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# Analyzing the User Journey of Students of Member state to understand the Impact of Single Digital Gateway Regulation from citizens perspective

Master's Thesis

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# Liikmesriikide tudengite õppimatuleku protsessi analüüs hindamaks SDGR määruse rakendamise mõju kodaniku vaates

Magistritöö

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# Author’s declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

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# Abstract

In recent years, the concept of cross-border data exchange has been an essential part of development in the European Union where the services are provided using information technology and communication in an interoperable environment. Since the data exchange is a long way journey, the European Commission has initiated the Single Digital Gateway Regulation as an important step to implement the digital revolution in Europe.

EU Single Digital Gateway Regulation **(**SDGR) brings various services and methodologies under the same roof to set rules and guidelines on how to implement uniform public services in the member states. The following thesis seeks to investigate the impact of the regulation in Estonia. More specifically, the running case for the research investigation is the student application process for the member state students in the field of higher education. In order to seek answers for the research, different the student from the member state studying/studied in Estonia will be interviewed to understand the student journey which explains the steps and the processes the students have to complete by coming to study in Estonia. The thesis aims to identify the steps involved in the application process in Estonia, the number of contacts students have to make and potential issues in the process that can be improved or updated. The interview and its analysis will help to understand the current situation of the public service delivery in Estonia and the impact of the implementation of the regulation in Estonia where the changes in the public sector delivery will be analyzed. As the goal of the thesis is to understand impact of the regulation based on the real-life problems identified through the interviews, author will provide various recommendation, to make the student application process easier and efficient from both student and public administrative point of view.



Keywords: SDGR, interoperability, Cross-border services, Estonia, student application process

This thesis is written in English and contains 71 pages, 6 chapters, 13 figures, and 1 table.

# Abstrakt

Viimastel aastatel on riikideülese andmevahetuse mõiste mänginud Euroopa Liidus tähtsat rolli infotehnoloogia ettevõtete koostalitlusvõimelise keskkonna arengus riikideülese teenuste pakkumisel. Kuna andmevahetus on keeruline protsess, on Euroopa Komisjon algatanud Ühtse Digitaalse Turu määruse rakendamaks digitaalset revolutsiooni Euroopa Liidus. Nimetatud määrus toob ühe katuse alla mitmeid teenuseid ja kasutusmetoodikaid, pannes paika reegleid ja juhtnööre, mille toel on võimalik liikmesriikides luua ühtsed põhimõtted avalikele teenustele. Antud lõputöö uurib määruse mõju Eestis ning selle rakendamisega seotud muudatusi. Täpsemalt uuritakse liikmesriigist Eestisse kandideerivate tudengite sisseelamisprotsessi. Lõputöö käigus intervjueeritakse liikmesriikide tudengeid, kes on Eestis õppimas või eelnevalt õppinud, et selgitada tervikprotsessi, sealhulgas vajalikke samme ning teekonna pikkust, mida tudengid peavad protsessi käigus Eestisse õppima tulemiseks läbima. Uuringu läbiviimiseks toob autor välja järgnevaid aspekte: kui palju kontakte on vaja luua, vajalik suhtlusvõrgustiku haare ja millised on potentsiaalsed murekohad protsessis, mida oleks võimalik parendada või uuendada. Intervjuud ja analüüs aitavad mõista, milline on hetkeolukord avalike teenuste kättesaadavuse osas ning määruse täideviimise mõjust. Lõputöö eesmärk on mõista reaalseid ja elulisi murekohti, mille sisend saadakse läbiviidud intervjuude analüüsist. Autor pakub välja parandusettepanekud kandideerimisprotsessi hõlpsamaks ja efektiivsemaks muutmiseks nii tudengitele, ametnikele kui ka administratsioonile.

Märksõnad: SDGR, koostalitlusvõime, piiriülesed teenused, Eesti, tudengite kandideerimisprotsess

Lõputöö on kirjutatud inglise keeles ja koosneb 71 leheküljest, kuuest peatükist, 13 kujundist ja ühest tabelist.

# List of abbreviations and terms

| | |
|---|---|
| EU | European Union |
| SDGR | Single Digital Gateway Regulation |
| OOP | Once Only Principle |
| NPM | New Public Management |
| ICT | Information and Communication Technology |
| UML | Unified Modelling Language |
| ATM | Automated Teller Machine |
| ID | Identification Document |
| eID | Electronic Identification Document |
| eIDAS | Electronic Identification and Trust Services |
| OECD | Organization for Economic Co-operation and Development |
| ISIC | International Student Identity Card |

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# 1. Introduction

## 1.1. Overview of the research

Digital revolution is not a new concept in the world surrounded by technological equipment's which has been an inevitable part of people's life. One cannot imagine a day without the use of digital components as it has been an integral part of one's life. The urge for digitalization is one of the prominent discussion topics in national and international platform. Using a digital solution to provide better services has been the goal of most government and non-government organizations. Development in the technological aspects can be seen in different countries where the online platform is used to provide public services e.g. online banking, online tax registration, digital identity, providing information once only, etc. [1].

European Commission also plans to implement such aspects in the European Union (EU) countries so, its prominent initiatives is that the citizens of the EU can perform the public services regardless of the borders and any restrictions. To establish the cross-border data communication, the European Commission introduced the Digital Single Gateway Regulation (SDGR) where the gateway will provide the access to online information and procedures and citizens will be able to perform online transactions in a cross-border platform [2]. The regulation is based on the once-only principle so, the citizens do not have to provide the same information to public administrations again. It will help to develop better exchange of data and information between businesses and public administrations to reduce the administrative burden and improve the base of Digital Single Market [3].

To establish the interoperability framework between the European Countries, the European Commission published the Single Digital Gateway Regulation (SDGR). It provides a framework of the services that will be available online for the citizens in the cross-border journey. The regulation states the information about the public services being performed online, information about the EU Countries, etc. [4]. Among various aspects the regulation covers, this thesis will only use the case study on the students within the EU, studying in another member state.

Citizens face a higher impact of implementing any regulation in the country or inter-country. The services that are implemented are made for common people so, citizens understand the problems better and need for any regulation or additional service in the country. The regulation offers various services that can be performed online and information regarding traveling, studying, working in another member state and access to information from other member states

[5]. However, the implementation of any law or regulation does not guarantee to solve the real problem of the people. Analyzing the requirement and measuring the impact of any regulation is important to understand the real necessity and effect of public services in the country. In addition, although Estonia has been successful in terms of application of digital and unified data exchange [6] [7] [8], still it is needed to understand the impact of the SDGR for Estonian environment.

Among various aspects the regulation covers, this thesis will only focus on the students within the EU, studying in another member state. It will focus on the requirements and actions the student must perform while going to another member state which later will help to analyze the impact of the regulation in the current services. The user Journey will help to understand the impact of regulation in the most effective way by understanding the necessity of the citizens and expectations of the citizens.

## 1.2. Thesis Motivation

SDGR has brought various services and methodologies under the same roof and planning to implement uniform public services in the member states [9]. On the other hand, the challenge of maintaining uniformity in the regulation might have left the room in meeting the customer requirement. As the regulation is agreed by several countries covering many citizens in the member state and different aspects of citizen's life [10], it contains only the minimal set of requirements that are acceptable for all EU countries and positively impact the citizens by solving their problems. It leads to failing to satisfy all needs related to the business and the citizens.

The prominent part of the regulation is to provide the required service to the citizens. Citizens are the ultimate user of the services so, considering their expectations, real-time problems and faster service should be one of the biggest concerns while implementing the regulation. Therefore, this paper intends to understand the citizen's expectations and offer potential solutions to understand the citizen's perspective and might work as a reference for future researchers to broaden the understanding of this issue.

The research will highlight the changes after the implementation of the regulation and provide the possibility of changes to provide better service in a cross-border platform. Therefore, it intends to understand the citizen's expectations and offer potential solutions for the regulation

to understand the citizen's perspective and might work as a reference for the future researchers to broaden the understanding of this issue.

## 1.3. Research Questions

The research is based on understanding and evaluating the implementation process of SDGR in the EU countries where the focus area will be the citizens perspective regarding the regulation and public services. eGovernment Action Plan 2016-2020, highly emphasized on establishing the base for creating cross border data exchange and digital by default to follow the European Interoperability framework within 2019 [11]. The once only principle (OOP) is initiating the implementation process through SDGR, for establishing the cross-border data transfer to use the digital services without the restriction of border, place and compatibility issues. Even though, being governed by European Commission, the regulation might face problems addressing the need of all the citizens of the member state irrespective of the infrastructure, working mechanism, and development of the country.

This research tries to answer the questions presented below and these research questions will serve as a guide for the overall process of the thesis:

*RQ 1: How does SDGR improve Estonian public service delivery?*
Answering this question will help to understand the current situation of the Estonian public service delivery. In addition to that how the implementation of the regulation will help to improve the service quality and the impact on the service consumers.

*RQ 1.1: How SDGR affects the Students application process in Estonia?*
Answering this question will allow thorough analysis of the student's perspective regarding the services that will be made available by the commission. The thesis will be focused on student of one-member state going to study in another member state. It will help to analyze whether the services are complete enough to complete a task or not. Using the services might help the citizen to complete their task or some additional information and processes are required will be analyzed here.

*RQ 2: How much does the regulation provide value in the public-sector delivery in Estonia?*
Answering this question will enlighten the scope and effect of SDGR in Estonian public service delivery. As, Estonia has structured and well-established digital services in a national platform so, the changes in the system and service delivery will be analyzed from this part. How does the regulation help the public service delivery will be the primary focus while answering this question?

To conclude, how do students estimate the current level of services the commission is planning to implement in the member state, which is collected, stored and processed by member states, will be assessed. Their level of satisfaction towards digital processing and overall mental outlook regarding e-services will also be gathered and analyzed. The potential of establishing student focused services to increase citizen participation will also be estimated.
To provide all-encompassing and comprehensive answers to the above-mentioned questions, preference was given to qualitative methods of the research for collecting data. Additionally, the following research objectives were drafted to establish agenda for the analysis. Following are the research objectives that will be followed throughout the thesis:

**Research Objective:**
1. Conduct a literature review to identify and analyze key aspects of SDGR containing the services including student's involvement within the frames of e-governance.
2. Investigate practical adaptation of the suggested regulation by the European Commission entities using qualitative methods (conducting interviews with citizens of the member states)
3. Understand students' perception of the uniform services that allows to perform the application process through the interview.
4. Formulate guidelines and recommendations for improving the cross-border data exchange journey by evaluating the student's perspective for better service delivery by the member states.

## 1.4. Thesis Outline

The thesis is divided into 6 chapters. Chapter 1 is the introduction. Chapter 2 includes the theoretical background in which the thesis is based on. It discusses the concept of public sector digitalization where the concept of interoperability, good governance and new public management plays a vital role in understanding the digitalization aspect which is related to this thesis.

Chapter 3 discussed about the research methodology used in the thesis. This chapters explains in detail about the data collection method and the analysis process used in the thesis. The collected data from the interview was analyzed which helped to understand the essence of the topic and provided better background for the research.

Chapter 4 explains the application procedure and development of the cross-border data exchange initiative in EU. It discussed the SDGR directive in detail providing a brief idea about current situation and related development like eIDAS for the implementation of the regulation in the future.

Chapter 5 discusses about the result of the research which is divided under several sub heading on the basis of the analysis. The analyzed data is presented showing the impact of SDGR in Estonia and possible redesigning process has been proposed.

Chapter 6 summarizes the thesis in a comprehensive way where the research question raised in the first chapter is answered and possible future direction for the research is also proposed.

# 2. Theoretical Framework

The research highly focuses on the concept of Public Sector Digitalization in the EU as a theoretical background. The increasing experience of the citizens regarding digital services and technologies tends to increase the expectation of the people for digitalized public services. In this highly digital pace of world public services remains highly untapped [12]**.** Government offers multiple services to its citizens and digital services are a powerful tool to connect all the citizens and to provide the services in a faster, easier and convenient way.

The increasing advancement of technology has made citizens expectations higher to provide faster, efficient and easier services these days. Citizen expects to access the public services irrespective of the place and time. The services are not limited to the paperwork or the physical presence to complete a task [13]. Due to these reasons now, the organization are mostly focusing on digital services irrespective of its size. Providing digital services has a greater impact to the public sector as it has a larger number of citizens as a service receiver and needs quick attention in most of the matters and services.

If the German Government starts eliminating paperwork, then it can save approximately 84 million hours of free time [14]. Estonian Government is using X-Road Platform for communicating and exchanging information within the institutions, it is estimated that it, saves 820 years of worktime. This time savings is only coming from 5% queries made in the X-Road System [15] [16].

These examples give a clear overview of how much a government can be efficient while using digital services. It does not only save time but also assures to provide better, faster and convenient services to its citizens. Millions of Citizens can use the same service at the same time being at their home.

Digitalization in the public sector helps to maintain transparency, increases efficiency and helps to involve in innovation that directly benefits the development of the country. As the infrastructure supports new technology, innovation then the challenges that usually government faces for change adoption decreases and the government can look for new opportunities and policies for the development of the country. There are many key aspects play a vital role in the successful implementation of digitalization in every institution which will be discussed in the chapter to have a better understanding of the topic.

## 2.1. Concept of Interoperability

The rapid expansion of the internet and the increasing use of technology has directed technology and services to be interconnected and easier to access for the consumers. The concept of Interoperability cannot be untouched in the world where consumers want services to be easily connected, interlinked and exchanged between the parties. Interoperability is the interconnection of various system, application, devices where, the information can be easily exchanged, accessed and coordinate between the stakeholders without any complication [17].
Data exchange architecture is followed which allows sharing the data in a coordinated and secure way which allows the cooperation among the stakeholder as well as faster and easier communication between the entities. It allows easier data exchange ensuring cross-organizational collaboration regardless of the origin and structure of the data [18].
To provide quality service in a faster and convenient manner, most of the government are introducing interoperability in their work structure. Interoperability plays a vital role when the services are delivered in an online platform where all the government data and services must be accessed and should communicate with each other without citizen's involvement. Every organization has different framework and architecture of communication with the stakeholders and management of the data and information. In general, interoperability holds the followings layers, According to European Interoperability Framework (EIF), it has distinguished three layers of interoperability and they are [19]

- **Technical Interoperability:**

Technical Interoperability highly focuses the technical accuracy and structure while communicating or access to any data. It makes sure that the software, system is accurate, and the data is being transferred securely. It focuses on data integration, exchange, application to share the message, etc. The information regarding the technical interoperability has been discussed and properly documented for future reference [20].

- **Semantic Interoperability:**

Semantic Interoperability focuses on the interpretation of the exchanged information and data and allows processing of the data to achieve the defined goal. The system is defined as semantically interoperable when it can perform all the defined task exchanged from other system and seamlessly provide the desired result [21].

- **Organizational Interoperability:**

Organizational interoperability focuses on linking the process among different systems and institutions. To exchange information between the stakeholders, the institutions should first collaborate and agree on the synchronization of the system to complete the business process [22].

- **Legal Interoperability:**

The main aim of legal interoperability is to ensure that the institutions operate under the legal framework and obligations, policies set by the commission. It helps to address the different set of rules and regulation of different countries in a member state and also includes the clear agreement among the use of specific regulation to maintain the uniformity among member states [19].

**Interoperability Implementations:**

Following are some of the application of the interoperability implementation in progress.

- **National Single Window Prototype:**

The Maritime authority is one the agency that provides support to the EU member state for the development and implementation of maritime safety and security. The maritime authority must go through complex administrative task regarding all the arrival, departure, delay and minor changes in the process. It increases complexity and causes long administrative work. The maritime authority must follow various administrative procedure and manually keep track of the arrival and departure of the ship. The ship operators and agents must go through various similar paperwork which has to be presented in multiple government authorities. To reduce the paperwork and reduce the complexity, National Single Window is a prototype developed to reduce the complexity of data flow in the shipping industry. European Maritime Safety Agency has developed the prototype to harmonize the administrative procedure and allow the transmission of data between the authorities [23].

Altogether six countries from member state like Bulgaria, Greece, Italy, Malta, Romania, and Norway are part of the prototype. Another member state will, however, will be included soon. However, most of the member state have access the system to familiarize themselves with the system [24]. With the use of SafeSeaNet network system which provides the information of around 17,000 vessels nearby operating in EU waters daily. It will help to identify, record the arrival, departure, delay of the ship and in the meantime also focuses on the ship security. The

prototype will help the resource management where all the information is stored in the same place which allows to reduce the unnecessary process and improve efficiency. It will allow the information exchange between the authorities and the authorities can exchange and record information via SafeSeaNet [23].

- **Railway Interoperability Directive**

The Railway Interoperability Directive is one of the initiatives of the European Commission to maintain uniformity and consistency in the railway system of Europe. The regulation has been updated a few times to include all the necessary changes that need to be included to maintain the interoperability in the system. The directive mainly focuses on ensuring common technical specification used in the railway system throughout Europe. It also focuses on the verification and authorization of the infrastructure and process to maintain uniformity and for the security check [25].

The directive was implemented as The Network Rail TAF TAP Program by European Union's TEN-T Program. TAF stands for Telematics applications for Freight services, which focuses on managing the information system for payment, invoicing, reservation, and monitoring the freight and trains. While, TAP stands for Telematics Applications for Passenger services which focuses on a system for providing the information to the passengers about their journey, payment, luggage management, connecting trains, etc. The United Kingdom already introduced the system in its legislation as Railways (Interoperability) Regulation 2006 as a big step of implementing interoperable system [26].

Interoperable System and architecture allow to have better control over the system and helps to exchange, store and retrieve information in a convenient way. It allows sharing information with the stakeholders in a faster and easier manner. However, Interoperability is not only about technical and syntactic specification, but it is also closely related to Good Governance. Proper management of the infrastructure, resources, skill, and planning allows to achieve the required goal of the company whether it is public or private firm.

## 2.2. Good Governance

The concept of governance or good governance is not new, it is in practice from years. The simple explanation of governance could be implementing some decisions to complete some task or process. However, such definition of governance is not sufficient in today's competitive and technology-driven society. So, according to the United Nations Economic and Social

Commission for Asia Pacific, Good governance has eight characteristics. “It is Participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable, and inclusive and follows the rule of law” [27].

Good Governance focuses on the effective interaction of government and other social organization. It focuses on the citizen’s interaction and how the needs and necessity of the citizens are reacted upon. The process of governance is presumed to be fair with equity and following the rule, transparent with no tied knots or hidden agendas, and it should be effective that results in the achievement of the defined goal of the organization. Implementation of good governance can be a good start for organizations to enter an interoperable, responsive and efficient system that allows the organization to achieve their defined goal [28].

A fine example of good governance in practice is Estonian Government, which has managed to achieve the successful implementation of the e-services, where 99% of the services are online. Using X-Road system, the citizens only provide their information once to the government than the public authority store and exchange the information among each other using the X-Road Platform [29]. The established e-services and citizens acceptance has encouraged the government to ensure effectiveness in the system. Moreover, that Estonia is planning to expand its horizon and establish cross-border data transfer environment for which, it is collaborating with Finland. The Population Registry Centre of Finland and Information System Authority of Estonia are working together to exchange the data between the countries using X-Road infrastructure [30].

Good governance allows to increase data efficiency, reduces unnecessary administrative work and allows a clear goal with transparency in the work process. The concept of good governance is closely related to the New Public Management (NPM) as many e-governance, e-services initiative is highly based on the concept of NPM.

## 2.3. New Public Management

The concept of New Public management is taken as a modernization of the public administration since the beginning of the 1990s. It is considered as a new paradigm in administrative science thought does not practice bureaucracy in the working mechanism [31]. The concept of NPM was first initiated by Hood and Jackson, who was working in the public administration field. NPM proposes a decentralized method of resources and services management, which helps to achieve better results. It highly focuses on increasing efficiency through financial control, it focuses on control mechanism where functions are identified,

target setting is done and also allows performance review in a transparent manner. This management method does not believe in bureaucracy, instead encourages participatory management [32].

NPM today is working as an important tool for successful implementation of ICT (Information and Communication technology) in public or private organizations. The working mechanism and process proposed by NPM suit the implementation of ICT in today's world. To flourish ICT, NPM provides competitive market which can be a greater initiative to be more efficient and provide better service to the customers. The introduction of quasi-market where both public and private company serves the same product or service to the citizens has also initiated competition among private and public company where both sides must be more efficient and faster [33]. It has also improved the planning, analysis and service delivery process as despite being a private or public company, the service delivery should be efficient.

While introducing ICT in service delivery, it allows the organization to use the resources effectively and provide the services in a digital platform that enables better access to the services. Now, the use of the digital platform to provide service cannot be broadly classified as ICT but it must be narrowed down to e-Governance. With proper planning, analysis, and decision-making, e- Governance helps to deliver services to the citizens which allow effective communication between Citizens, stakeholders and government using ICT.

According to OECD, e-government helps the administrations to improve efficiency, it enforces the institutions to seamlessly work together and also provides the environment to work in public-private partnership as it reduces risk and increases the efficiency on both sides [34].

# 3. Research Design and Methodology

After formulating the research question, Qualitative research methodology was adopted as a suitable research methodology to be used in this thesis. To analyze the user experience of students studying in another member state and understand the necessity and requirement of the citizen from the regulation, qualitative research methodology was given priority.

Qualitative research methodology tends to understand the research problem and tend to provide a solution through empirical and interpretive analysis of its representation. The research consists of an investigation that seeks the answer to the pre-defined question by collecting evidence, it tends to produce some findings that were not determined initially. It allows to present the findings from the perception and experience of specific citizens. Moreover, it gives high ground on exploring citizen's specific information like, behavior, value and opinion on a context [35].

A good definition is given by Denzin and Lincoln (1994) that qualitative research focuses on interpretation of phenomena in their natural settings to make sense in terms of the meanings people bring to these settings [36]. This method collects and works with anecdotes, interviews, personal experiences, interaction, observations that are significant to people's life and helps in understanding social life through the study of targeted populations or places. As this research in non-numeric, the researchers investigate interpretations, meanings, symbols, and the processes and relations of social life [37]. Thus, the results produced from this research is descriptive data and might lead to the creation of new theories.

Justification for selecting qualitative method is that the research will be focused on citizens perspective which can be easily explained by focusing on student moving from one-member state to another and understand the situation by experience and interaction. The advantage of using this research is it considers from minute to larger details in understanding the attitudes, interaction, experiences, and social processes so this method could be made adaptable and flexible with respect to the changes in the research environment.

The objective of this thesis can be met by understanding the citizen's experience and response toward the topic using the research method. Qualitative method provides answers to question from the view of the participant and the data are non-numeric, and often leads to bias judgment over the topic so the results drawn from these methods are non-factual and often non-reliable as it has been concluded from lower sample sizes. Thus, the scope of this type of research is limited [38].

## 3.1. Data Collection Method

There are various methods for qualitative research but in this work, the focus will be Data collection using Primary sources, one of them is semi-structured Interview. In this approach, one-to-one conversation is done between two people in which interviewer asks open ended question and interviewee answers the question [39].

Semi-structured interview is preferred to use when the interviewer wants to have a keen understanding of the interviewee and wants to learn more about the interviewee with informal interview and observation. The interview allows having open-ended questions. So, the semi-structured interview in this thesis will help to understand the interviewee's personal experience and behavior to get the depth of the topic.

To understand the impact of the SDGR, face to face interview is conducted with the citizens of the European member state. To understand the context better, the scope is narrowed down to observe the response of student studying in another member state. Therefore, priority was given to semi-structured Interview to have an open-ended discussion which leads to elaborate the situation and observe the situation in depth. Semi-structured Interview provides the environment for the interviewee to explain the idea and topic of interest [40].

The interview was conducted with nine students studying and currently studied in Estonia from different member states namely; Italy, France, Portugal, Finland, Czech Republic. All of the interviewees were asked about their experience of going to study in another member state i.e. Estonia from selecting the country to going to the destination country and start studying. The interview was highly focused on public service delivery on their home country and the destination country and their personal experience on the overall journey.

A pre-written questionnaire was prepared to keep the focus on the topic even though, the questionnaire was not strictly followed, and the interview was conducted in an informal way to allow the interviewee to share their ideas freely and to understand the context easily to the interviewer as well. All the interviews were conducted in English and following for easier transcribing and analysis in the future. Following are the interviewee:

| Respondent | University | Interview Length |
|---|---|---|
| Respondent 1 | Tallinn University of Technology | 45:35 |
| Respondent 2 | Tallinn University of Technology | 25:18 |
| Respondent 3 | Tallinn University of Technology | 36:51 |
| Respondent 4 | Tallinn University of Technology | 30:32 |
| Respondent 5 | Tallinn University of Applied Sciences | 35:46 |
| Respondent 6 | Estonian Academy of Music and Theatre | 46:21 |
| Respondent 7 | Estonian Academy of Music and Theatre | 40:12 |
| Respondent 8 | Estonian Academy of Music and Theatre | 34:19 |
| Respondent 9 | Estonian Academy of Music and Theatre | 32:25 |

Table: Respondents Information

The layout of the interview was carefully designed focusing on the European students. The interviewee was asked the open-ended questions on which they explained their whole application process, their experience and their feeling towards the whole process. The interview was recorded for further analysis of the interview and for transcribing it later. While transcribing the interview, the recording has listened multiple times and minor details were also carefully written down. To avoid the problem of missing or leaving some important information, the transcribed document was rechecked with the recording.

## 3.2. Data Analysis Method

To analyze the interviews and understand the collected information thematic analysis will be used in this paper. After the analysis using the thematic map, the collected data will be explained using a UML diagram to have a better understanding of the topic which explains the current situation and also provides some suggestion for betterment using the UML diagram as well.

Thematic analysis is a method used to identify patterns and themes in qualitative data. It helps to understand core ideas and the main theme of the data which can be perceived later to understand the information. Unlike various qualitative method thematic analysis is not focused

on a particular theoretical perspective which makes the data analysis flexible and changes can be made as per the case [41]. The main goal of the using thematic analysis id to understand the themes or pattern is the collected data which is interesting or seems important to the research and then summarizing or trying to address those themes in the research. It helps to figure out the most important aspect in the data, analyze it and make required conclusion on the basis of the collected and analyzed themes. It allows the researcher to have deeper understanding of the gathered information and divide the findings into broader patterns. The information is separately analyzed which provides a better understanding of data [42].

There are different ways of using thematic analysis, but the paper will use the six-phase thematic analysis proposed by Braun and Clarke (2006) and they are:

1. **Becoming Familiar with the Data:**

One of the very important tasks in the qualitative method of data collection is properly understanding and evaluate the data. To understand and familiarize oneself with the collected data, the interview was done which was recorded for the purpose of evaluating. The interview recording was listened multiple times, before the transcribing, to familiarize oneself with the information. After familiarizing the verbal data was transcribed in a written form which was re-evaluated multiple times, so any important information might not be lost in the transcribing process.

2. **Generating Initial Codes:**

After becoming familiar with the data, the information will be divided into smaller codes for further analysis. The transcribed interview has a lot of information where all the information cannot be used. So, the information will be divided into smaller codes which will try to answer the research question. The coding of information will be based on the important features that provide relevance to the research and which might provide a better understanding of the research.

3. **Searching for themes:**

Generating codes will help to organize the information in more systematic form in the form of themes. The theme will work as a meaningful pattern which is relevant to the research question. The information scattered in the form of codes will be organized and collected in a broader theme on the basis of the similarity, features the code shows. The theme will be more directed to answering or close to answering the research question. Searching for themes will be done

by organizing the codes in written form organized as a template to have better visual understanding.

**4. Reviewing themes:**

After searching and defining the themes, the generated themes will be reviewed and evaluated to understand the essence and necessity of the research. The theme has to be evaluated, whether it works in relation to showing compelling and complete story of the data. The defined theme should have a relation between the individual themes that can help to explain the data and provide sufficient information to interpret the interview questions and answer the research question.

**5. Defining and naming themes:**

After proper evaluation of the theme, the themes will be defined and named to refine the analysis and interpretation that will be generated from the theme. The essence of each theme will be identified while defining the theme to analyze whether the defined theme will generate some understanding of the data or not. The themes will be organized and managed systematically that will help to re-evaluate, which will help to identify the necessity of the theme.

**6. Writing Up:**

The final and important part of the analysis is writing the information in a systematic order which will; help the reader to understand the data correctly. After defining and naming the themes, it should be properly placed which will explain the data to the reader. The themes and the analysis will extract the content and explain the process of data analysis and will also help to answer the research question. It will provide visual understanding and better interpretation of the data [43].

After completing the thematic analysis, the paper will also present the data by using the UML diagram which stands for Unified Modelling Language. UML is used for visual representation of the system using the main actors, artifacts and their roles. It helps to visually understand the workflow of any data or system and also helps to improve the readability and efficacy [44].

The data generated from the interview will be converted into the UML diagram which will present the current situation of the overall application process. Current process will explain the current step and process that the student of the member state will have to complete before starting their studies. After the completion of the current process analysis, a redesigned process will be proposed as a TO-BE model using the UML diagram suggesting the possibility of the

improvements that can be made in the current process to reduce the number of contacts and to make the process more effective and easier for the students on the future. These processes will be explained in detail with a relevant visual representation.

# 4. Cross-border Principle Application in EU Countries

This chapter aims to provide an overview of the infrastructure, services and the practices supporting the digital single gateway regulation. The chapter highly focuses on the concept and ideas implemented which is discussed as a core concept in the thesis. However, the positive experiences and the initiative that has been in progress in order to provide a better understanding and overview of the implementation possibilities of the SDGR.

## 4.1. Single Digital Gateway Regulation

The implementation of the OOP project has been rapidly moving forward with various developed architecture, project division, pilots, and implementation of various regulation [2].In the process of development, the European Commission has announced SDGR be enforced in the EU countries. The regulation is based on the OOP and might help the citizens to access and provide information in an easier, faster and convenient way.

The OOP project through SDGR has an aim to reduce the barriers and problems to the domestic and international users by providing all the information online. The citizens can access the information from a cross border scale. To reduce these administrative barriers the European Economic Area (EEA) countries must provide at least 21 administrative services fully online which both domestic and cross border citizens can access [10]. By providing this information, citizens can interact and understand the requirement of the government and country in any stage. The European Commission has estimated that this regulation will help the citizens to save 855.000 hours annually, and companies can save 11 billion euro per year [45].

The European Commission will be using a common interface “Your Europe” which is integrated in the portal with the same name, where the citizens can find the information regarding travel, business, work, etc., in a common platform. The portal will be available in all official EU language and it will work as a gateway of accessing and providing information in a cross-border platform. The administrative procedure like studying, performing business, registering vehicle, insurance, etc., will be possible using this portal. The portal is based on the OOP process so, the information once asked will be saved and used accordingly by public administrations. It will reduce the administrative burden of the public administrations and allows the benefit of transparency, and cross border data exchange within the European Union. The interface will provide general information about the European Country without any discrimination where the information available for the citizen of one country should be also accessible to the citizen of another member state [46].

### 4.1.1. Single Digital Gateway Regulation for Business

In the ever-changing world, business organizations are one of the units that needs to respond to changes quickly. These days organizations work pro-actively maintaining interpersonal relations with the supplier, customers, and shareholders. In the process of expansion, organizations tend to grow its business to different countries to expand its horizon. However, doing business in a different country with a same motive is a very difficult task, as every country has its own habits, culture, regulation, processes, etc. The processes and acts vary from one country to another. So, business organization must investigate on the related acts, law, and process of the country and act accordingly. However, any changes made in the company must be changed in the public administrations of all the country followed by different acts and way of changing and following the new act.

The troublesome and lengthy process of working has become the working procedure of the multinational companies. However, the implementation of SDGR is expected to decrease the paperwork and repeated job for both the public administrations and the business organizations. It has been quantified that if only eight cross border services were online then business can save 170 million euro annually [47]. Another similar quantification suggests that if high quality and fully accessible online services are made available online in the cross-border scale then business organization can save between 11 and 55 billion euro annually [47].

After the implementation of SDGR, business organizations operating in the EU will be able to perform various organizational activities via internet. Following are some of the task the business organizations can perform fully online:

- Business organization can register, merge, close the organizations online. The company can also perform various administrative functions like applying for patent, registering trademark, getting license for reproduction, etc., online.
- There is regulation special regulation focusing on staffing as well. The business organization will be able to register the employee, starting, and termination of contract, pay social securities. Business can get full information about the rules on staff representation like equal treatment, rules against discrimination, and terms of employment that is needed to be followed in the country.
- Business organizations can now get the full information regarding the tax payment and related rules from the Your Europe Portal. Business now can register and pay taxes online; the refund of the paid tax can also be claimed and can be received online.

- The regulation and the gateway also focus in the goods management. Here, the business can check the regulation and standard for the goods, technical specification, recycling, waste management, etc. Business can also get additional information regarding the standards of selling the goods, defective products, etc.
- The company can also participate in the public tenders and can get the complete list of rules and regulations that needs to be followed. The bid for the contract can be submitted online and check the activity and process digitally [47].

### 4.1.2. Single Digital Gateway Regulation for Citizens

The goal of the implementation of SDGR is to create an effective way of cross border communication, easier access to information and services and to reduce administrative burden. Cross border data transfer and digital services strengthen communication process and allow greater transparency and faster work done. Single digital gateway regulation not only helps the businesses for smooth functioning of their administrative job but also help the citizens to have effective communication and user-centric services. The regulation has clarified the way of communication, effective digital service and a road map for further development which helps the individuals to get the end service.

The services, information, acts available in the 'Your Europe' portal helps the citizens to understand the requirement of other countries, reduces paperwork, enables effective communication with the public administrations. The portal allows the user to check the requirements and necessary information regarding travel, work, study, etc. and allows to use the digital services [48]. Following are some of the information the Citizens can access fully online:

- **Travel in the EU:**

Citizens can find information regarding their travel within the European Union. The documents needed for themselves, family, and rules of the specific country, while traveling. Citizens can also find the information regarding the assistance if needed while travelling, etc.

- **Work Information:**

The portal also provides information regarding the employment search in other European countries, accepting the job, terms of employment in other European countries, etc. Citizens can also file tax in other member states through the portal and gets information about the health and safety requirement, social security rights, pensions, etc.

- **Vehicle Information:**

Citizens can also get information about the use of temporary or permanent motor vehicle from one-member state to another. It gives detail information about getting and renewing the driving license, motor insurance, renting the motor vehicle, etc. Along with that the portal also provides the information about national traffic rules and other mandatory requirements for motor vehicles.

- **Changing the Residence:**

If any citizen wants to move to another member state temporarily or permanently then, the detail information regarding residence is available in the portal. The portal discusses the requirement for acquiring residence card for EU citizens and non-European citizens. It also explains the requirement of participating in municipal and European Parliament election.

- **Education in Member State:**

The citizens can check the information regarding attending school, university, and traineeship in another member state. The information with required document and regulations are mentioned already and could be possible to perform some of the steps online as well.

- **Healthcare Information:**

The citizens can get the information regarding getting medical facility in other European Country. The citizens can buy the Pharmaceuticals products in any member state regardless of the prescription being written in paper or is online.

- **Family Rights and Obligation:**

The regulation also specifies the obligation and rules regarding parental responsibilities, marriage and succession rights in detail. Citizens can get information about child custody, obligation towards the children and other family situation. It also provides information about the people living in between different nationalities and the obligations of marriage, divorce, property rights etc.

- **Basic Services in Cross-border Situation**:

The citizens can now hold a bank account in any European member state and one can buy goods and services or perform financial transaction in any member state. Citizens can pay the utility bill like gas, water, electricity and perform the credit transfer and cross border payment.

## 4.2. eIDAS

eIDAS stands for Electronic Identification and Trust Services. It is a regulation formulated by the European Commission with a range of services to verify the identity of the individual and businesses using the electronic document. The regulation creates a secure online medium for interaction across the EU among the citizens, businesses and the public institutions. It allows the EU countries to have a common standard of the document which is valid throughout the Union countries. Using the eIDAS platform, the European Commission is planning to provide various services online like issuing a birth certificate, parking permit, etc. Use of common platform helps to make the cross-border data exchange easier and more convenient. The implementation of eIDAS id not only helpful for the citizens but also is beneficial for the businesses for the cross- border online services like health services, financial services, banking, insurance services, etc., [49].

The implementation of the eIDAS regulation encouraged the member states to develop and introduce electronic identification document that works as a valid form of identity throughout the EU. The regulation specifies that the e-id issued in one country must be recognized in all member states. The e-id works as a tangible and intangible form of identification for the citizens or business which contains the personal identification data that can be used as a validation for online services [50].

The regulation focused on using the native identification schemes of the citizens and businesses to provide the public services within other EU countries which uses e-id. The regulation mainly focuses on electronic identification and trust services [51]. To maintain the uniformity and enable cross border data exchange, first, the European Commission initiated electronic identification which allows the citizen and businesses to perform use the public services online within the member state. The identification should be unique for each citizen created under the law and provision of the home country. The services that one-member state provides must be recognized in another member state to us to continue the cross-border data exchange. The regulation emphasized on making the platform interoperable with less technical specification [52] which make sit use easy and simple for the citizens and businesses.

Another topic. In Estonia, the electronic signature is widely used and effectively implemented into local government processes for instance [53] [54] [55]. The regulation acknowledged is trust services, regulation defined it as paid for services that include creation, validation, and verification of the electronic signature, electronic stamps, seals, electronically delivered services and the certificates related to those services [50]. The countries select one or more

bodies to supervise the trust service among the EU countries, which are responsible for informing changes, technical specification, procedures and formats of working and exchanging information.

Electronic signature is one of the important aspects covered in the eIDAS regulation which comes under the trust services. Electronic signature is defined in a simple form, as a qualified electronic signature that carries same legal effect as handwritten signature. The regulation mentions that it can be used in legal proceeding and should be recognized in all member states. Being able to sign, any document digitally is a big step to move forward in the interoperable world where, the data, information can be validated, transferred and reused legally. Electronic signature can be easy and faster way of working in contrast to the paper-based signature. A person being in one country can check the document and sign the document with the person sitting in another country by using the secure channel of communication. The European commission has created certain standards that have to be met to use the electronic signature under eIDAS which includes:

- Citizens or business should provide a valid date and time stamp for the certificate they create.
- The signature is revoked for the certificates which have expired.
- Providing training about the trust service and electronic signature
- Use of trustworthy hardware and software to prevent any forgeries of the certificate [52].

Implementation of the eIDAS regulation was a great initiative from the European Commission to overcome the physical boundaries and create interconnected data exchange and communication method. While focusing on the implementation of the regulation, Estonia is one of the few countries which adopted and successfully implemented the regulation and is providing services like electronic signature and electronic identity to the citizens and businesses. Estonia has created a digital identity for all its citizens for receiving public services online. The citizens have a physical identity card which also works as an electronic document for the electronic services. The electronic identity works based on Public Key Infrastructure (PKI). PKI has two keys; one is the public key and the other id private key. The public key as the name suggests, is visible to everyone, but the private key is only provided to the id card holder. The PKI model and it protectants allow to safe service delivery like digital signature and using other online services [56].

The use of the X-Road system in Estonia has made the exchange of data and information faster and easier for the institutions. Due to this, citizens do not have to provide same information to

public institutions again. Using the same resources, the public administration provides public services online and with the use of electronic document, citizens and businesses can easily use the services in a secure environment. A good example of electronic identification and obtaining online services is the Estonian ID card which works not only as a physical identity document but also is a medium of using the services which are provided digitally.

The same Estonian Id card is used to sign the document electronically. To sign the document the user needs to download the software called DigiDoc4, with the Estonian id card, a user can log in to the system with the credentials. After logging in the user can sign the document digitally and can send the document to the next person for signature which also needs to have to have the same environment. The information about the digital signature, software and other requirements are also mentioned in the Estonian Id website called www.id.ee [57].

The use of electronic identity for exchanging information among institutions and later use for the cross-border data exchange is the fastest and safest method of sharing information. The uniformity in the requirement and the validity of these document in all EU member state reduces the problems of lack of compatibility and technical problems.

# 5. Research Analysis and Discussion

To collect detailed information about a student's journey from one-member state to another member state, the author conducted semi-structured interview with different students who are currently or just finished studying in Estonia. Interviewees were selected on a random basis and while using the data for the analysis. There were no special or difficult cases included in the analysis which required extra effort or special treatment in the application process. The interviewee from the different country represented the general application process that all the students must go through in their country. To understand the context in the detailed manner interviewee from different European member state were interviewed who are studying in different universities of Estonia. It provided a wide spectrum of opinions and help to understand the diverse process of few member states and the outcome of such diverse processes in the overall application process of the student in Estonia. The interviewees were asked to explain their journey of applying and coming to Estonia and all the processes they had to went through to settle in and start studying. It gave a proper guideline about the real steps and process that students must go through. Every Interviewee was contacted personally via Email and the duration, place, and medium of the interview were agreed upon mutually. In total, nine students from different European Country studying in different University and faculty in Estonia participated.

Interviews were conducted in English and recorded for later analysis and transcribing.

Interviews were conducted face to face for the students who were in Estonia and Skype was used for the Students who were overseas. The interview questions were open-ended which required longer discussion and covered the minute aspects of the journey of the students. There were few questions prepared for starting and following the lead in the conversation, however there were many questions raised during the interview which enlightened the topic and provide better understanding of the student's perspective and journey.

## 5.1. Thematic Analysis

For the data analysis, the author transcribed the recorded interviews in a written form to analyze and understand the key aspect from the interview to perform the thematic analysis. Transcribing the interview in written form helped to analyze and evaluate the key points and identify the pattern that can be used in the research later. The recording was listened multiple times with rechecking to verify no loss of any important information from the interview.

To analyze the data through thematic analysis, the author mapped all the key aspects into different codes for further analysis. The key aspect was on the basis of the common pattern and important aspect highlighted by the interviewees. Different techniques were used to analyze the data like highlighting, underlining which later helped to mark the pattern and organize the data as per the identified pattern. Later, to create a theme the codes were rearranged on the basis of the relationship and similarities between them which was followed by further analysis. Various themes were identified on the basis of the interview however, the theme that mostly answered the research question explained in the previous chapters were selected for further analysis. As a result, four themes were identified: 1) Process Nature, 2) Resources, 3) Accessibility,4) Advantage. These themes explain the user journey and the impact of SDGR in the Students application process. Themes and codes are shown in the Thematic Map below:

**Process Nature:**

While the interview process almost every interviewee mentioned some processes that were common for everyone. One of the most common processes was constant communication with the required parties, whether it is the university or any public service entity. Out of nine interviews, all mentioned that the communication was very fluent and digital services and activeness of the employee in the digital platform was very impressive for all of them.

However, moving towards the journey in detail, interviewee mentioned various processes that they had to go through, all of which was not quite easy for all of them. All the interviewee has had email contact with the university, specific department where the university promptly replied all the email query and provided additional information to the students. Even though, the communication was fluent the requirements of the university and the public services were quite high as per the respondents so, they had to provide various information and go through various steps to complete all the task. For e.g. in order to submit the application for a course in the university the student has to open Dream Apply Account first which is an online portal from which the student can apply for any university in Estonia, fill the requirement for the account setup, then fill the application, write motivation letter, Provide English Language proficiency, Previous educational certificate, Interview etc. After the student's arrival, they have to register themselves in the population registry, get the Estonian ID card, open bank account that also requires regular follow up and has longer process. However, among all of this, there is online access to various information, online help that makes these processes easier. For e.g. after the registration in the population registry, the students can activate their free

transport card online, if they have some problem then the required authority can be reached via email or by call and the help to solve the problem.

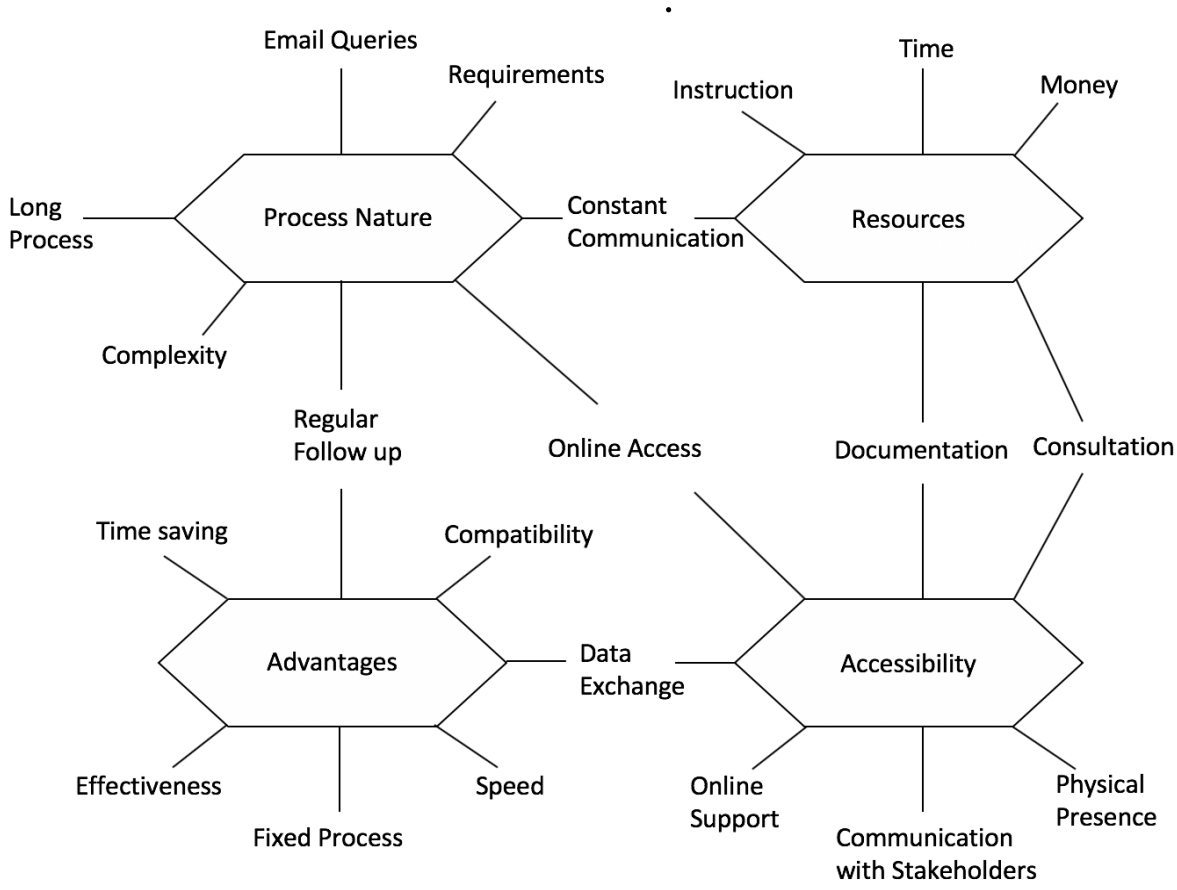


Figure 1: Thematic Map

**Resources:**

While discussing the resources aspect, the interviewees were not able to explain the resource invested in the beginning as most of them were directed only to the physical and monetary resources. However, later while explaining their process most of the respondent started pointing out the resources used in the whole user journey. First of all, the main resource pointed out by all the respondents was money as they had to pay money for the application form, plane ticket, insurance, Estonian ID, accommodation, etc. Most of the process involved in the journey was related to the monetary transaction that also made the process long and that required constant communication to be sure about the doing.

Other than money most respondents mentioned the documentation quite frequently as every process needed proper documentation. For e.g. to register themselves in a population registry, respondent had to present their ID, rental contract to the population registry. Four respondents

mentioned that their rental contract did not have few information so, they had to remake the rental contract and revisit the population registry office. Due to such cases, respondent mentioned that they needed a lot of consultation from the university and the public service office regarding the transportation, ID, etc. The convenient part of the process mentioned by the respondents was the instructions provided by the university, webpages of the concerned public authority that helped them to find required information easily.

**Accessibility:**

The most emphasized aspect of the interview was the accessibility of the information throughout the interview. Out of nine respondents, seven respondents mentioned that the functions were very easy to perform because of all the instructions, consultation received for the university and public service authority. But, two respondents explained that it was difficult to find what to do next due to lack of information and the language problem they had to face.

The respondents explained that the communication process was quite easy because of the constant communication with the stakeholders through email or even physical presence. It helped them to find out the next required process. The service providers as per their experience were available online as well as had office nearby them so, if they had any query it was easy to find an answer. For e.g. one of the respondents had problem registering the transport card, so, he called the Population registry office and explained his problem and the office activated his card through phone and informed him that his problem was solved. As per the responded it took him only 5 minutes to solve that problem. Other aspects pointed out by most of the respondents was the data exchange between the public authorities. All of the respondents mentioned that it was very easy for them to make the Estonian ID card because the population registry office had already provided their information so, the did not have to bring an document or much long process so, it was very easy for all of them.

**Advantage:**

As per the respondents experience the overall application process had a lot of advantages in terms of communication, completing the documentation and meeting all the requirements. According to the respondents, even though there is a long process and needs regular follow up, the whole application process was quite fast where all the tasks were done as pre-planned. It saved time of the respondents as they did not have to wait for the response and perform most of the task digitally. The respondents had to go through fixed process that was previously

mentioned in the instructions so, all of their views was that the services were very effective and saved their time for searching and waiting for the information.

Another important aspect mentioned by the respondents was that the services provided by different bodies were compatible so performing digital services were very easy and acceptable everywhere. And the data exchange between the authorities made the process even faster and easier. For e.g., while opening a bank account, respondents had to show a letter of confirmation to the bank and the bank would provide student card and from the authorities check all the necessary information. So, the respondents just had to fill the form and then come back to receive the ATM card in the bank. The whole process was linked through the online access and the digital platform is compatible and used everywhere to increase the ease of service provision.

## 5.2. Analysis of Services

To understand the impact of the SDGR implementation, it was important to analyze the current situation of the services that are being provided in Estonia. The services and the processes that the student must perform to start studying and to use the services in Estonia are shown in the UML Diagram below. The UML diagram explains the step by step process that must be completed by a European Students while studying in Estonia. This is the current situation of the service delivery that Estonia is providing without the involvement of the SDGR regulation and any other influence. The UML diagram was also made based on the interviewee response. While the interviewee has a different experience and the process was not duplicated for all of them, however, the diagram below shows the basic processes and steps that the European Students must follow while studying here. Any special cases and conditions are not included in the diagram and show the general process which is applicable to all the European Student.

**Overall UML Diagram**

The UML diagram above explains all the processes and steps a student from member state must follow to stay in Estonia and receive the services like free transportation in the Capital City. The UML diagram is based on the interview response given by the students which is presented in the table in the appendix 2.

The first process to come to study would involve getting enrolled in the university. To get enrolled in the university the student first needs to find the information required to apply online through the platform called Dream Apply. After the application, the university contacts the students to inform whether they have been selected or not. If a student is not selected, then the

process could be repeated all over again or the process ends immediately as per the student's requirement. If the student is selected, then the student can apply for the accommodation, as accommodation is important in general even to register anyone to the population registry office of Estonia. If a student can find the accommodation, then they immediately receive a digital rental contract which confirms the room is owned by that person for a certain period.

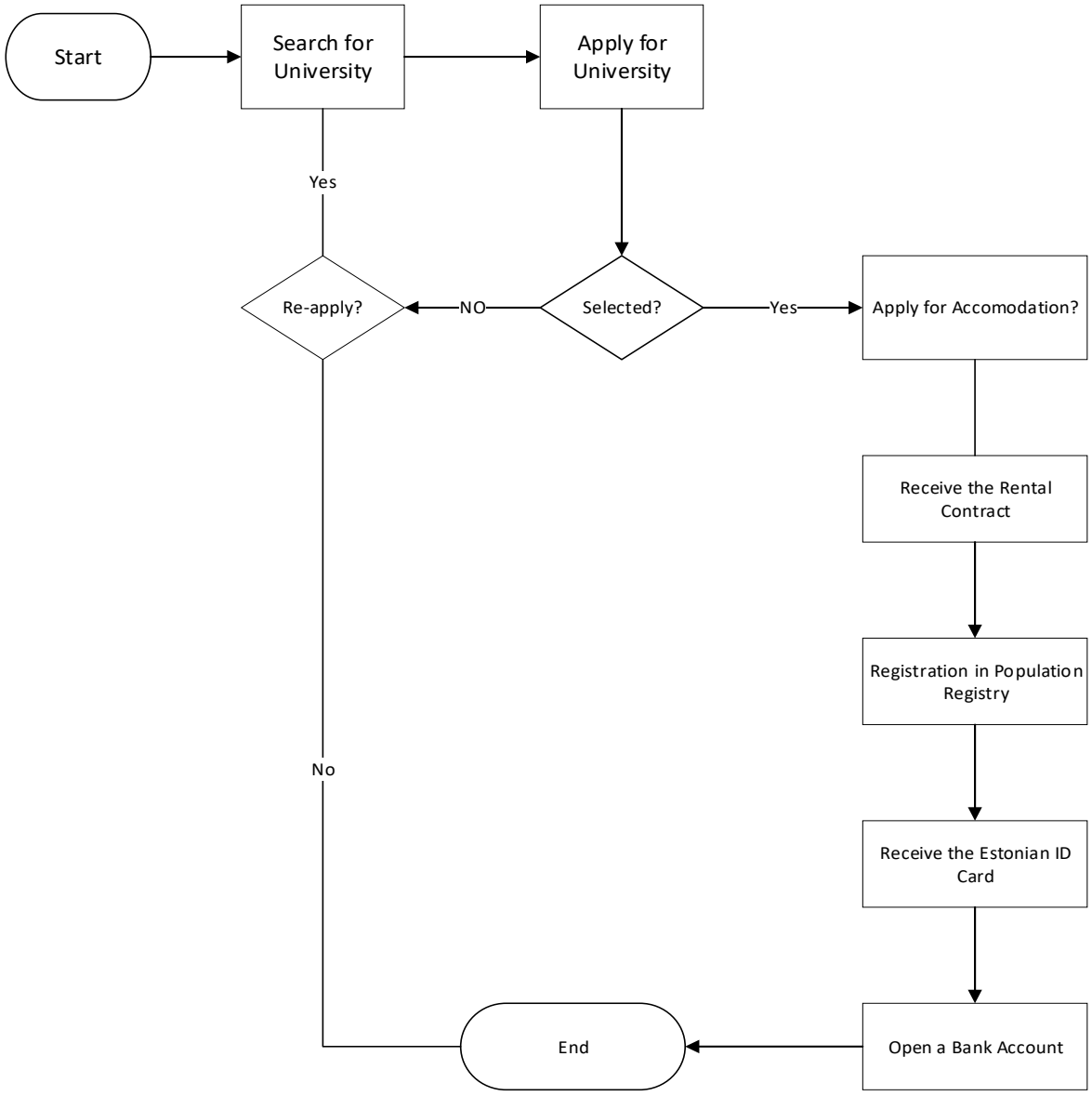


Figure 2: Overall Progress

However, if a student is not able to find the accommodation at once then they must continue the process until they find the accommodation. After the accommodation is fixed, student arrive in the Country. The important task after arriving is registering once self in the Population Registry Office of Estonia to use the public services while staying in the country. For registering one must go to the office and fill the form, after registering in the population registry, another process is to get an Estonian ID for the required amount of time, which can be received from the Police and Border Guard Office in Estonia. After receiving the ID card, the whole application process is completed. The overall application process is further explained in detail by separating the important task like Application process, getting accommodation, registering in population registry office, receiving Estonian ID card, and opening a bank account. The separate tasks are explained below:

**Application Process:**

The very first process of the whole application process is the university application. Following are the steps a student follows while applying in the university in Estonia. On the basis of the interview conducted, the average number of contacts made by the interviewees were presented in the UML diagram for completing the application process. The number of contacts the students had to make to complete the application process is shown in Appendix 2.1.

Step 1: To enroll, first the student must search for the required university which is more suitable for a student.

Step 2: This step is not a compulsory or widely used process to write query emails to the university or the specific department. If any student has questions about the course, student write email mentioned on the website of the university. Mostly, students write an email to understand the course in detail, future aspects, teachers, and to explain person specific interest.

Step 3: After selecting the university and specific course, the student needs to apply in the university through the digital platform called Dream Apply, while applying through Dream Apply a student needs to provide the document like the previous educational certificate, CV, motivation letter any specific topic chosen by the department itself, English proficiency certificate (if the course is taught in English language).

Step 4: On the basis of the documents provided by the student, the specific department chooses the student on the basis of the skills, knowledge and educational background to pursue the studies in the university. If a student is selected the university sends the confirmation about, they are been selected for the next phase which is the interview. However, if the student is not selected, they are sent a negative response via email. If a student is not selected, and if they want to reapply, they can apply again in the following else, the process ends after the negative response. The university sends the response within two to three weeks of sending the application

Step 5: For the students who received a positive response the university send the interview information attached with the email. The email mentions the date and time and the faculty member who will be present in the interview. The university proposes suitable time for the interview by agreeing with the student.

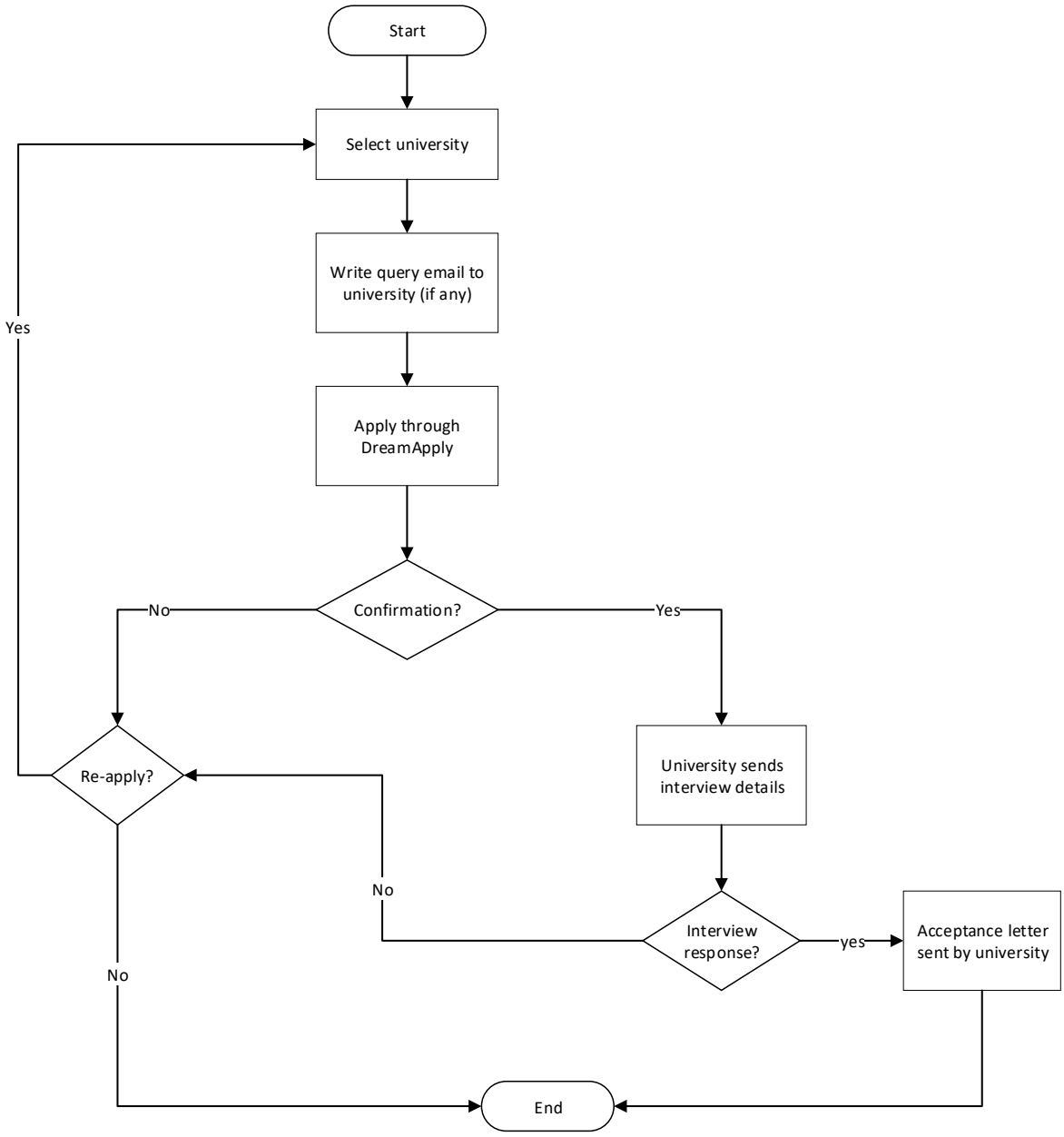


Figure 3: Application process

Step 6: After the interview is done with the specified faculty member, the university send the interview response generally within 2 weeks of the interview. If the interview response is positive, then the university sends the final enrollment confirmation to the student and the confirmation is sent to the students via email and to a physical copy of the confirmation to the address of the student. If the interview response is negative, then the student again has a choice of reapplying next year from step 1. If the student does not want to reapply then the process stops immediately.

**Accommodation Process:**

Accommodation is another step that the student had to complete after getting selected in the university. The accommodation process flow is created on the basis of the table shown in appendix 2.2.

Step 1: Before starting the accommodation search in Estonia, first the student should complete the Application process mentioned in Figure 3.

Step 2: After the student is enrolled in the university, the second task to be completed is to get accommodation before the arrival.

Step 3: There are two options that one can follow for the accommodation, one of the university dormitories and another is renting outside the university. First, the student has to decide which one they want to start as both the options has to be performed differently.

Step 4: If the student wants to receive the dormitory facility inside the university then, one must apply the dormitory online by filling all the form online in the university portal. One has to provide personal information like address, phone number, and email address. Along with the information, one must choose the room among different option like shared, single room, etc., if the student does not want university accommodation, then they have to find accommodation outside the university. To find the accommodation outside the university, one must search online on Estonian websites and Facebook pages and apply from the online portal.

Step 5: If the university has enough rooms to offer, then one will receive confirmation of getting the required room. The dormitory asks the student to pay the deposit before the final confirmation, after the student has paid the deposit into the bank account mentioned by the dormitory via email, the dormitory send the final rental agreement to the student of confirming the room. If there are no rooms available, then the dormitory will send the negative response to the student then one has to find the accommodation outside the university.

Step 6: After the application, the owner sends the response of the availability of the place and if one likes the place, contact the owner to make the rental contract, if not suitable then one must start the same online search process again. After finding the place as per the requirement, one should contact the owner to make the rental contract. The owner asks to pay the deposit

money, after the payment of deposit, owner send the rental contract online. After the finalization of the contract one can sign the rental contract upon arrival in Estonia.

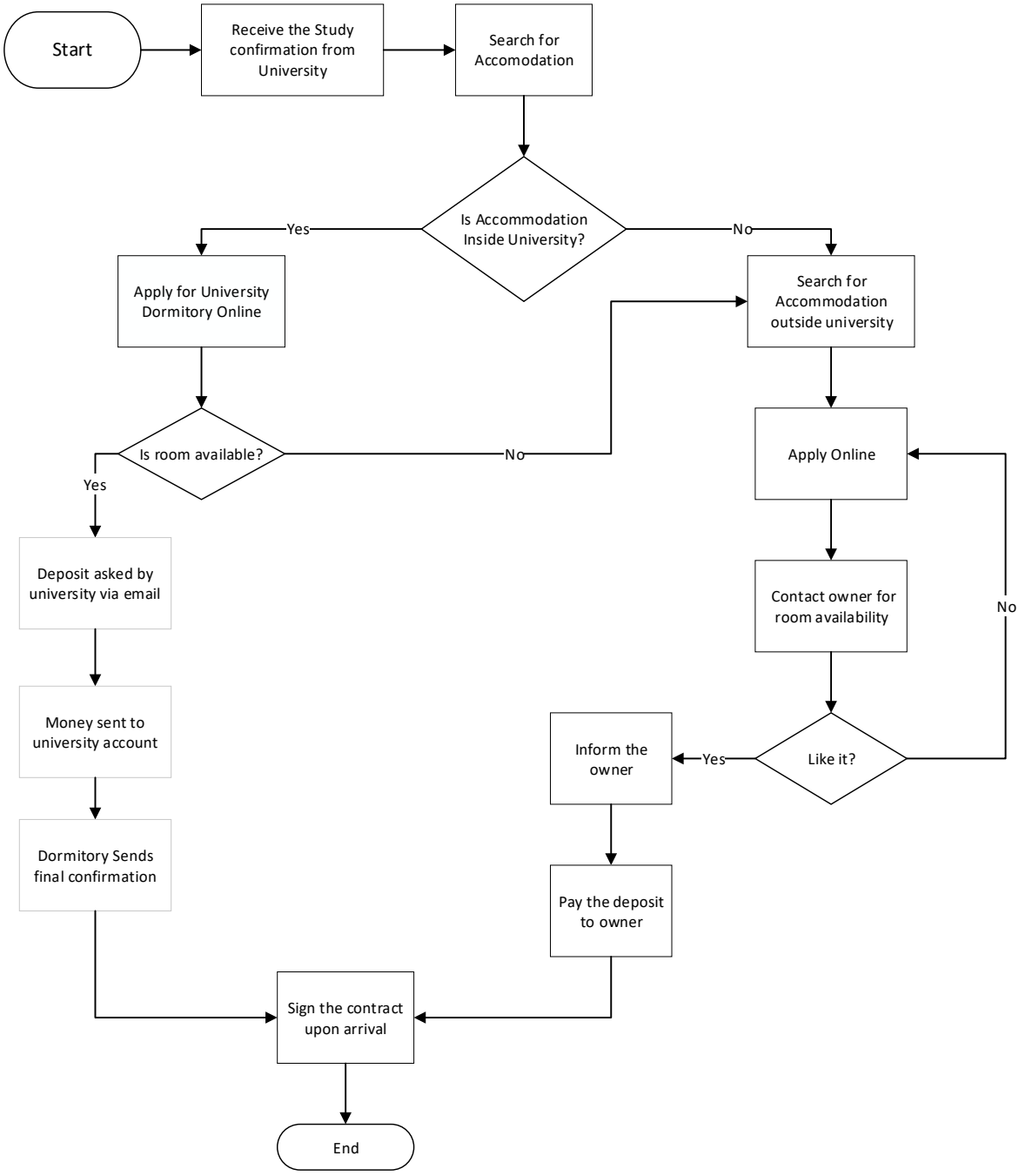


Figure 4: Accommodation Process

**Population Registry:**

After arriving in Estonia, the important task to complete is to register oneself in the Local Municipality Office of Estonia. The steps that the students as per the interview had to do is shown in the appendix 2.3 which is explained in UML below:

Step 1: The first task, student has to perform is to buy a transport card from any local store. The transport card works as a smart ticket which can be used instead of conventional tickets which registers the entry of passengers in the bus from a system. If one's accommodation is inside Tallinn, they can use the free transportation service after registering themselves in the population registry office. The office confirms the registry then, one can sync the transport card and start using the free transportation inside Tallinn.

Step 2: In order to stay in Estonia for the long term, student has to register themselves as a temporary resident in the specific region they are staying. Registry in the office will help to use the public services offered by Estonia as well as helps to provide one's information to the required authority. To do so, one has to go to the population registry office, with the documents like identity document from one's country, the rental contract which specifies that person is staying in Estonia mentioning the exact location of the accommodation and fill a form with the previous location, name, country name, etc.

Step 3: The student after providing the information to the population registry office, the office checks whether the documents are valid and complete to register oneself in Estonia. If the document is fine, the office sends a confirmation mentioning that are registered in the population registry office.

Step 4: To use public transport, one should buy the transport card from the store nearby. After that, one should go to the Population Registry office and show the identification document and the valid rental contract in Estonia and one must fill the form. If the rental document is fine, then the office will provide the confirmation of registry and use of free transport card but if the rental contract is not according to the requirement then the office asks to provide additional confirmation from the owner of the place. After the process is done, one is registered in the population registry office. However, if the document is not according to the requirement, the population registry office asks to recheck and provide the information again and continue with step 3.

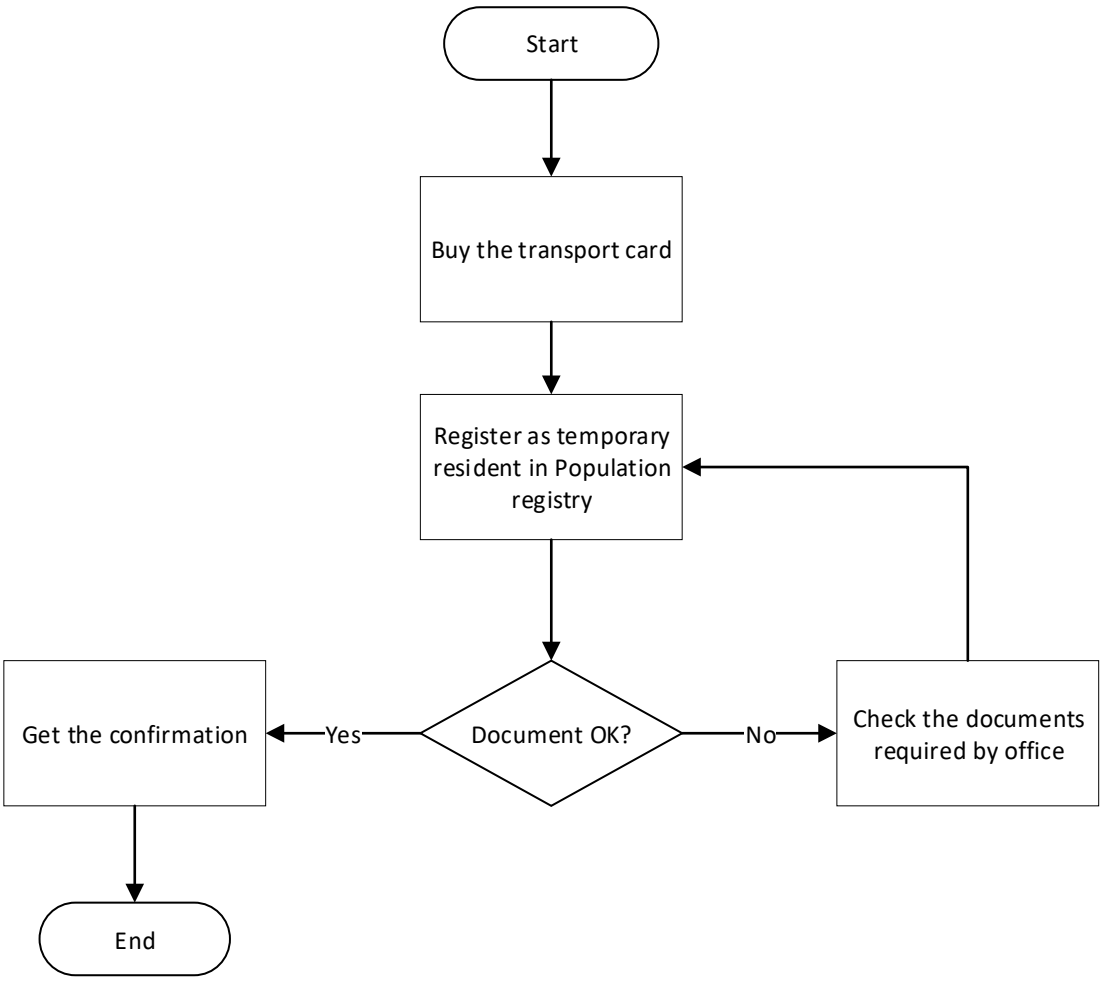


Figure 5: Population Registry

**Estonian ID card**

After receiving the Confirmation from the Local Municipality office, one must receive the Estonian ID card. The steps the interviewee had to complete is explained in the UML below where the number of contacts made by the interviewee is shown in the table in Appendix 2.4:

Step 1: To receive the Estonian ID card one must go to the Police and Border Guard office to start the process. Estonian ID card is useful to stay in Estonia for longer stay and also to use the public services in Estonia. The ID card can be used as a transport card, it is used to do the digital signature and the identification code received in the card is used to verify and identify the residence of Estonia.

Step 2: To receive the card, one must go and fill the form on the police and border guard office, which includes basic information like, name, address, home country, etc. and show them any

identification document. The administration will ask the applicant to take a photo there and pay the application fee which is 25 euro. Due to the interoperable system, and the use of X-Road the local municipality office automatically sends all the necessary information like a rental contract, current status, so, the applicant does not have to show any document in the office except an identity document.

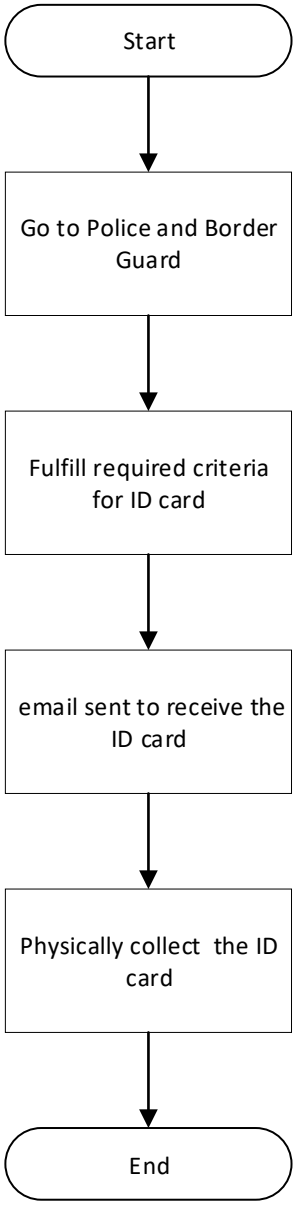


Figure 6: ID card

Step 3: The next step is, after a few days the police and border guard office send an email requesting to receive the ID card from the office.

Step 4: The applicant must go to the police and border guard office and receive the Estonian Id card from there.

**Bank Account**

After receiving the Estonian ID card, the last process left is to open an Estonian bank account with the following steps where the number of contacts made by interviewee is shown in Appendix 2.5:

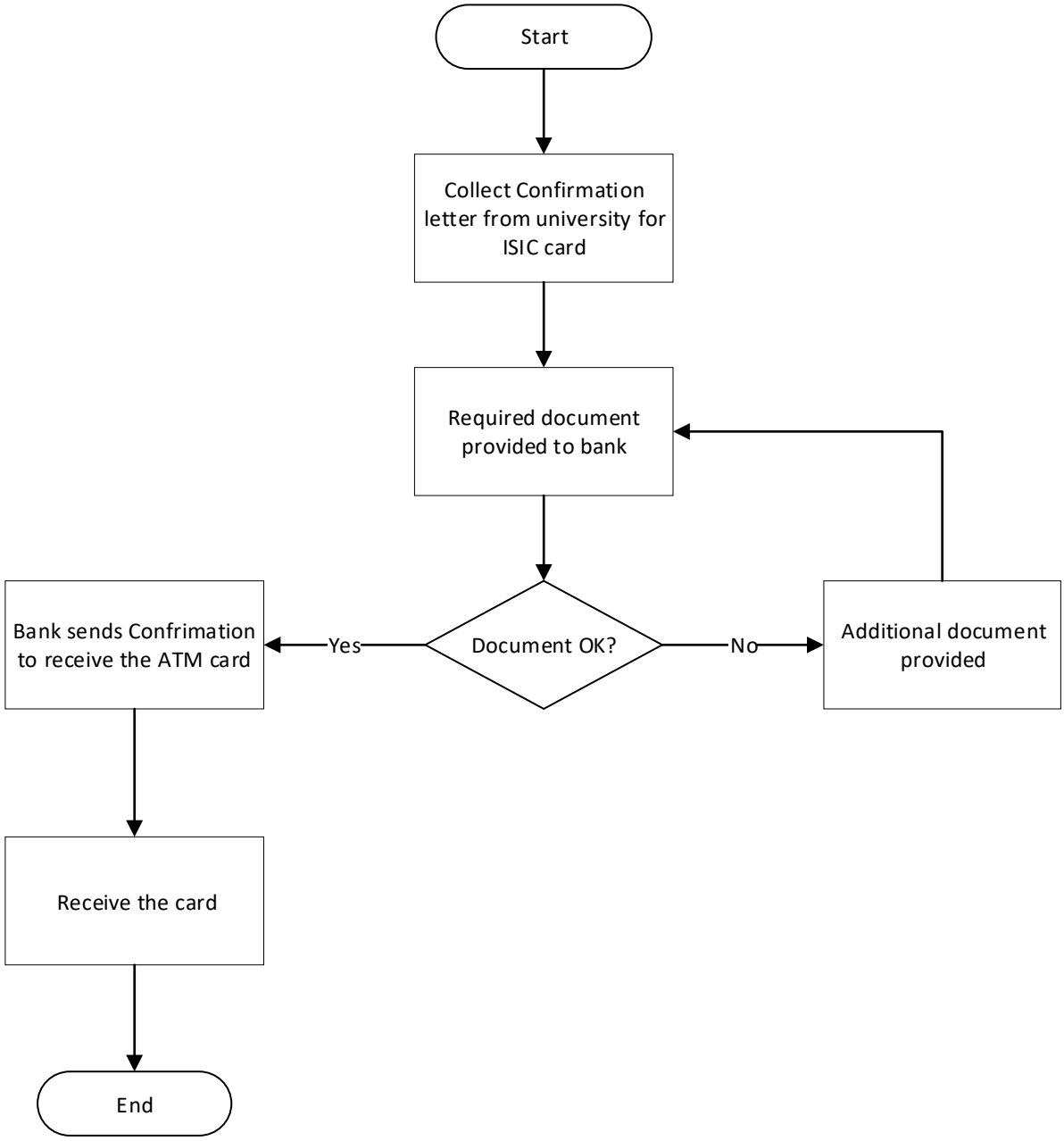


Figure 7: Bank Account

Step 1: Banks in Estonia makes specific ATM cards for students which work as a student identity card which is called ISIC card. So, if the student wants to make an ISIC card, they

must ask the university department to make the letter confirming that they are studying in that university. If they do not want to make an ISIC card one can start with step 2 immediately.
Step 2: After step 1, one must take the letter to the bank and fill the form, show the id card to start the process. Because of the X-Road system, student also does not have to show many documents to the bank in general, which makes the filling form process faster.

Step 3: If everything is fine, the bank sends the confirmation to receive the ATM card via email or mobile number. But if the information provided by the student is not enough, then bank asks additional questions and information example some valid document, income source, etc., After clarifying all the questions and documents the student have to go to step 2 all over again to open the account.

Step 4: After receiving the confirmation, one must go to the bank and receive the ATM card and related documents like PIN number information, Smart ID. To receive the bank account, one can choose to go to the bank physically and receive the ATM card, or one can also choose to send the card through the postal service to the home address in Estonia. The ATM card is received generally with one week of filling the form.

## 5.3. SDGR Impact Discussion

The overall application process that student from member state must follow provides a detailed overview of the public administrative processes in Estonia. The implementation of the SDGR and its progress is based on the development and built-in infrastructure that the country already has. If the country has a stronger IT infrastructure where the government is providing services online, it will be easier to implement the regulation and work accordingly in those countries. However, if the country does not have proper IT infrastructure then it will be difficult to establish the base of digital transactions first and start working on the interoperable system and services in a cross-border platform. In the case of Estonia, it already has an interoperable system and digital infrastructure by which the citizens are receiving online services from the government.
While understanding the impact of SDGR in Estonia, it is important to know how and where the implementation of the regulation is affecting the process and which aspects need to be improved to adopt the regulation. Based on the SDGR directive following article related to the student's application process is explained below to understand the SDGR impact:

**Access to information**

Based on Article 4 on the directive, the commission explains to ensure that all the information should be available online for the citizens for easier access that information. The national webpages should inform about all the rights, regulation, law, and all necessary information needed for citizens to process any information.

The state portal of Estonia www.eesti.ee [58], provides all the necessary information about the topics like registering residence, health, and care, doing business, Estonian documentation to the users. The user can receive all the information from the website, which is directed to all the citizens, but the users also have the option of receiving personalized information as well. By using the smart card or bank login helps to check the personalized information about the user like; family doctor, Estonian card status, license, etc. As a state portal, it provides basic and personalized information to the citizens which is very easy to access and does not require any specific consultation and multiple documents. However, the specific service providers also have information about the services they provide online. 8 out of 9 interviewees mentioned that they did not have any problem finding any information about the topics they were looking for. So, the information access is easy and convenient in Estonia. The requirement set by the commission regarding easier access is already in action in Estonia.

**Procedures to be followed fully online**

Based on Article 6 in the regulation, the member state should provide the services fully online. The physical presence of citizens is encouraged only in the matter which cannot be performed online which might increase the risk of fraud or security hindrance. The service delivery should be in a structured and easier manner.

In the case of Estonian public service delivery, for a student, there are a couple of tasks that can be performed fully online. The application process from applying the university to receiving the final confirmation, all the steps are performed online. The accommodation is also online except the last step as the student must be physically present to sign the contract with the owner as explained in the AS-IS process. Except that the student can use the smart card to use the transportation inside Tallinn which needs to be activated online by visiting the website www.pilet.ee [59] and put the credentials like identification number, transport card number. The process of receiving the Estonian ID card and registering in the population registry is also online, but population registry needs physical presence in the beginning to fill the form and to show the identity documents and the ID card needs presence, in the beginning to pay the money

and receive the card to avoid the security risks. The requirement of the regulation is fulfilled on the basis of this article as well in case of Estonia.

**Quality of information in rights, obligations, and rules**

Based on article 9, the commission tries to ensure the access of information should be easy, use- friendly, and provides sufficient information to the citizen to proceed to perform the action based on that information. Being user-friendly is not the only requirement that is necessary for completing the task, the commission explains that the information must also provide detail about the rights and obligation, technical specification and guideline to perform the task.

The student application process from the perspective of providing quality service was quite straight forward with various information and guidelines to follow. All the 9 interviewees mentioned that the university provided the guideline of processing in terms of the application process, accommodation and receiving the Estonian id card. With respect to the example presented before about the transportation, the pilet.ee website provides all the information about the types of card, guidelines to but the transport card, activating the smart card, how to use the smart card and mentions the rules and regulations that need to be followed and the consequences of not following the rules [59]. Except for the individual service provider, the state portal also provides the detailed information about the requirements, rules, the necessity of the service with the contact details of the institution handling the issue [58]. The information is provided in plain language and structured way so that it will be easy for the user to follow the information.

**Quality of information on procedure**

Based on article 10, the commission includes the quality of information on procedures, providing the information about the rules and regulation is not the only task the service provider has to be concerned about, but the procedure that must be followed to perform the task has to be considered as well. The detailed procedure of completing the task online must be included like necessary document, file format, applicable fees, online payment options, deadlines if any, additional language, etc.

From the student application process point of view, all the interviewees performed most of the tasks online with the use of public service website. Firstly, the submission of application, the application was submitted in an online portal called Dream apply, the accommodation was online, and the population registry and Estonian ID card process was partly online. In the process of completing these tasks, the students received all the necessary information as a step

by step process of application from the university website which explains how to apply for any courses including the deadline, and all necessary contact information [60]. The population registry office also provides detailed information and step by step process of registering oneself in Estonia with the contact information of place and responsible person [61] and the police and border guard office also provides the detailed step by step process of applying for the Estonian id card in detail [62].

**Quality of Information on assistance and problem-solving services**

The commission while explaining about providing quality services to the citizens also focuses on the state aiding and problem-solving services to the citizens as well is discussed in article 11. The citizens should be aware of the services offered including the assistance possibilities. The information like email address, phone number, office details, online inquiry, etc., should be possible and made available for the citizens.

The service delivery of institutions in Estonia has the option for citizens to contact the service provider and ask for special assistance with them. The individual service portal and the state portal has the contact details and assistance facility included. The information is also provided in multiple languages like Estonian, Russian and English to make the service delivery more effective [58]. One of the interviewees shared the experience of the problem of activating the transport card. So, the interviewee called the population registry office and explained the situation to the officer, and they explained the reason for the problem and activated the card from the phone. The interviewee mentioned that service delivery and problem-solving is very quick and effective in Estonia.

The public service delivery of Estonia is highly based on the digital system which can be seen from the application process where most of the steps are performed online fully online and some like Estonian ID card needs physical presence but due to the security reasons. These are not the only services and online application of public service delivery in Estonia, the service provision is based on the one-only principle where institutions communicate with each other so, the citizens do not have to provide the same information again [63]. Using X-Road infrastructure the institutions relate to each other [15], which helps to maintain the interoperability and successful digital services. With the use of x-Rod architecture, the services are performed in a smooth manner. For e.g. After the registration of a person in the population registry, the person when goes to apply for the Estonian Id card does not have to provide same information there. The police and border guard office already have the information. Not only

these services, citizens can also declare taxes online, get medical prescriptions online, online banking, etc. [64].

On the basis of above-mentioned article, the key aspects that need to be completed before and for successful implementation of SDGR are implemented in Estonia and the citizens are using the public services effectively. The successful use of the services mentioned in the article of the regulation shows that the implementation of the SDGR does not seem to make any radical changes in the public service delivery in Estonia as the infrastructure and requirement set by European Commission is long implemented and being successful in Estonia. The processes are online and easy to access from the student's perspective so, the regulation does not provide any specific difference or implementation that Estonia could perform to adopt the change soon to be formulated.

## 5.4. Proposing Redesigned Processes

Even though, the SDGR implementation has not brought specific changes in the public service delivery in Estonia now. The processes can be updated and made more efficient while initiating cross-border communication with the member states. The cross-border communication might be better from the Estonian service delivery perspective, which is shown in the TO-BE process below.

By Studying and analyzing the current process analysis shown in the UML diagram above provided a clear picture of all the process and steps that a student coming to study in Estonia has to follow before studying. It provided a clear picture of the process, services, and administrative workflows. The analysis of all the process individually provided an in-depth knowledge of the individual entity which can be evaluated in this chapter in detail. On the basis of the current process described earlier, will be analyzed and a TO-BE process will be discussed where the possibilities of change and improvement will be pointed out. Though the proposing process does not resemble any current work or a fixed solution for the problem, it works as the author's sole idea of the process on the basis of the interview and the AS-IS process designed.

The TO-BE model will help to analyze and examine different aspect of the process and will help to determine the possible area of improvement. The overall application and settle in the process have various steps and various number of contacts that the students must make to complete all the administrative process from applying to the university to get the bank account. Though Estonia has digital services and interlinked, compatible system, it requires physical

contact in various steps. The TO-BE process will identify the possible improvements in the process to make it more efficient and user-friendly.

The TO-BE process will discuss the individual UML diagram which explains the steps in a detailed manner, like the application process, accommodation, population registry process, Estonian id card, bank account.

**Overall Process**

The overall TO-BE application process shows the possible changes that might be possible to enhance the speed and decrease the number of contacts between the students and various institution.

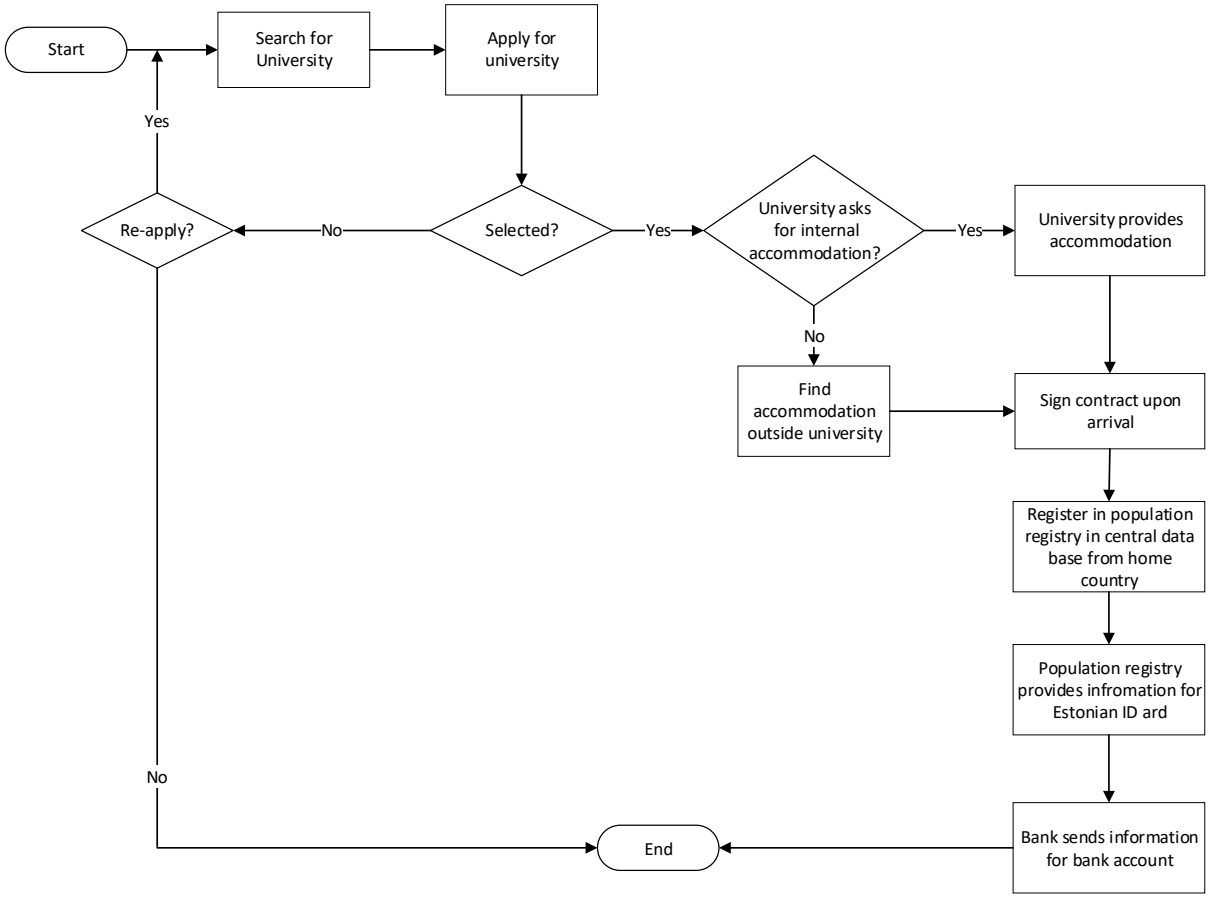


Figure 8: TO-BE Overall Process

The overall administrative work in Estonia is highly digital where basic queries, problems can be solved online, and services can be obtained via the internet. However, the process still can be improved where the services can be provided in a faster and easier manner. The university, unlike the AS-IS model can provide easier and detailed information on the website to the students which reduce the query emails and number of contacts. The students had to write 8-

10 query emails to the department or university regarding course, application complication, requirements, further processing, etc., as students were not able to attain all the information from the university website. If the university website is more detailed by separating the specialties and simplifying the content. It would reduce the contacts regarding the query emails. At the same time, if the university asks for the accommodation requirement after the enrollment process, it would also reduce the number of contacts for the students who are willing to receive the university accommodation. The regulation is willing to establish an interoperable system where the documents and information can be exchanged between the member state. So, if the population registry office between the member states can exchange the information then, the student does not have to go to the office in Estonia to register themselves as the population registry office already has the information. Likewise, If the Police and Border guard office use the information from the population registry office and create the Estonian ID card and inform the student to receive the card physically would reduce few steps of process that the students have to perform. The last process, students have to perform is to create a bank account. The process would be faster if the university provides the information of the student and required information to the bank with the mutual consent of the student to create the bank account, and bank would inform the student of creation of the account and asks to receive the ATM card.

The overall application process as explained above has many processes and steps, which has been broadly divided into the Application process, Accommodation, Population Registry, and Bank Account. These TO-BE processes will be explained in detail below for the above mention aspects:

**Application Process**

The application process for applying any university in Estonia is digital. The students have to apply through the digital platform. Though the whole process is online, there is still various number of contacts with the university and the specific department. The TO-BE model does not change the whole process and steps in the application process but it identifies few steps that can be reduced to make the process faster and more convenient for the students.

If the website has clear and detailed information about the university and courses, then the number of contacts between the student and the university would be reduced which makes the process smaller and convenient. In another process, the university makes multiple contacts with the student regarding getting selected or not, then provides interview information, conducts an interview and finally sends the enrollment letter.

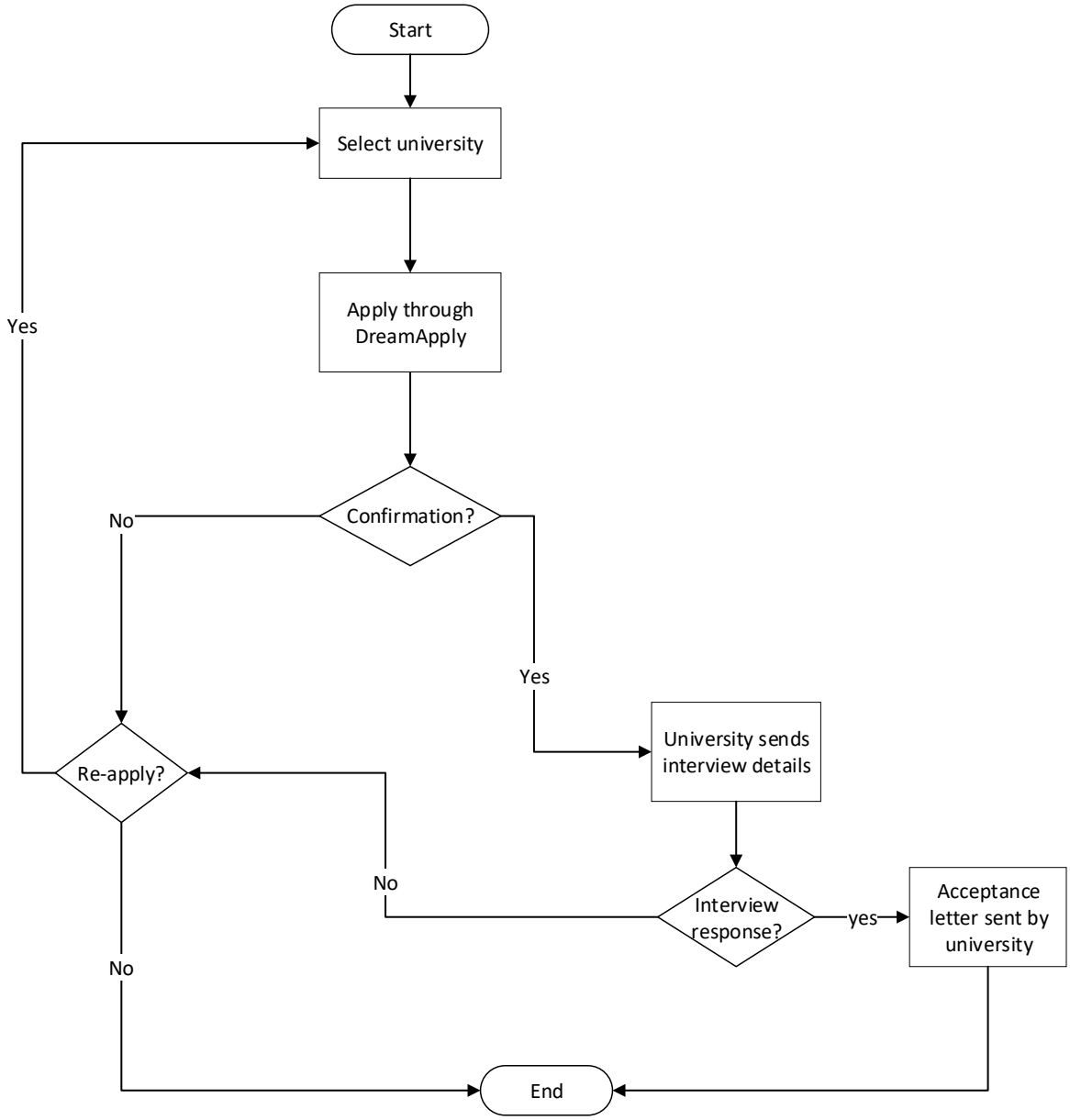


Figure 9: TO-BE Application Process

As per the interview and the AS-IS model, the student must search the course and write a few query emails to the department. As per 7 interviewees, they had to write 8-9 emails to the departments asking a question about the university, course, requirement, future aspects, etc. The website did not have a clear picture of the course and university and most of the respondent also mentioned the website was difficult to follow as there was different and a lot of information. Due to the complex website and unclear information from the web the student has to write many emails to understand the application process.

**Accommodation**

Accommodation plays very important part in the process to register oneself in the population registry and most importantly to stay in the country. The accommodation process starts quite late in the application process. If the student wants to use the university accommodation, then the university only offers after the enrollment process when the student applies it separately which has its own separate process.

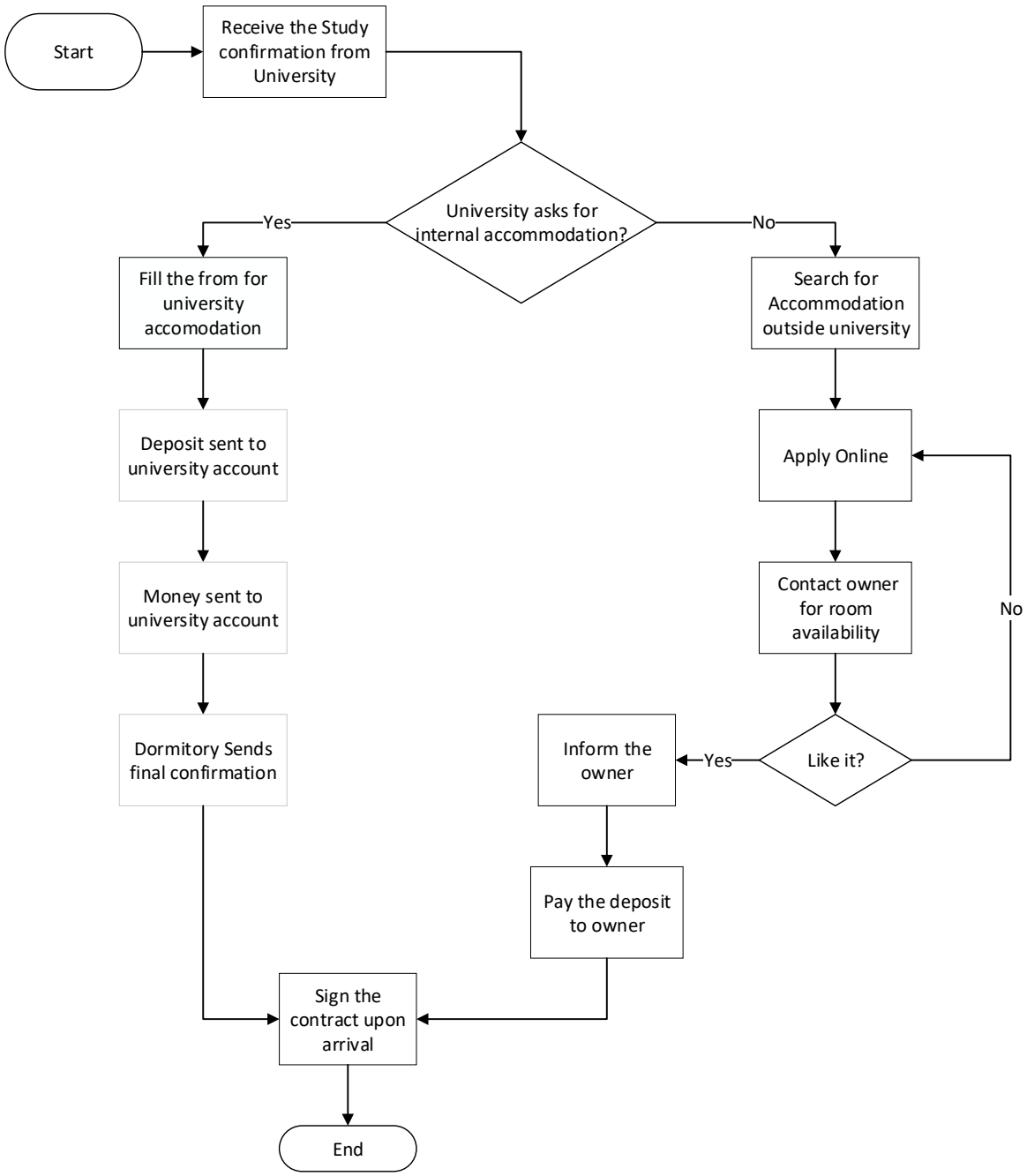


Figure 10: TO-BE Accommodation Process

After the enrollment, if the university asks the students, whether they want to receive university accommodation and if the student wants it, the university simply provides the accommodation. If the student does not want to receive university accommodation they respond likewise. Introducing this process will reduce the steps of searching accommodation, a separate application, waiting time for the accommodation for the students willing to get university accommodation. However, the students willing to have accommodation outside the university will have the same process as it is. The process would be a lot shorter and faster if the university asks the student about the accommodation choices at the beginning of the application process.

**Population Registry**

Registration in the population registry does not have long and complex problems however, it does involve few physical contacts and waiting time due to dependency in the application process, receiving the rental contract and physically going to the office and fill the form and complete the required process.

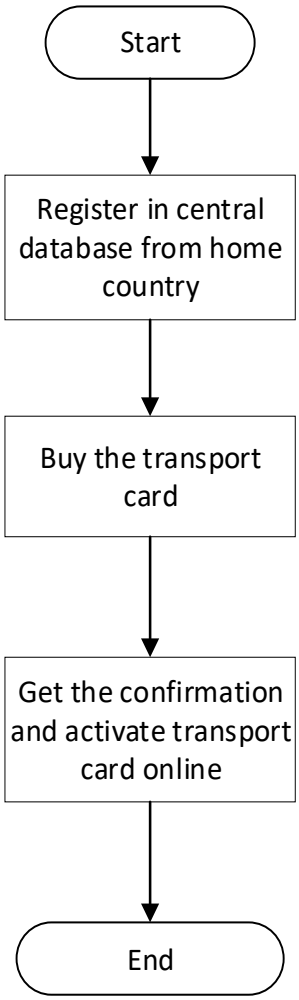


Figure 11: TO-BE Population Registry

The population registry office exchanges the information of the residents to other institution when required for processing of the data so that the residents do not have to provide that information again.

If the population registry office by using the interoperable system gets the information of the students from the population registry office of their respective home country and provide this information to other institutions in Estonia, them the contact that the student has to make will be reduced. The student has to provide the information in the population registry office in their respective country once then the population registry office of the home country will share the required information to the population registry office in Estonia. After arriving in Estonia, students do not have to go to the population registry office. One has to buy the transport card and the population registry office will send the confirmation about their registry in the office and they can activate the transport card online.

**Estonian ID card**

Another important step the student must follow is to receive the Estonian ID card for studies. The AS-IS process is not long and complicated for receiving the id card, but it requires physical presence to complete the process. All the physical presence cannot be eliminated as the Estonian card holds sensitive information to perform all the process online. Even though, there could be some improvements to reduce the number of contacts in the process.

If the police and border guard office can use the information from the population registry and can make the Estonian id card for the students. It would reduce the step of a student going to the border guard office and applying for the card when the office already has the information about the student from the population registry office. If the police and border guard office would make the card beforehand and inform the students to collect the card from the office that would reduce the extra steps. After receiving the email from the police and border guard office, the students can go to the office and receive the card physically. Using the interoperable system can make this process faster and easier and also would reduce the administrative burden from the institutions perspective. Receiving the residence card physically would be preferable because the residence card holds sensitive information about the person which could be better not to be trusted to be delivered. It would maintain the minimum number of contacts between the institutions and the students to make the process faster but secure at the same time.

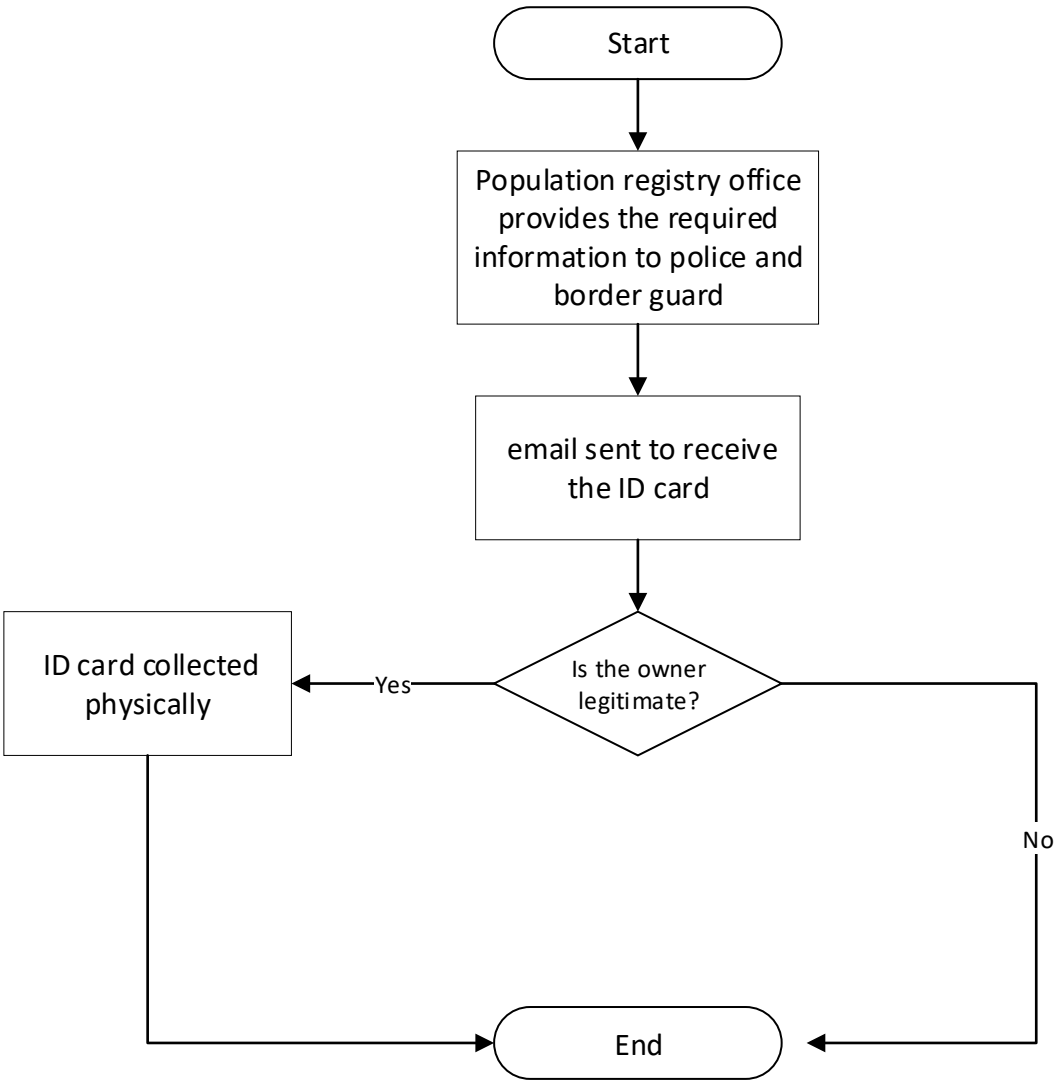


Figure 12: TO-BE ID card

**Bank Account**

Creating the bank account is the last process the student has to follow to complete the whole settlement process in Estonia. As receiving the Estonian id card, creating bank account also needs more physical presence.

Unlike AS-IS process, instead of student going to the bank and start filling the form and providing the information. If the university instead provides the required documentation to the bank directly with the mutual consent of the students and bank starts the processing, then the student does not have to visit the bank and the university for the letter. It reduces number of steps which makes the process easier and faster for the students. After receiving the information and processing it, the bank could send the confirmation email to the student to come and collect the ATM card. The student could visit the bank and receive the card. Instead of making multiple contacts the whole process is reduced to two contacts between the bank and the students which makes the process convenient for the students and for the bank.

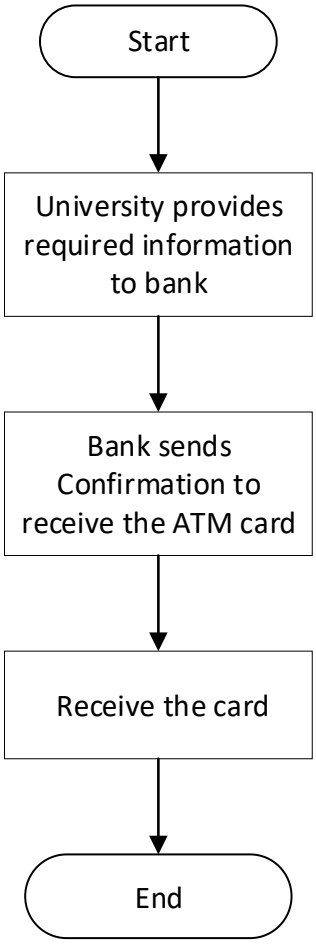


Figure 13: TO-BE Bank Account

After completing the above-mentioned steps, the overall application is completed for a student pf member state. The above shown TO-BE process suggestion is made based on the interview and the improvement ideas generated based on the AS-IS process. The above TO-BE process might not be the only way of improving the steps and making communication easier and convenient for the students. There is not any work being processed in implementation or consideration regarding those TO-BE process. Even though, the process overall process has room to update which can reduce the number of contacts being made by the student to different authorities and also helps to increase the convenience of use of those services.

# 6. Conclusion

As the main research methodology of this research, the author chooses the qualitative method of data collection where the collected data were analyzed using thematic map and UML diagram. The above-mentioned data collection and analysis method helped to provide detail outcomes which were the initial aim of the research. The detailed study of the SDGR regulation helped to understand the impact and the real-life situation based on the experience of the users which it was intended to.

The primary data collection was gathered by conducting interviews one on one with the students of the EU member state who are/ was Studying/studied in Estonia. The interview was conducted with 9 students about their user journey of the application process and relevant documentation and processes that need to be done to start studying in Estonia. The user experience though was their personal journey, but it does not include any exceptions or special cases of particular student but generalizes the processes and steps that a student has to perform to start studying in Estonia. The interview provided better insight into the process and the impact of SDGR in the student's application process in Estonia.

The above-mentioned methodology helped to answer the research questions that mentioned in the introduction of the thesis

Firstly, the first research question was divided by another sub-question which aims to understand the current situation of the student application process in Estonia and the effect that will be seen after the implementation of the regulation.

1. *How does SDGR improve the Estonian public service delivery?*

The Estonian public service delivery is very efficient as the information about the processes are explained in detail in the webpages and most of the services can be performed online. There are some services that need physical presence as mentioned before in the research like receiving Estonian id card, registering in the population registry office, etc., but these services require communication and verification of sensitive information like identity, rental contract etc. So, the implementation of the regulation does not seem to change or improve vital part of the service delivery. However, the implementation might change the processes and requirement, but this cannot be considered improvement.

*1.1. How SDGR affects the Students application process in Estonia?*

The public service delivery in Estonia is highly digitalized where services and information is easily available online. As seen by the analysis of the student's application process where students were able to apply online, receive the confirmation online and get the information about the services through the website which helped them to complete the process faster than performing all the steps physically. So, the implementation of SDGR does not seem to affect the application process as most of the requirements that are mentioned by the European Commission to initiate the regulation are already in action in Estonia.

2. *How much does the regulation provide value in the public-sector delivery in Estonia?*

Secondly, the regulation tends to make the process faster as it aims to provide all the information online which will be easier for the citizens to receive all the information. Estonia although has effective public service delivery, however if the all the member state has similar data exchange platform, compatible system, and digital services, it will make the data exchange and communication easier for Estonia as well. The availability of all the information, compatible services will help to reduce few steps from the process that has been suggested in the TO-BE process. Availability of information online might help to verify the required information and make the process faster and efficient.

## 6.1. Future Direction

In the current research, the author has disused the possible problems and findings of the impact of SDGR in Estonia. The public service delivery in Estonia although is digitalized but it can be improved in many aspects where the citizens can receive the services in more convenient manner.

The author sees the possibility of further development in service delivery in Estonia with the use of SDGR implementation. The cross-border data exchange and compatible system might help to exchange data, easier service delivery and minimum number of contacts for citizens. Overall student process still has multiple contacts and long process to complete all the task and start studying. If the student receives more detailed information and a single number of contacts that provides all the information, then the process would be easier and more convenient for the students.

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## Appendix 1: Interview Questions

1. How did you find out about the country and course?

2. What was the process for applying in the country from selecting the university to coming to study in the country?

- The process you had to do in your country.

3. What were the process that you must perform after arriving the destination country?
4. How many days it took in total to complete the whole process?
   - Number of contacts
   - Emails, calls
   - Which country had easier and effective service delivery in your point of view? Why?

7. Would you come again/ recommend another people/rate country from user experience?

## Appendix 2

Number of Contacts students had to make in all the Processes in a detail:

### *2.1.* University Process

| Process | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **University:** | | | | | | | | | |
| Query Email to University | * | * | * | * | * | * | * | * | * |
| University replied the answers | * | * | * | * | * | * | * | * | * |
| Application sent with required documents | * | * | * | * | * | * | * | * | * |
| Department Contacted for Interview | * | * | * | * | * | * | * | * | * |
| Interview with Candidates | * | * | * | * | * | * | * | * | * |
| Confirmation of selection sent to the student by unversity | * | * | * | * | * | * | * | * | * |
| Sending documents through post to the university | | * | * | * | * | * | * | * | * |
| Final Acceptance Letter sent to the students | * | * | * | * | * | * | * | * | * |
| Student asking letter from department to confirm ther student status | | | * | * | | * | * | * | * |
| Sending that letter to the concerned institution in own country | | | * | * | | * | * | * | * |
| **Number of Contact** | 7 | 8 | 10 | 10 | 8 | 10 | 10 | 10 | 10 |

## *2.2.* Accommodation Process

| **Accomodation:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Appying for room from university portal | | | * | | | | * | * | |
| University send confirmation of room approval | | | * | | | | * | * | |
| Pay the money to the university | | | * | | | | * | * | |
| Final Contract sent by univeristy | | | * | | | | * | * | |
| Appying room from facebook page | * | * | | * | * | * | | | * |
| Responding to the notification of available room | * | | | | | | | | |
| Searching for more options | * | | | * | | | | | |
| Owner contacts for the room availability | * | * | | * | * | * | | | * |
| Respond to the interest in the room | * | * | | * | * | * | | | * |
| Pay the money fot the room | * | * | | * | * | * | | | * |
| Owner sends the final contratc of rental room | * | * | | * | * | * | | | * |
| After arriving sign the contract and receive the key | * | * | * | * | * | * | * | * | * |
| **Number of Contact** | 8 | 6 | 5 | 7 | 6 | 6 | 5 | 5 | 6 |

## *2.3.* Population Registry

| **Population Registry:** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Buy the Transport Card | * | * | * | * | * | * | * | * | * |
| Go to the Population registry with all documents | * | * | * | * | * | * | * | * | * |
| Problem with the rental agreement so cannot register | | | | | * | * | | | |
| Contact the agency for the new rental agreement | | | | | * | * | | | |
| Agency makes the new rental agreement | | | | | * | * | | | |
| Go back the population registry to register | | | | | * | * | | | |
| Problem linking the transport card so contact the population registry via phone | | | * | * | | | | | |
| Population registry instructs or make changes in the system | | | * | * | | | | | |
| Tranport Card starts working | * | * | * | * | * | * | * | * | * |
| **Number of Contact** | 3 | 3 | 5 | 5 | 7 | 7 | 3 | 3 | 3 |

## *2.4.* Estonian ID

| **Estonian ID:** | | | | | | |
|---|---|---|---|---|---|---|
| Go to Police and Border Guard to get the Estonian ID with ID/Passport a | * | * | * | * | * | * |
| Police and Border Guard send an email to receive the Estonian ID | * | * | * | * | * | * |
| Go and receive the ID | * | * | * | * | * | * |
| **Number of Contact** | 3 | 3 | 3 | 3 | 3 | 3 |

## *2.5.* Bank Account

| **Bank Account:** | | | | | | |
|---|---|---|---|---|---|---|
| Ask the Department to make a letter for the Bank to make a student Ba | * | * | * | * | * | |
| Univeristy makes the letter | * | * | * | * | * | |
| Go to bank and fill the form | * | * | * | * | * | |
| Could not open the account due to some complication in the bank | | | * | | | |
| Come back again and fill the form again | | | * | | | |
| Bank sent the notification to come and pick the card | * | * | * | * | * | |
| Went to Pick the card | * | * | * | * | * | |
| **Number of Contact** | 5 | 5 | 7 | 5 | 5 | |