations or biases connected to human judgment and decision-making. Tversky and Kahneman established a new field of study called behavioral decision research by methodically identifying certain, organized, and predictable biases that affect human judgment. (Gino et al., 2016) Since then, a lot of people have built on that work to find limitations in our decision-making in a variety of contexts. The overwhelming majority of research from businesses and lab trials shows that when making decisions, we unintentionally restrict our options and produce subop- timal outcomes.

More recently, psychologists Richard F. West and Keith E. Stanovich have tried to ex- plain why we don't approach big decisions systematically. They proposed that we handle information using either System 1 or System 2, In a study from a 2000 paper. Intuitive thought is a product of system 1 thinking, which is automatic, instinctual, and frequently emotive. System 1 thinking is an enormously useful technique that frees us from obsess- ing over insignificant choices and enables us to respond quickly when we are in danger. System 2 thinking, on the other hand, refers to conscious reasoning that is usually slow, laborious, explicit, and rational. System 2 thinking is exemplified by the six-step rational decision-making paradigm, which requires intentional consideration.
The human machine is constantly malfunctioning, even though it is amazing that we can switch between these two systems so effortlessly. Despite the fact that System 1 think- ing is crucial, a flood of experimental study data shows that we rely on it excessively, making sweeping generalizations when faced with complex problems that would benefit from deliberate System 2 reasoning. (Kahneman et al., 2021)

To provide just a few examples, we frequently give too much or too little weight to the advice of others. Such thinking is referred to by Herbert Simon as "satisfice": When making a significant decision, we look around until we discover a satisfying solution that merely suffices rather than considering all viable options. Satisficing is a helpful strategy for making decisions with minimal impact, but it might leave you feeling disappointed when it comes to choices that actually matter.

While making judgments, humans frequently use a variety of simplification techniques referred to as heuristics, sometimes known as mental shortcuts or rules of thumb. For instance, we base our conclusions and judgments on (1) our own prior experiences ("Experts are usually correct"), (2) stereotypes we have formed ("Ivy League graduates are smart"), (3) the degree to which the information supports our prior conclusions ("Price is a sign of quality"), and (4) our emotional reactions ("Sunshine puts me in a good mood"). (Gino et al., 2016)

Heuristics frequently help us make good or good-enough decisions by enabling us to deal with complexity in an effective manner. But as we shall see, heuristics can become biases when used improperly, clouding our judgment. These biases have certain patterns and are systematic and predictable. And almost all of us rely on them.

We must first become aware of the bias that affects our judgment in order to make more logical conclusions. Several distinct cognitive and emotional biases that can influence our decisions have been found by psychologists. (Gino et al., 2016)

Now returning to the steps of decision-making, we'll concentrate on seven of the most pervasive and sneaky of these.

Biases

Unconscious bias, also known as implicit bias, is a learned assumption, belief, or attitude that exists in the subconscious. Everyone has these biases and uses them as mental shortcuts for faster information processing.

Confirmation bias: When people utilize evidence to support their own opinions while ignoring or omitting any facts that would contradict them, this is known as confirmation bias. (Jahde, 2013)

Hallo Effect: The psychologist Edward Thorndike coined the phrase "halo effect" in the 1920s to describe the phenomenon wherein we form an overall favorable opinion of

someone due to one of their characteristics. Since we're forming an impression of a person based on limited information, this impact may cause us to unintentionally elevate others and affects our capacity for critical and objective thought.

Conformity bias: Conformity bias is similar to groupthink, which occurs when we change our opinions or behaviors to match that of the bigger group, even if it doesn't reflect our own opinions.

Affinity bias: Unconscious bias known as affinity bias makes people favor those who resemble them. (Affinity Bias Overview, n.d.)It may cause us to reach a variety of irrational conclusions and judgments. (Mason, 2022)

Contrast effect: When two things are compared to one another rather than being evaluated independently, a bias known as the contrast effect results. Once we begin to compare objects to one another, our viewpoint is changed. Instead of evaluating them on their own value, we frequently compare them to one another. (Caccavale, 2020)

Anchor bias: When we overly rely on the first piece of information we receive as an anchor to guide our decision-making, it is known as anchor bias. As a result, we have limited perspectives on things.

Perception Bias: When we judge or treat others based on frequently unreliable, too simple stereotypes and assumptions about the group they belong to, this is known as perception bias. Other biases like gender, age, and attractiveness may also be present.(Asana, 2022)for example, people who want to migrate, easily judge who migrated based on the city they live in.

Affect heuristic: Heuristics are cognitive shortcuts that speed up our decision-making. When we base our decisions on our emotions, the effect heuristic takes place. This might speed up the process, but it might not always be accurate or fair.

Recency bias: sometimes referred to as availability bias in behavioral economics, is the propensity for people to place more weight on recent information or events without taking their long-term objective probabilities into account. (RASURE, 2022)

Idiosyncratic rater bias: Idiosyncratic rater bias has an impact on how we assess other

people's performance. We frequently assign ratings to people based on our subjective interpretation of the assessment and our own ideas of what constitutes "success."(Asana, 2022)

In decision making Biases described above can happen, and multiple ways such as frameworks and question sets were introduced to confront these biases. What they have in common is that they reflect a light of awareness to underlying expectations, specifically the assumptions and judgments, and needs that guide our decision-making process. (Einhorn, 2022)

2.2.3 Bias Awareness

Everyone wants to think that they observe the world objectively. Nevertheless, as discussed previously, our perception of reality is actually clouded by bias, assumptions, and judgment. Confronting our underlying expectations, specifically the assumptions and judgments that guide our decision-making process, is one of the best methods to overcome bias. In another world being aware and Examining our own Biases is the first step toward understanding and transforming biases. To become aware of unconscious biases, we should start by educating ourselves Paying attention to thoughts and examining beliefs, values, and finally, needs can help you identify the assumptions one currently hold. (Acton, 2022)

We can make better choices if we make an inventory of our personal wants and needs for later life. There are various strategies to reflect on inner needs. However Nonviolent communication psychological approach was chosen due to many factors described below.

To take inventory of thoughts, beliefs, and values psychological approaches were introduced. By Marshall Rosenberg, an American psychologist, called Non-violent Communication (NVC). This approach helps raise awareness of one's assumptions and judgments about inner needs and, as a result, minimizes biases in making decisions. NVC helps to respond compassionately to oneself based on awareness of what users perceive, feel, and want. (Rosenberg & Chopra, 2015) The following is this approach in more detail.

Non-Violent communication

NVC is a way of communicating that was developed in the early 1960s (Rosenberg, 2002) In some communities, the process is known as Compassionate Communication with ourselves or others; the abbreviation NVC is used throughout this research to refer to Nonviolent or Compassionate Communication. (Rosenberg & Chopra, 2015) Despite the fact that it has been referred to NVC as "a language of compassion" or "a process of communication".it is more than a process or a language. On a deeper level, it serves as a constant prompt to keep our attention on a location where we have a higher chance of finding what we are looking for. NVC is developed as a way to train attention—to shine the light of consciousness—on places that have the potential to yield what we are seeking.(Violent Communication - Importance of NVC in Communication, n.d.)

It is based on the premise that everyone has the same fundamental needs and is compassionate by nature. This presumption is helpful in the NVC process because it enables communication to be focused on addressing an understandable human need, which can help people connect with one another.

NVC contains nothing new; all that has been integrated into NVC has been known for centuries. The intent is to remind us about what we already know about how we humans were meant to relate to one another and ourselves—and to assist us in living in a way that concretely manifests this knowledge.

NVC guides us in reframing how we express ourselves and hear others. Instead of habitual, automatic reactions, our words become conscious responses based firmly on awareness of what we are perceiving, feeling, and wanting. In any exchange, we come to hear our own deeper needs and those of others. NVC trains us to observe carefully, and to be able to specify behaviors and conditions that are affecting us. We learn to identify and clearly articulate what we are concretely wanting in any given situation. The form is simple, yet powerfully transformative. (Rosenberg & Chopra, 2015)

We learn the extent of our compassion when we put more effort into defining what is being seen, felt, and required than labeling and judgment.
On a deeper level, it serves as a constant reminder to keep our attention directed in the direction of the area where we have the best chances of finding what we are looking for.

The NVC Process

We start by watching what is actually going on in a situation. What are we seeing other people say or do that is either enriching or not enriching our lives? The key is to be able to express this observation without adding any judgment or evaluation. Next, we describe our feelings in response to this action: are we angry, hurt, terrified, happy, amused, or irritated? Then, in the third step, we describe our wants as they relate to the feelings we have noted. When we use NVC to eloquently and truthfully describe how we are, we do it with an awareness of these three elements. (Rosenberg & Chopra, 2015, page 21)

Four Components of NVC

NVC facilitates honest expression through the four components. The following four components will be used in the design process:

1. **Observations:** the obvious behaviors that we see that have an impact on our well-being.
2. **Feeling:** How we are feeling and what we are observing.
3. **Needs:** the wants, needs, and other factors that influence how we feel.
4. **Requests:** the specific activities that we request in order to enrich our lives.

2.3 Decision-making for migration

Now that a deep introduction to decision-making and Migration has been conducted, we sought to explain the correlation between migration and decision-making to understand how biases would affect decision-making for migration and which are migration decision-making steps.

2.3.1 Biases in Decision-making for migration

Migrating is no exception to the obstacles mentioned above, as it requires a well-structured process. Due to this, when making decisions about migration and generalizing, there is a risk of using System 1 instead of System 2. Four steps are suggested for overcoming biases that may arise when making decisions about migration and gather-

ing information, especially when seeking the personal experiences of others. We should first evaluate our intention to migrate and reflect on who we are inside. In the next step, we will structure the relevant data and information collected and align it with our inner needs. In addition, slowing down to engage in deliberate, less biased thinking will reduce the likelihood of taking mental shortcuts. Last but not least, we need to question and revise the information gathered and make sure it aligns with our inner needs and main intentions of moving abroad.

2.3.2 Migration decision-making process based on the Rubicon Model

We have introduced a theory here to help with understanding what the decision-making steps are in migration cases. Migration decision-making and behavior have been studied widely in the past decades, but still, the process of migration decision-making and behavior is not fully understood (Arango, 2000). The most important reason might be the high complexity of the phenomenon: structural factors interact with individual characteristics, social embedding, life-course events, and psychological characteristics. (Kley, 2010)First, it is important to establish the psychological Rubicon model in order to understand decision-making. This concept recommends categorizing the many stages of the decision-making process. There are often many factors taken into consideration during the Predicational phase of the decision-making process, but thoughts are readily abandoned again without suffering major consequences for subsequent intentions and behaviors. (Gollwitzer, 1996; Heckhausen, 1991)The first transition point at the end of the first phase is called the crossing of the Rubicon. The principle is to realize certain wishes and desires. They are changed into goals at the end of the pre-decision phase. The actor is then striving for making his or her goals come true. Therefore the making of concrete plans for certain behavior is an indicator of having decided to act in a certain
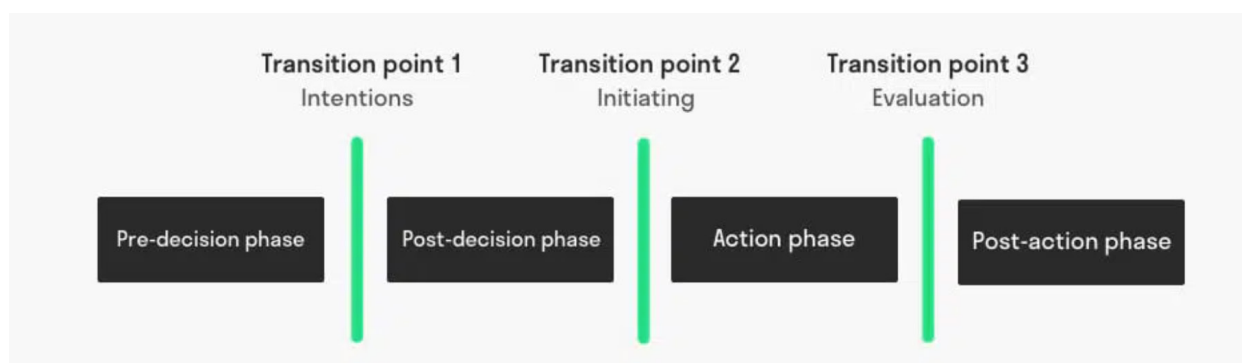

Fig.4 / Rubicon model

way. The pre-decisional phase is represented by considering migration, whereas the pre-actional phase is represented by planning it.

The Aim of this research is this phase in which no decision to act in a certain way has not been made. Because when entering the precautional phase, abandoning intentions or plans is costly, because it goes hand in hand with negative emotions and often damages self-respect. (Gollwitzer, 1996; Heckhausen, 1991) Therefore from the early stages of deciding for migration having a clear understanding of wishes, desires, or in another word the needs and wants is important and in the case of migration as a lot of needs and emotions are involved, a designed- meaningful process should be offered to guide people who wants to decide whether to migrate or not. A disciplined decision-making process, not individual genius, is the key to a sound strategy. (Kahneman et al., 2021)
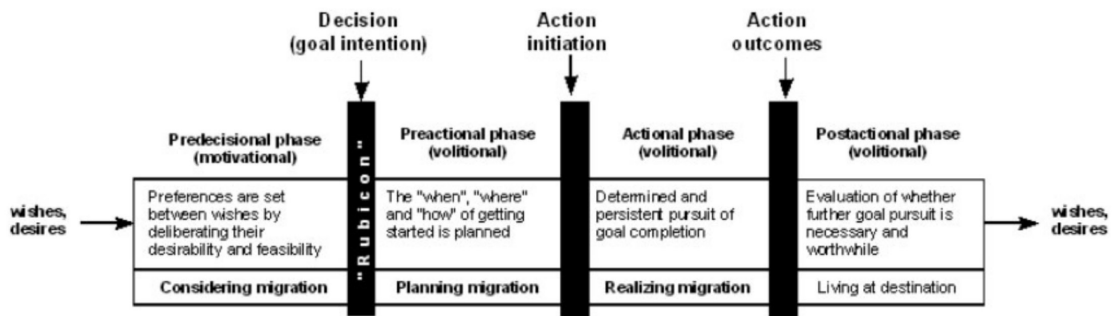

Fig.5 / Stages of MIgration process and action phases of the Rubicon model. Source: Scheme adpoted from heckausen,1991

3. RESEARCH

In this chapter firstly the methodology for approaching the research questions and the roadmap of the design process will be described. Then, field research and Design tools used will be explained. The final result will be introduced at the end of this chapter.

3.1 Research and design

For a long time, design and research have been considered two clearly distinct matters, the first related to industrial practice, the other to academic experiments. Now, in the last three or four decades, Design in its different expressions grew an academic basis, became a university-taught subject, and developed its own research culture. This occurrence brought to introduce research activities as a formal part of the design process, a practice known as research for Design, but also to make design activities and artifacts responsible for a substantial contribution to the process of generating and communicating knowledge, the designerly way of doing research, usually referred to as Research through Design (RtD) (Stappers and Giaccardi, 2014).in this research the design activities played a formative role in the generation of knowledge, typically actions that we'd recognize as design activities from one of the design professions, that depend on the professional skills of designers such as gaining an actionable understanding of a complex situation of decision making for migration, framing and reframing the problem may time, and iteratively developing prototypes that address it.

3.2 Design methodology

The Double Diamond design process, which is just one of many design thinking techniques, can be used as an effective illustration of a standardized methodology. The two diamonds reflect a process of engaging in more in-depth or broad analysis (divergent thinking), followed by targeted action (convergent thinking). This version follows a common procedure for working through a project, making it easily adaptable to most projects. (Gustafsson, 2019)

3.2.1 The Double Diamond Design Processs

The double diamond design process is a relatively new and well-known methodology. It was developed by the Design Council in 2005. An in-depth study of eleven global brands and the methods they use was conducted in 2007. The double diamond method was produced as "a simple graphical way of describing the design process.". (Design Council, 2007)
The four phases of the Double Diamond design process are: Discover, Define, Develop and Deliver (Design Council, 2007).

Discover

In the discovery phase, an idea or user need must be established. The actions taken in the Discover phase are meant to generate innovation and therefore involve a wide perspective and minimal formalization. (Frishammar, J. & Florén, H. 2010)."At this level, some research about migrations in different levels, decision-making, and data visualization has been conducted to get an overall view of the topic.

Define

In the defined phase, needs, problems, and ideas are focused toward end goals. The first quarter of the Double Diamond Design Method (Discover) ends in a brief, which the Define stage then examines, evaluates, changes, and refines into a project brief that is in line with corporate goals and interests. (Design Council, 2007). The main questions and topic of research were defined in this phase of design.

Develop

This phase and third quarter of the design process are intended for development, iteration, and testing (Design Council, 2007). Following the official sign-off, the project is now ready to be developed using such design methods as brainstorming, visualization, prototyping, testing, and creating scenarios (Design Council, 2007).

Deliver

Finalization of the product or service, production, and launch belong to this final phase of the design process. Although evaluation very much belongs throughout the development of a service or product, it is particularly noted in the "deliver" phase. Once products are in production, testing can be done both in the factory and in the intended environment. (Design Council, 2007).

The entire design process was started by defining migration and its different types, as well as decision-making and different theories around it. This helped me find the potential in migration from the country of Iran and find research gaps in this field. This was followed by deep research into decision-making obstacles and human limitations on one side, and on the other side, reasons and factors for migration from Iran were explored.

To diverge In the second phase, from a diverse set of information, the problem and "how might we" questions' were defined. In the developing steps of the design process, there was a back-and-forth process of gathering information through field research such as interviews, and discussions with experts, and redefining the problems and questions in more detail. The user research happened in this phase and multiple case studies were identified that correlated with the topic. After this phase, the idea of the service started to take shape, and different angles of the service were defined through maps and diagrams. Through the service, a platform for communicating and delivering data was designed, which covers a huge part of the service. User experience and user interface designs, along with prototyping, testing, and communication design of the platform, happened in the next steps.
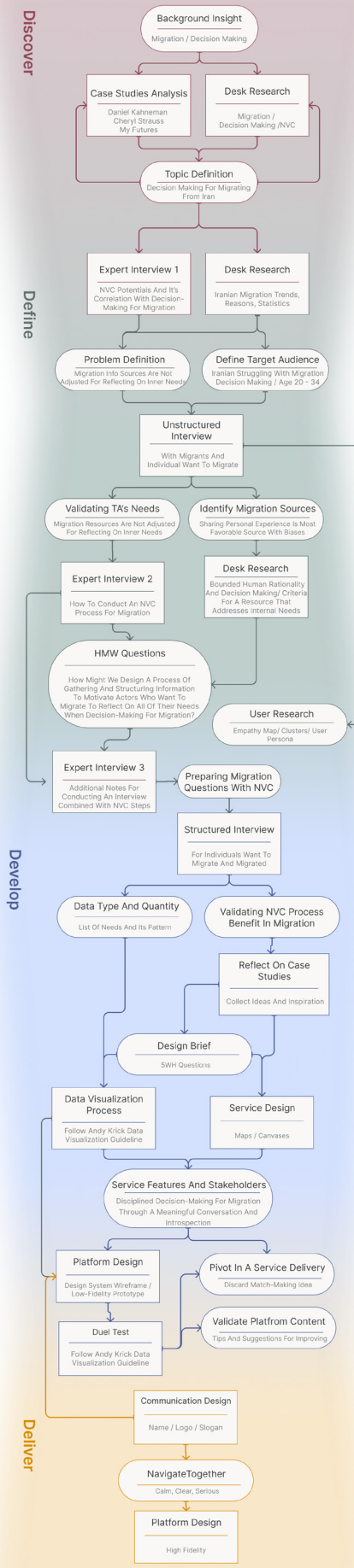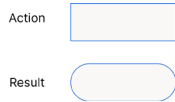

Fig.6 / Rsearch process

3.3 Field Research

The hypothesis and questions arising from the literature review were identified and listed and then through field research, the data were collected through a qualitative method. The objective of the field study in this chapter was to observe and interpret the subject of study in its natural environment and get to know the users. The conclusion of field research was identifying the user personas on one hand and in another hand to develop and identify the problem deeper with more details along with literature knowledge.

3.3.1 Discussions with NVC Expert

To gain a deeper understanding of the role of personal needs and values in decision-making, as well as the NVC structure and process, and finally to get answers to the questions arising from the literature review, three online discussions with NVC psychologist, Kamran Rahimian were conducted in different parts of the research. Dr. Rahimian is the translator of some of Rosenberg's books, such as Non-violent Communication and Start Being Real, and he was trained under the direct supervision of Rosenberg.

First Meeting Conclusion

As part of the first meeting, we discussed how to help users observe their situation without judgment and how to help them become connected to themselves to identify their feelings and find out if their needs have been met or not. In order to improve this experience, the following points were suggested:

• In the first phase of NVC, Observation, asking users to imagine they are looking at their situation through the lens of the camera can assist in making a separation between their judgment of reality and the actual.One of the ways to identify needs is to refer to one's wishes as they can be later translated into needs.
• It's not necessary to have a psychologist by your side for using NVC but it needs explanation and step by steps guidance.

Second Meeting Conclusion

Concerns were raised regarding the nature of NVC in the second session. Concerns

were raised about the validity of user-captured needs lists as sources of information. In qualitative research, the validity of the findings will be determined by the people who participate in the study. Additionally, since NVC encourages users to give from their hearts, the risk of receiving false information is minimized.

A second concern was the omission of the fourth phase of NVC, creating demand from the research process, and whether this would interfere with the approach. During this psychological process, different perceptions can occur based on needs, and it won't harm the entire process, as Dr. Rahimian explained.

While interviewing migrants about their first recollections of migration, there is the issue of whether or not to believe others' memories. Dr. Rahimian brought out the "Faulty Memory Theory" in order to address this. According to this hypothesis, we will make decisions based on the events we remember, rather than what actually occurred, since it represents our beliefs.

The requirement of having an NVC mentor while gathering needs based on his methodology was also reviewed, and as a consequence, we came to the conclusion that I could also manage the data collection sessions.

Third meeting Conclusion

The third session was more about implementing NVC. In this session, the concern regarding the effect of personality in NVC was brought up. As stated personality is not considered in NVC. As Marsha Rosenberg believes characteristics make people stable. Marshal wants fluidity and to be current, or to go with the flow of needs and emotions.

3.3.2 Unstructured Interviews

Unstructured interviews were arranged between two groups of people: first, the Iranians who migrate aged 25–28, and second, the Iranians who want to migrate aged 22–26 to another country. The aim of these interviews was to get familiar with each group's concerns regarding migration, identify obstacles, and find the gaps in international migration from Iran.

Interview with Iranian Migrants

In these unstructured sessions, four migrants, aged 25 to 28, who had migrated over-

seas, shared their opinions and insights on the topic. The interviewees were asked what pieces of information they think are necessary for someone wanting to migrate to be aware of and they shared their experience of someone approaching them to ask about their migration experience at least once. They talked about how sharing their personal experiences could guide those who have immigration thoughts and how it is possible to be improved. Some of their insight is quoted here.

" We should show the reality behind what's happening in migration." For example, taking a movie, film, or picture showing everyday life can be helpful data to share reality. I also believe sharing feelings and needs next to each photograph can make it more real " Kimia, 26 years old, migrated to Munich, Germany in 2020.
"People find me and ask about my experience since I came here. On the internet, we can't know clearly about culture, working environments, rental property conditions, etc. Migration really depends on the characteristics of the person who wants to migrate. for example, if he/she is too dependent on their family members, maybe it's better to reconsider moving abroad. When considering migration, a lot of factors and different circumstances are probable that make the experience different for each person." Ava, 25 years old, migrated to Milan, Italy in 2021

" We can have a simplification approach, like one of the psychological tests that tell your personality after asking some questions considering migration variables. This way we should have a designed process and a designed formula that can receive data, and have a usable and trustable output" Mahdad 25, migrating to the United States of America 2017

"The platform also needs to be designed in a way to receive data from people who want to migrate. they should be able to add data inside in order to be able to compare it with others who migrated" Farshad, 28 years old, migrated to Como, Italy in 2020 and returned to Iran after 2 years
During the interviews with Iranian migrated their experiences, and pain points in the migration decision-making were gathered and ideas emerged during an open discussion with them. The ideas will be discussed in the next chapter

Interview with Iranians who want to migrate

7 Iranian young adults, ages 22–26, were interviewed with a view to migrating to an-

other country. Unstructured interviews were conducted in order to discover a participant's approach and mental model when making migration decisions. In addition, references to gathering information, as well as their disadvantages and benefits, were also explored. In these discussions, it was also pertinent to see the target audience's approach to reducing the risk of taking a decision that was not in line with their beliefs and ultimately resulting in migration. Here are few points extracted from the interviews.

• During the past 8 years, their intention of migration has changed from studying to migrating for their basic rights and to satisfy their basic needs. Their decision was influenced by the political situation in Iran.

• Their first three references are mostly personal experiences, social media, and websites.

• Websites and social media channels can be useful resources for gathering information on applying for jobs, studying, and getting visas, as well as connecting with different people. A general overview of how to migrate. Most of the information in this resource is accurate, comprehensive, and easily accessible.

• Information received from personal experiences is more about living conditions and housing, migrants' level of satisfaction, cultural aspects of the country they are settling in, environment, quality of work or study, and working opportunities.

• All the participants agreed that when they gather information from personal experiences, they are aware that there can be biases or overgeneralizations, or cognitive errors.

• 3 of the participants mentioned that they usually seek help from those who have an insight into their personality. Because they can filter their experiences based on the characteristics they possess, they believe these people are more trustworthy.

• After discussions, the interviewees noticed they didn't look at the problem that leads to migration deeply, and they need to define the problem of leaving their country better before looking for a solution.

• When making decisions, they rely so much on their faulty memory and all of the intentions they keep in mind.

• Some motivations and introductions need to be prepared in order to guide a user to take an NVC approach during their decision-making for migration. It is hard to penetrate into the ones' beliefs of those who are thinking of migration for a couple of years. These people might not easily want to change and consider another approach of thinking about migration.

• Some people view migration as superficially and it might create problems after.

Personal experience, Main source of information

In the field research, the sources of information for migration were discussed in order to identify its characteristics the most used one and later were evaluated based on criteria introduced in the literature review, and three measuring statuses defining the probability of occurrence of each were identified with following keyword: imminent, probable, and impossible. Imminent for the most probable to happen and impossible for the least possibility to take place.

Unstructured interviews revealed that the first source of information for migration is sharing personal experiences, which is subjective. According to this graph, this source was cited as the most popular source for data collection for migration. However, it is also the least complete, accurate, and timely for the following reasons. First of all, it's incomplete and not straightforward most of the time as the discussion around this topic can take too long and some major subjects remain unspoken.

Another perspective is that this conversation is usually shallow and superficial since it does not focus on the deeper needs of migrants. It also doesn't trigger their personal values during discussion and focuses on generalizations a lot in-

Migration references based on interviews are Respectively

Source	What information	Which type of infromation	probability of being Subjectivity (imminent / Probable / Impossible)	probability of being Relevance (imminent / Probable / Impossible)	probability of being Timeliness (imminent / Probable / Impossible)	probability of being Accuracy (imminent / Probable / Impossible)	probability of being Completeness (imminent / Probable / Impossible)
1- personal experiences	Living conditions and housing, migrants' level of satisfaction, cultural aspects of the country they are settling in, environment, quality of work or study, and working opportunities.	Subjactive	imminent (+)	imminent (+)	imminent (+)	Impossible (+)	Impossible (+)
2- social media	Process of applying for jobs studying, Process of getting visas; Living conditions and housing, migrants' level of satisfaction ,....	Factual; Subjactive/ Objective	Probable (+); Impossible (+)	imminent (+)	imminent (+)	imminent (+)	imminent (+)
3- websites	Process of applying for jobs studying, Process of getting visas	Factual	Probable (+); Impossible (+)	imminent (+)	imminent (+)	imminent (+)	imminent (+)
4- Experts (migration lawyer, consultant)	Process of applying for jobs studying, Process of getting visas	Factual /Analytical	imminent (+)	imminent (+)	imminent (+)	imminent (+)	imminent (+)

Fig.7 / Sources of Information Evaluation

stead. Secondly, and more importantly, such conversations are not accurate, as they can be full of errors and biased judgments as discussed in the literature review. The interviewees who wanted to migrate mentioned that they were aware that they cannot rely only on one person's opinion as it might not be valid enough. Finally, there is a possibility that the information shared during this conversation may not be updated enough, so it's not timely. The positive point about looking at sharing personal experience as a resource is that.

3.3.3 User Research

To understand the user personas of the platform, user research has been conducted. It first started with field research through discussion with experts and unstructured interviews with both groups of people. The following is the result of field research and the conclusion through empathy maps and user cluster and lastly user persona.

Empathy Map

To understand the beliefs and attitudes of our target audience the Empathy Map was created that is divided into 4 blocks: what the user hears and sees, what thinks, what does, and what feels. most of the information gathered is firstly based on the unstructured interview and literate and later became more complete based on the structured interview.

The list of feelings was chosen based on the NVC feelings list. What users feel is divided into negative feelings which are mostly hesitant and baffled about migration decisions, feeling insecure, hopeless, and displeased with the current situation in Iran. They think the situation is unstable and therefore they need to migrate to make it more balanced and meet their basic needs. They are anxious about the life they should leave behind like their community of friends and family. so they try to gather information from their friends and families who have migration experiences. In some cases, they look through social media especially Instagram to find influencers who are sharing their life stories about migration or ask for consultants from agencies to help with deciding on migration countries. The information they hear or what they usually see after these proceedings are mostly friends' successful experiences abroad which makes them passionate, optimistic, and engrossed about migration, and in return hearing the unsuccessful career experience

of friends in Iran makes them feel displeased.They constantly encounter Disappointing news about the economical and political situation in Iran and feel pity for themselves even if they are in a reasonable situation.

Based on the field research conducted and especially after introducing new approaches of decision-making about migration, two clusters of users were identified.
The Denial group is the ones that are close to new approaches of decision-making that stimulate their System 2 of thinking. They have made their decision about migration and it's unpleasant for them to revise it. They usually either do not share their concerns

Feel

Negative
- Hesitant
- Insecure
- Hopeless
- Discouraged
- Turbulent
- Displeased
- Baffled
- Anxious
- Pity

Positive
- Passionate
- Optimistic
- Stimulated
- Engrossed

Think

- Iran situation is unstable to live in
- By migration we can meet our basic needs
- Almost everyone who migrated became successful in their career life
- Escape from Iran
- Can I build community again after migration?

Hear & See

- Friend's successful life in social medias such as instagram
- Friend's disappointing work experience in Iran
- Disappointing news about economical situation in Iran
- Economic situation of other Iranian people

Do

- Gather information through personal experience of other migrant
- Following migration influencers of their preferred country
- Follow Iran's news constantly
- consult with migration consultancy about destination country

Fig.8 / Empathy Map

User Clusters

with others or consult with like-minded people around them. Acceptance groups are open to new guidelines or pieces of information to question their decision about migration. They intend to consult with people who migrated constantly in order to raise their awareness about migration. And are willing to try new ways of approaching their decision and the information they have gathered. (Figure 9)

Fig.9 / Cluster of Users

Denial / Close

I think it's not possible to change your decision.

I think this approach won't change people's choice of migration.

It's Painful to delve deep in my needs.

Acceptance / Open

Maybe I was biased when making decision.

I need to use this approach for My decisions.

Where can I learn about this approach.
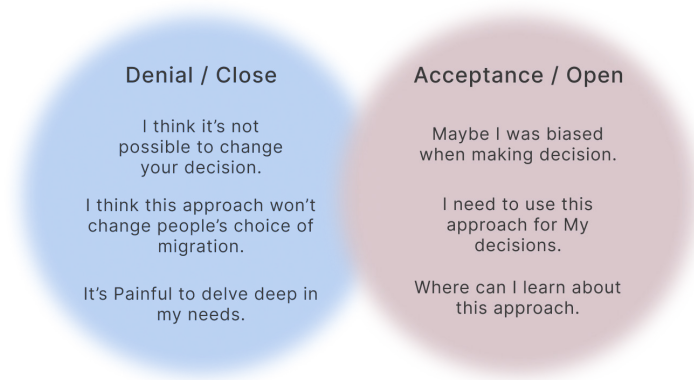
User Persona

Probably the main user of the application is 24 years old man who just finished his bachelor's degree at an Iranian university. He started to build a career life for himself and look for different ways and opportunities and struggling to decide whether to migrate or not. Therefore he consults with his seniors, family, and friends. He is lost in information and news received about migration and is not sure which is accurate and which is more relevant in his case. Therefore his goal is to receive a reliable source of information and a way to validate the information he receives. he sometimes decides based on his guts and feelings and gets influenced by news easily. He is insecure and hesitant about the situation he is in.

Fig.10 / User personas

USER PERSONA

Taha, 24 Years Old

BIO

Taha, is a 25-year-old man, has obtained his bachelor's degree in Iran. Due to the challenging economic and political conditions in his home country, he is contemplating moving to a more developed nation to pursue further studies and establish his career. . During these conversations, he has received some helpful information, but he has also encountered some off-topic discussions and unreliable sources.

PERSONALITY

Feeling   Thinking

Insecure   Confident

GOALS

- Identify which country is better to pursue further studies and establish his career
- Receive reliable information about migration
- have a reference to validate information receive from personal experiences

FRUSTRATION

- Challenging economic and political conditions in IRAN
- Some of his basic needs are unfulfilled in Iran
- Uncertain about migrating
- Struggling to determine which country to migrate to and if migration is the right decision for me
- not sure if information gather is correct, or if it is correct for me

3.3.4 Structured Interviews

To test how NVC can raise awareness about migration and put the theory gathered in the literature review into practice, an unstructured interview has been conducted for both groups of the target audience using NVC steps, The ones who have migration thoughts and Iranian migrated. Some part of the process was different for each group which will be discussed in the following paragraphs.

The meeting took place via google meet individually to first of all keep the privacy of the information that will be shared and secondly. To guide the interview session A step-by-step process was designed with the help OF Kamran Rahimian, an NVC expert, in the collaborative board of Figjam and users were asked to reach it using the shared link, for the ones who were not familiar with Fig jam, a screen was shared, and they were guided to fill in the information.

In the first step, NVC was introduced to both groups of interviews and the aim of using NVC for this thesis research was explained. This helped users to become familiar with the steps they need to take for the interview beforehand and get familiar with non-violent communication and its usage while making decisions about migration. (figure 11)

∿ INTRODUCTION ∿

WHEN IT COMES TO **MAKE DECISION FOR MIGRATION** THERE ARE A LOT OF **QUESTIONS** TO ANSWER

WE START SEARCHING FOR **ANSWERS**

PERSONAL EXPERIENCES ARE AMONG OUR IMPORTANT SOURCE OF INFORMATION

but

THERE ARE **BIASES** IN DISCUSSION BOUT MIGRATION

WE CAN IMPROVE THIS BY **ASKING RIGHT QUESTIONS** AND **TARGETING RIGHT ANSWER**

NVC IS A PHYSIOLOGICAL APPROACH THAT **TAKE INVENTORY OF OUR PERSONAL WANTS AND NEEDS** FOR MAKING A BETTER DECISION WITH A DISCIPLINED APPROACH

IT HAS 4 STEPS WE ARE GOING TO EXPLORE AS FOLLOWS
1- **OBSERVATION WITHOUT JUDGMENT**
2 - **SEE FEELINGS**
3 - **FIND NEEDS**
4 - **TAKE ACTION**

Fig.11 / Unstructured Interview Introduction

In the next step, attendees were asked for personal information that could affect their migration decision, such as their destination country, relationship status, gender, age, and degree they intend to pursue. For migrants, two more questions were added about their migration status and the country they are living in. (figure 12)

Fig.12 / unstructured Interview personal Information

From this point on, the NVC process officially began, and the questions were separated for both groups, who migrated and who wanted to migrate. As shown in the graph, attendees were made aware of the time period they needed to observe their situation to find their feelings and needs during the process of answering NVC questions. The Iranians who migrated have been considered exploring two periods: before they migrated when they were considering whether to migrate and after they migrated, when they were considering their current situation. In order to make comparisons between migration needs during these periods, these times were chosen. Moreover, the current situation of Iranians who are considering migration was discussed in terms of their decision-making. The NVC steps are the same for both groups. Firstly to help users become connected with themselves and try to observe the situation they want to identify their needs in, they were asked to observe the period they are in by telling stories about events and happenings or

memories regarding migration de-cision-making or their current ev-eryday life. Secondly, they will be provided with a list of needs and feelings that was adopted from the NVC official website. The list was provided for users to make the process of identifying needs and feelings more straightforward. From both groups of positive and negative feelings, attendees will identify the feelings they are ex-periencing or have experienced in the process of decision-making about migration. (figure 13)

The first and second stages of NVC help users to delve deep into their personal situation and ob-serve what circumstances they are actually dealing with and put the -light of consciousness- on places that have the potential to make the process of Decision-making for migration with awareness. In the last step, attendees were asked to identify the satisfied and unsatis-fied needs that motivate them to

Who?	
Iranian Wants To Migrate	Iranian Who Migrated

Questions Time Zone		
Present: Before Migration	Past: Before Migration	Present: After Migration

What To Ask ?		
Observe Their Situation: While Engaging With Migration Decision Making Process	Observe Their Situation: First Time Remember Thinking And Deciding About Migration	Observe Their Situation: Their Current After Migration Life
Identify Feelings: While Engaging With Migration Decision Making Process	Identify Feelings: First Time Remember Thinking And Deciding About Migration	Identify Feelings: Their Current After Migration Life
Find Needs: • Satisfied Needs: While Engaging With Migration Decision Making Process • UnSatisfied Needs: While Engaging With Migration Decision Making Process	Find Needs: • Satisfied Needs: First Time Remember Thinking And Deciding About Migration • UnSatisfied Needs: First Time Remember Thinking And Deciding About Migration	Find Needs: • Satisfied Needs: Their Current After Migration Life • UnSatisfied Needs: Their Current After Migration Life

Fig.13 / Unstructured Interview NVC Questions

migrate or prevent them from migrating. .both needs are important as they bring atten-tion to what user have and lack and makes the situation more realistic. Users were also asked to rank their demands in this phase according to how urgently they are needed.

The result of Structured Interview using NVC as a Tool

The interviewees were invited to provide comments on the interviewing procedure

at the conclusion of these sessions. They were asked how it influenced their decision to migrate.

The people who were having trouble expressing their migration thoughts said that they were already aware of their reasons for moving but didn't know how to articulate it or what its causes were. By identifying unmet needs in Iran that motivate migrants, this NVC process made clear what needs migrants lack and want to satisfy by migrating. The importance of being aware of unmet needs is that it helps us identify the direction of our intentions and helps create multiple demands that can address those needs rather than insisting on one solution, in our case moving to abroad.

We as humans are more influenced by what we lack and therefore by guiding users to identify Needs that are satisfied in Iran, we tend to draw their attention to what they possess currently, this way they would also pay attention to needs that might lose by moving abroad and help make a more rational decision.

Seeing both types of needs next to each other lets users watch them carefully, compare them and weigh each to have a better insight.

During the interview session, migrants reported that the process assisted them in retrospectively reflecting upon their migration journey, enabling them to gain a deeper understanding of their motivations for leaving their home country, their losses and gains, and to compare their past and present circumstances. This reflective process serves as a reminder of their reasons for migrating and provides an opportunity to evaluate the efficacy of their decision. Consequently, migrants can identify and articulate their unmet needs, leading to an increased level of satisfaction with their migration experience or to reconsider their future plans, including whether to remain in the destination country or return to their country of origin.

The interview also facilitated the identification of the data types to be collected on the platform and the patterns of migration-related needs that can be discerned from them. While prior hypotheses existed concerning the frequency and diversity of such needs, a small quantity of data was collected during the interview process, which aided in the design of data visualization tools. These data were examined and explored during the data visualization design phase, enabling a wider perspective and comprehensive understanding of the full range of possibilities offered by the user-generated data.

An important insight that emerged from the interview was that although following Nonviolent Communication (NVC) steps can facilitate introspection and increase awareness of

inner needs, creating a list of needs and visualizing them may not suffice for the purpose of this research, which aimed to enhance the sharing of personal migration experiences between migrants and individuals considering migration in one hand and in another hand needs keywords can be perceived differently in different circumstances and each need's keyword required further explanation. As a result of these interviews, the notion of a guided conversation based on a list of needs and data visualization emerged. Subsequently, efforts were made to devise a new solution for facilitating guided conversations between migrants and individuals who have migrated.

Furthermore, it should be noted that the questions formulated based on NVC were tested, refined, and integrated into the design phase.

3.4 Case Studies

In assessing decision-making for migration, sharing personal experiences, and matchmaking platforms, a number of cases were examined to gain greater insight into the real-life application of methods and tools of making such complex decisions.

3.4.1 MyFutures

The MyFutures Research project (2016-2018) focuses on how people can imagine, plan, and act toward their personal possible futures. MyFuture states that if we expect people to prepare for their future, we should offer them a well-designed, meaningful conversation. And we can make better choices if we make an inventory of our personal wants and needs for later life.

It is not easy to think about your own future. However, the MyFutures project shows that there are opportunities to support people in doing so. "It's all about having the right conversation at the right time, and that is something we can design." Sharing personal experiences being a form of conversation, I found this case study useful to explore. (Sleeswijk Visser & Ernest, 2017)

MyFutures introduces a guideline called "meaningful conversation about the future." The followings are the guidelines and steps:

Two modes of thinking in a conversation

Two ways of thinking, reflection, and perspective, are crucial for a meaningful discussion about the potential futures of individual participants. Finding out what personal values, needs, and desires are most important to someone requires reflection on the past. According to MyFuture, "making a plan for a further future is not so much comparing the here-and-now to another situation, but first and foremost it requires a fresh look at what you find important in life," or in other words, underlying needs and values And perspective and imagination are needed to envision different possible futures. . Therefore, This approach is consistent with the NVC psychological approach described in the literature review.
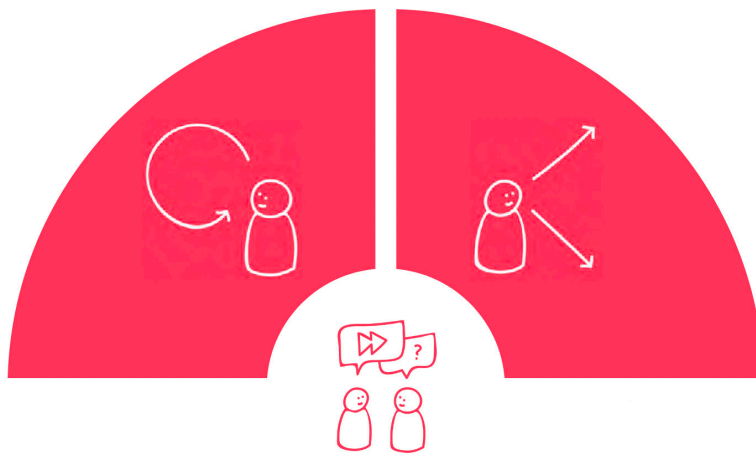
Fig.14 / Two ways of thinling about future: Reflection ,Perspective

The six elements of a conversation

The following six elements were designed to stimulate both reflections as well as perspective and imagination in a conversation about the future. These guidelines can be a helpful source of inspiration for the ideation phase of this thesis's research.

Trigger: Thinking about the future requires a trigger. a trigger The absence of a trigger to talk about the future is a reason people postpone doing so. Two ways to Recognise the moments in which people are more open to thinking about the future and use these moments

Others: It is during conversations with others that we are forced to clarify our thoughts. In such a conversation we can compare, clarify and develop our thoughts. In discussing
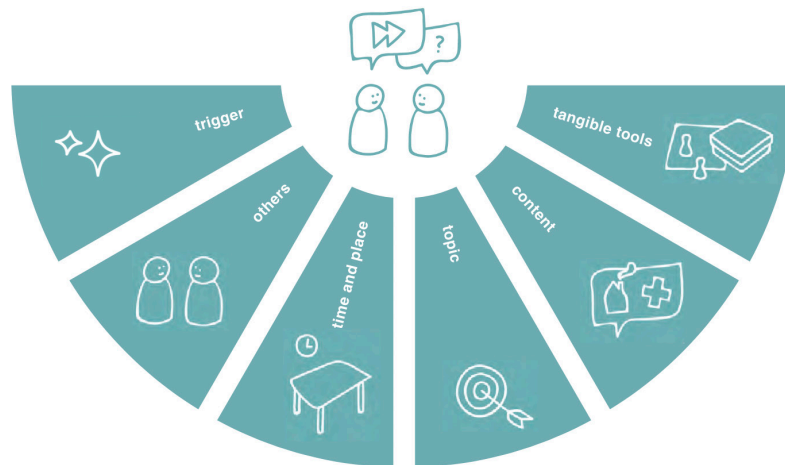
Fig.15 / 6 elements of a Conversation

together the future, and asking questions, that future gets shaped and has more personal relevance. There are two things to consider in discussions. Firstly, Make sure that the participants' thoughts are made explicit, by having them put their thoughts into words and Decide on who should be part of the conversation.

Time and place: If we want to design a conversation about possible futures, we have to actively assign a time and a place for it.

Topic and purpose: If we do want to explore possible personal futures in a conversation, it can help to first of all Choose a specific topic about the future and secondly decide on the conversation's purpose and structure. Some tools can be helpful in making sure all the topics were discussed.

Content: Content can be provided in the form of existing, relevant information secondly it can be given content in the form of a comparison as the imagination can be helped along with good examples from others, and, lastly, y, provided content in the form of new stimulating facts.

Tangible Tools: Personally relevant conversation about possible futures doesn't just spontaneously happen on one hand and on the other hand, it can be impossible to keep all of the needs, and values in mind as we end up relying on faulty memory and a distracted mind. Tools help to support the conversation with tangible tools. using tangible tools has multiple benefits, first of all, Coherence and an overview nearly always result from making knowledge visible and accessible. Secondly, A tangible object can serve as a neutral conversation guide. For instance, if we want to discuss five topics, and there are

five 'things' on the table. that need to be discussed, and lastly, owning a tangible object can ensure a greater personal involvement with the topic.Sharing personal experiences about migration is a form of conversation about the future. When a person who has migration thoughts in mind starts discussing it with some who migrated, a conversation will be taken place between them that already has a trigger and others involved. This case study is inspirational as it guides how we can foster and improve this conversation by adding time and place, topic, content, and tangible tools to improve it.

3.4.2 Data gathering and analyzing platform | Carbon Footprint

Another case study regarding data visualization that gathers data from the user which answers some specific questions and later on gives the user the result is the "Carbon Footprint Calculator" by the World Wildlife Fund (WWF) with following website: https://footprint.wwf.org.uk/#/results/ .

The Carbon Footprint Calculator is an online tool that allows users to estimate their carbon footprint based on their lifestyle choices. The tool asks users a series of questions about their energy use, transportation, and food choices, among other things, and uses that information to calculate their carbon footprint.

Once the user has answered all of the questions, the tool generates a visual representation of the user's carbon footprint, along with suggestions for how to reduce it. The visual representation may take the form of a graph or chart that shows the breakdown of the user's carbon footprint by category, or it may show a comparison of the user's carbon footprint to the average for their country or region.
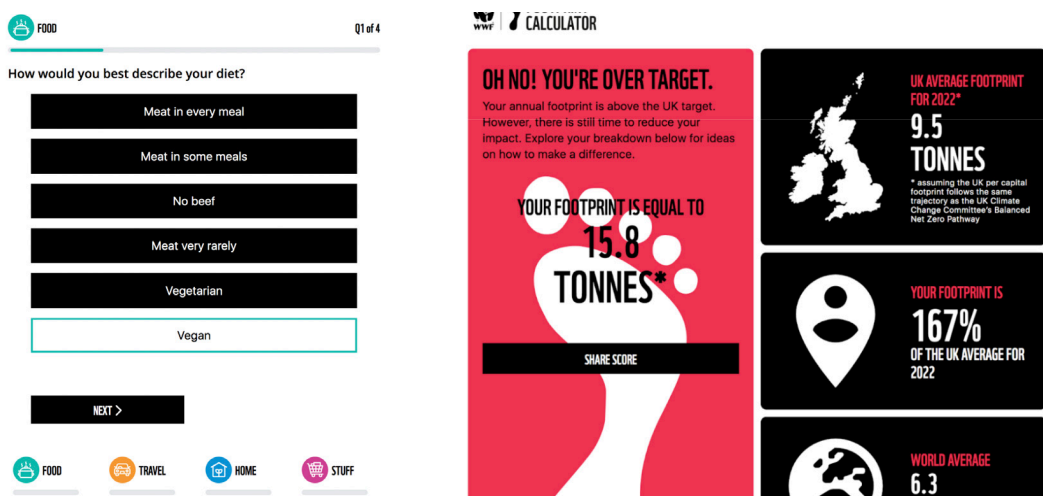
Fig.16 / Carbon Footprint Website

By providing users with a visual representation of their carbon footprint, the Carbon Footprint Calculator helps users to better understand the impact of their lifestyle choices on the environment. The tool also provides practical suggestions for reducing one's carbon footprint, which can help users to take action to reduce their environmental impact.

This case study was the Carbon Footprint Calculator is a powerful example of data visualization that gathers data from the user and uses it to generate a visual representation of their carbon footprint, along with practical suggestions for reducing it.

3.5 Concept

During field research in the unstructured interview and in the literature review while exploring human-bounded rationality and in the conclusion as soon as the problems regarding decision-making for migration were identified, ideas were shaped slowly. Ideas and the chosen one will be described in this chapter.

3.5.1 First Ideas

To begin with, the project was designed to assist those who wanted to immigrate with the migration decision-making process. We noticed that evaluating this can be quite difficult as decision-making has many steps and identifying the problem can be hard for each individual. We then decided to analyze the decision-making steps and narrowed them down to the pain points involved in the migration decision-making process.

According to the literature review, resources for gathering information have a direct impact on the decision outcome, and based on my field research, it was found that personal experiences are the main sources of information for individuals who are considering migration, and their decision-making is impacted in many ways as a result. There has been research on improving the sharing of personal experiences as a resource since then. In the course of the research process, ideas emerged with the aim of resolving and improving personal experience sharing. some of the ideas around this topic were:

Create a set of designed Questions based on NVC: helps become deeper in raising awareness about biases that might happen while thinking about migration or through

discussions about it.

Create a data visualized platform for migration qualitative data: This idea was mentioned due to creating a valuable resource of information on personal needs. And provide a comparison environment based on the resources/

Create a matching system for connecting who migrated to who wants to migrate: This idea emerged to connect people based on their needs and values and not as they usually connect to discuss migration. This idea was later defined due to the pain points and obstacles identified .

3.5.2 Design Brief

In this chapter, I briefly describe the final idea, the service, and its details. This design brief proposes a service that provides a platform for Iranians who are considering migration to another country. The platform will use a Non-violent communication approach (NVC) to connect these individuals with Iranian migrants and provide reliable advice and personal experiences. The data visualization chart will provide a realistic insight into migrants' needs and help prevent myths and biases while making decisions about migration. The platform will gather data on migrants' needs and use this information to guide them to have a better conversation as well as riching data visualization chart.

What?

A platform that helps those who want to migrate to activate their system 2 of thinking while making decisions about migration, become connected with their inner self, and find their needs and values regarding migration. The platform can also be used as a connection tool with the ones who migrated to make the process of sharing and receiving information about migration straightforward, complete, and deeper.

The platform can also be used by migrants to raise their awareness about the needs upon which their migration decision was based, and in the event of dissatisfaction create requests for unsatisfied needs until they are satisfied.

The platform can give the user the chance to see the needs and values of whom migrated from a wider point of view as it can visualize the needs and values of migrants after collecting data from them. It can also be filtered based on the country, age, gender, mi-

gration status, etc.. . this qualitative data can be useful for whoever wants to explore the topic of migration at the individual level first and then the social level.

How?

The platform uses a psychological approach called NVC for collecting needs from both groups of migrants and individuals who have migration thoughts through the prepared questionnaires. The platform will be also used as a guided tool for improving discussion between migrants and who are considering migration. The system will use the information gathered through its users to sort the information and visualize them.

Who?

This platform has three groups of target audiences: firstly, those who have migration thoughts and consider leaving the country of Iran but are struggling with making this decision and need to share and receive advice from others. Secondly, the ones who migrated and want to revise their decision by answering the questionnaire or form prepared in the platform and at the same time share their experiences with those who want to migrate. The third group that can benefit from this platform would be the ones who need the data resulting from these questionnaires to use in research or answering this social phenomenon Such as data scientists or generally politicians.

Where?

A web-based platform for identifying needs and connecting with others whom they share the same values and needs with. Part of the communication will take place on the website and the other parts in the preferred platform provide voice calling.

When?

Those who want to migrate can use it when they're contemplating migration but have trouble making a decision. It can also be utilized by those who migrated if they regret doing so, if they need to change their minds, or if they want to share their experience.

3.6 Service Design

Since we decided to expand the scope of the project and introduce it as a service, it is necessary to explain the service in more detail. Some tools have been used as follows to introduce a different aspect of the service.

3.6.1 Business Model Canvas

The service's key proposition consists of two components. The first aims to enhance decision-making related to migration by increasing awareness and drawing attention to personal needs. To this end, the system provides a series of specific psychological questions through a website, as well as data visualization tools that offer insights into the needs of migrants on a larger scale. The second component seeks to foster the sharing of personal migration experiences among migrants. To facilitate this conversation, the system provides an online collaborative board that guides individuals who are connected and willing to discuss migration together the platform provides tools to support the conversation, making knowledge visible and accessible, and serves as a neutral conversation guide. To conclude, The final aim and value that the service brings is to develop migration decision-making.

The information produced by the system is expected to hold significant value for various stakeholders such as data scientists, migration consultants, and migration observatories with a focus on Iran. These entities may choose to invest in the website or pay to access the qualitative data that has been collected, thus becoming key partners of the service.

In order to develop the platform, a team comprising design, IT, and public relations professionals will be required to work on various aspects such as the user interface, user experience, and website development while simultaneously sorting the gathered data and undertaking advertising and promotional activities. The human resource team will also assist with employee-related issues. Although data gathering will be automated through the platform, a support team consisting of NVC specialists will be available to assist users facing difficulties.

Given that the customers are likely to access the website on a few occasions for information, the customer-vendor relationship is expected to be short-term. While the service is automated to some extent through data sorting, presentation, and match-making

Key Partners

- Data Scientist

- Migration Consultant Institutions

- Migration Influencers And Content Producers

- Iran Migration Observatory

- Statistical Center Of Iran

Key Activities

- Support In Gathering Data
- Sorting And Visualizing Data
- Provide Hints And Guides For Improving Conversation
- Design UI/Ux Of Website
- Support And Consultants

Key Resources

Human:
- IT Team
- Design Team
- PR Team
- NVC Consultants

Intelectual:
- Data
- Website Domain
- Brand Identity

Key Propositions

- Improve Sharing Personal Experiences

- Raise Awareness Of Personal Inner Needs

- Trustable Environment For Discovering Correlation Between Different Migration Circumstances And Personal Needs

- Develop Migration Decision Making

Customer Relationships

- Short-Term

- Automated Service (Data Visualization/Match Making System)

- Co-Creation

Channels

Platform Cognition
- Migration Institutes
- Social Media (Instagram, Twitter, Telegram)
- NVC Communit
- Statistical Center Social Media

After Sale
- Email

Customer Segments

- Iranian Wants To Migrate

- Iranian Migrated

Cost Structure

- Value Driven Business

- Web Development, Web Support , Web Design ,Consultants Salary

Revenue Streams

- Donations From Iran Migration Observatory

- Referring NVC Consulting Fee

Fig.17 / Serivce Business Model Canvas

systems, customer engagement will be sought through questions to create information, thereby extending the service beyond a traditional customer-vendor relationship and co-creating value with the customers.

The service will reach customers through various channels such as social media platforms and migration institutions that provide services to customers. Iranian migration influencer pages and the Iran migration observatory can aid in introducing the service to their large follower base. The website and email will be used to maintain a continued relationship with customers.

This service is primarily focused on creating value for customers rather than the cost implications. However, revenue streams will include selling the collected data to communities such as the Iran migration observatory and referring clients to NVC psychologists with consulting fees as a potential source of income.

3.6.2 Value Proposition Canvases and pivot on part of the project

This Part explains the value proposition canvas which aims to explore the gain and pain associated with a service. During filling the value proposition canvas, some pains were identified which lead to some changes in the service value propositions. This will be discussed as follow.

The canvas comprises two segments that relate to the value that the service brings to its users and the tasks of the users, including their gain and pain. This paper focuses on the value segment of the canvas and discusses the tasks of the users and the gain and pain associated with the service.

The main product the service provides is its web domain with two main sections. Data representation of migrants' needs before and after migration and contribution section in which the user will answer some questions and receive services in return such as a list of all needs categorized, a match-making system to migrants which later omitted from the service values, and a collaborative board for a guided conversation with migrants and as an extra service, a consultant with NVC experts.

Service Gain creator and Gains

The system provides migration-related data visualizations, allowing users to contrib-

ute to filling out-migration data and sharing their experiences through the website. Users are divided into two categories: people who have migrated and wish to share their experiences, and those who have concerns about migration and seek tailored advice from the platform. Both user groups are expected to perform similar tasks, but their motivation, pain, and gain may differ.

The NVC questionnaire is utilized on the platform, allowing both groups to gain a comprehensive understanding of their migration-related needs. Data visualization with a filtering option enables users to see requirements in various migration scenarios, and a list of all needs is prepared based on users' answers at the end of their questionnaire to avoid overlooking migration-related aspects. A second benefit of the service is guided discussion, which uses a communicative board designed for the internet to ensure that all discussions remain on track. As a spiritual value, the service provides an impression of genuineness and kindness for the migrant, as it guides and helps them.

Pain Points and Pain Reliever:

The service aims to resolve several pain points, including a lack of knowledge about NVC, which can lead to difficulties in answering questions correctly, particularly during the observation and feelings-finding phase, which may
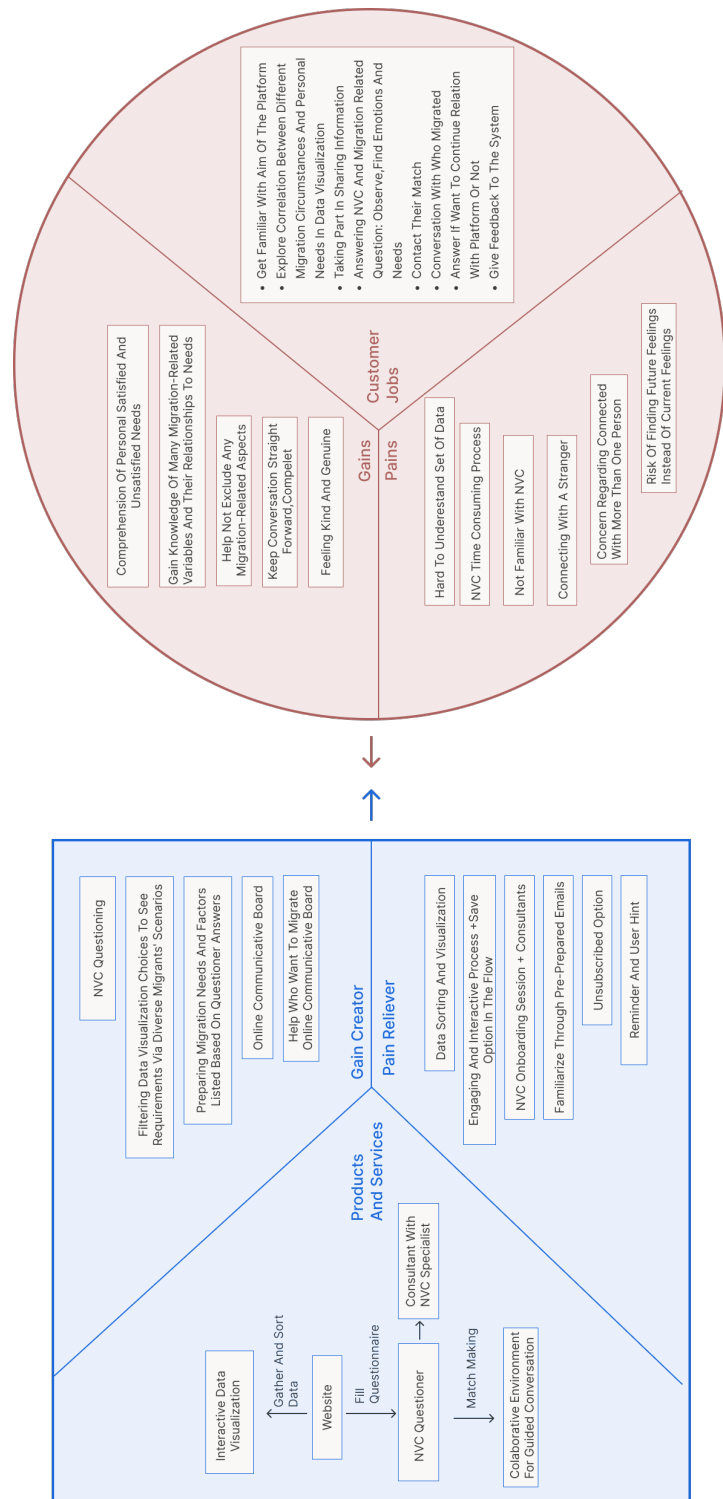
Fig.18 / Old Value propsition map

cause confusion. To overcome this issue, a clear introduction to NVC will be provided in advance, and the email address of an NVC consultant will be added to the website's contact list. Additionally, data will be presented in well-designed data visualization to enhance the process of reading and understanding data sets. Furthermore, efforts will be made to design questionnaires that leave a minimal impression of time passing, as the process of filling them out can be time-consuming.

This service had a major obstacle in the form of the match-making feature, which reduced motivation to use the platform for discussing migration. Despite its ability to connect users with similar values and needs, it had challenges creating trust between two strangers, a lack of motivation for migrants to help strangers, and the inability to see different needs by matching only with people who share those needs. As a first step, some pain relievers were offered, including contacting users via pre-prepared emails and providing preliminary information about users in order to build trust and motivate them. Through interviews with users, it was determined that the problem was not well addressed by the solutions offered. Hence, we should pivot at this stage and omit the matchmaking. As a result, instead of match-making,

Fig.19 / Iterated Value propsition map

users who are already connected via other channels will bring their discussion to this platform. As an example, users who are considering migration will ask one of the migrants they are familiar with to visit the website and follow the NVC process and subsequently discuss with a user through the collaborative board.

Conclusion:

The value proposition canvas is a useful tool for exploring the gain and pain associated with a service. The service discussed here provides migration-related data visualizations, enables users to contribute to filling out migration data, and shares their experiences through the website. The pain points associated with the service are also discussed, and efforts were made to overcome these issues. The canvas's value segment provides insight into user tasks, gains, and pains, which are crucial in creating a successful service that meets the needs of its users.

3.6.3 Stakeholders Map and Eco System Map

In the present discourse, a stakeholder map is presented which delineates the various stakeholders involved in the provision of a particular service. The stakeholders are categorized into three concentric circles based on their proximity to the service providers. The inner circle represents the service providers themselves, while the next level includes the direct stakeholders who directly benefit from the service. The outermost circle comprises of indirect stakeholders who may be affected by the service, albeit indirectly. It is emphasized that the presence and active participation of all stakeholders is indispensable for ensuring the optimal performance of the service.

The service providers of the system are headquarters, a team o financial, human resources and office, designers, and developers. Together with an NVC specialist as a part-time mentor, will make the system come to life. Some of these stakeholders will be in touch with direct stakeholders and some are working internally only within the company. Direct stakeholders of the service are Iranians who moved abroad, Iranian who are considering migration, and NVC consultants working with the service, migration influencers, data scientists, as well as policymakers. The outer circle belongs to Investors, Iran migration observatory members, and random visitors and family and friends of migrants that they are in touch with to promote the platform.
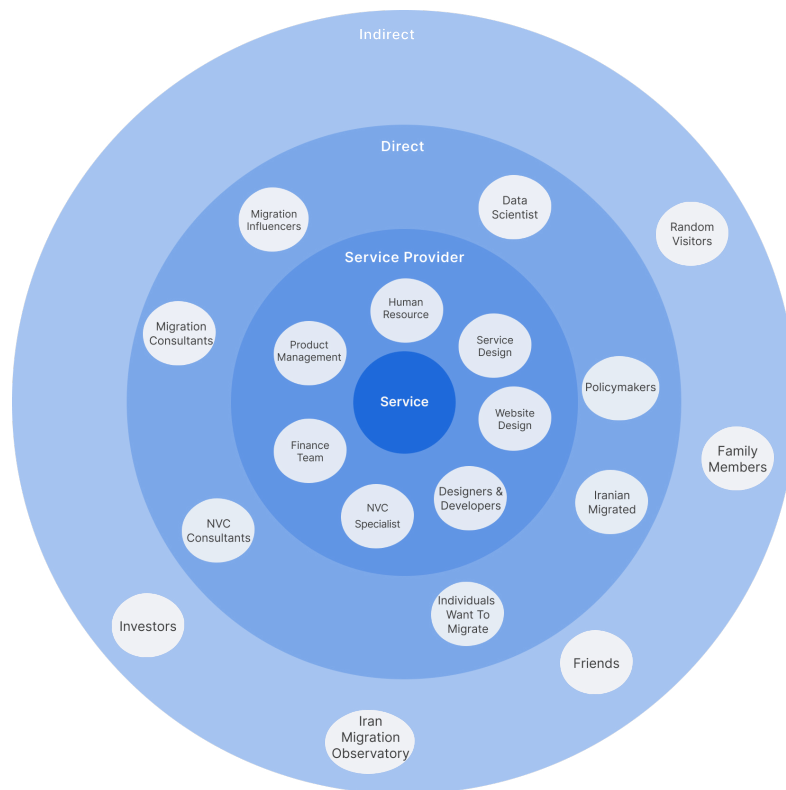
Fig.20 / Stackholder's Map

How do the stakeholders relate and what are the values each receives or gives?

This map (figure 21) is provided to show the value exchanges between different stakeholders. The maps represent different shared values such as Money, information, structured and raw data, and content. At the center of the map, there is a website that connects different stakeholders. Iranians who are struggling with migration as the main direct stakeholder will share multiple values with different stakeholders, Firstly they will give Raw data of their satisfied and unsatisfied needs to the website through the NVC process and the website in return will give a structured set of data and knowledge of self-awareness to them as well as information through digital visualization. This NVC specialist will receive money from service providers to give further information and guidance to this stakeholder.

Iranian who Moved abroad share almost the same value with the website they will give the list of their needs as raw data to the website and in return will receive them in the structure after passing a process of self-awareness. These stakeholders will later discuss with Iranians who are trying to decide on migration and through these discussions will give information about their personal experiences and feel genuine in return for help-

ing someone else. During these discussions, The website will provide hints and discussion topics which will foster their discussion.

Service providers such as designers and developers will provide content for the website and the website will give them the raw data received from both groups of users. These raw data gatherers can be useful for data scientists to analyze and turn them into the structure and useable information for the Iranian migration observatory or statical center of Iran. They will in return give money for purchasing this set of qualitative information.

It is also noteworthy to mention that Immigration Influencers and Migration consultants will promote the website with content provided and in return will receive money from the service providers.
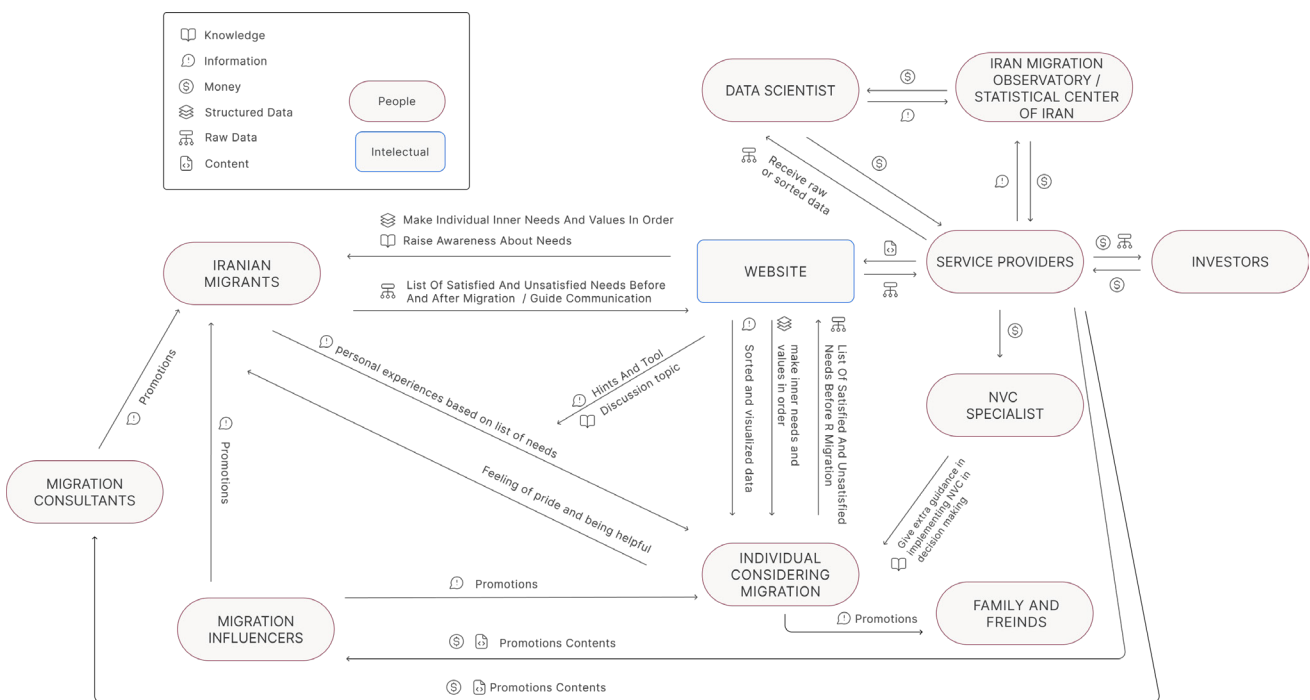
Fig.21 / Stackholder Shared Value Map

3.6.4 Service Blueprint

To provide a comprehensive understanding of the service and the underlying resources and processes, both visible and invisible to the user, that enables the service to function, the following service blueprint is presented. The diagram delineates various layers of interaction between users and service providers, which are segregated based on interaction, visibility, and line of internal interactions.

The service is divided into five stages, namely Becoming Aware, Exploring the Website, Needs Awareness, Sharing personal experiences, and After-Sales Service.

The initial step is to become acquainted with the service and the website. This will be accomplished through two means: partnering with migration consultants from Iranian institutions, as well as via social media influencers who are migrants themselves. Both parties will need to visit the website links after encountering advertisements provided by the service promotion and the assistance of influencers and consultants.

The next phase entails exploring the website and becoming familiar with the service. It is crucial to comprehend the value proposition of the service, so users are onboarded during their first usage of the website, and later, they can explore the provided data visualization to gain insight into the service's potential. To facilitate this, a development team consisting of designers, IT specialists, and data scientists should participate in developing the webpage and sorting and visualizing the data. Additionally, external storage for the massive data is required to support the process.

The next step in the process is to encourage users to contribute to the process of answering NVC questions, and at the end of the process, store the results of the questionnaire for future reference. Advertisements and promotions are required to make users aware of the influence and effect of identifying needs in decision-making for migration. Furthermore, the external assistance of NVC specialists is necessary to prepare the questions and ensure the accuracy of the content.

After completing the questionnaire, the next step is to encourage both two target audiences to take part in sharing personal experiences. Service providers should first encourage users to use this platform as a means of their conversation , particularly those who have migrated, Iranian migrants are typically busy with their daily lives and, maybe less

Stages	Become aware		Explore Website		Needs Awarness		Sharing Personal Experiences		Extra Service
Sub Stages	Social Media Posts	By Migration Consultant	On Boarding	Explore Data	NVC process	Result	Find Partner	Conversation Session	Get In Touch With NVC Consaltants
Iranian Considering Migration Action	Enter The Link	Scan Website Qr Code	Get Familiar With The Aim Of The Platform	Explore Data Related To Migrants	Filling Data	Check Result	Ask A Migrants To Contribute Through Platform	Receive Experience	Ask For Further Assistance
Migrants Action	Enter the link	—	Get Familiar With The Aim Of The Platform	Explore Data Related To Migrants	Filling Data	Check Result	Confirm/ Reject Contribution; Guide A Migrant To Visit Platform For Discussion	Share Experience	Ask For Further Assistance
Line Of Interaction									
Front Stage Of Interaction	Posts, Tweets,	Promoting Service Showing Qr Code	Onboarding/Home Page On Website	Data Visualizations With Filtering Option	8 Step Questioner	Visualized Result For Saving And Printing	Promotions About A Guided Conversation	Collaborative Digital Board	Promotions On The Website
Line Of Visibility									
Back Stage Of Interaction	Asking Migration Influencers To Post, Twitter	Write Promotional Content And Design The Qr Code	Developing The Webpage	Storing Data Sorting Data Visualising	Prepare Questions Content And Web Development	Visual Representation Of Result	Provide Motivating Content	Develop A Well Designed Board For Improving Conversatio	Provide Content About Influence Help Of NVC Expert / Contact NVC Specialists
Line Of Internal Interaction									
Support Process	Influencers Contribution	Migration Consultant Contribution	Website domain	external data storage	NVC Consultants	—	Promotions On Other Platforms	Voice Call/Video Call Platforms	NVC Community Support

Fig.22 / Service BluePrint

motivated to participate. The team should provide promotions and content to achieve this goal. Once users are motivated to use the platform for a guided sharing personal experience, a collaborative board should be designed to assist users in interacting and guiding them through the discussion time and external help and support from video/voice calling platforms is needed.

The final part of the service's engagement with the user involves proposing a consultant with an NVC expert. To enhance the user's experience of filling out the questions at the highest level, users will be encouraged to contact an NVC psychologist through the platform using the promotions they received while answering questions. This requires managing the NVC specialist's time and contracting options, as well as external support from the NVC community to involve their members in this process.

3.7 Communication Design

As the main aim of the service is to communicate some kind of data with its user and guide them to build meaningful conversations, the Communication design topic has been brought up to be developed in advance to design the platform.

3.7.1 Service Target Audience

The design proposal consists of three target audiences. The main and most influential target audience are Iranian people between the age of 20-30 regardless of their gender and preferred migration country. They just got educated with their bachelor's degree and are seeking to either continue their study or build their career path. They are encountered with a mass of data and ways and need clarity.

The other target audience is Iranians who have migrated between the age of 24 - 40 regardless of their destination country, they are usually busy with loads of work, especially during the first years of migration. But they are also willing to help other Iranians in case they have migration questions. They feel proud of themselves s migration is an extra value in Iran and on the other hand, they feel genuine by helping their congener. They are usually dealing with different feelings as a migrant and tries to deal with what they don't possess anymore and can't take for granted. Due to their lack of time, and distracted

mind, fastness, easiness, and straightforwardness are important for them.

The last target audiences are who are dealing with data extracted from the service. They are not dealing with the platform but with the data sets extracted from the website.

3.7.2 Tone of Voice

For Iranian migrants, and who are considering migration

Users who are reaching the website are expected to be Iranians trying to decide on migration who have distracted minds due to migration decision-making being multi-dimensional and loads of information. And also Iranian migrants are overloaded with tasks such as migration administrative work while working or studying, building a community for themselves, and dealing with a new society. that's the reason the overall tone of the website should represent clarity, discipline, and calmness. worth mentioning that all the users should be comfortable sharing information and in return trust, the website the data will represent. So the website needs to build trust as well.

For Data experts

As professionals, who are dealing with the data received from the platform, they need to perceive clarity from the interfaces and data set, receive a data set that is rich in details, and lastly, it is important to access trustable information. Therefore they need to perceive these three keywords while communicating with the service: Clarity, Details, Trust

3.7.3 Name, Logo, Slogan

Multiple names were chosen based on the following keywords: Disciplined decision-making, Migration, Meaningful conversation, sharing experience, data visualization, and reflection on inner need. The chosen name was NavigateTogether. This name reflects the idea that migration and decision-making are complex journeys that can be made easier through meaningful conversation, shared experiences, and collaboration. Navigation can be also representative of migration topics.

The slogan chosen for this service is: "you must choose one of the two pains. The pain of discipline, the pain of regret." This was chosen as reflecting on inner needs and finding the route of our thoughts is sometimes painstaking and therefore we deny our values sometimes and rely on our system 1 thinking sometimes and let it decide for us. This will raise the chance of decision failure and create regrets. The platform is trying to minimize this regret by bringing up disciplined decision-making through meaningful discussion and raising awareness.

The logotype of the website is easy to read and represents the navigation through the migration needs and at the same seeking help from others to reach this goal. Two Icons have been implemented in the logotype. One is The Navigation icon in Navgiate and the other one represents four people in a circle from the top view brought together.

NAVIGATE TOGETHER

Fig.23 / Logotype

3.7.4 Look and Feel

Look and feel o the platform has a direct effect on its user and as the aim was to create a sense of discipline and clarity a Clean and Minimalist Design with a lot of white space and simple typography can make the user interface easy to navigate and help users focus on the content without any distractions.

Color

For choosing the color of the platform two factors were considered. Firstly, To give the users the feeling of calmness and at the same time, the seriousness of the service light blue, Green, and pink colors were chosen. The second factor was choosing Persian Blue as the main color in the platform design to become more applicable to its target audience.the following colors were choosen as primary colors of the Service.

Persian Blue: represents trust, calmness, and stability
Light Grey: represents neutrality and professionalism
White: represents purity and clarity
Dark grey: represents sophistication and formality

Shapes & Patterns

For choosing patterns and shapes to be used in service, it was important to make the content clear and straightforward and at the same time engaging to its target audience.

Geometric shapes: represent structure and order for data experts
Organic shapes: represent calmness as it close to nature and informality for main target audience
Circles: represent wholeness and completeness

Fonts

For choosing fonts Inter was chosen from Sans-serif fonts Family which represents the following keywords: clean, modern, and professional

Overall, a minimalist and clean design with a limited color palette can be effective in conveying a sense of discipline and order. Using a blue or green color scheme with clean lines and geometric shapes can communicate trust, calmness, and organization. A sans-serif font can be a good choice for readability and a modern look. Ultimately, the design should be simple and intuitive, allowing users to easily navigate the website and reflect on their inner feelings and decision-making processes.

3.8 User Journey

The user journey map describes the interaction process between the service and its user. The journey map was built based on the following scenario:

" Taha, a 25-year-old man, has obtained his bachelor's degree in Iran. Due to the challenging economic and political conditions in his home country, he is contemplating moving to a more developed nation to pursue further studies and establishing his career. Although he feels some of his basic needs are unfulfilled in Iran, he is uncertain about migrating due to the various ways it could impact his life. Furthermore, he is struggling to determine which country would be the best fit for him, so he has started speaking with fellow migrants he has encountered via various channels to learn from their experiences. During these conversations, he has received some helpful information, but he has also encountered some off-topic discussions and unreliable sources. Eventually, Taha discov-

ered an advertisement on an Iranian migrant influencer's Instagram page for a platform that can help him identify and prioritize his needs, as well as provide guidance for his migration decisions."

The journey map of this user got 6 different layers namely becoming aware of the system, onboarding, needs and migration data visualization, discovering individual needs, and sharing personal experiences.

The first stage is getting to know the platform in which the user after encountering it will feel sympathetic to the situation described in the platform and later become curious to understand how it will help with decision-making about migration. There is a risk of miscommunication at this stage that users won't notice the aim of the platform, one design opportunity it brings is to ask Iranian influencers related to migration to discuss thoroughly the service and make it clear to their customers.

The Second stage is about getting familiar with the platform and there is where the touch points of user and service will become the website, Users will enter the provided link to understand what is the website's features and start exploring its different parts. They will be excited and still curious to understand how it will work. Here there is also the risk of communicating unclear data in onboarding sessions which can be solved by giving hints in the different parts of the website to guide users.

The third stage of interaction with the platform is exploring data visualization of needs

Fig.24 / User Journey Map
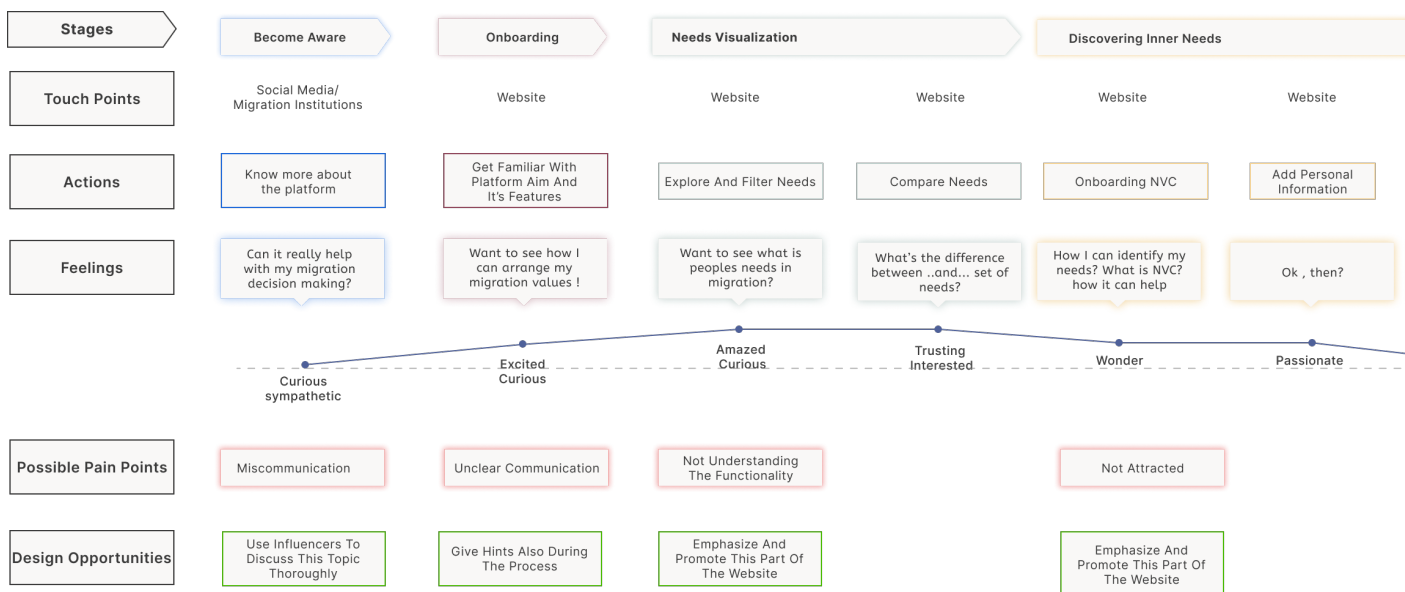
and migration. Once the user is finished with onboarding, they will encounter a list of all the needs one person can have and later by filtering them will receive information about the correlation of different migration circumstances and needs might be satisfied or not options to explore. Users will be a`mazed by the data received about migration that haven't encountered so far, and become curious to explore more which brings them to the next level of comparing two different migration circumstances and comparing the list of needs that will emerge afterward. At this stage, the user will trust the platform and is interested to identify his/her own migration-related needs which brings him to the next stage.

The 3rd stage of interacting with the platform is Discovering individual needs using the NVC psychological approach, at this stage first the user will be unboarded to get familiar with the NVC process. At this stage the user is wondering what kind of information will be asked, to get the user to reach this part we should show the benefit of identifying inner needs in decision-making for migration. Next, the user will follow the steps by answering personal information questions and later observing the situation as well as identifying needs. At this stage, users might become bored as the process might take a bit long. Having a progress bar and a timer and entertaining the users can be identified as design opportunities to make this long process less tiering. As a result, the user will get a data-visualized set of needs which will be amazed by it. It's also important to let the user know keeping the result somewhere in his sight can be beneficial for recalling and remembering it.

The next interaction with the service is sharing personal experiences within the platform
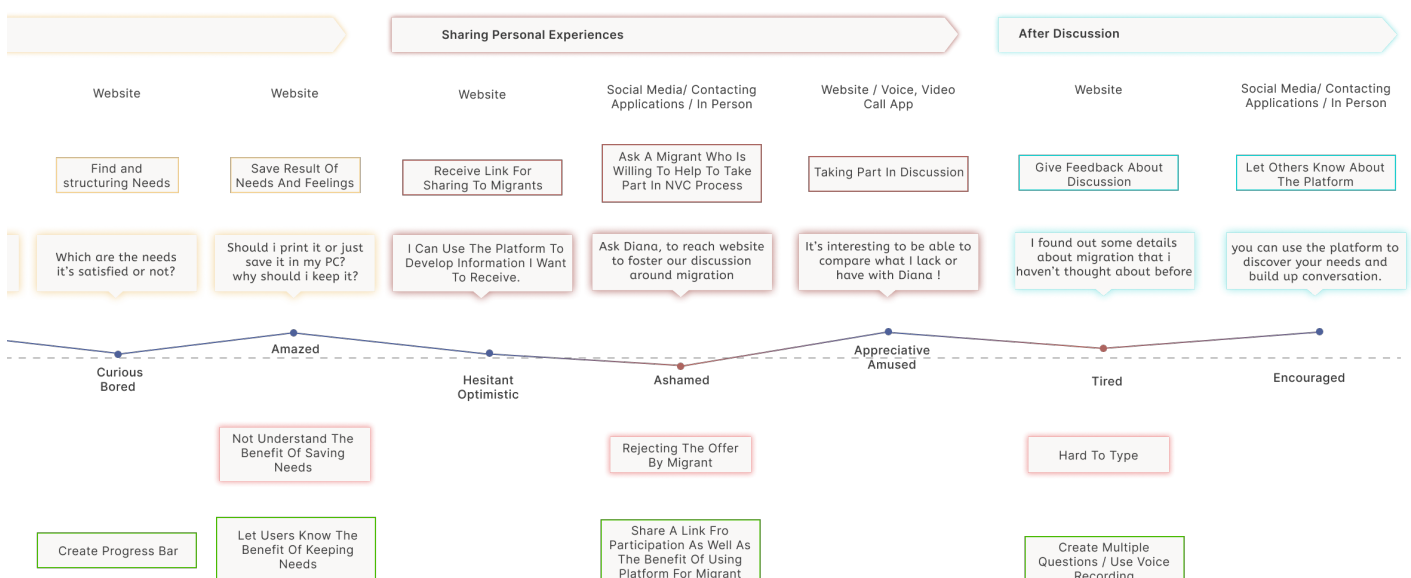
with another migrant. To make this happen, the user needs to be encouraged first to do so. the platform will promote the benefit of bringing the conversation with a migrant to the platform and provide a link for the user to share it with the migrant he prefers. At this stage, users might become hesitant, and ashamed to ask someone else to reach the platform for answers to their questions and to build a conversation. So it is important to explain the benefits of using the platform for migrants in the link that will be shared with them. Once the discussion begin and both target audiences started to talk about different needs, and some details and valuable information were revealed through their discussion our user will start to feel appreciative and amused by the help received.

The last stage is called post-discussion, at this stage, users will write feedback for the system as well as keep notes to themselves, after a long process of discussion this can be boring so we can provide questions with multiple answers or provide a voice recording option for the user. After doing so the user can refer the platform to other migrants or refere it to a friend who might need it through different channels such as social. Having the Design opportunities and the steps identified in User Journey map the design of the website was started which will be described in the following chapters.

3.9 Platform Design

In this chapter, we will delve deeper into the development process of the website, providing more detailed explanations of the design and technical requirements. Additionally, we will discuss the data visualization design process and later present the step-by-step user interface and user experience of the website, including tests conducted to validate the results of each.

To begin, it is important to explain why a website was chosen as the primary means of communication for this service. To effectively communicate with users, it was crucial to select a medium that allows them to answer questions, interact with different models and layers of a data set, and engage in guided discussions with a migrant. As stated in the business model canvas, the service's relationship with customers is short-term, so they will not frequently use the service. Therefore, a mobile application was discarded. Another crucial factor was the mass of information presented on the platform, requiring users to navigate through a large amount of data. For this reason, a web application was chosen as the optimal platform for the service

3.9.1 Design Requirements:

As data visualization was the main part of the design proposals it was crucial to understand how to conduct a trustable read le, and elegant data visualization. Therefore data visualization process was followed step by step with reference to the data visualization book called " Data Visualisation_ A Handbook For Data-Driven Design-Sage" by Andy Kirk. some part of the process was correlating with the design process of the research, therefore less attention was paid to those parts. Here shows a diagram of the topics and steps that will be discussed further.

Data visualization design

As a major part of the platform design is data visualization, this chapter is dedicated to describing the usage of data visualization, the reason for using it, data visualization design steps, and ultimately ways of evaluating it.
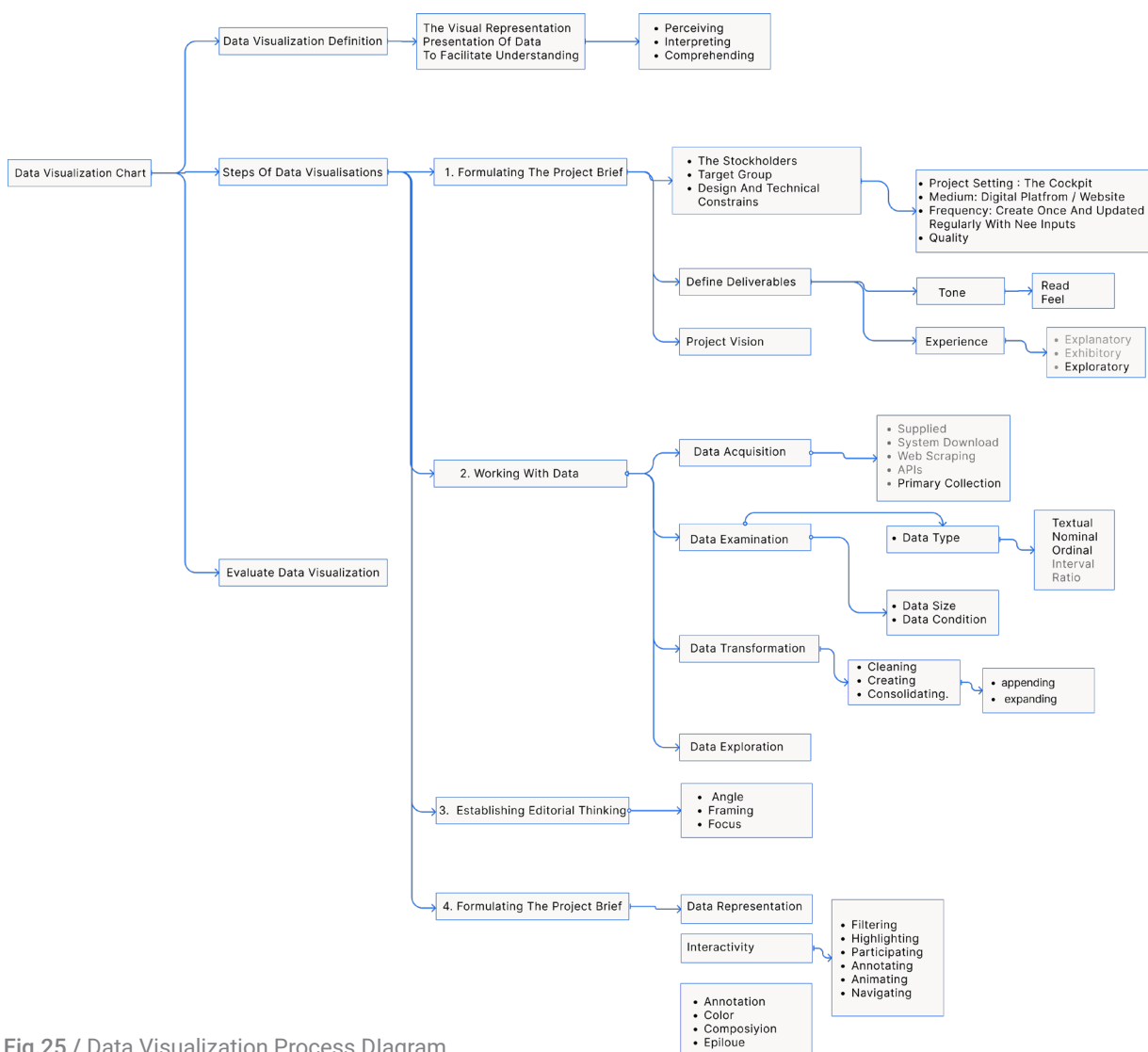
Fig.25 / Data Visualization Process Diagram

Why are we using data visualization?

When discussing people's migration factors and needs we tend to overgeneralize migration factors and migration-related needs with our system 1 thinking. Based on interviews we noticed that usually we don't have a specific reference for our saying and we tend to trust easily on word of mouth. A valid source of information that gathered its data with a systematic approach from people who migrated can be a reliable reference that gives insight into migration factors. People can use this resource during their personal sharing experiences.

The result of each data collecting session is not only valuable for individuals to reflect on but also can be valuable on a bigger scale for comparison and study of a mass of data. This data set can be better communicated through visual representation. The visualization of data is DVL (Data visualization literacy), like other literacies, strives to increase communication and cooperation, empower users to comprehend their reality, build individual self-efficacy, and improve decision-making in organizations and governments. (Börner et al., 2019)

What is data visualization?

Data visualization is The visual representation and presentation of data to facilitate understanding. Each part of this definition will be explained shortly for more clearance. (Kirk, 2019) Data is the primary factor driving decisions throughout the design process. There is no material to feed and no need for a display if there is no data. The phrase visu-
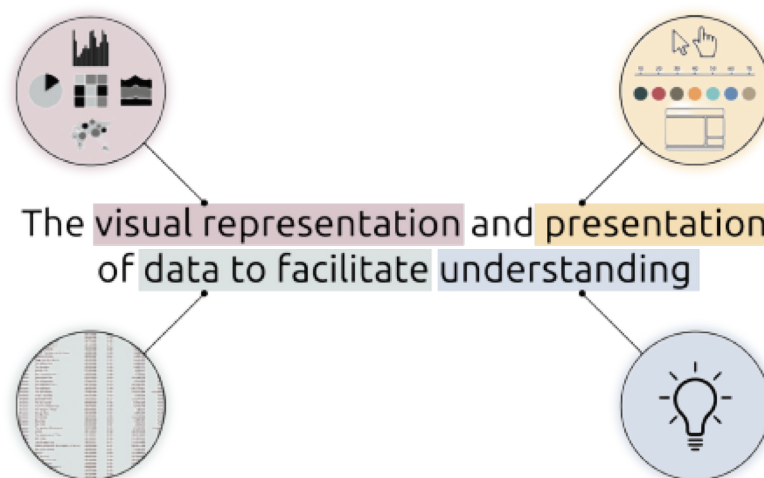
Fig.26 / Data Visualization Definition

al representation refers to making decisions about how data will be visually displayed so that the subject understanding it provides is accessible to the audience. In a nutshell, this is all about charts and the act of picking the appropriate chart to display the elements of the data that are most relevant. Presentation refers to how we choose to 'package up' a visualization work in order to convey it to an audience, regardless of the media or mode of dissemination. Visual presentation involves design considerations such as the potential use of interactivity, annotation tools, color usage, and the composition of the work.

The definition's final component indicates that data visualization intends to facilitate understanding. The three stages of data understanding include perceiving, interpreting, and comprehending. a viewer's ability to perceive, interpret and comprehend the data visualizations will be significantly determined by factors external to the visualization itself such as the degree of knowledge viewers possess about the portrayed subject,the context of scale, the context of the subject. Furthermore, there is the matter of willingness. At the time of consuming a visualization, not everyone has the inclination to engage with it, especially if they have no interest in a subject or if it has no immediate relevance to their needs. (Kirk, 2019)
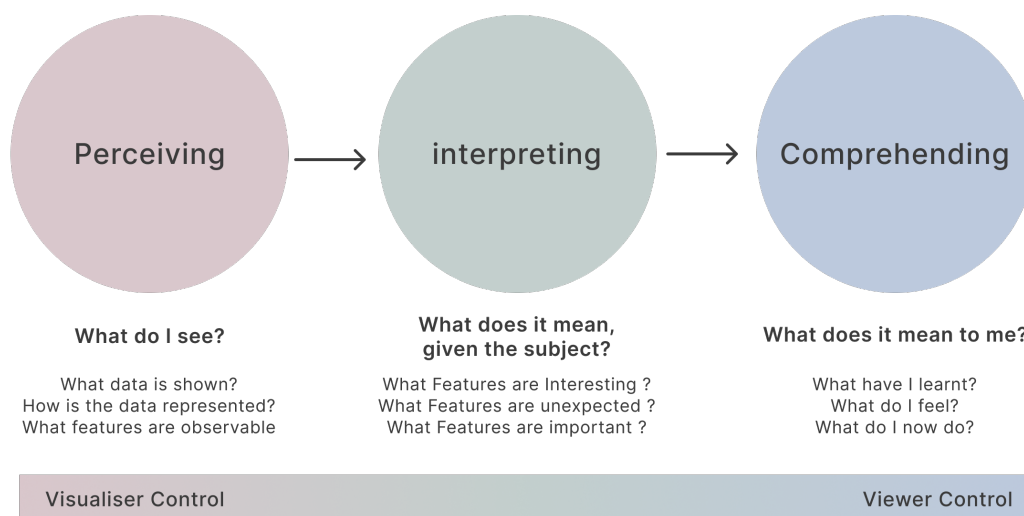
Fig.27 / The Three Phase Of Undrstanding

What is the Data visualizations design Process?

The central premise in data visualization is that decision making is the key competency: namely, effective decisions, efficiently made. To accomplish this we need to follow a design process that organizes thinking and is underpinned by robust principles to

optimize thinking.The first 3 stages involve activities concerning the 'hidden thinking' of data visualization. These stages cover the preparatory work that informs what you are visualizing, for whom and, crucially, why:

1. **Formulating the project brief:** planning, defining and initiating your project.

2. **Working with data:** gathering, handling and preparing your data.

3. **Establishing editorial thinking:** defining what you will show your audience. (Kirk, 2019)

4. **Developing the design solution:** involves the visual manifestation of the preparatory work you have conducted. This stage is concerned with the how.

Fig.28 / The Stages of Data Visualization Design Process

Stage 1 : Formulating the Brief

At the first stage we tried to establish preliminary clarity regarding the context and vision of your work. For identifying the context we have prepared a design brief in the previous chapter answering 5wh Questions which we have relied on. The stakeholders, Target group (audiences), design, and technical constraints are also identified in the service design map and user research chapters, and design requirements. the only further step of the research process we should consider is identifying deliverables and the Vision of the data visualization.

There are four factors to consider when it comes to the project deliverables:

• **Setting:** This refers to the qualities of the environment in which work will be encountered and consumed by the audience. To begin, because the data visualization would be consumed remotely - away from the author - I wanted to incorporate details of the data collection procedure, assumptions, or computations as annotated properties. Therefore, boarding sessions were added to the website flow.

Secondly, is the nature of the engagement. There are 4 settings described by Kirk namely the boardroom, The coffee shop, the cockpit, and the prop. (further details about setting Data Visualisation_ A Handbook For Data Driven Design). In our case, the setting will be

The cockpit as the data visualization is offered as a tool that provides immediate signals and then use filterings to give depth and serves multiple potential levels of inquiry.
• **Medium:** the medium of the data visualization will be a digital platform and it is an interactive and animated one.
• **Frequency:** this concerns the lifespan and the number of reproductions of the project. In this case, it is a one-off project that will be constantly updated as it receives more data. Some parts of the system should be programmatically automated so it reduces time and effort in the future.

The vision of creating data visualization is also important to be identified before planning the design process. The Vision for creating this data visualization is to inspire its viewers to reflect on their inner needs while making decisions for migration. And provide a reliable source for making comparisons between different migration circumstances and individual needs. Therefore the Tone of visualization should place more emphasis on readability and efficiency rather than feeling it; however, at the same time, it is important for it to be emotive, figurative, and fun so the user can easily grasp the general sense of the major patterns and be motivated to engage with it.

Reading		Feeling

Fig.29 / The Spectrum of 'Tone"

So even though the tone is a continuum, determining the best appropriate experience is more distinct and involves many means of facilitating interpretation: explanatory, exhibitory, or exploratory(Kirk, 2019)

EXPLANATORY	EXHIBITORY	EXPLORATORY

Fig.30 / The Classifications of Experience

In this design proposal data visualization is exploratory as users discover and form their own interpretations.The user will be able to filter a display to see only certain categories of migration circumstances and evaluate different migration-related needs that emerged.

Stage 2: Working with Data

In this stage, the focus will shift to the practical mechanics of data manipulation

through four various actions to become well acquainted with it, as follows:

- **Data acquisition:** locating and obtaining raw materials.
- **Data examination:** Get acquainted with the major physical qualities and state of your data.
- **Data transformation:** Improving your data by modifying and consolidating it.
- **Data exploration:** Discovering insights via exploratory analysis and research methodologies.

Data Acquisition

there are different methods of acquisition of data supplied by stakeholders, system download in organizations, web scraping, APIs from social media platforms, Data foraging, and Primary collection. In this research, as the data needed is not provided gathering primary data, observation, and measurements were considered through designing a questionnaire to collect data about MIgrants' needs before and after migration. (Figure 32)
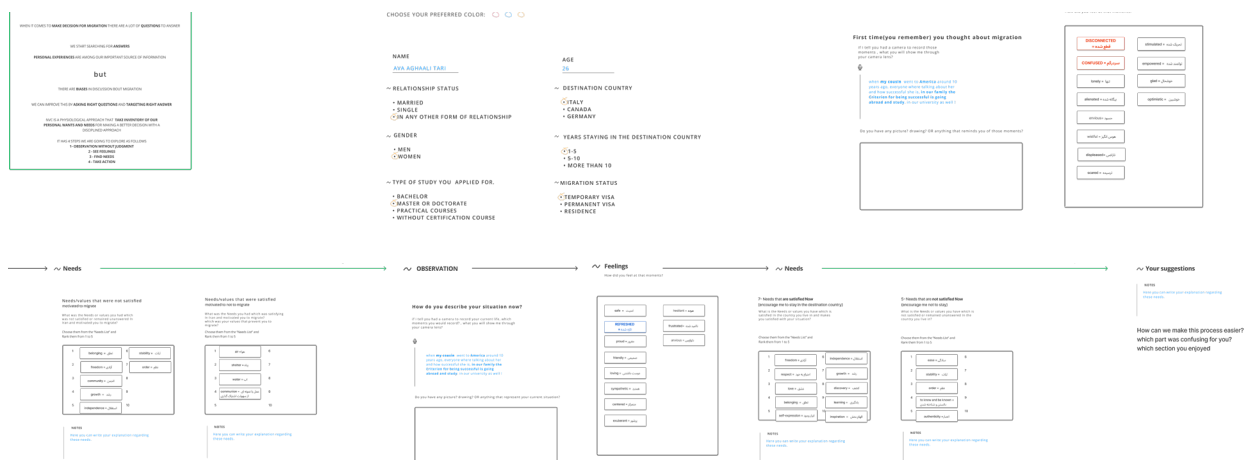
Fig.31 / Data Acquisition Forms and Process

Data Examination

Examining data involves learning about the types of data, the size and range of values held, and its condition.The type of data we are dealing with is Textual, Nominal, and Ordinal as it arises from responses to a questionnaire, it will be separated and grouped with different variables, and needs will be prioritized and ordered. When working with textual data, we must alter it in some way in order to extract particular features and re-

lationship qualities, for that, certain variables have been identified such as satisfied or unsatisfied needs, age, gender, country of residency, and migration status to obtain sentiment classifications which frequency of needs will be calculated based on that.

Fig.32 / Data Size and Distribution in Notion Platform

Data Size

Data size is concerned with the frequency of distribution, Measurements of spread, and Measurements of spread. We have 54 Needs that will be categorized into 4 different categories namely satisfied and unsatisfied needs before and after migration. In each category, there are usually 15- 20 needs which will be ordered based on their frequency.

Data Transformation

There are three different types of potential activity involved in transforming the data: cleaning, creating, and consolidating. As the data was collected through the service itself, not much cleaning was needed. However, for creating a new set of data grouping based on ' age', 'gender' or 'country of residency', 'relationship status' as well as their relation two by two we pointed out. appending and expanding data didn't take place in this case as it was not needed. However, there is an option for future prospects of the project to add some data such as a number of Iranian migrants to different countries, and women vs man migration statistics to compare with current data.

Data Exploration

Data exploration, attempts to broaden our perspective and become fully familiar with the entire possibilities of what the data has to offer. Some visualization techniques have been performed to supplement statistical approaches as a way to discover more about the qualities and insights are hidden away in the data. Some patterns have been identified in the short amount of data gathered so far. Such as Iranian migrants' unsatisfied needs before migration patterns or married migrants' satisfied needs after migration patterns; However, the value of this data visualization is as its data grows by number and diversity.

Stage 3: Establishing Editorial Thinking

Editorial thinking is concerned with Making educated decisions about the material planned to include in visualization. When explaining what it means to establish editorial thinking in practice we can think of a chart as a photograph of the data. Several important views for shaping editorial thought in visualization were discovered by analyzing some of the considerations involved in shooting an image. There are three particular perspectives to consider: angle, framing, and focus.

The first part of editorial thinking is associated with selecting the angle of analysis - the point of view of your data - that you believe would best assist the needed comprehension for this issue. The angle of data will be shown based on the filter setting. As in this

Fig.33 / Migration cicumstances as Filtering Options

project, every person reaches the data based on their preferred migration circumstances, the angle of data shown will be left open for users to interact with. In the framing and focusing section the content that will be shown, and emphasized will be identified, and the importance and focus is on either the satisfied or unsatisfied needs of migrants with the most multiplicity.

One idea that emerged at this stage was Bringing a comparison option between two sets of data for users so they could for example see what were the unsatisfied needs before and after migration. Therefore the "Compare Data" option was added to the platform.

Fig.34 / Filtering and Comparing

Stage 4: Developing the Design Solution

In this stage we will switch to the more pragmatic perspective of selecting chart types. Representing data visually involves the act of visual encoding. We have encoded our data using two main visual properties, marks and attributes. Marks are visual place-holders representing data items and Attributes are variations in the visual appearance of marks to represent the values associated with each data item. The main attributes and marks are included in those given in Figure 35.

At this stage, the proportional symbol chart with a combination of word clouds was cho-sen to demonstrate the satisfied and unsatisfied needs data.

A proportional chart or bubble chart was used for displaying quantitative values of needs based on different category items. Different colors were chosen for demonstrating different categories of needs. In this case,, some organic shapes were chosen to represent the complexity and interconnectedness of our needs.

Another chart that was used was the word cloud. The frequency of individual word items within a passage of textual data is represented as a word cloud. Each object is represented by words, and the font size of each is adjusted based on its frequency of use.
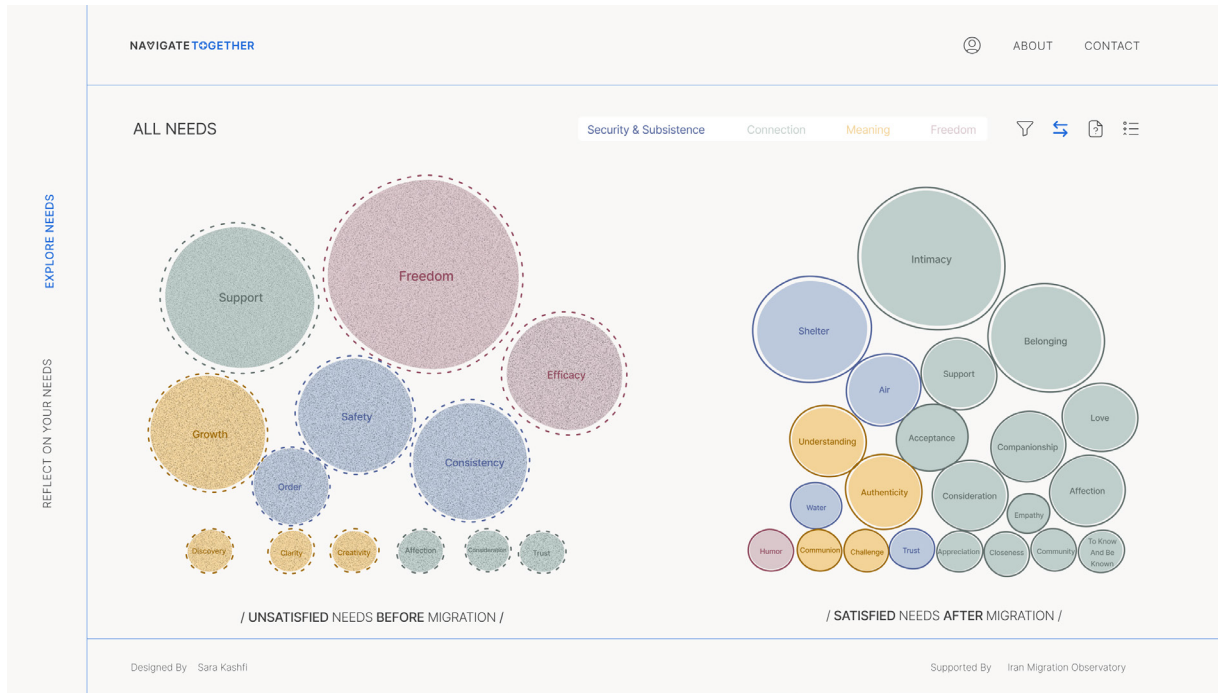
Fig.35 / Word Clouds and Bubble chart

Interactivity

At this stage it was decided to introduce interactive elements into the visualization showcasing a variety of alternatives that will allow users to inspect and manipulate a Visualization. Because the variables were different and showing all the angles of data at the same time was impossible. Two of the interactivity options that were decided to be represented are:

Filtering: in this process, the user will have the possibility to select which data to include or exclude from the bubble chart display.

Participating: this technique was used in sharing and receiving personal experiences of the project to encourage users to provide data about their needs before and after migra-

tion and to help customize participatory experiences at one hand and bring an individual assessment of their needs at the end of participatory.

Annotation and User Guide

For guiding users to read the chart correctly and interact with it legends have been created. In the picture, the color of each shape represents a category of need which is made clear above and the origin of data is clarified through a Data origin Icon.
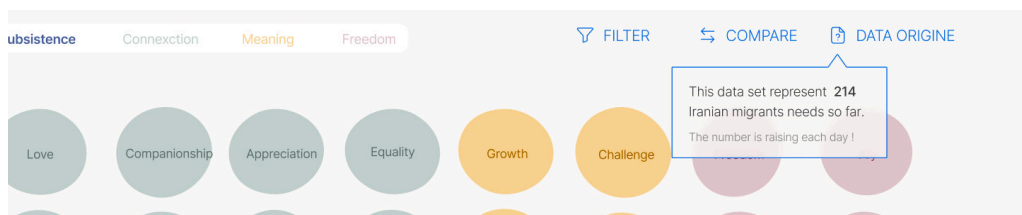
Fig.36 / **Annotation - hints**
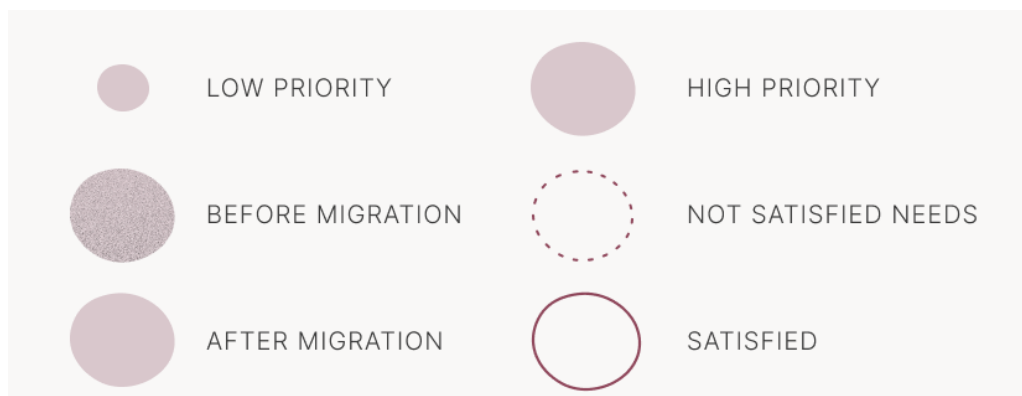
Fig.37 / Annotation - Legend

How can we evaluate data visualization?

Data and data sets are not objective; they are creations of human design. Hidden biases in both the collection and analysis stages present considerable risks.[in terms of infer-ence].' Kate Crawford, Principal Researcher at Microsoft Research NYC. That's why evaluation methods should be conducted in order to reduce these biases. To understand how a data visualization will be evaluated 4 principles have been introduced.

• **Trustworthy:** This is about reliability and is achieved by securing and sustaining the trust of the audience. Trust is something a visualizer must try to nurture through accuracy and transparency, eliminating doubts or legitimate disputes from a viewer.

In this Design proposal, firstly the data will be gathered through surveys of the platform from migrants therefore the source of data is trustable. The data was shown without any specific modification, all the parts are included in data visualization and no assumption has been made through the creation of data visualization. Therefore we can state that the presentation of data has integrity.

• **Accessibility:** Accessibility in visualization design is concerned with giving your audience access to useful understanding. It must be relevant to the subject and relevant to their needs. This needs to be achieved in a way that does not require undue effort to perceive, interpret and comprehend. Accessibility in design is fulfilled by removing any design and content-related obstructions faced by your viewers.

The data visualization proposed is easy to perceive as everyone is familiar with the list of Needs. The categorization and annotation will help perceive the result as well.

• **Elegance:** focuses on developing a visual style that will resonate with your audience and last, maintaining a good attitude throughout the encounter, well beyond simply the early moments of contact. methods, or interactive elements. Your greatest design ideals get a degree of stability and dependability via the creation of a style that can be used again. It takes time to grow as you discover your design voice.

During the communication design of the service, attempts have been made to make an aesthetic visualization. The use of colors and patterns and organic form was the reason to make the visualization look more appealing.

Good visualization design is	Good visualization design is	Good visualization design is
Trustworthy	**Accessible**	**Elegent**
Is it reliable?	Is it Usable?	Is it aesthetic??
Is the handling of the data **reasonable** and **faithful** to the subject?Does the representation and presentation design have **integrity?**	Is the portrayal of the data and the subject **relevant**? Is the representation and presentation design **suitably understandable?**	Is the representation and presentation design **appealing?**

Fig.38 / The three Principles of Good Visualization Design

• **Relevance:** lack of is a problem that many visualization projects suffer from. Turning data into a graphic merely because you have it on hand is a pointless endeavor. That is why we must start at the beginning of curiosity. This should give a good idea of what could be most beneficial to the audience.

For the target audience of this data visualization, it is important to access a reliable source of information in which they could explore the level of satisfaction of Iranian migrants in different countries with different circumstances to compare with their situation. Instead of relying on other people's random sayings. Hopefully, the platform designed is relevant to the target audiences' expectation, as by designing a data visualization in which the user has access to different filtering representing different circumstances can explore the different needs of migrants and check if it is satisfied or not.
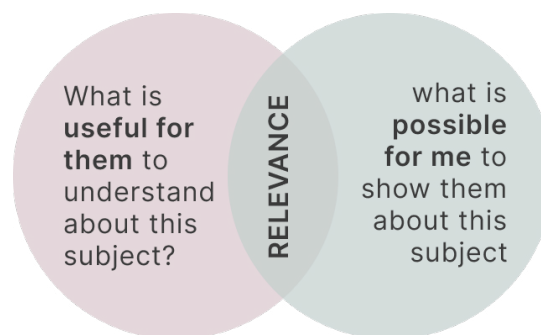
Fig.39 / An Illustration of Determining Relevanc

3.9.2 Technical Requirements:

Like any other platform, there are some technical requirements, which their presence is necessary to make the system work. The following is a list of technical requirements the system needs to be built upon.

1- Web development skills: To build a matchmaking website, we need to have strong web development skills, including proficiency in HTML, CSS, JavaScript, and other programming languages like PHP, Ruby, or Python.

2- Database management: For a matchmaking and data visualization website a database to store user information, including profiles, preferences, and matches is required. We need to be proficient in database management tools like MySQL or MongoDB to design and manage the database.

3- API integration: for further development, We may need to integrate with various third-party APIs for features like payment processing, location services, or social media integration. We need to be able to integrate these APIs into your website seamlessly.

4- Security measures: A matchmaking website needs to be secure to protect user data and prevent hacking or unauthorized access. security measures like SSL certificates, firewalls, and encryption need to be implemented to ensure the safety of your users' data.

5- Data visualization tools: To create data visualizations, you need to be proficient in data visualization tools like D3.js, Chart.js, or Highcharts. We also need to be familiar with data analysis and visualization best practices to create effective visualizations.

3.9.3 Information Architecture

The Platform's information architecture (IA) was built to organize, structure, and categorize material in an effective and sustainable manner. The purpose was to assist users in finding information and completing activities, as well as to demonstrate how the parts fit together to build the broader picture and how elements inside the system interact with one another. (Information Architecture Basics, 2013)

Information architecture for the website has two major flows: the first involves data visualization that will provide multiple views based on filtering and comparing options, and the second involves users contributing to data collection and reflecting on their inner needs at the same time. Additionally, there is another flow that is dependent on the second flow, which is about sharing personal experiences. On the data visualization page, the flow is straightforward and shown in pink, while on the contribution page, the flow is more convoluted and shown in blue.

The NVC onboarding process begins by asking what kind of user is accessing the site. For migrants and those who wish to migrate, the question format is a little different. Afterward, there will be a page for NVC onboarding and a page for gathering personal information. By following NVC steps, we observe, identify feelings, discover both satisfied and unsatisfied needs, and then put them in order. Upon receiving the result of the question, the user will be asked if they would like to participate in the collaborative board of the platform as a means of discussing migration with others and receiving personal
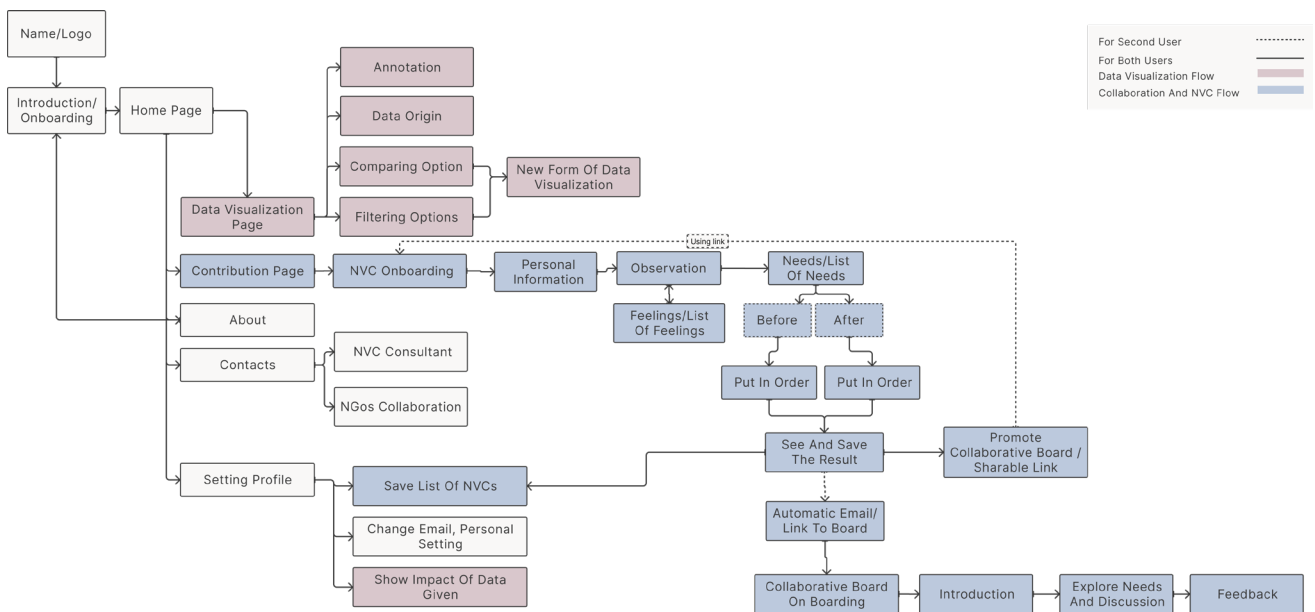
Fig.40 / Infromation Architecture

experiences. In case The first user who reaches this part of the website, either the migrant or one who wants to migrate, wants to do so, they will be provided a link to share with the second user of the website.

As soon as The second user uses the link to follow the same NVC questionnaire process and receives the result, an automatic email will be sent to both users containing a link to the collaborative board. Using the collaborative online Board as a meeting point for users was designed to facilitate straightforward and meaningful communication. The initial stage involves onboarding to become familiar with the board, followed by an introduction between both users to get to know each other. After comparing the list of needs identified by both users, the discussion and sharing of personal experiences start. Finally, there is a feedback session for users to save parts of their conversation and improve the platform.

In designing the contact page, which is accessible from the home page, we intended to provide contact options for anyone who wishes to get further consultations with NVC specialists. We also intended to provide contact options for anyone who wishes to contribute to the platform, whether by seeking a database or by participating in fundraising.

Through the process of answering a questionnaire, there is a save option in the middle of the way in order to save the information field so far. Along with the registry email and password, they raise the necessity of having profile setting pages.

We identified small details with big impacts through the information architecture that we hadn't noticed in other areas of understanding the platform. As a result, it appeared quite useful as it made the path for creating the wireframe smooth.

3.9.4 Wireframe

To lay out the content provided in the user journey and Information architecture we start creating the wireframe and examined the functionality on the platform pages.

Creating wireframes gave me a better understanding of what the data visualization page layout would look like. Different layouts and styles were prepared based on the content of each page. The reference for providing wireframe pages was the user journey of the user.

When creating the user journey map, the idea of creating a collaborative board arose, but I wasn't sure what content would go on it. Wireframes and discussion shaped the layout after the wireframes were created. Collaborative boards are inspired by Miro and Figjam and provide a guided discussion environment for users by providing hints and a list of both sides' needs. The idea was to have two divided sections for both users to show their personal information and the list of needs they have chosen. We wanted to give the possibility to change the list of needs from satisfied to unsatisfied before and after migration. Also, a shared space was built for users to bring their discussion keywords inside while they are speaking about it. (Figure 41)
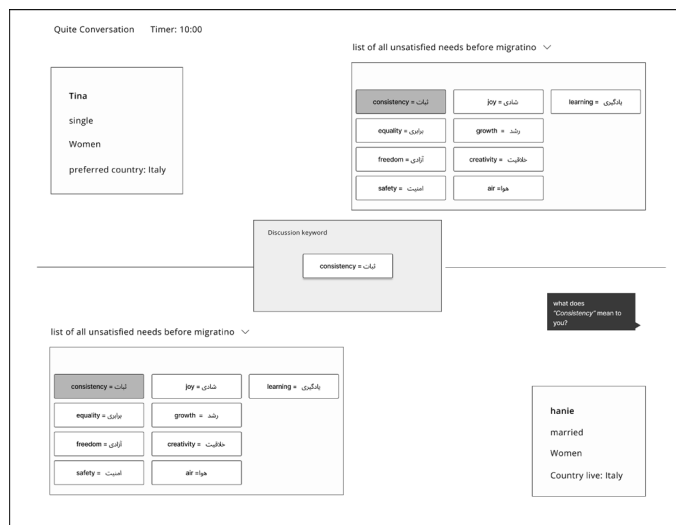
Fig.41 / Collaborative Board Wirframe

Although the number of people who provided data was limited (8 people), some ideation and thoughts were put into the wireframe pages of data visualization, considering the look of the page after a mass of data is collected. On this page, a list of all the needs will be shown without any priority or specification. the filtering section has been created for users to explore their needs using the provided filtering options. Once the user starts adding criteria from the filtering, the need shape will change based on the multiplicity of choosing it.
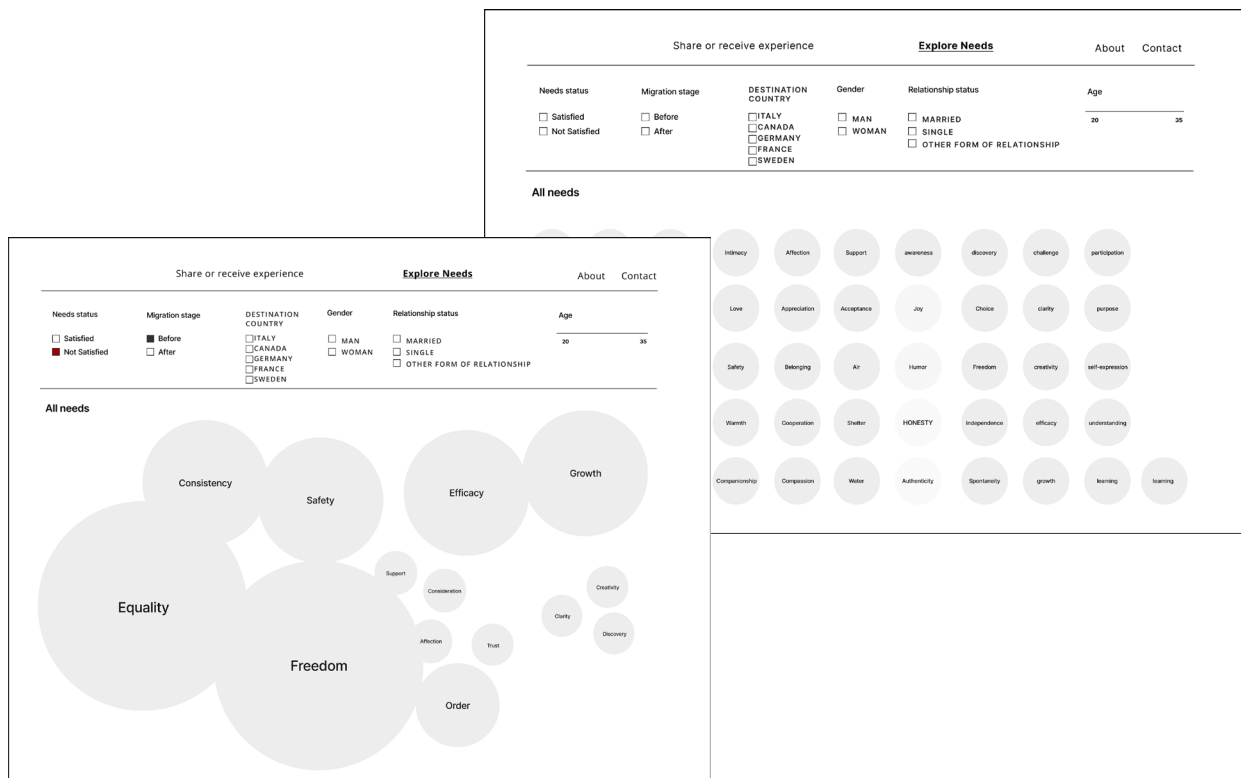
Fig.42 / Data Visualization Wirframe

Another part of the wireframe was dedicated to the NVC question answering process, attempts have been made to make this part as engaging and interactive as possible as it might be a long process. For that, the list of feelings and needs was shown to the user to choose from and later by tapping or clicking on each add the level of intensity of the needs. Also, a progress bar was considered to make users aware of steps taken and left.

One part of the wireframes which was dedicated to match-making and arranging pages of the website were discarded later after testing it with the users in parallel with taking the value proposition of the service into account. Through creating the flow, the way of contacting and organizing users was clarified. We decided that the user contact each

other using an external link like email. Instead, the process of sending, and receiving the link to the second user who wants to participate in the conversation was added to the wireframes.
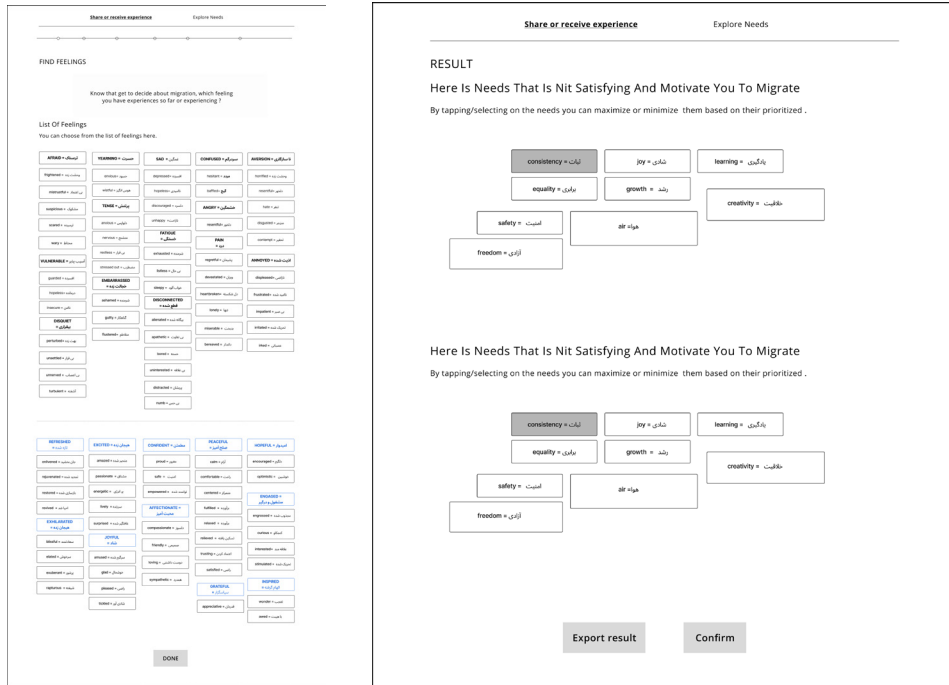
Fig.43 / NVC Question Process Wirframe

3.9.5 Low-fidelity Prototype

To determine whether the platform mechanics can be used by our target demographic and whether the users may desire to use the platform in the process of migration decision-making generally, the initial low-fidelity prototype was required. Additionally, it was crucial to identify any potential problems with the design proposal's usability, especially for the data visualization part and the collaborative board. In designing the low-fidelity prototype more details were identified and designed and the design system started to shape.

To start with data visualization, colors were assigned to different needs, and an organic yet simple shape was chosen to represent each need. After filtering and comparing the shape of needs will change accordingly.
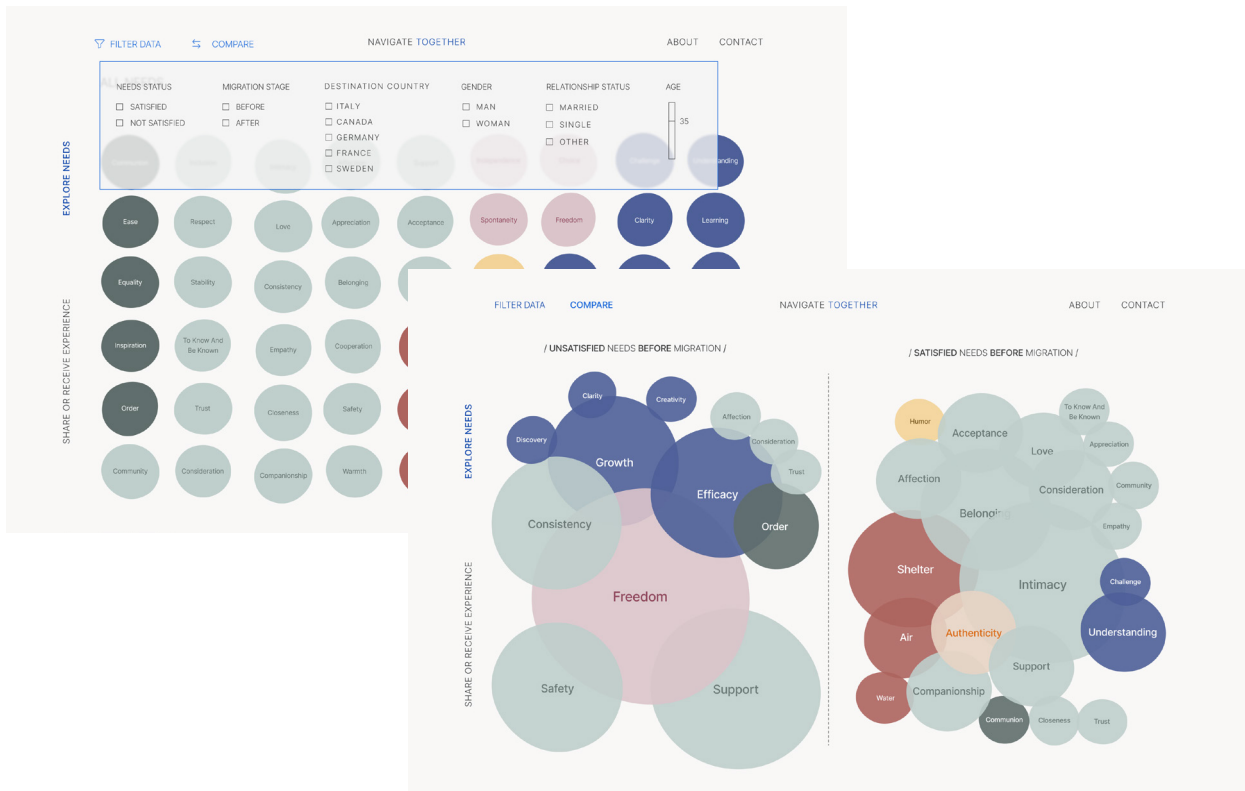
Fig.44 / Data Visualization low-fidelity

Designing The collaborative board flow was a bit more tricky as it was a new concept on one hand and on the other hand, it should be suitable and understandable for both users at the same time. The flow consisted of 5 pages: start, getting familiar, reflection on needs, discussion time, and feedback. On all the pages there is a blue card to guide users through the steps of discussion and a hint icon to give guidance on every page. (Figure 45)
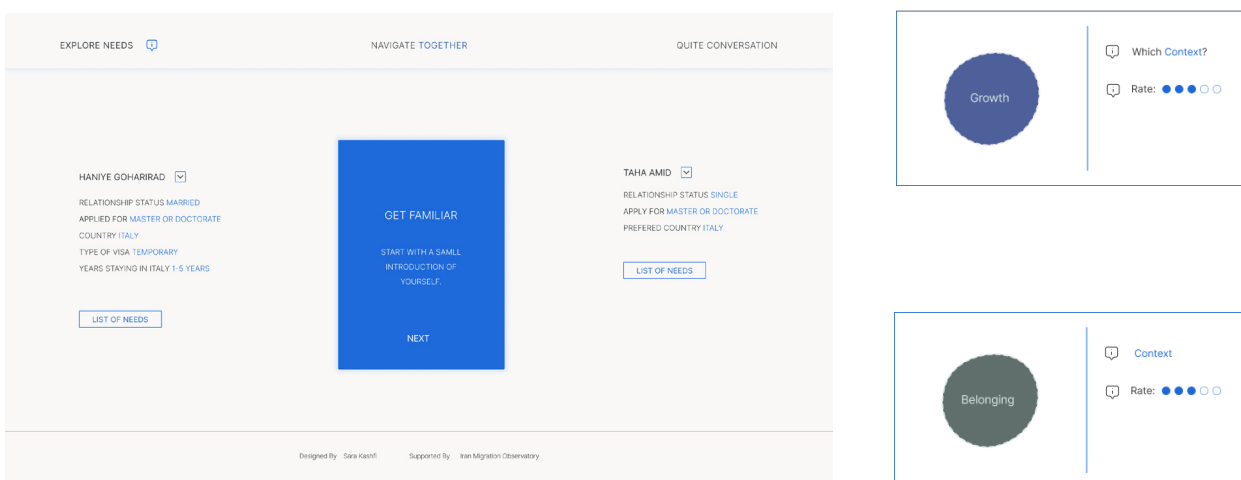
Fig.45 / Blue card as User Assistance

In this stage, the list of needs chosen by each user in the previous structure interview were designed specifically for them to see, compare and use them as a conversation reference. In desinging, the list of needs attempts were made to make it look aesthetically beautiful, in case some users wanted to save it or print it and refer to it from time to time. Therefore, The form of dandelion was chosen as it fits the data visualization and makes it look appealing. To make a separation between each set of needs high color saturation was chosen for after-migration needs and low saturation for before-migration needs, the dashed stroke was chosen for not-satisfied needs and complete circles represent satisfied needs.(Figure 46)
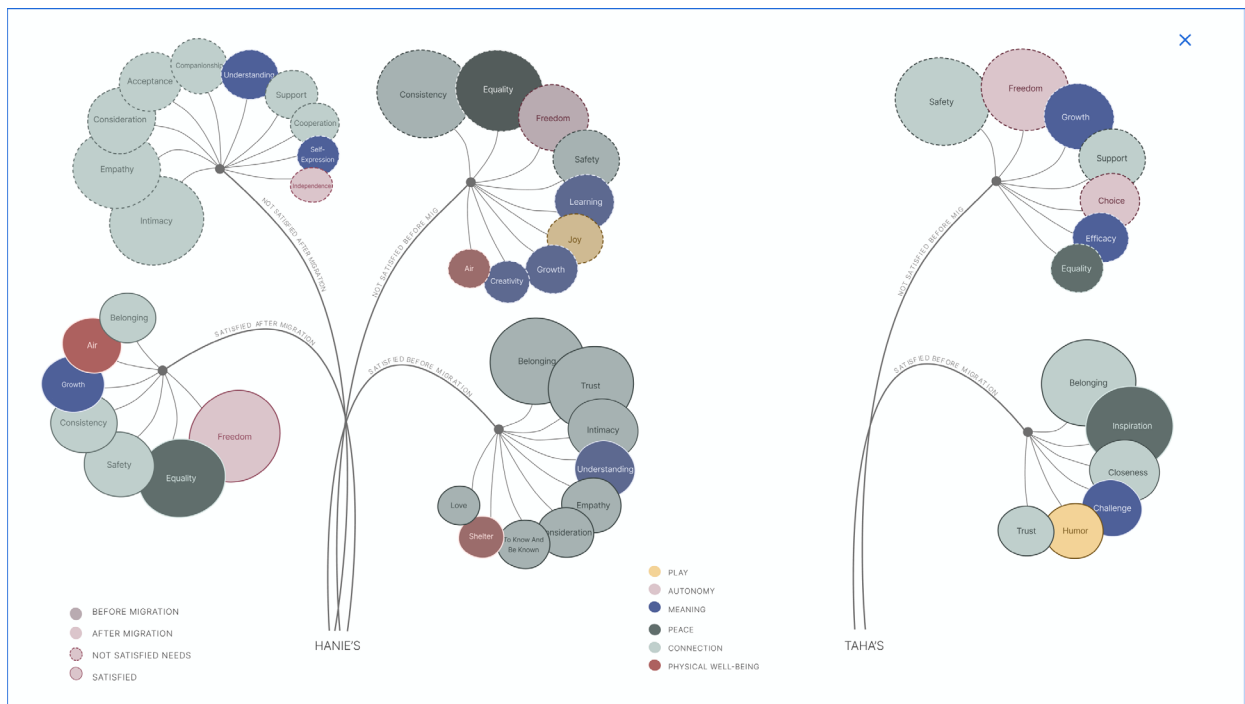
Fig.46 / User Individual need tree. Right: For Individual considering migration, Left: For individual migrated

In the discussion page, as the conversations were around the list of needs it was important for the user to have access to the list constantly so it made the main content of the page. The shared area for users to put the discussion keyword was put in the middle of the page. The initial idea was for the user to bring each keyword wants to discuss in the box and, the box in return gives some hints immediately for guiding the discussion such as for migrants to give a rate from 1 to 5 to specify the level of satisfaction of that specific need after migration or ask the users to speak about the context of each keyword. A timer was set at this stage two to give the time have passed overall.
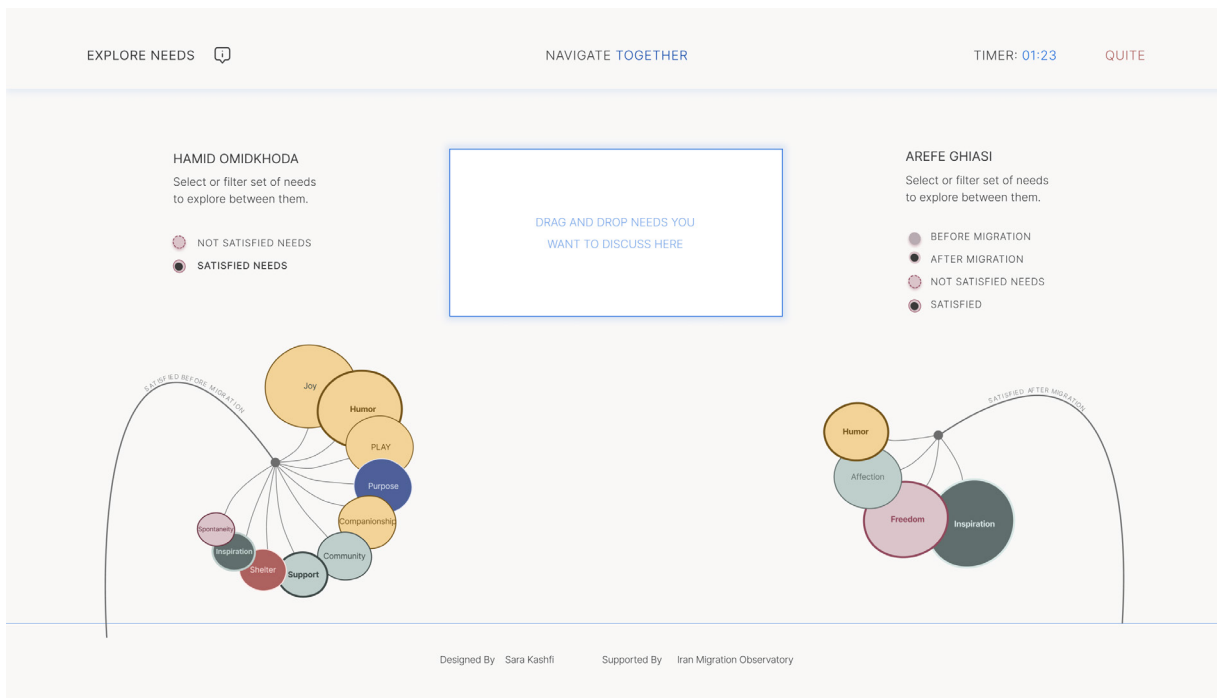
Fig.47 / User Individual need tree. Right: For Individual considering migration, Left: For individual migrated

3.9.6 Try it Yourself Test

After designing the low-fidelity prototype and before testing it with users, the wireframes were tested by 2 people including me. The data visualization was prototyped in Figma and the filtering and comparing features were tested. A list of iterations prepared to take into consideration:

- Add a title for comparing sections of data visualization
- Add annotation for the size and colors
- A background is needed for separating the blue rectangle with the rest of the page

3.9.7 Observing Users in a Debate

To validate the features of the platform deeper, surely essential with the development of products and services, it is important to dig deeper and get the needs and interests that aren't on the tip of users' tongues. The dual test method was aimed at gaining the deeper laying knowledge and values of customers, together with customers. At this stage, two sets of users: two Iranian Migrants, and two Iranian who are struggling with making migration decisions discussed the topic of migration while using the provided

platform and having the list of needs in front of them. Users were chosen from previous people who did the NVC test in the structured interviews and they didn't know each other beforehand.

The meetings were set using meeting pool platforms and took place using skype and Figma while the session was recorded. The participants were initially asked if they remember the list of needs they have identified or not. Then they were given an introduction to the process they took so far in the unstructured interview and then asked to follow the guidelines and give feedback as they proceed in each step and, do not count on me as I'm only an observer. Once the users were finished with their discussion, they were asked some open questions regarding validating and improving the flow and details of the collaborative board. They later were introduced to the migration-related needs data visualization and their opinion regarding that.

The limitation of this test was mainly due to Figma's prototyping limitation. firstly, in reality, users should be able to see each others' cursor on the board to be able to interact with each other. Secondly, some animations should be used to emphasize some parts of the process.
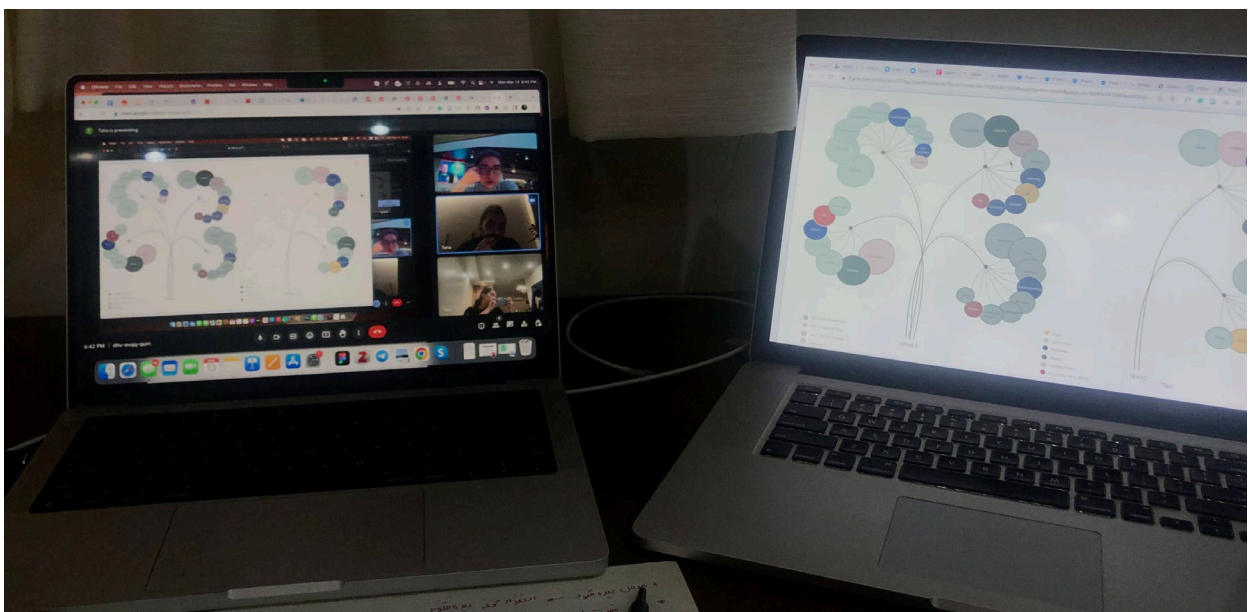
Fig.48 / Observing user while Discussing using the platfrom.

Result of Observing user in a debate

The feedbacks given through using the platform were listed here for further iterations

and is divided into four sections namely: Problems which later changed to or design opportunities, improvement ideas, platform advantages and, feedback on data visual- izaiton.

Problems

• It's not clear what they are going to speak about at this step. especially for the one who wants to give advice.

• Waiting for some signs to go to the next level.

• Changing between each step and the Start button is not visible.

• When facing a list of needs, I'm not sure where to start when facing it for the forts time.

• Giving a rate for some needs it's hard and impossible. For example, giving a rate to growth is hard but for physical well-being needs it's easier.

• Drag and drop in the box to talk only about one need is not useful. they pass some needs so quickly And, it is a waste of time. some times they also talk about 2,3 needs at the same time.

• Quite a button is not clear.

• There is an issue of trust meeting two strangers for the first time through the platform and there is the uncertainty of how useful one person can be.

• There is an issue of motivation for migrants to take part in the match-making part of the system

• Users rely on the platform for each step, so they should be guided

• The differentiation between a list of needs is not visible enough

Improvement Ideas

• Introducing yourself in 1,2 minutes.

• Add a timer for each step of the discussion.

• Add a finish button for every step that should be done individually to let each other user understand it is finished.

• Emphasize and bold some important and interesting needs similarities or differences the first time encountering all needs.

• Encourage migrants to give advice based on individuals who want to migrate needs.

• When want to talk bout some needs select them so both users let each other know they are talking about which needs

• Make some needs they talked about inactive to let them know they already discussed

it.

• There is already a connection and community between migrants and who w-ant to migrate.

• Migrants can be motivated by promotion targeting their situation and clearing their minds or sth similar to participate in the platform.

• At the introduction level encourage users to give briefs of themselves whit providing questions to ask.

• Show both lists of needs automatically when opening the needs page

• The page of observing needs and discussion around it can be combined.

• Add a pattern to the list of needs and make the color more contractible.

• Provide different forms of showing data.

Platform Advantages

• Needs keyword works as a good conversation starter and guides users to become deep in details they have never discussed or have never thought about it.

• Providing comparing needs options brings some important insights for discussion which guide the user.

• Discussion around need took place and it gives users a conversation subject. They talked about them one by one and covered all their needs.

• If I wanted to do this alone myself it was hard to identify needs only in one session with migrants. Usually, when I want to talk about migration it took a lot of time and, as a result, I didn't cover all the topics I wanted to talk about.

• I talk to some of my friends who migrated almost every week, and after one year I'm starting to identify some needs inside me after talking with them.

• We have paid attention to some details that helped us to become deep into our needs related to migration.

• The discussion using needs helped validate some of the information I already have and make them more structured.

Feedback on Data Visualization

• when hovering on freedom show the number of people choosing it as well as bolding freedom on the other side.

• Redesign the way of showing comparison

3.9.8 Design system

The design system of the user interface of the platform was inspired by the communication design developed earlier. It was created based on Material.io ,Material Design kit 3. To start with Typography, The Inter font from the Serif family was chosen In Light, regular, and medium with an emphasis on keeping the final interface clean and Easy to follow. Speaking about colors, A light grey color (# F9F8F7) was chosen for the background to
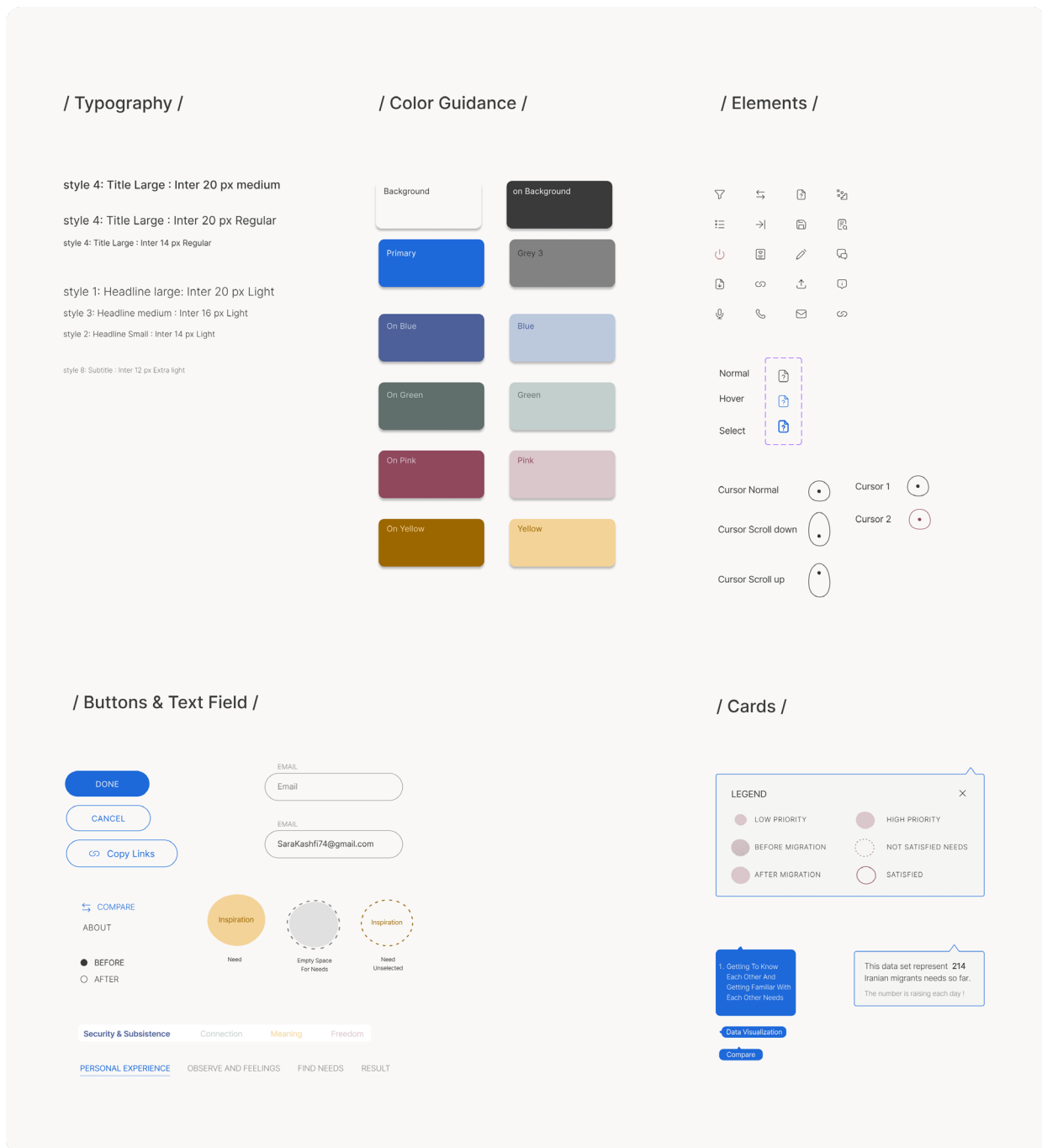
Fig.49 / Design System

make the environment less tiering and to match with color variations in the pallet chosen for data visualization. In some of the pages gradients using color pallets were added to make them soothing and appealing, The primary color used in the user interface was Persian Blue(# 1E69DA) to be more appealing to its Iranian target audience. For data visualization choosing the right color was important in differentiating each group of needs. A Noisy pattern inspired by Old television images was chosen to differentiate the List of needs before migration from needs after migration. To represent an empty space for placing needs inside, A light grey box with a light grey stroke was chosen.

The elements used in Designing the interface were Icons with Stroke 1 to Match with typography style and Cursor designed to raise the platform engagement on one side on the other hand, In collaborative board, 2 cursor represents two users on the page it was important to differentiate them.

Button and Text fields are designed in consistency with elements and typography. Additionally, Two multiple tabs were designed for navigating and switching between different steps of the process.

How are the three differen part of the platfrom connected?

The platform utilizes three distinct tools, namely the discussion tool, data visualization, and questionnaire, to provide three different values. Once the user completes the questionnaire, the input is utilized to generate data visualization, which is also used in the discussion tool. The data visualization tool not only serves as a useful reference for discussion, but it also motivates users to fill out the questionnaire.
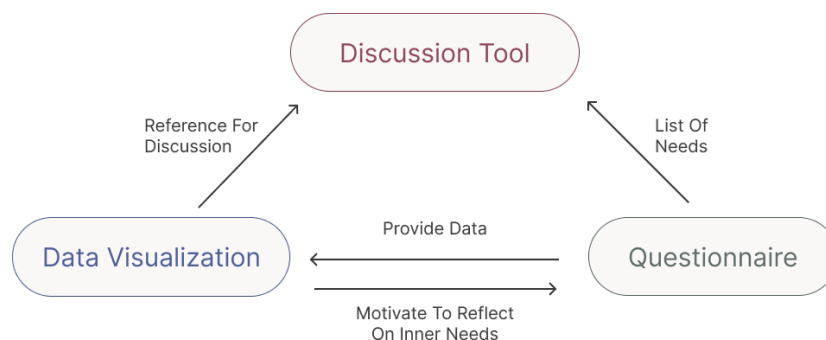
Fig.50 / 3 Part of the Platfrom Relation

3.9.9 High-fidelity Prototype

The changes identified in the previous test have been implemented in the new version and new ideas emerged which improved the User experience of the user while working with the platform which will be described thoroughly.

The first page of the website that the audience encounters should be so attractive that it encourages the audience to search more on the website. For this purpose, a question that will make the audience curious was chosen along with the form of a knot representing the confused mind that is involved in making a decision to migrate.

once the user starts to explore the website they will be directed to the onboarding page, in which the aim and intention of the website will be discussed as well as the value it brings through its 3 main functionality.
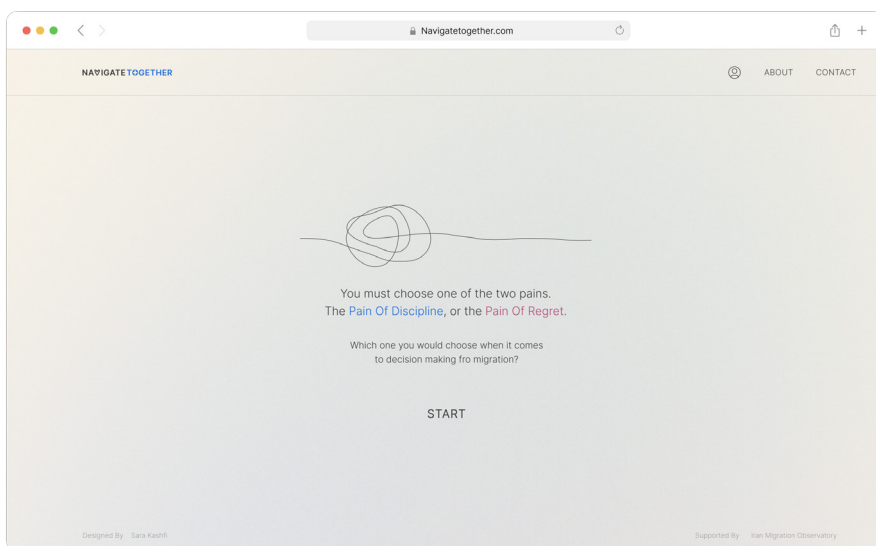
Fig.51 / First and Onboarding page
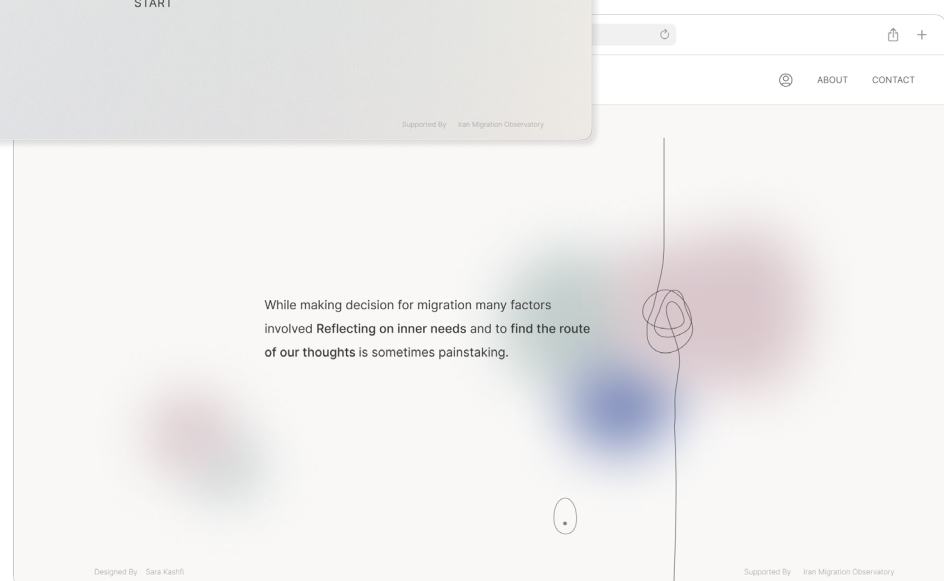
Users will be able to choose between one of the three functionalities offered by the website after the onboarding stage. They can either choose to explore data visualization of Iranian migrants' needs or reflect on their own needs through the NVC questionnaire or share and discuss migration with a migrant using the list of needs identified in the previous step.
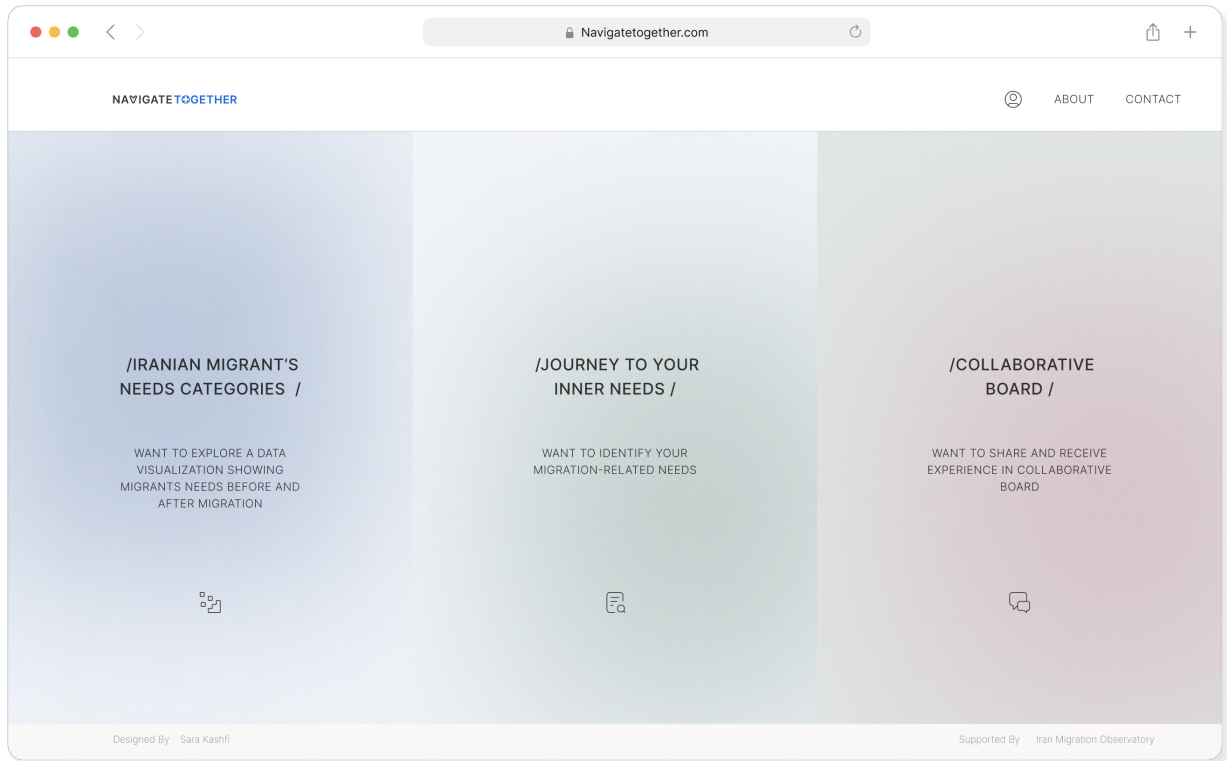

Fig.52 / Platfrom three funtionality

Headline and Footer

Organizing the border of the website for easier accessibility was one of the main changes made in the high-fidelity prototype. In the borders of the website, information such as the logo, the about, and contact sections, the footer, and the three main functionality sections won't change depending on how the website flows and becomes fixed. The borders of the pages were constantly changing before this change, which caused confusion and inconsistency. This enhanced feature also gives the user the ability to switch between three functions of the website without interrupting the others.
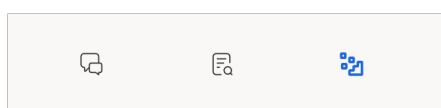

Fig.53 / Platfrom three functionality in header

Data Visualization flow

The data visualization page starts with a list of needs as stated in the low-fidelity process. Although the main data visualization remained the same, new features were added to this page. Firstly annotations such as the legend Icon and legend tab were added to this page for making the data visualization provided clearer. It was also important to let the user know where is the origin of data and how it will be collected to improve trustworthiness. Therefore an Icon representing the data origin which will be updated constantly was added to this page. Comparing and filtering options remained the same.
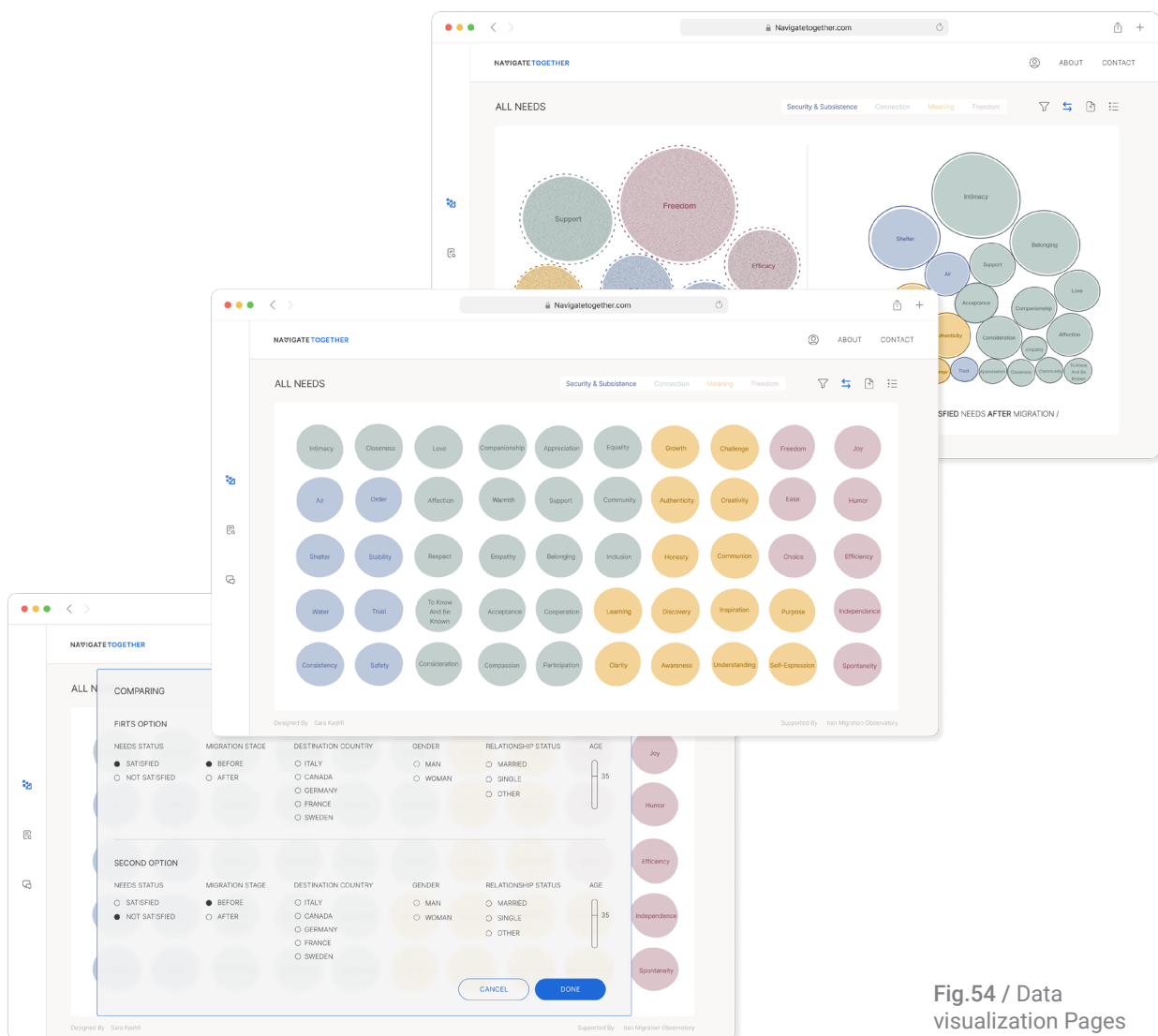
Fig.54 / Data visualization Pages

NVC Questionnaire page

The NVC questionnaire starts with the onboarding of NVC. this page will be explained

what is NVC how it will affect decision making and what steps need to be taken to raise awareness about needs. Then the user will be directed to the page in which they will be asked if she/he is a migrant or have migration thoughts and based on that the question-naire will be displayed based on that. The first stage is personal information like name and family name, age, gender, and country of residency. Email and password were later added to the system as answering NVC questions might take time and having an account help save an ongoing session.
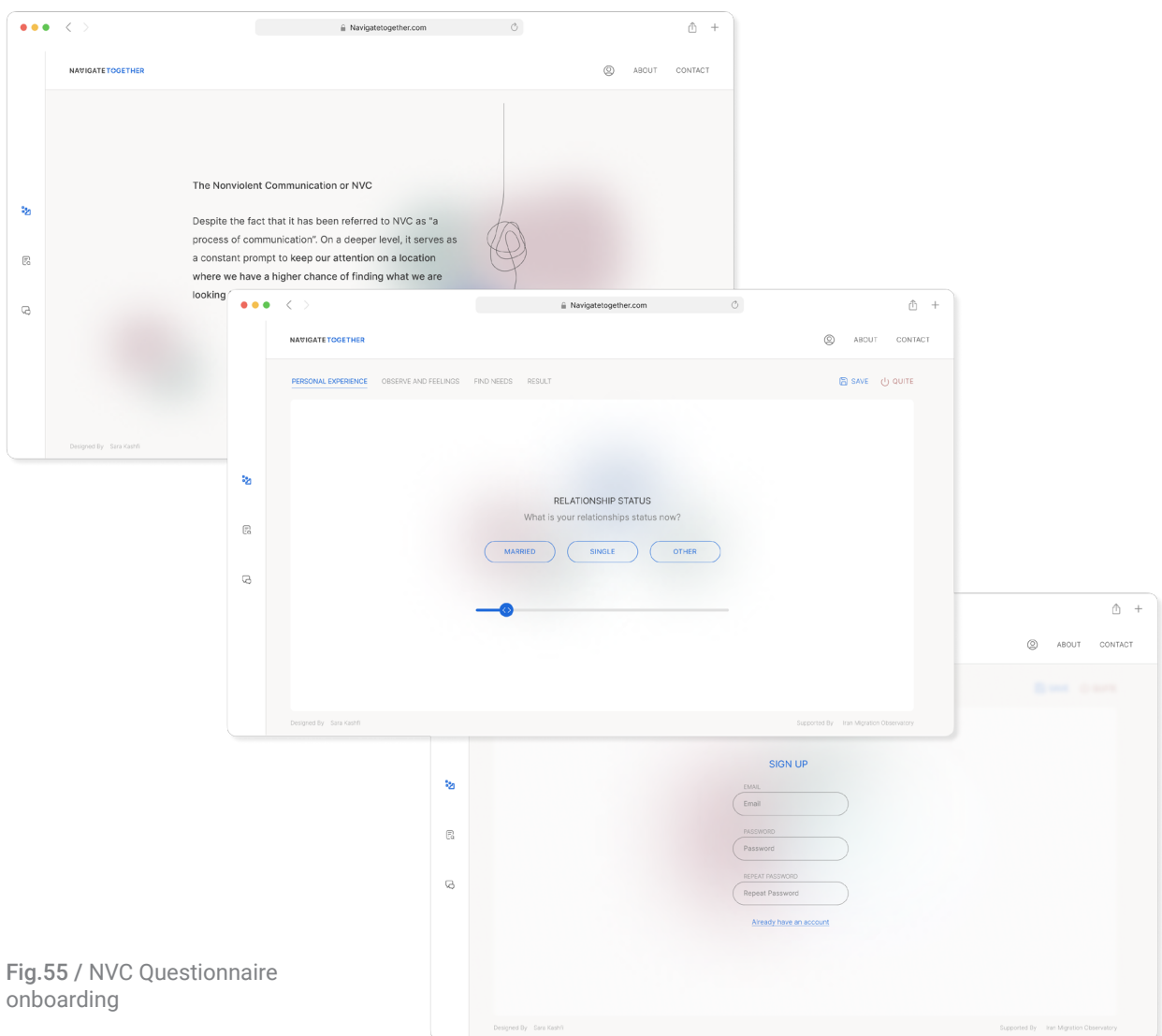
Fig.55 / NVC Questionnaire onboarding

The second stage is observing the situation and identifying feelings. A list of feelings provided based on NVC feelings list was created to help the user identify their feelings faster. This stage helps users to become connected with themselves and observe their life reality. This stage for whom migrated will take place two times, one before migration

and one at present moment after emigration. After choosing the feelings from the list, A set of feelings will be provided for the user to confirm or edit on one hand and reflect on them on the other hand.

Fig.57 / NVC Questionnaire Identify Feelings

The next and main stage is identifying satisfied, and unsatisfied needs before and after migration for migrants, and for those who have not migrated at present time before migration. In this stage, the user starts browsing through the list of needs provided by the

Fig.56 / NVC Questionnaire identifying needs page

NVC website and identifies both unsatisfied and satisfied needs on two levels. After each section of choosing the needs, the user will put them in order and therefore make each list of needs prioritized. (Figure 57)

At the end of this session, a list of all the categorized needs will be given to the user with annotation and the possibility to customize the result to dark or light mode. Additionally, a member code will be created for the user. The necessity of having this code is to access this user's data when they wanted to start a discussion with another user in the collaborative board area.
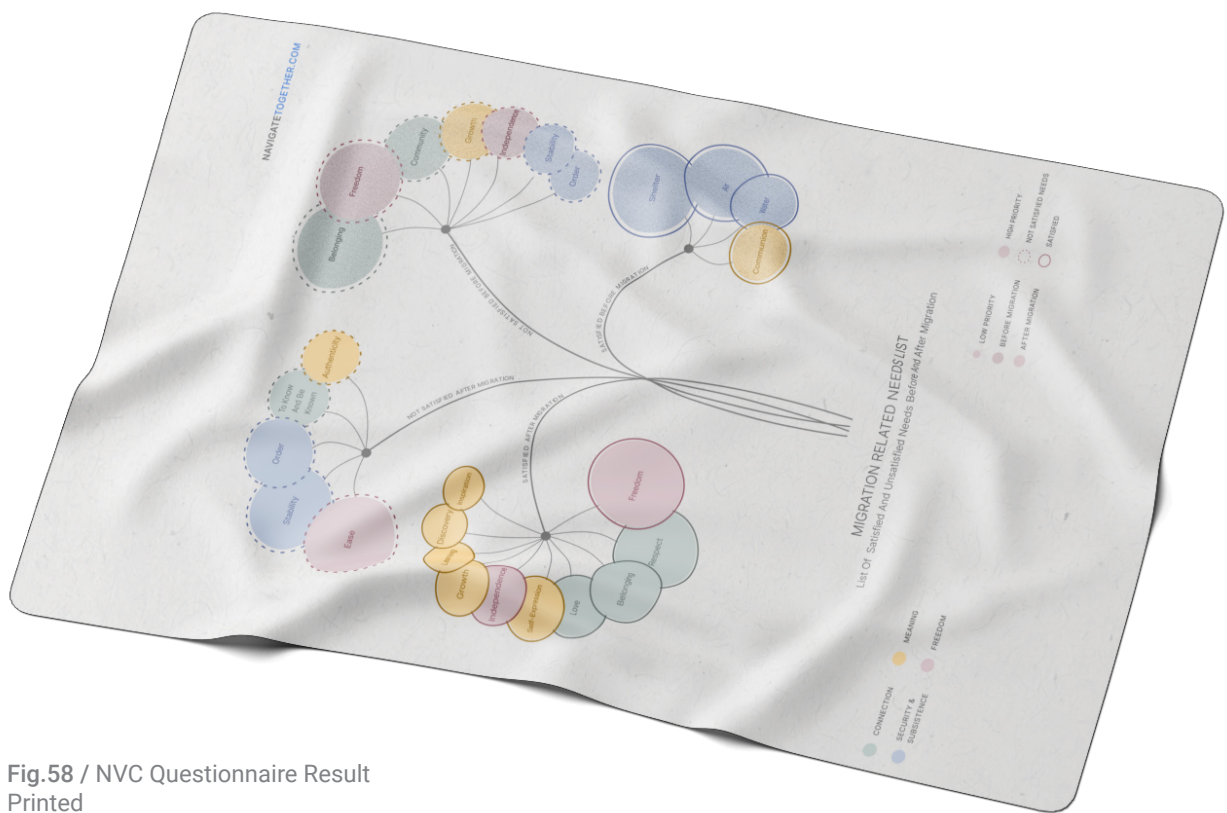
Fig.58 / NVC Questionnaire Result Printed

Collaborative Board

The third part of the platform has been created to improve the sharing of personal experience moments between migrants and individuals considering migration. The prerequisite for getting involved in this part of the platform and starting a conversation is to go through the NVC questionnaire process and find the list of needs. For this reason, it is mandatory for both users who want to enter the conversation using the platform to get the list of their needs and the membership code. To start the conversation, the first user

who refers to this section with the other user's membership code and previous coordination; Adds him to the conversation.

A user who has not logged in before entering this page and does not have a membership code will be asked to receive his membership code through the answer to the NVC questionnaire. Also, if the user does not have a partner to start a conversation with, an invitation link is prepared to be sent to him. In this invitation link, the user is encouraged to go through the NVC process and receive his membership code to start the conversation.
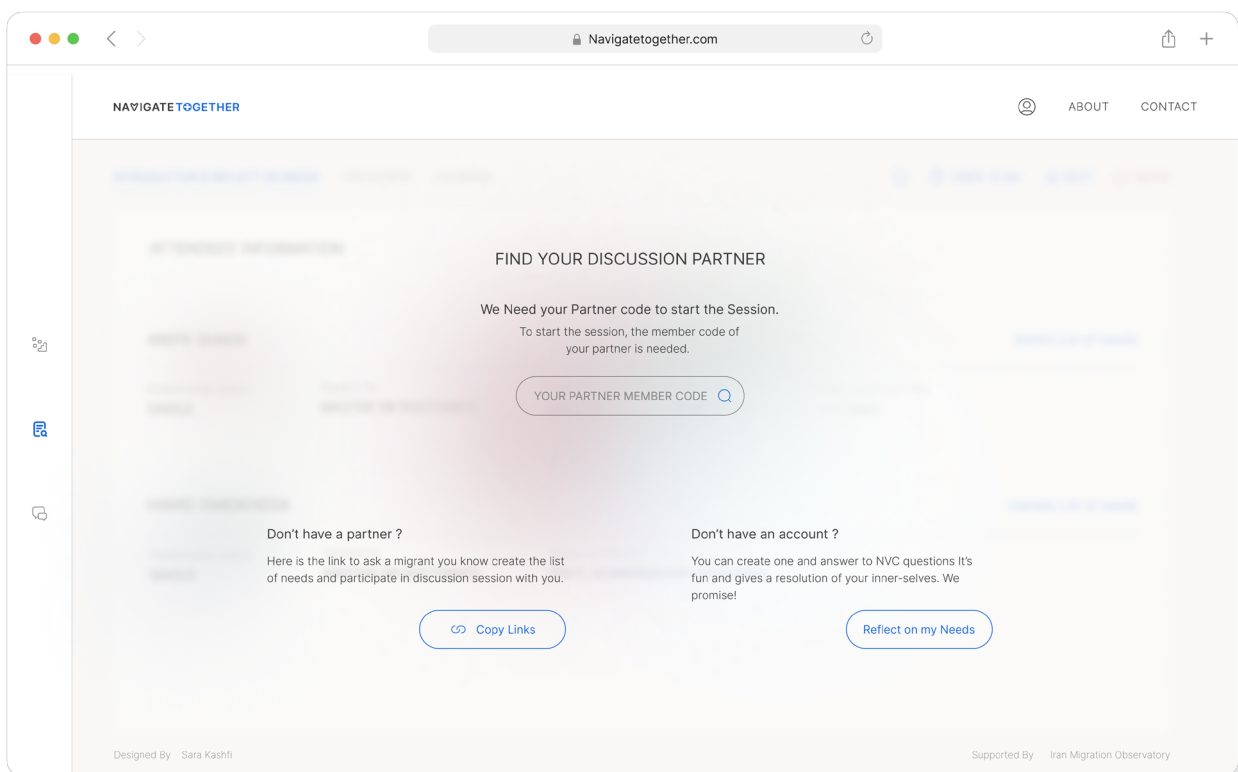
Fig.59 / Collaborative board starter page

Once the user got connected together, the discussion session starts with onboarding of discussion steps and collaborative board features. The conversation has 3 main steps first introduction & Reflecting on each other needs, then the start discussing the needs, and lastly giving feedback. For each step, there is a timer to make the discussion time more organized. Migration topics can have multiple aspects and not having a time limitation can distract users from discussing the list of needs. Additionally, a hint button is located above the page which gives advice through discussion moments.

The first step of the guided conversion process is for users to become familiar with each

other and also to get familiar with each other's list of needs. The user needs to spend some minutes introducing each other This will act as an ice breaker on one hand and on the other hand will give a background for later discussion about needs and migration. In the next step, users will be guided to search through the list of needs to identify interesting similarities and differences or any keyword of needs that they are curious to know about, and this way the conversation around the needs will be built. On this webpage, both users' lists of needs were placed with the possibility to switch between.
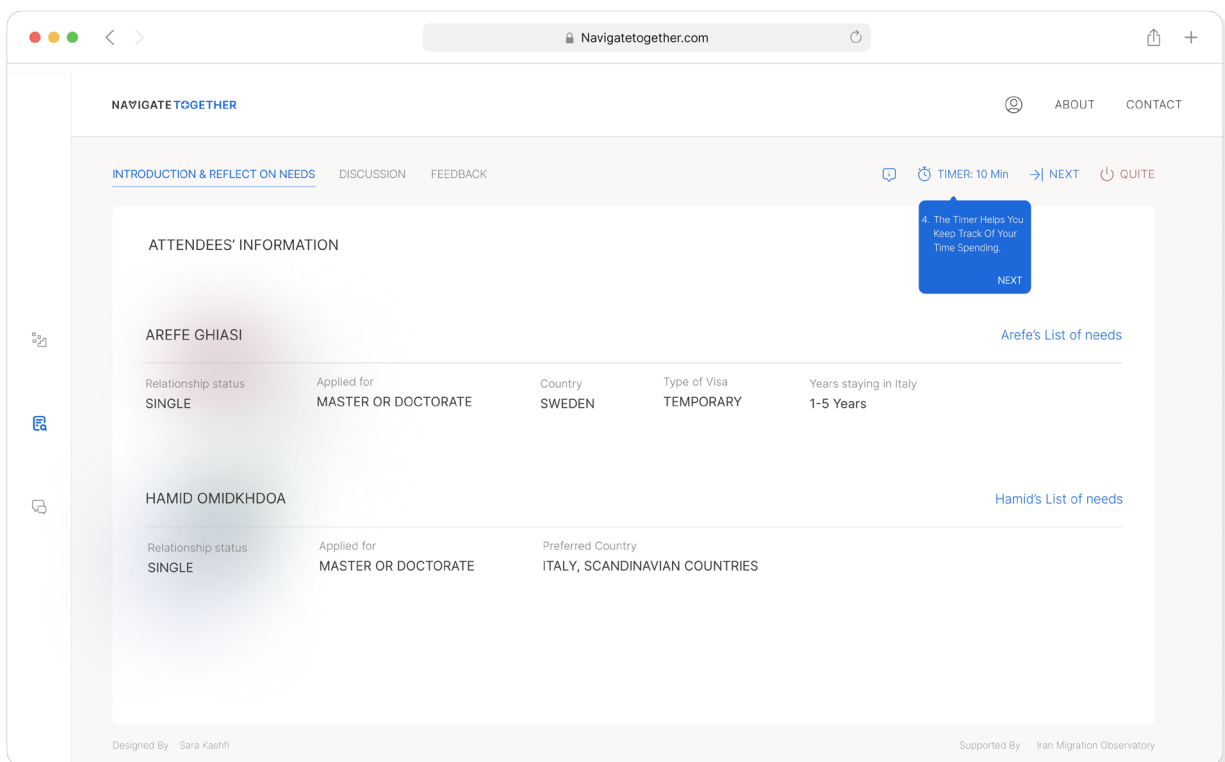
Fig.60 / Collaborative board getting familiar page

Among the feedback given during the testing of the platform, it was suggested that the platform make some of the similarities identified in the needs list of both users bolder so they don't have to spend a great deal of time searching for similar or interesting keywords to discuss. This will be accomplished by the platform identifying similar keywords and showing them to the user. The animation making this happen is inspired by dandelions seeds flying. one need represeneting one seed of dandelion that matches other partner's need will fly and reach each other in the middel of the page.(Figure 60)

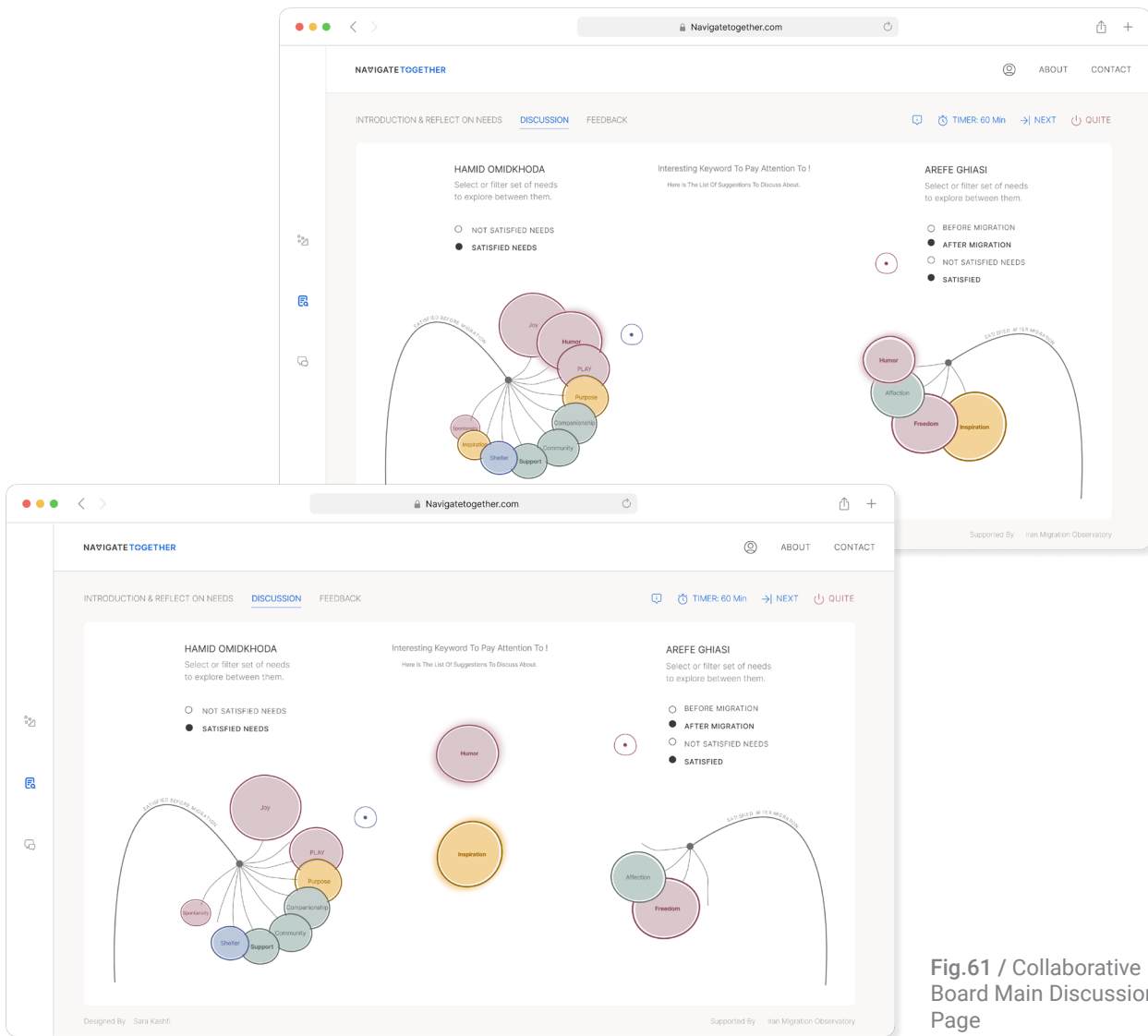User feedback will be recorded in two terms at the end of this session. The collabora-

Fig.61 / Collaborative Board Main Discussion Page

tive board and discussion session can be improved by noting what each participant has brought from their own discussion session and giving feedback on how to make the board and session better.
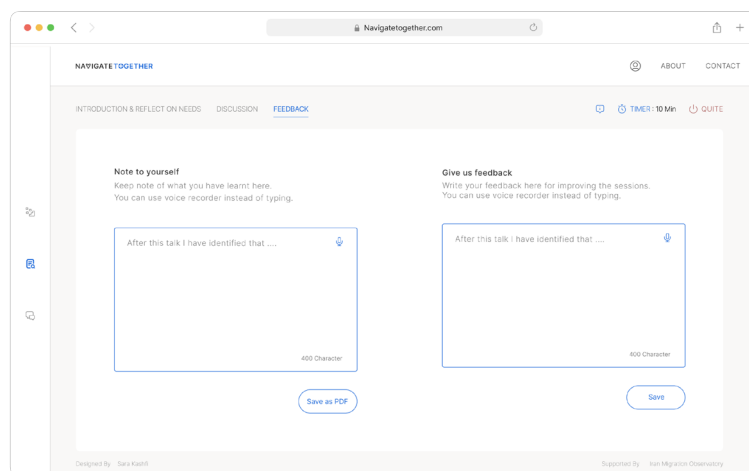

Fig.62 / Collaborative board Feedback Page

The Profile

The profile picture was created with the aim of containing firstly the personal information of the user and the ability to edit them. Secondly, it keeps track of answering the NVC questionnaire process and gives the user the freedom to pause the process, save it and reach it whenever possible from his profile and access the list of needs and the member code, as a result. And lastly, From the profile page user is able to download feedback recorded from collaborative sessions.
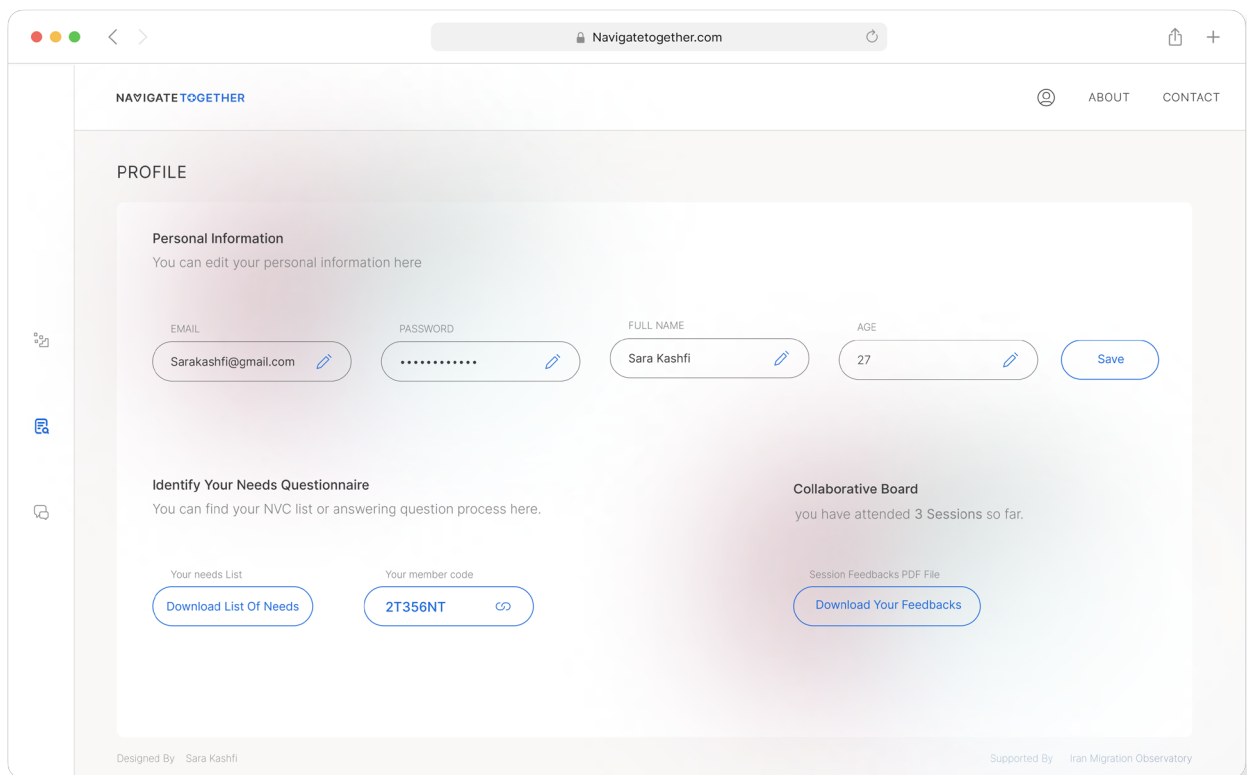

Fig.63 / Profile page

The Contact

The aim of the contact page was threefold, first to provide Contacting options to NVC specialists. The NVC process has one further step which is about creating a demand for the unsatisfied needs identified. Helps of NVC psychology is always helpful in firstly removing judgments from pure observations and then identifying needs that might be hard to capture and finally helping create demand for the identified need. The second contacting option is for Migration observatories or statical centers that are looking for

data provided by the website to study. They can contact the service provider for further assistance in accessing data. And finally, The last contact option is for getting assistance in case any troubles happened on the website for its users.
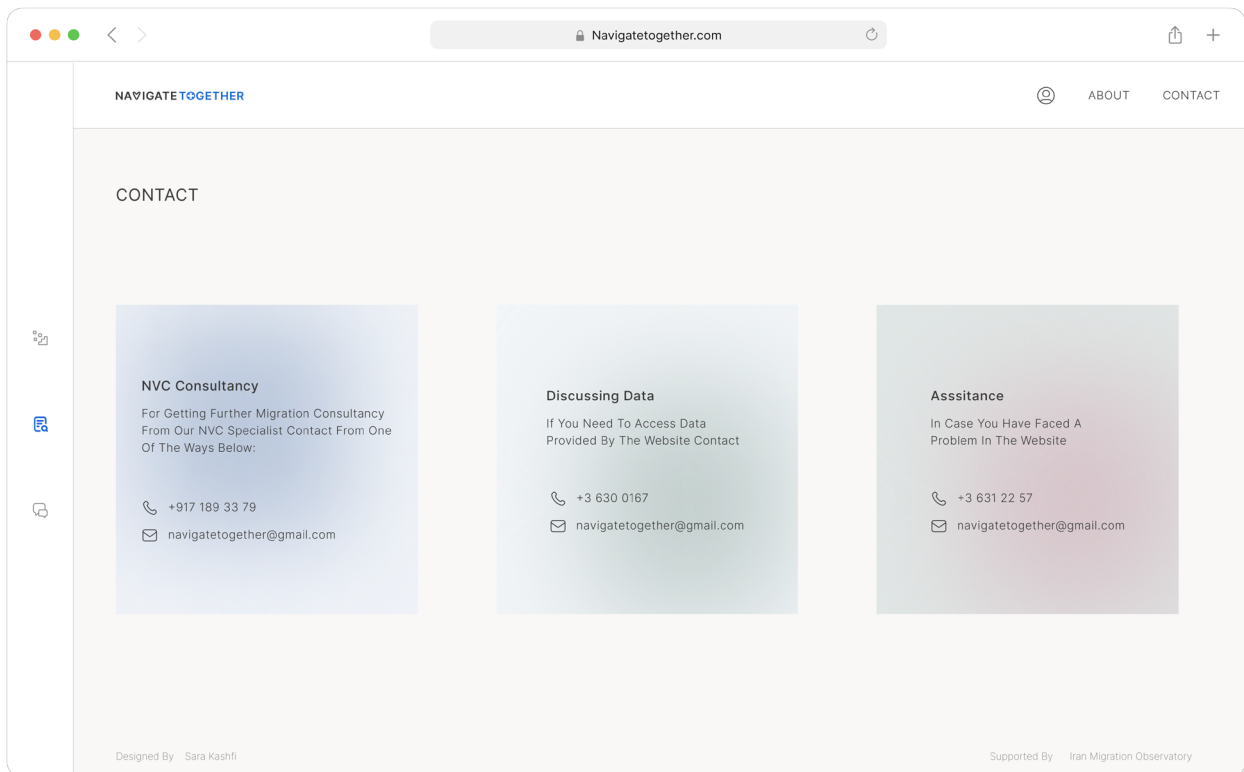

Fig.64 / Contact page

Future Development

As the main target audiences of the platform are Iranians the platform needs to be also translated into Persian -The Iranian Language - for better communication. In addition , Although The Platform User interface design Iterated many times, there is still place for improvement after doing usability and heuristic tests.
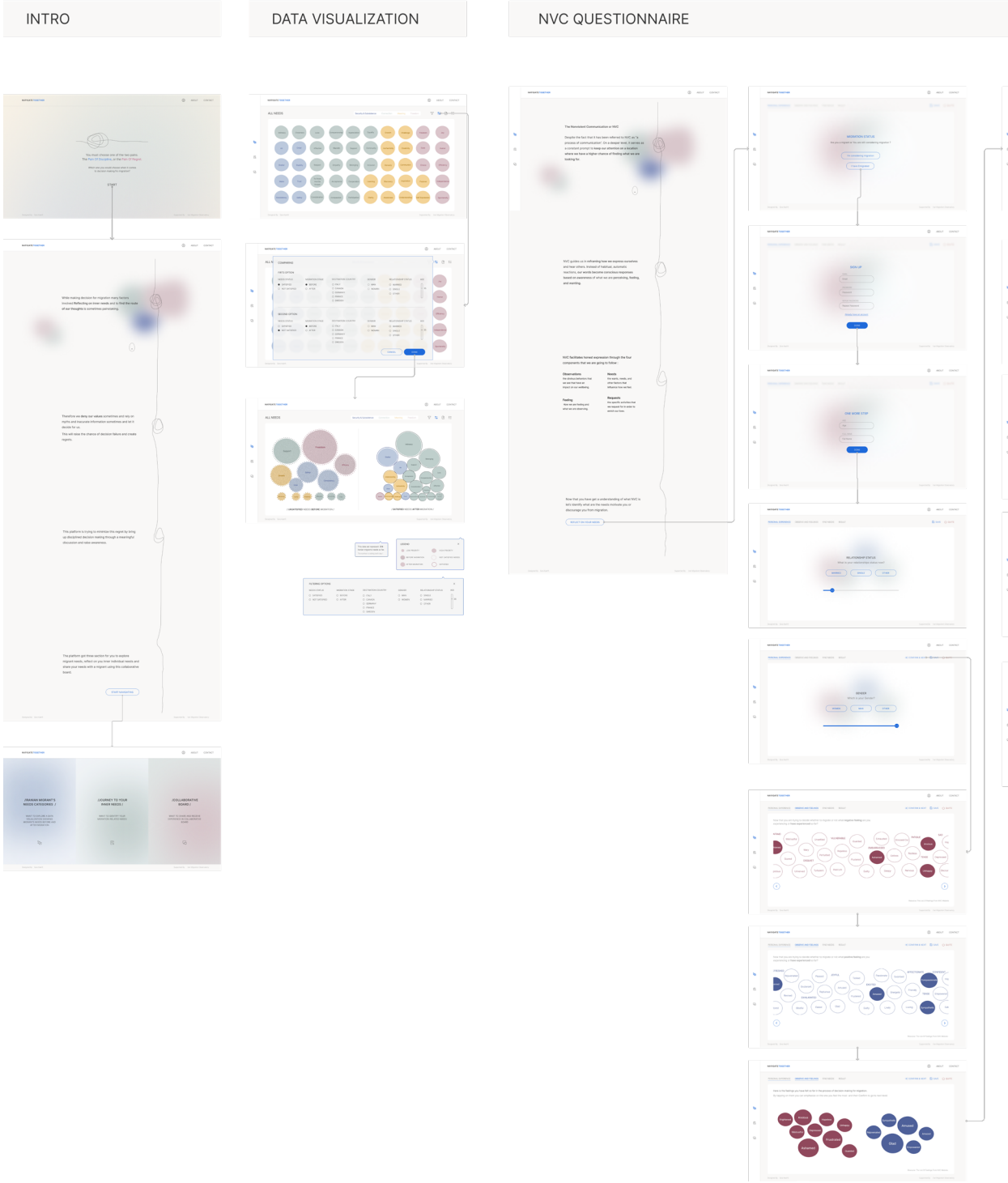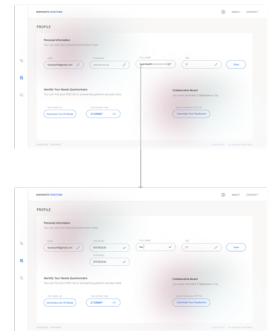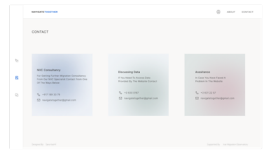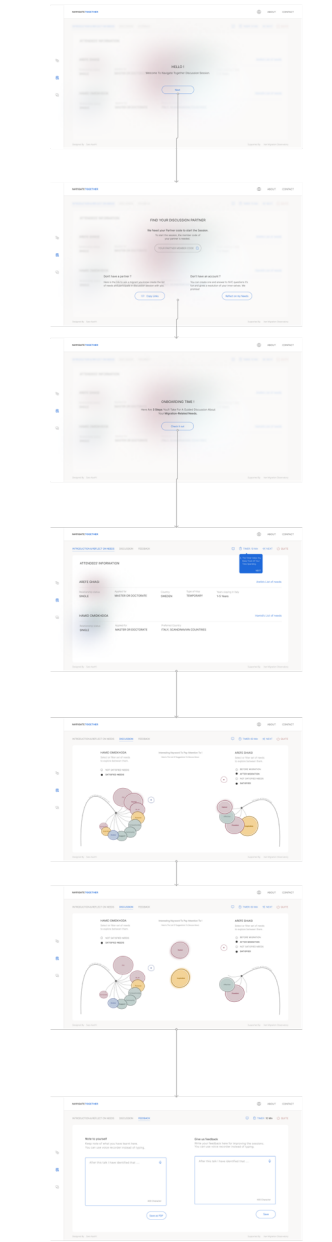
INTRO

DATA VISUALIZATION

NVC QUESTIONNAIRE

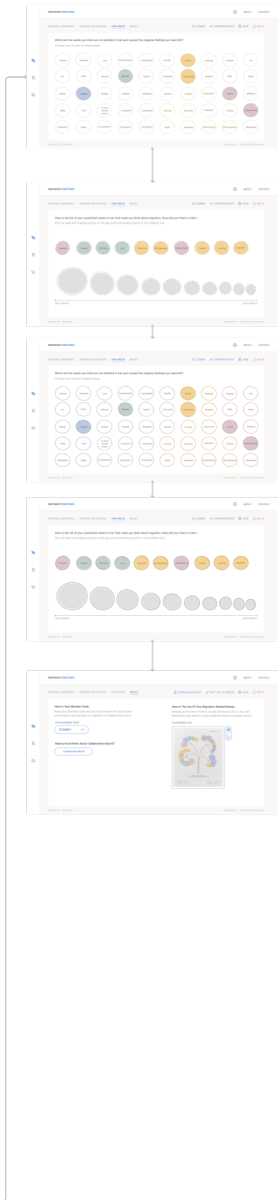**Fig.66 /** Webpage Flows

COLLABORATIVE BOARD

CONTACT

PROFILE
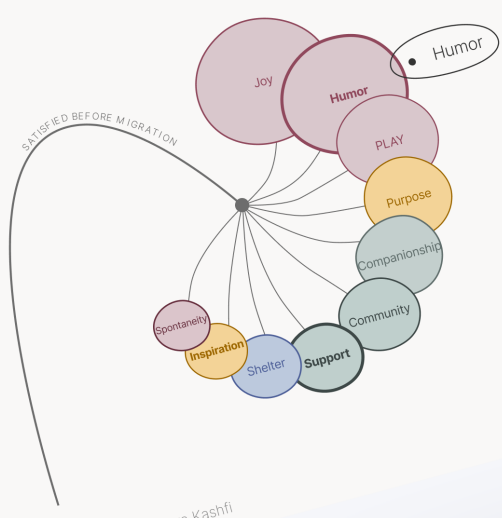
HAMID OMIDKHODA
Select or filter set of needs
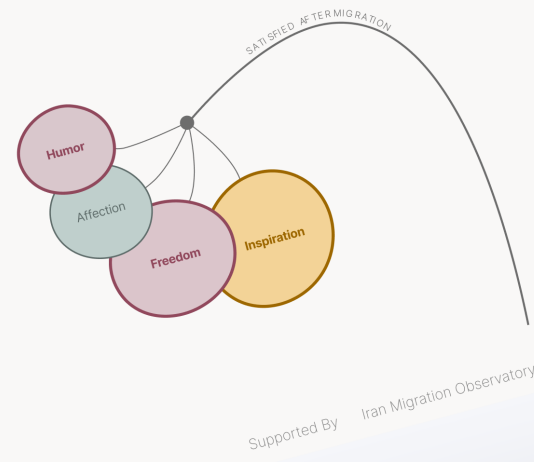to explore between them.

○ NOT SATISFIED NEEDS
● **SATISFIED NEEDS**

Here Is The List Of

○ AFTER MIGRA
○ NOT SATISFIED NEEDS
● SATISFIED

Humor

Support   Freedom

Self-Expression   Inspiration

Efficacy

Independence

Authenticity

Equality

SATISFIED AFTER MIGRATION

Humor

Affection

Freedom   Inspiration

Supported By   Iran Migration Observatory

SATISFIED BEFORE MIGRATION

Joy   Humor   Humor

PLAY

Purpose

Companionship

Spontaneity   Community

Inspiration

Shelter   Support

Designed By   Sara Kashfi

ABOUT   CONTACT

⊕ NEXT   💾 SAVE   ⏻ QUITE

Learning   Inspiration

LEAST PRIORITY

Supported By   Iran Migration Observatory

NA▽IGATE**TOGETHER**

Security & Subsistenc

ALL NEEDS

Freedom

Support   Efficacy

Safety   Consistency

Growth   Order

Consideration   Trust

Affection

Clarity   Creativity

Discovery

*/ UNSATISFIED NEEDS **BEFORE** MIGRATION /*

Designed By   Sara Kashfi

NA▽IGA
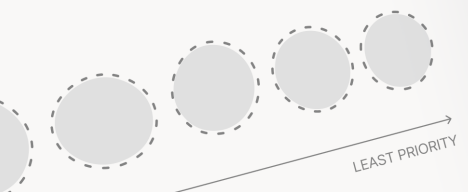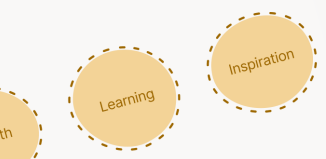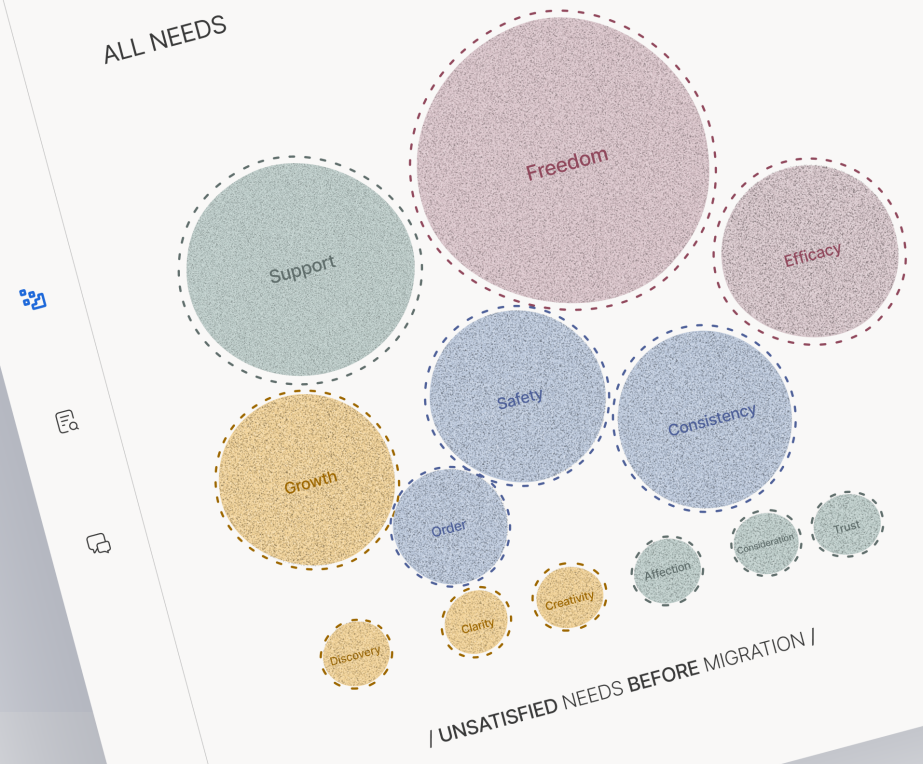
ABOUT   CONTACT

looking for

Designed By   Sara Kashfi

NAVIGATE TOGETHER

ABOUT   CONTACT

Connection   Meaning   Freedom

Intimacy

Belonging

Shelter

Support

Air

Love

Acceptance

Companionship

Understanding

Affection

Authenticity

Consideration

Empathy

Water

Closeness

Community

To Know And Be Known

Appreciation

Trust

Humor   Communion   Challenge
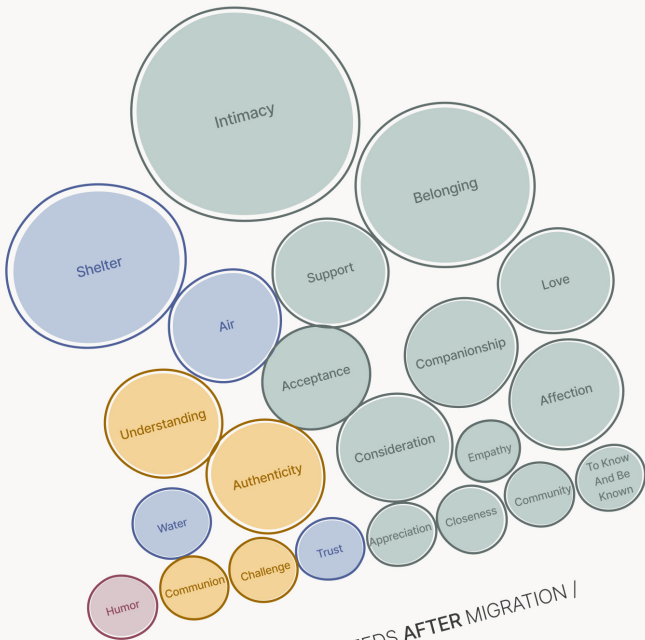
/ SATISFIED NEEDS AFTER MIGRATION /

Supported By   Iran Migration Observatory

/IRANIAN MIGRANT'S
NEEDS CATEGORIES /

WANT TO EXPLORE A DATA
VISUALIZATION SHOWING
MIGRANTS NEEDS BEFORE AND
AFTER MIGRATION

Designed By   Sara Kashfi

ABOUT   CONTACT

Freedom

Compare

Security & Subsistence   Connection   Meaning

Joy

Freedom

Growth   Challenge

Humor

Equality

Ease

Appreciation

Creativity

Companionship

Authenticity

Efficiency

NAVIGATE TOGETHER

Love

Community

Choice

ALL NEEDS

Closeness

Support

Communion

Intimacy

Warmth

Honesty

Independ

Affection

Inclusion

4. CONCLUSION

Based on the research conducted, it has been identified that personal experiences shared by Iranian communities about international migration is a common practice, and serves as the primary source of information for migration decision-making. However, it has been observed that these conversations often lack consideration for the inner aspects of human beings, and can be biased at times. This has resulted in a social issue that is impacting the decision-making of a significant number of Iranian young workforce.

In response to this issue, a range of steps and methodologies were implemented, including a literature review, interviews, co-design sessions, and user tests to validate the process and results. The final service design developed as a part of this research aims to address this issue by offering three values. The first value is to help Iranians identify and arrange all their unsatisfied and satisfied inner needs that can affect migration decision-making. The second value is to use this list of needs as a reference to guide and improve the sharing of personal experiences with migrants. Lastly, the third value is to raise awareness about migrants' needs from different parts of the world through a collection of individual needs and turning it into a new source of information using data visualization.

The platform has been designed as the central hub, data collector, analyzer, and visualizer of this service. It serves as a connector for all stakeholders to ensure and implement the mentioned values. However, further development and steps need to be taken to improve the service, including raising the data diversity and multiplicity, conducting further usability testing, and adding more animation to make the platform more engaging and interactive.

It is also worth mentioning that data generated from the platform can be valuable at the governmental level too. To make more optimal use of Iranians abroad as well as to keep the young Iranian workforce in the country, Iran should replace the current "reactive" political approach with an "active and reactive" one. (Salavati, 2021) The government must identify the reasons behind Iranian workforce's migration, both within and outside the country, and address their unfulfilled needs. Improving infrastructure and creating more opportunities for the economic and social reintegration of specialists within Iran are crucial steps that the government needs to take to attract and retain talented professionals.

The proposed service provides valuable references for Migration Observatories through both data generation and extraction.

To conclude, the integration of data generation and data visualization with technology for decision-making provides an adequate solution to this research topic. In the meantime, on a larger scale and with regard to the topic of involving citizens in sustainable development, which emphasizes citizen engagement as an important part of achieving social goals, the solution provided is encouraging citizens to collaborate with each other through technology to overcome the issue of decision-making for migration. The proposed solution is therefore applicable to other migration contexts as well.

5. APPENDIX

Introduction script of the unstructured interview with Iranian wants to migrate

1- What is your intention of moving abroad?

2- do you have a specific goal in mind ? or a specific motivation?

3- why you don't like living here

This is the first stage of migration. It's about considering your needs and desires.

4- At this stage , where do you usually encounter information you need?

(rank them from 1 to 5)

 -web pages

- ask for personal experiences of other people

- social media

- journal and magazine articles

- expert opinions(migration lawyer, consultant)

5- for personal experiences

what you usually ask and for what piece of information you seek help from and experience person?(more about personal level or environmental factors)- about concerns and worries- seek advises

- other:

Did you have a moment of reflection on your discussion?

Do you have any obstacles or pain points in this way of gathering information for migration?

how do you think it can be improved?

Do you consider the person's personality? to see how she/ he looks like you?

6- For social media

What kind of information are you looking for in social media?

Which social media do you usually search for?

how do you look for information? use hashtags?

Have you found what you were looking for?

Do you have any obstacles or pain points in this way of gathering information for migration?

how do you think it can be improved?

7- For web pages

What kind of information are you looking for in Web pages?

Have you found what you were looking for?

Do you have any obstacles or pain points in this way of gathering information for migration?

how do you think it can be improved?

8- For Expert opinions

Who you talked to?

what you asked and for what kind of information you asked for a consultant?

Do you have any obstacles or pain points in this way of gathering information for migration?

how do you think it can be improved?

9- For journal and magazine articles

What is the name of the magazine you read?

Do you have any obstacles or pain points in this way of gathering information for migration?

how do you think it can be improved?

10- Is there any more information you think you lack and you can not find?

11- Is there any form or way of communicating information that you think suits this topic?

12- is there any value or need you might have and you think prevent you from migration?

13 - how do you manage considering all your needs?

14- Look at this list of needs, is it understandable for you?

15- Do you think it is helpful to understand about others people's values and needs?

Introduction script of the unstructured interview with Iranian migrants

1- Which piece of information do you think gives more insight to people who want to migrate?

inside out approach (inner needs and feelings of a person who migrated after and before migration or outside in approach(starting from external push and pull factors and see its influence on one's self)?

2-how do you think sharing your experience can help others who are thinking about migration?

3-if you wanted to share your experience, where would you do that?What topic would you choose?Which platform would you check?

4- What piece of information you needed before migration but couldn't find on the internet?

5- Which piece of information makes a decision about migration structured and finally real?

6- If you want to help someone with a decision about migration, how would you do it?

Introductory script of the structured interview

When it comes to make decision for migration there are a lot of questions to answer and we start searching for answers, Personal experiences are among our important source of information but,There are Biases in Discussion about migration. we can improve this by asking right questions and targeting right Answer. NVC is a physiological approach that take inventory of our personal wants and needs for making a better decision with a disciplined approach. It has 4 steps we are going to explore as follows. We will only follow the first 3 steps.

 1- observation without judgment

2 - see feelings

3 - find needs

4 - Take action

5.4 Introductory script of the doubled interview

Thanks for contributing to this session. So far you have reflected on your need and identified what are your satisfied and unsatisfied needs. Now imagine you have been introduced to each other to share and hear from personal experiences in migration using the platform.

This platform will give you hints and show the list of needs you have chosen previously. You can compare and take a look at it and start the discussion using the figma link provided for you. I'll turn off my camera and be your observer.

Open Questions asked afterwards:

1- What is your overall feeling after this discussion?

2- how can we improve the session?

3- Are there any hints or feedback you needed during the process?

4-What is your opinion about the conversation around the topic of needs?

5- Is the timing of the session enough for you ?

6- What do you think about data visualization?

6. REFERENCES

• Amanat, A. (2017). Iran: A modern history. Yale University Press, 2017. Yale University Press.

• Azadi, Mirramezani, & Mesgaran. (2020). Migration and Brain Drain from Iran. Google Docs. https://drive.google.com/file/d/11DvaD27ZsRhwJDEd2XlwsxFuL1NoRJAZ/view?usp=sharing&usp=embed_facebook

• Bakewellb, Longc, & Hear. (2018). Reconsidering the Drivers of Migration, Journal of Ethnic and Migration Studies,. Journal of Ethnic and Migration Studies.

• Börner, K., Bueckle, A., & Ginda, M. (2019). Data visualization literacy: Definitions, conceptual frameworks, exercises, and assessments. Proceedings of the National Academy of Sciences, 116(6), 1857–1864. https://doi.org/10.1073/pnas.1807180116

• Boy, J., Rensink, & Bertini. (2014). Boy J, Rensink RA, Bertini E, Fekete J-D (2014) A principled way of assessing visualization literacy. IEEE Trans Vis Comput Graph 20:1963–1972.

• Costigan-Eaves, P. (1986). Edward R. Tufte The visual display of quantitative information. Information Design Journal, 4(3), 235–236. https://doi.org/10.1075/idj.4.3.12cos

• Giaccardi, E., & Jan Stappers, P. (n.d.). Research through Design. Retrieved December 3, 2022, from https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/research-through-design

• Glasser, W. (1999). Choice theory _ a new psychology of personal freedom. HarperCollinsPublishers.

• Gollwitzer, P. M. (1996). Gollwitzer, P. M. (1996). The volitional benefits of planning. In Gollwitzer, P. M. and Bargh, J. A. (Eds.), The Psychology of Action: Linking Cognition and Motivation to Behavior. New York: Guilford Press, pp. 287–312.

• Grafton, A., & Rosenberg, D. (2010). A History of the Timeline-Princeton Architectural Press (2010) Cartographies of Time_.

• Gustafsson, D. (2019). Analysing the Double diamond design process through research & implementation. 55.

• Guttman, B. (2011). The Change of Power Paradigm in Art Education.

• Heckhausen, H. (1991). Heckhausen, H. (1991). Motivation and Action. New York: Springer.

• Ivan, S. (2021). Qualitative Data Collection: 6 Things You Need to Know to Get It Right. NICHQ - National Institute for Children's Health Quality. https://www.nichq.org/insight/qualitative-data-analysis-7-things-researchers-need-know-get-it-right

• Kahneman, D., Lovallo, & Sibony, O. (2021). Before You Make That Big Decision.

• Kirk, A. (2019). Andy Kirk—Data Visualisation_ A Handbook For Data Driven Design-Sage Publications (2019).

• Kley, S. (2010). Explaining the Stages of Migration within a Life-course Framework.

• Knaflic, C. N. (2015). Storytelling with Data. 284.

• Lee, S., & Kim. (2017). . Lee S, Kim S-H, Kwon BC (2017) VLAT: Development of a visualization literacy assessment test. IEEE Trans Vis Comput Graph 23:551–560.

• Markman, A. (2022, February 24). 3 ways to stop comparing yourself to others, according to a cognitive scientist. Fast Company. https://www.fastcompany.com/90723635/3-ways-to-stop-comparing-yourself-to-others-according-to-a-cognitive-scientist

• Acton, C. (2022, February 4). Are You Aware of Your Biases? Harvard Business Review. https://hbr.org/2022/02/are-you-aware-of-your-biases

• Affinity Bias Overview: How to Avoid Affinity Bias - 2023. (n.d.). MasterClass. Retrieved February 15, 2023, from https://www.masterclass.com/articles/affinity-bias

• Asana. (2022). 19 Unconscious Bias Examples and How to Prevent Them [2023] • Asana. Asana Group. https://asana.com/resources/unconscious-bias-examples

• Ayat, R. (2019, October 15). Meaning of Decision Making: Meaning and Definition by Author, Scholars. Economics Discussion. https://www.economicsdiscussion.net/decision-making/decision-making-meaning/31962

• Azadi, Mirramezani, & Mesgaran. (2020). Migration and Brain Drain from Iran. Google Docs. https://drive.google.com/file/d/11DvaD27ZsRhwJDEd2XlwsxFuL1NoRJAZ/view?usp=sharing&usp=embed_facebook

• Dartmouth, U. of M. (n.d.). Decision-making process. Retrieved February 18, 2023, from https://www.umassd.edu/fycm/decision-making/process/

• Einhorn, C. S. (2022). Make Better Decisions by Challenging Your Expectations.

• Evaluate Information and Its Sources Critically. (n.d.). Retrieved February 4, 2023, from https://www.hartnell.edu/library/infolit/evaluate-information.html

• Gino, F., Bazerman, M., & Shonk, K. (2016). Making decision. Harvard Business Publishing.

• Information Architecture Basics. (2013, October 8). Department of Health and Human Services. https://www.usability.gov/what-and-why/information-architecture.html

• Jahde. (2013, August 23). Personal experiences with confirmation bias. Medium. https://jahde.medium.com/personal-experiences-with-confirmation-bias-e627a5f420f6

• Kahneman, D., Lovallo, D., & Sibony, O. (2021). Before You Make That Big Decision.

• Kirk, A. (2019). Andy Kirk—Data Visualisation_ A Handbook For Data Driven Design-Sage Publications (2019).

• Mason, K. (2022, October 27). Affinity Bias: What It Is and How to Combat It. JobSage. https://www.jobsage.com/blog/affinity-bias-what-it-is-and-how-to-combat-it/

• RASURE, E. (2022). Recency (Availability) Bias. Investopedia. https://www.investope-dia.com/recency-availability-bias-5206686

• Salavati, B. (2021). Iran MIgration journal 2021.

• Sleeswijk Visser, F., & Ernest, E. (2017). MyFutures: The future is plural.

• Spacey, J. (2022). 144 Examples of Personal Experience. Simplicable. https://simpli-cable.com/edu/personal-experience

• The Decision-Making Process. (n.d.). Retrieved February 19, 2023, from https://www.cliffsnotes.com/study-guides/principles-of-management/decision-making-and-prob-lem-solving/the-decisionmaking-process

• Violent Communication—Importance of NVC in Communication. (n.d.). PuddleDancer Press. Retrieved February 12, 2023, from https://www.nonviolentcommunication.com/learn-nonviolent-communication/nvc-communication/

• Voorberg, s. (2021). Decisions for information or information for decisions? Optimiz-ing information gathering in decision-intensive processes. Decision Support Systems, 151, 113632. https://doi.org/10.1016/j.dss.2021.113632

• Westerman, D., Spence, P., & Heide, B. (2014). Social Media as Information Source: Recency of Updates and Credibility of Information. Journal of Computer-Mediated Com-munication. https://doi.org/10.1111/jcc4.12041

• Zongola, K. (n.d.). LibGuides: Information Literacy Guide: Types of Information Sources. RetrievedFebruary4,2023,fromhttps://ufh.za.libguides.com/c.php?g=91523&p=590868

• O. WARD, M., GRINSTEIN, G., & KEIM, D. (2015). Interactive data visulaization, Founda-tions, Techniques, and Applications.

• Research through Design. (2014). https://www.interaction-design.org/literature/book/the-encyclopedia-of-human-computer-interaction-2nd-ed/research-through-design

• Rosenberg, M. B., & Chopra, D. (2015). Nonviolent Communication: A Language of Life:

Life-Changing Tools for Healthy Relationships. PuddleDancer Press.

• Sadeh, s, Mirramezani, M., Mesgaran, A., & Azadi. (2019). The Scientific Output of Iran: Quantity, Quality, and Corruption, Working Paper 7, Stanford Iran 2040 Project, Stanford University,S. Sadeh, M. Mirramezani, M. B. Mesgaran, A. Feizpour, P. Azadi,.

• Salavati, B. (2021). Iran MIgration journal 2021.

• Sleeswijk Visser, F., & Ernest, E. (2017). MyFutures: The future is plural.

• Székely, L. (2021, September 13). Design Ethics—Can We Solve Social Problems With Design? UX Studio. https://uxstudioteam.com/ux-blog/design-ethics/

• Spacey,J ,(2022) 144 Examples of Personal Experience

• Westerman, D. and Spence (2014) Social Media as information source: Recency of updates and credibility ... Available at: https://onlinelibrary.wiley.com/doi/pdf/10.1111/jcc4.12041 (Accessed: February 4, 2023).

YOU WOULD CHOOSE THE PAIN OF
DISCIPLINE, OR THE PAIN OF REGRET?