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Master's Thesis

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Casting Votes Digitally: Examining the Latvian National Position on Internet Voting

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I have written the Master's thesis independently.

All works and major viewpoints of the other authors, data from other sources of literature and elsewhere used for writing this paper have been referenced.

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Abstract

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The following dissertation aims to examine the Latvian national position on Internet voting through the prism of governmental and non-governmental actors' perspectives. Drawing upon the theoretical framework of the i-voting pre-conditions outlined in Kotka's et al. analysis (2015) as well as the Estonian National Electoral Committee's report *E-System Overview* (2005), the dissertation adopts the content analysis method to identify the main underpinnings of the governmental and non-governmental actors' position on the issue as well as the factors that shape the national discourse. Through examination of 34 documents of the relevant actors issued in the period between February 2012 and December 2015, the dissertation proposes a framework of determining the national position by estimating and comparing the indexes of average connotations (IAC) for governmental and non-governmental actors. Relying on empirical findings emerging from the coding scheme framework, the study argues that the national position is influenced by concerns over trust and security factors and suffers from a high degree of incoherence due to discrepancies and mismatches in the governmental and non-governmental actors' ways of forming their judgments in regard to the vital i-voting pre-conditions.

Taking into account that there are currently no studies that analyse in-depth the i-voting situation in Latvia, the following dissertation brings both academic and policy-oriented contributions by laying out a new theoretical approach of looking at the issue of i-voting through the lens of the pre-conditions and their impact on forming the national position as well as providing recommendations on the future direction and prospects of the i-voting strategy in Latvia. Moreover, the study puts forward a model that could be tested and applied further in other EU Member States to verify the state of the development and readiness of the i-voting pre-conditions.

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List of abbreviations

CEC – Central Election Commission of Latvia

DESI – Digital Economy and Society Index

eID – Electronic Identification Cards

EMEAC – Estonian Ministry of Economic Affairs and Communications

ENEC – Estonian National Electoral Committee

IAC – Index of Average Connotation

ICT – Information and Communications Technology

IDEA – International Institute for Democracy and Electoral Assistance

LICTA – Latvian Information and Communication Technology Association

LOTA – Latvian Open Technology Association

LPCEU – Latvian Presidency of the Council of the European Union

LSRTC – Latvia State Radio and Television Centre

MB – Manabalss.lv

MEPRD – Ministry of Environmental Protection and Regional Development

MT – Ministry of Transportation

OCMA – Office of Citizenship and Migration Affairs

ULFC – University of Latvia, Faculty of Computing

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Introduction

Research problem

Increasing digitalization of public services has generated debate in many European countries regarding the introduction of e-voting procedures[1] as an attempt to improve voting convenience, efficiency and turnout. While Estonia and Switzerland are already using e-voting systems at various levels of the electoral process, other European countries have either tried the procedure or are currently carrying out testing (International IDEA 2014). In this regard, Latvia is no exception.

One of the earliest attempts to introduce online voting in Latvia began in 2012, when a proposal, *'For the Development of an Internet Voting System',* was issued and approved by the Committee of the Cabinet of Ministers (CEC 2014). Despite the agreement that the Ministry of Transportation would implement a feasibility study throughout 2014, in close coordination with Latvian IT agencies, the deadline for implementing the system was postponed (International IDEA 2014). The public's efforts to speed up the initiative at the parliamentary level did not achieve fruitful results: even though 10,845 online signatures were collected as part of the 'Internet Voting' petition on the Manabalss.lv platform, the Latvian Parliament eventually rejected the proposal on the grounds of current non-availability of secure technical solutions for online voting (Latvian Parliament 2014). However, suggestions that the Internet voting proposal might be revitalized in 2017 are still circulating at the governmental level (Delfi.lv 2014).

In this light, the examination of the i-voting situation in Latvia is important for several reasons: (i) there is no consensus on which path Latvia should follow when it comes to the introduction of the i-voting procedure; (ii) despite an extensively developed body of academic literature on e-governance and i-voting, there are no research studies analysing in-depth the i-voting situation in Latvia and its position on the introduction of Internet voting; (iii) the current uncertainty as to whether or not to introduce the i-voting option in an electoral process contradicts Latvia's prioritization of, and commitment to, the digital agenda that was set during its EU Presidency of the Council and subsequent

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[1] While academic literature often uses e-voting and i-voting in the same contexts, there is a clear distinction between these conceptualizations. While e-voting might refer to any type of electronic voting (be it an online procedure or a count of votes aided by voting machines), the term i-voting refers specifically to an Internet voting procedure. The present study will use the latter term in its analysis.

plans regarding further modernization of public services (LPCEU 2015). These reasons provide solid ground for tackling the roots of Latvia's uncertainty regarding the introduction of Internet voting as part of election processes, and for clarifying the country's stance on the issue.

Aim and main research tasks

The main aim of this dissertation is to examine the Latvian national position on Internet voting. However, in order to achieve this aim, the thesis must first clarify which premises compose the national position and which factors affect its formation. In this regard, the framing of the Latvian national position takes two dimensions into account: governmental and non-governmental perspectives. These two perspectives compose the core of the public debate in Latvia with regard to the i-voting issue. The factors that shape the national position on i-voting will be interlinked with the pre-conditions of its introduction.

In view of these clarifications, the aim of this thesis can be divided into two interrelated objectives: (i) to examine the Latvian national position on Internet voting from governmental and non-governmental perspectives by understanding their main arguments; and (ii) to distinguish the pre-conditions of the introduction of a i-voting system, which shape the perceptions of the above-mentioned actors, and to analyse the projected influence of these actors on the formation of the national position.

In the pursuit of these research objectives, the dissertation is divided into five chapters. The first chapter starts by laying out some theoretical remarks related to the various conceptualizations of Internet voting and the pre-conditions of its introduction, drawing on the 2015 analysis of Kotka et al. and the Estonian National Electoral Committee's report *'E-System Overview'* (2005). This chapter also outlines the impact of these pre-conditions on governmental and non-governmental positions on i-voting. The chapter ends by providing a comparative overview of the successful Estonian introduction of the i-voting procedure, offering a more detailed survey of the Latvian i-voting pre-conditions and defining the dissertation's hypotheses based on its theoretical findings, as outlined within the chapter.

After providing the theoretical outline, the discussion turns to clarifying the dissertation's methodology by detailing the tools used in the content analysis method, identifying governmental and non-governmental actors representing the Latvian national position on Internet voting, and selecting and justifying the relevant documents chosen for substantiation and examination of the actors' perspectives. This second chapter also outlines and explains the coding scheme and its parameters, and proposes a means of conceptualizing and determining the Latvian national position based on calculation and comparison of the indexes of average connotations (IAC) for governmental and non-governmental actors.

The third chapter of the dissertation is devoted to the description of the empirical data obtained from the coding scheme regarding the governmental and non-governmental actors' perspectives. This section demonstrates the most frequently mentioned pre-conditions, their favourability levels and the relationship dynamics between different governmental and non-governmental actors. The fourth chapter of the thesis builds on these empirical findings and earlier analyses: inspecting the findings in greater depth, connecting the data to the i-voting situation in Latvia and linking the observations with the dissertation's hypotheses.

The final chapter summarizes the main findings and outlines where the Latvian national position and level of development of the i-voting pre-conditions could be placed in regional and European contexts.

Contributions

The dissertation's analysis aims to supply both academic and policy-oriented contributions.

From an academic perspective, the dissertation not only provides an in-depth analysis of the i-voting situation in Latvia, which had not yet been investigated, but also lays out a new theoretical view of the i-voting issue through the lens of its pre-conditions and their impact on forming the national position, stemming both from governmental and non-governmental perspectives. Moreover, the dissertation proposes one possible way of evaluating the national position on i-voting on the basis of comparing and estimating indexes of average connotations (IAC) for governmental and non-governmental actors,

which helps to indicate the overall favourability level of i-voting pre-conditions in the country. This model could be tested and applied to other EU member states to verify the state of development and readiness of the i-voting pre-conditions, as well as the national stance on i-voting adoption for electoral processes.

From a policy-oriented perspective, the dissertation provides an up-to-date picture of the readiness of the i-voting pre-conditions in Latvia and unpacks the governmental and non-governmental actors' positions on the issue. The following analysis highlights the gaps and problems associated with the implementation of an i-voting procedure in Latvia and could serve as an important basis for formulating policy recommendations on the future direction and prospects of the i-voting strategy in the country.

Chapter I. Theory: The Conceptualization of Internet Voting

To address the thesis objectives, this first chapter focuses on laying out the theoretical framework clarifying the core definitions and conceptualizations analysed in the research. The discussion will be organized as follows. To begin, it defines Internet voting and places it within a broader e-governance structure. It proceeds to examine the Internet voting pre-conditions and their impact on forming governmental and non-governmental perspectives. The following section examines the pre-conditions of these actors in a general theoretical context, as well as in specific terms, focusing on the case of Estonia. A brief comparative analysis will draw parallels between Estonia's successful implementation of its Internet voting strategy and the situation in Latvia, since these countries possess similar socio-economic, institutional and IT infrastructures. The chapter concludes by delving deeper into the analysis of the Internet voting situation in Latvia and drawing together the dissertation's hypotheses based on its theoretical observations and the i-voting pre-conditions in Latvia.

The outlined theoretical remarks will identify the relevant elements and categories necessary for the creation of the coding scheme identified in Chapter II and help place the i-voting situation in Latvia within the broader regional debates on the subject, evaluated in Chapter V.

Conceptualization and differentiation of Internet voting types

The concept of Internet voting (or i-voting) is often referenced as one of the elements composing e-governance structure, which can be broadly understood as the utilization and application of information technology solutions and frameworks in the support of government operations, engagement of citizens and provision of government services through the means of electronic administration and citizen participation (Scholl 2003). Internet voting, specifically, can be defined as an e-voting method that transmits completed voting ballots via the public Internet through a web browser or client application, accessible via personal computer, tablet or smartphone. It can be divided into two types:

1) *On-site Internet voting* is performed at supervised locations, established in high-traffic areas such as shopping malls or universities. Representatives of election officials

or independent electoral authorities can be stationed to authenticate voters and ensure the integrity of the device and software used for voting.

2) *Remote Internet voting* is performed under the voter's sole influence through an Internet-connected device (University of Maryland 2001: 6-9; Elections BC 2011: 3).

While on-site Internet voting grants electoral administrators' greater control over the voting infrastructure used on the client's side of the process, this study instead analyses remote Internet voting. This is because remote Internet voting is the type of voting that was chosen by the Latvian governmental bodies for the feasibility study and it has thus generated a significant level of debate in Latvian political and civil society circles. Remote Internet voting therefore fits more closely with the focus of this research study than does on-site Internet voting.

Voting principles and pre-conditions for the establishment of an i-voting system

In order to be considered legitimate, any type of voting must, before its introduction, meet the relevant basic legal requirements as written in the constitution and electoral laws. These legal principles should stipulate that elections are universal, equal, free, secret and direct (Volkamer and Hutter 2004: 112, in Prosser and Krimmer 2004). Therefore, i-voting systems are favoured based on their ability to closely imitate the main mechanisms of traditional voting and to comply with election legislation: i-voting should ensure the same level of security and confidence as traditional voting and provide reliable and accountable grounds for the collection of votes. From a technical perceptive, an i-voting system should be user-friendly and transparent, so as to be available for audit by a wide range of specialists (Maaten 2004: 84, in Prosser and Krimmer 2004). To ensure these principles are met, some general pre-conditions for the introduction of an i-voting procedure should be established. Summarizing the findings of Kotka et al. (2015) and the Estonian National Electoral Committee (2005), the following pre-conditions could be said to be necessary:

1) *The legal framework should establish a coherent and comprehensive normative structure to guide the process of i-voting implementation*, clarifying a division of responsibilities among administrative authorities, the means of interaction between different agencies, the guarantees on personal data protection and documentation

required to qualify for the voting procedure (Vassil et al. 2015: 6). Such a legal package safeguards the requirements of transparency, privacy and security of the voting principles.

2) *The governance framework and prerequisites for the creation of an integrated identification system* serve as a mechanism for the authentication and verification processes. Such a system depends on three foundational blocks: electronic identification cards (eID), issued with PIN codes and digital signatures; the national identification system, which uniquely identifies a country's residents; and the Population Register, storing personal and family circumstance data. These elements ensure the confidentiality, privacy and security of personal information in a voting process (Vassil 2015: 4-6).

3) *Decent information technology and public key infrastructure, combined with a high level of Internet connectivity,* ensure equal access to, and a solid grounding for, i-voting procedure implementation. To meet these requirements, a country should preferably score a 'high performance', or at least 'medium performance', in the Digital Economy and Society Index (2016), E-Government Readiness Index (2014), Digital Access Index (2003), or similar rankings. The existence of sufficient information and communication technology infrastructure also allows for the meeting of the *security requirements* vital to the establishment of an i-voting system, including the creation of an integrated identification system and provision of secure protection of personal data. In this context, the security component can be divided into *organizational security*, which relies on the behaviour of agents and their compliance with rules, and *technical security*, which is based on technical guarantees against defined manipulations or threats (Prosser et al. 2004: 175, in Prosser and Krimmer 2004). The protection and enforcement of both aspects of security are important for the *governance framework* and *information and communication technology infrastructure* pre-conditions, as they together determine an essential quality and credibility parameter of the i-voting system (Prosser et al. 2004: 175, in Prosser and Krimmer 2004).

4) *A sufficient degree of trust in government, as well as acceptance and belief in the reliability of technological solutions,* provides confidence and credibility in undertaking the i-voting strategy. The trust component depends on both variables: trust in the entity

providing the service - party trust - and trust in the mechanism through which the service is provided - control trust (Tan and Theon 2001: 61-74). Party trust, or trust in government, can be conceptualized as citizens' belief in the credibility, as well as the managerial and technical ability, of the government to implement various services, whereas control trust or trust in information technology can be defined as an individual's belief (both from the governmental and citizen perspective) that the Internet is a dependable medium, capable of providing accurate information and facilitating secure transactions (Belanger and Carter 2008: 166-167). The combination of both trust elements is vital in determining whether the i-voting system will be implemented or not, and can be grouped into several scenarios (see Appendix 1).

This list represents the general and most vital pre-conditions for the introduction of an i-voting system. However, it is important to note that some additional variables particular to the political, institutional and socio-economic context of the country implementing the strategy can play an important role in determining the success or failure of i-voting adaptation.

The impact of pre-conditions on governmental and non-governmental positions

When analysing the national position on the implementation of i-voting, it is important to take into account two groups important in democratic society - non-governmental and governmental actors. Understanding the perspectives of both groups is crucial in predicting the decision-making and policy implementation process: while government (from a classic top-down approach) might play an important role in deciding whether or not to introduce the policy in the first place; non-governmental actors play a crucial role in whether to accept or reject the policy in the further process of policy implementation. The coherence between the willingness and acceptance of these two groups will determine the final outcome and success of the policy implementation strategy, and will help to establish a clear national position on the issue. It can be argued that the above-discussed i-voting pre-conditions tend to shape, to varying degrees, governmental and non-governmental actors' positions.[2]

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[2] The impact of i-voting pre-conditions on governmental and non-governmental actors is differentiated on a general basis. The degree, as well as the combination and outlook, of the i-voting pre-conditions on different groups of actors will depend on the political, socio-economic and institutional environment of a country, as well as the strength and level of development of civil society and non-governmental actors.

The non-governmental position can be seen as the most likely to be shaped by the *Internet infrastructure*, *reliability of technology* and *trust in government* pre-conditions. It can be argued that a high and advanced level of available ICT infrastructure and citizens' skills would lead to the public's greater expectations and reliance on technologies and their availability in the public services sphere, including the expectation of an i-voting option. In general terms, it could be concluded that the Internet increased the power of the individual to take part in political processes and transformed the relationship between government and citizens, making politics more accessible and convenient than before (Evans and Yen 2006: 207-209). As the Internet has increased the circle of social influence and lowered barriers between the communicative spaces of representative institutions and non-governmental actors, the overall attitude within the population towards e-services and participation has been broadly positive, especially among the younger, more educated and skilled elements (Trechsel and Vassil 2011). However, taking into account the level of sensitivity associated with the voting procedure in an online environment, there are some who do not embrace i-voting opportunities due to transparency and security concerns. That is why it is also important, for the secure and legitimate provision of the i-voting procedure, that the level of trust in the government and its ability to reliably execute this procedure is high (Evans and Yen 2006: 207-235).

The governmental perspective on i-voting can be viewed as most likely to be influenced by the pre-conditions related to *legal and governmental resources*, *information technology infrastructure, security risk factors* and *reliability of technologies* pre-conditions. While the i-voting system might reduce the administrative costs and increase the voting turnout, there are a couple of scenarios under which the governmental position towards i-voting might be unfavourable: (i) a very low level of trust in technology as a reliable and secure platform upon which to conduct such a procedure; (ii) a very high level of required investment in the creation of necessary legal, governmental and technological resources and infrastructure, where the outcome and success of the policy implementation is not certain; (iii) a combination of both of these scenarios. The government's position might be more favourable if: (i) it sees a clear benefit to introducing the policy; (ii) it has most of the necessary infrastructure and legal tools already in place, so the costs of implementation would not be too high;

(iii) it has a strong reliance on, and believe in the reliability of, technology and a commitment to an e-governance agenda (Evans and Yen 2006: 207-235).

I-voting in Estonia: key enablers and critical pre-conditions for implementation

Discussing the case of Estonia is important for several reasons. Firstly, Estonia is the only European country that has introduced legally binding i-voting at all levels of its electoral process and has been using the system for more than 10 years. Secondly, Estonia and Latvia have both experienced a successful transition to democracy, score high in the Human Development Index (2015) and have similar socio-economic, institutional and information technology infrastructures.[3] Therefore, the examination of the key driving factors enabling the introduction of the i-voting system in Estonia will aid the understanding of the situation in Latvia and predict the pre-conditions that could be crucial for the implementation of the i-voting strategy, as well as the impact of such pre-conditions on forming governmental and non-governmental positions on i-voting.

When examining the above-outlined pre-conditions in the Estonian situation, the following conclusions can be drawn:

1) *The legal framework* served as an important normative foundation for the introduction of the i-voting system, providing guarantees for the security and protection of personal data and supplying normative incentives for the development of the integrated identification system necessary for the implementation of the i-voting system. Many of the necessary laws enabling the introduction of the i-voting system had been already introduced in the late 1990s and early 2000s, such as the Personal Data Protection Act and the Digital Signatures Act, and these have been amended and developed further as the system has evolved (Vassil 2015: 7-8).

2) *The governance framework and the integrated identification system* were built on the basis of Estonia's Identification Management System and Population Register, which were operationalized and interlinked via the X-Road system. Moreover, the issuance of compulsory personal identification cards equipped with electronic chips and PIN codes

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[3]Even though an argument could be made that Estonia and Latvia are not entirely comparable in the identified categories (for example, these countries differ in terms of party system stability, minority population integration and language), this dissertation focuses on the general framework of socio-economic and institutional similarities.

helped to solve the issue of personal authentication (first PIN code) and verification (second PIN code) during the voting process (Vassil 2015: 28).

3) *Information technology and public key infrastructure* provided technical incentives for building the i-voting system. Looking at the overall level of Internet connectivity in Estonia in the mid-2000s, it should be noted that nearly 50% of households had a computer at home; more than 80% of those were connected to the Internet and almost a quarter of the Estonian population aged between 15-74 had used Internet banking services. This ensured Estonia a 'high performance' score in the Digital Access Index (Madise and Martens 2005: 16). Estonia's gradual success in improving its information technology infrastructure can be partly attributed to its largest public-private partnership, the Look@World project, which helped to increase the number of public Internet access points and provided computer skills training to more than 100,000 residents, or 10% of the Estonian population (Vassil et al. 2015: 36).

This sufficient development of the information technology infrastructure provided the foundation for a more detailed articulation and creation of the technical framework underlying the i-voting system, which is designed in a similar fashion to regular postal voting and is based on the principles of the envelope method, ensuring data protection and ballot secrecy via a process of separation of the encrypted votes and the data identifying the voter (see Appendix 2 (a)). In addition, the Estonian National Electoral Committee introduced a set of technical and organizational security requirements to be met by the i-voting procedure so as to guarantee its legitimacy, such as the possibility to recast i-votes, the precedence status of ballot paper voting and restrictions against the use of another person's ID card (or mobile-ID) for voting (ENEC 2005: 7-8).

4) *Trust in government, as well as acceptance and belief in the reliability of technological solutions,* played one of the most significant roles in determining the outcome and degree of success in adopting the i-voting system. Estonian citizens' trust in the credibility of the national government in implementing the i-voting strategy gained a sufficient level of support in the early 2000s compared to the other Baltic states, achieving an approval level above 30%, partly due to the proactive role of Ministry of Justice and the Reform Party in pushing forward the i-voting strategy (Eurobarometer 2001).

In this respect, it could be argued that trust in i-voting evolved through the usage of electronic identification cards. Even though, initially, the use of digital IDs remained low for almost five consecutive years, this usage and the level of trust in e-services increased rapidly, starting from 2007, thanks to the banking sector's involvement in raising societal awareness of the facility, as well as the actual distribution of cards (Vassil 2015: 9-12). Successful developments in Internet banking services also made an impact on citizen's decisions to vote online, increasing i-voting turnout from 5.5% in the 2007 parliamentary elections to 30.5% in 2015. In addition, overall satisfaction with e-services increased, reaching 71% in 2014 (EMEAC 2014).

While the above-described pre-conditions were important in creating a favourable environment for the development of the i-voting system in Estonia, their mere existence would not have been sufficient to facilitate the process of i-voting adaptation in elections without the political will and proactive role of the Estonian government, as well as the involvement of the private sector. Therefore, another variable can be added to the analysis:

5) *The role of the Estonian government and the support of the private sector,* who actively pushed forward and promoted the e-services strategy. The Estonian government's commitment and consistency in pursuing its e-governance agenda played a critical role in facilitating the development of such digital solutions as eIDs and the X-Road. In this regard, the private sector's involvement contributed to additional investment, as well as the expansion of the technical resolution to develop the e-governance structure.

Having discussed the vital pre-conditions enabling the introduction of the i-voting system in Estonia, it is important to address the ways in which they impacted the governmental and non-governmental positions on i-voting.

Taking into account the active role of the Estonian government in pushing forward the i-voting agenda, it could be argued that its position stemmed from a pair of the outlined pre-conditions: (i) existing legal grounds and established key public infrastructure; and (ii) commitment to an e-governance agenda and swift developments in such fields as e-banking and paperless government. In this light, the introduction of the i-voting procedure was seen by the government as an appropriate next step and as a strategy to

brand Estonia's leadership in e-related fields (Drechsler 2003: 5-6). However, some concerns regarding the i-voting procedure, such as privacy and security and the digital gap, were also discussed at the parliament's plenary sessions (Drechsler 2003: 5-6).

It could be argued that the favourable position of Estonia's non-governmental actors was formed by such pre-conditions as *trust in technology* and *trust in the government to successfully execute the procedure*. This conclusion can be drawn based on several factors: (i) a generally favourable attitude towards i-voting before and after the implementation of the procedure, which reached 67% support in 2004 and 73% support in 2005, according to a Faktum survey (cited in Madise et al. 2005: 22); (ii) a constantly increasing number of i-voters at all levels of the electoral process, growing from 1.9% in 2005 to 30.5% in 2015 (ENEC 2016); (iii) increasing usage of and reliance on digital IDs, reaching an average annual growth rate from 2002 to 2015 of about 6.4 million authentications and approximately 3 million signatures per year (Vassil 2015: 9); and (iv) reliance on governmental structures and e-services, which was related to a 'high performance' score in the international ranking for e-governance matters and Estonia's 15th place in the UN's E-Government Readiness Index (2014).

It can thus be argued that the Estonian national position towards i-voting could be identified by taking into account the proactive role of the Estonian government and the generally accepting attitude of Estonian citizens towards e-governance. This resulted in a lack of major clashes or incoherence between the governmental and non-governmental perspectives on the issue and, thereby, Estonia's overall favourable position towards i-voting.

Internet voting pre-conditions in Latvia: introduction to the case

The implementation of the i-voting strategy in Latvia originated with the Cabinet of Ministers' legislative proposal for the development of an i-voting system, which stipulated that the task should be undertaken by the Ministry of Transportation, the Interior Ministry and the Ministry of Environmental and Regional Development (Cabinet of Ministers 2012). Later that year, the document *'For the Development of an Internet Voting System'*, describing the i-voting situation and a theoretical concept for the policy's implementation, was issued by the Ministry of Transportation and approved by the Committee of the Cabinet of Ministers (Ministry of Transportation 2012a).

However, further development of the policy was postponed and eventually stalled at the early stage of the policy-shaping phase. Therefore, the last section of this chapter will examine to what extent Latvia currently meets each pre-condition for the introduction of the i-voting procedure and briefly compare it with the Estonian case, before formulating the hypotheses of this dissertation.

Applying the necessary pre-conditions of an i-voting system to the current environment in Latvia, the following observations can be made:

1) *The legal framework* can be considered as comprehensively developed. Latvian legislation covers the most fundamental principles required for the secure and legitimate introduction of an i-voting procedure – it includes such aspects as data protection (the Personal Data Protection Act 2000), personal and electronic identification (the Identity Documents Act 2012 and the Electronic Identification Act 2015), population registration (the Population Register Act 1998), digital signature (the Electronic Document Act 2003), protection of ICT infrastructure (the Information Technology Protection Act 2011) and access to public information (the Information Society Services Act 2004 and the Electronic Communications Act 2004) (see Appendix 3). It can thus be argued that the most vital legislative acts are already in place and can be compared to those introduced in Estonia. Nevertheless, some of the existing acts and laws would still require amendments and additional provisions in the case of the i-voting system introduction. For example, the Population Register Act would require additional provisions clarifying how the exchange of data will take place between the register and an i-voter. Similarly, the Law on Elections of the Municipality Council would have to establish the legitimate regulation of the Internet voting system, stipulate the procedure as a regular voting type, specify its timing and clarify provisions for the approval and verification of the Internet voting results.[4] In this regard, this pre-condition could be rated in the *medium* stage of development.

The second element - the Population Register system, an integrated and centralized state recording system storing information regarding more than three million persons - also

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[44]Other laws that would require additional amendments and provisions include the Elections to the European Parliament Law, the Saeima/Parliamentary Elections Act and the Law on Central Electoral Committees.

[4]'Eligible voters', in this context, refers to all Latvian citizens who are 18 years old or above and who have the right to vote.

must be updated and improved in order to meet security requirement if i-voting is to be introduced. This implies that (i) the system should ensure the security of the preparation and provision of the electronic lists of candidates and voters for parliamentary elections and referendums; (ii) the system should be able to identify the eligibility of a voter as well as the number of i-vote casting attempts made; (iii) the system should ensure a secure exchange of data and verification of i-votes during advance polling days; and (iv) the overall system should be transferred to a new, up-to-date technical platform, which will ensure more secure storage potential (Ministry of Transportation 2012).

3) Information technology and public key infrastructure could be seen as a *modestly* developed pre-condition. In the EU's Digital Economy and Society Index (2016), Latvia ranks 18th out of the 28 EU member states and belongs to the low performance cluster (see Appendix 4 (a)). Even though Latvia scores high in the Internet connectivity dimension, both in terms of fixed broadband coverage and the quality and speed of its connections (93% and 92%, respectively), it lags behind in the Digital Public Services dimension, where the country's overall score is 0.36, or 20th position among other EU member states (DESI 2016). Latvia's performance in the Human Capital category is also positioned towards the lower end of the scale: the number of Internet users has increased only slightly from 2014 and falls short of the EU average. At the same time, the digital skills of Latvians are almost on a par with the EU average (see Appendix 4 (b)).

When it comes to the technical components of the i-voting system, it could be argued that the Latvian proposal is similar to the Estonian model: the mechanism behind the voting is designed based on the envelope method, while the whole procedure is planned to be conducted via the state's integrated online services portal, www.latvija.lv, through which the process of authentication and vote verification will be undertaken (see Appendix 2 (b)) (Ministry of Transportation 2012a: 14).

Similar to the Estonian National Electoral Committee, the Latvian Ministry of Transportation has outlined the list of technical and organizational security requirements for a transparent, fair and legitimate provision of the i-voting option. The security requirements state that (i) the option to vote online should be offered only during the advance polling days; (ii) the i-voting system security provisions and checks

should be undertaken by the Information Technology Security Incident Response Institution of the Republic of Latvia, which will test the system's security against cyber-attacks and other possible threats; (iii) the security checks of the system should meet the standards and recommendations identified in the Council of Europe's *'Guidelines on Transparency of E-Enabled Elections'* (2011) and the Estonian National Electoral Committee 's report *'E-System Overview'* (2005)*;* and (iv) the provider and developer of the i-voting system should closely coordinate with and act under the supervision of state authorities in order to ensure the legitimacy of the process (Ministry of Transportation 2012a: 16).

4) Trust in government, as well as acceptance and belief in the reliability of technological solutions, could be labelled as the *insufficiently* developed pre-condition in the Latvian case. According to the Eurobarometer's survey (2015), only 17% of Latvians trusted the national parliament, while 25% trusted the government, which is below the EU's average rate of 31%. When it comes to trust in Internet voting options, the Marketing and Public Opinion Research Centre's report (2011) shows that 52% of respondents either 'completely do not trust' or 'most likely tend to not trust' in the legitimacy and security of the i-voting procedure, while only 36% of respondents replied in favour of the i-voting option. Finally, when asked how much respondents would trust the results of an election if i-voting were the sole available option for ballot submission, 52% responded negatively, implying that they would not consider the results of the election legitimate (see Appendix 5) (MPORC 2011: 25).

Summarizing the level of progress of each pre-condition, it can be argued that the most developed is the *legal framework*. *Information technology* and *governmental frameworks* come in at second place, while *trust in government, as well as acceptance and belief in the reliability of technological solution*s, can be seen to be the least developed pre-condition. Further elaborating on these findings, the dissertation's hypotheses can be formulated as follows:

> H1. The governmental position towards i-voting is influenced by low levels of trust in information technologies and security concerns regarding the protection of key i-voting system infrastructure.

> H2. The non-governmental position towards i-voting is influenced by low levels of

trust in the government and acceptance of information and communication technologies.

If both hypotheses are verified, it would be possible to infer that *the Latvian national position towards the introduction of Internet voting will be unfavourable and sceptical,* and that *trust and security will be listed as the most frequently mentioned issues with i-voting from both governmental and non-governmental perspectives.*

Having established the theoretical basis and hypotheses of this dissertation, it is now time to turn to clarification of the study's methodological toolkit and outlining of the elements of the coding scheme used to identify the Latvian national position. The next chapter takes up this task, presenting a detailed description of the core elements composing this investigation's methodology.

Chapter II. Methodology: Defining the Latvian National Position – Tools and Measures

The main aim of this second chapter is to outline the methodological framework that supports the examination of the Latvian national position on Internet voting. To achieve this aim, the chapter is organized as follows. It begins by introducing and justifying the choice of content analysis as the main research method, and proceeds by clarifying the sample choice: the timeframe of analysis, the relevant actors composing governmental and non-governmental positions on i-voting, and the selection of policy documents and texts for coding. The final part of the chapter outlines the categories of the coding scheme and guidelines for document coding, and defines methodological and data limitations. This methodology section will build an important foundation for analysing and discussing the results of the governmental and non-governmental positions on i-voting in Chapters III and IV.

Methodology of content analysis

As the nature of the present research is related to the analysis of the Latvian national position on Internet voting through the examination of policy documents and official texts, this study applies the content analysis method. Content analysis has been widely used in cross-disciplinary settings with a particular focus on examining issues such as changing trends in the theoretical content of different disciplines, changes in mass media content, the nature of news coverage of social issues or social problems, trends in propaganda and election issues as reflected in mass media content (Colorado State University 2016). Elaborating on these considerations further, and incorporating the academic works of Kerlinger (1986) and Weber (1990), content analysis can be defined as a research method enabling identification and highlighting of certain words and/or concepts within a text or set of texts by quantifying and analysing their presence, meanings and relationships, and making further inferences about the sender(s) of the message, the message itself or the audience of the message.

Content analysis has been here selected over other qualitative methods due to its following advantages: (i) it allows one to conduct both quantitative and qualitative operations with a text and, thus, present and explain the studied phenomenon through

the quantitative expression and symbolic meanings of data, interlinked with its context (Weber 1990: 10-16); (ii) it allows one to demonstrate and quantify the most significant elements and aspects highlighted in the text and evaluate their impact on the issue; and (iii) it helps one to better distinguish positions proposed by different actors and establish their favourable or unfavourable positions with regard to the examined research question(s) (Prasad 2008: 173-193, in Lal Das and Bhaskaran 2008). It can be argued, therefore, that this method is well-suited to the focus of the present study and its objectives.

Choice of sample

To effectively evaluate the Latvian national position on Internet voting, it has already been established that the national position will be framed by two distinct dimensions: governmental and non-governmental perspectives. Both aspects constitute the core foundation of any democratic society and, as the two groups of actors actively contribute to the public debate in Latvia when it comes to the issue of i-voting, their dual consideration represents a more balanced view on the issue. In this light, the key actors composing the national position are selected on the basis of the following criteria: (i) official confirmation of participation in i-voting development, stipulated in state documents such as the proposal *'For the Development of an Internet Voting System'* (Ministry of Transportation 2012a); (ii) the political weight of the actor in decision-making and policy implementation;[5] and (iii) the actor's level of involvement in the issue, as measured by the frequency of their publications and activities related to i-voting. For this study, sufficient frequency will be regarded as four or more publications on the issue[6] and/or the placement of the i-voting agenda at the core of the actor's mission statement. Finally, to present a balanced view on the issue from both perspectives, an equal number of actors – four from each side – have been selected for examination.

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[5]These criteria are intended to result in the selection of governmental actors such as the Ministry of Transportation and the Ministry of Environmental and Regional Development, who have a significant role in determining the agenda and pace of policy implementation.
[6]This threshold has been selected taking into account that the field of i-voting in Latvia is not well-developed and only a limited number of publications are currently available on the issue.

Taking these considerations into account, the following list of governmental actors is drawn: (i) the Ministry of Transportation, which is responsible for the overall managerial supervision of the i-voting project and its feasibility study; (ii) the Central Election Commission of Latvia, which is the central body for directing elections, referenda and legislative initiatives, drafting instructions for their preparation and procedures; (iii) Latvia State Radio and Television Centre, selected as a potential developer and provider of the Internet voting system;[7] and (iv) the Ministry of Environmental Protection and Regional Development, responsible for further conceptual development and approval of the Internet voting project, in cooperation with the Ministry of Transportation.

The list of non-governmental actors consists of the following organizations: (i) the Latvian Information and Communication Technology Association and (ii) the Latvian Open Technology Association – both chosen as leading consultative bodies providing advice on legislation, security and technical issues related to the implementation of i-voting; (iii) the University of Latvia, Faculty of Computing - one of the strongest institutions conducting academic research on the Latvian ICT environment; and (iv) the Manabalss.lv platform - a petition website which helped to collect and pass to parliament more than 10,000 signatures in favour of introducing Internet voting in general elections.

To examine the governmental and non-governmental positions on i-voting, between two and five articles produced by each above-identified actor are selected for evaluation. The number of selected articles depends on (i) the importance of a given document (e.g., legislative proposal, extensive academic report, etc.) and (ii) the length of the document. These criteria allow both for the identification of the position of a given actor and a summary of the overall perspective of governmental and non-governmental actors on the issue.

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[7]The main reasons for selecting the LSRTC as the provider of i-voting were that the organization complies with the electoral law requirements (the Electronic Document Act, 9th article) as a reliable, qualified and certified e-services provider, and that it enjoys direct links with governmental institutions (LSRTC is the only e-services provider whose shares are 100% owned by the Ministry of Transportation). This is a crucial factor in the selection of a reliable i-voting provider due to the government's requirement for significant influence over the i-voting system to preserve the legitimacy of the elections.

The articles directly represent the views of the above-mentioned actors[8] and were issued within the period between February 2012 and December 2015.[9] A full list outlining the selected articles for governmental and non-governmental actors is provided in Appendix 6.

Defining the coding scheme categories

To accurately record and verify results as well as depict governmental and non-governmental positions on i-voting, the main elements of the coding scheme as well as their purpose should be clarified. The coding scheme consists of 10 parameters: (i) code of the document; (ii) paragraphs; (iii) lines; (iv) actors; (v) pre-condition; (vi) connotation; (vii) positive expressions; (viii) negative expressions; (ix) other involved actors; and (x) external actors (see Appendix 7). Each of the parameters serves a certain objective:

1) *code of the document* – each text and document is numbered and assigned a code, which helps to better organize the documents and keep track of them in the coding scheme and analysis (see Appendix 6 ((code of the document)).

2) *paragraph and* 3) *lines* – each document is divided into paragraphs and lines and is coded sentence by sentence. The following division will help to organize the documents as well as to identify their key parts and substance. It is important to point out, however, that only sentences that bear relevant i-voting pre-conditions will be coded in the scheme (see Appendix 7 (a)).

4) *actors* – the debate regarding i-voting is represented by the views of four governmental and four non-governmental actors. This parameter, together with others such as *connotation* and *pre-condition,* enables the identification of the position of each actor, as well as the perspective of governmental and non-governmental actors in general.

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[8]Ideally, selected documents are primary sources written entirely by the identified actor(s). Exceptions are granted to articles published in media outlets where (i) the document is written by the identified actor(s) and published in a reputable media source in the form of an op-ed or commentary, or (ii) the document is written in the form of an in-depth interview, where the identified actor(s) express their opinion on i-voting.

[9]February 2012 marks the issuing of one of the first, and most important, legislative proposals related to the initiation of i-voting systems, under the leadership of Valdis Dombrovskis - Cabinet of Ministers. (2012) Proposal No.84 [*'Par Valdības rīcības plānu Deklarācijas par Valda Dombrovska vadītā Ministru kabineta iecerēto darbību īstenošanai'*], article 76.6.

5) *pre-conditions* - the pre-condition parameter is the central aspect of the coding scheme and is closely correlated with the pre-conditions outlined in the theoretical chapter. This category aids in the pursuit of the dissertation's objectives: firstly, by helping to establish which of the pre-conditions is the most frequently mentioned in each actor's discourses, and, thereby, which pre-conditions shape their position on i-voting; and secondly, together with the *connotation* parameter, by helping to identify which pre-conditions are the most favourable or unfavourable in each actor's view, as well as in the general governmental and non-governmental perspectives.

6) *connotation* – the connotation parameter is another key element in the coding scheme, which helps to portray the actors' overall positions on i-voting, as well as their positions regarding each i-voting pre-condition. Each connotation bears a numeric value (favourable connotations are assigned +1; neutral, 0; negative, -1), which helps to demonstrate the overall level of favourability of the various pre-conditions by summing these values (see Appendix 7 (e)).

7) *positive and* 8) *negative expressions* – help to strengthen and confirm connotations as well as give additional context to governmental and non-governmental actors' positions.

9) *other involved actors* and 10) *external actors* – establishes the relations between outlined actors as well as to showcase other external actors who might play an important role in implementing i-voting. A detailed breakdown of the coding rules as well as other coding scheme parameters are provided in the Appendix 7.

Conceptualizing the Latvian national position

As mentioned earlier in this chapter, the Latvian national position is formed taking into account the perspectives of governmental and non-governmental actors (see Figure 2.1).
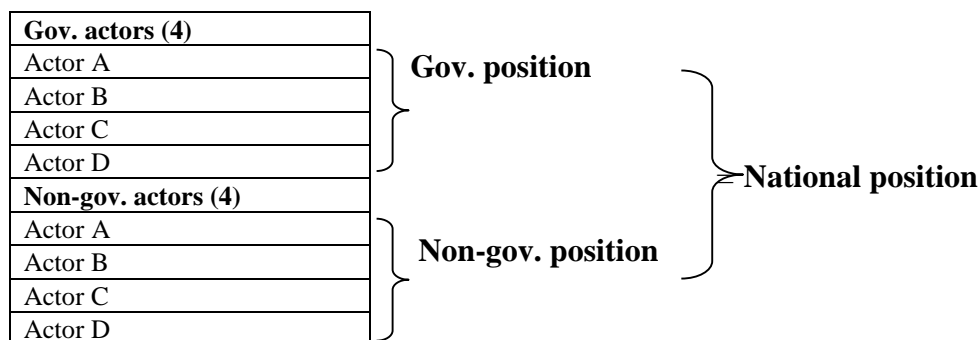

Figure 2.1. Scheme showcasing the components of the Latvian national position

Based on this conceptual framework, it can be argued that the national position is determined by evaluating and comparing the governmental and non-governmental components. In this context, the governmental and non-governmental positions are estimated by calculating the combinations of favourable, neutral and unfavourable connotations related to i-voting pre-conditions. Taking into account these considerations, a formula for estimating the index of average connotation (IAC) is established:

$$IAC = \frac{(F-U)}{(F+N+U)},$$

where *F* represents the number of favourable connotations, *U* represents the number of unfavourable connotations and *N* represents the number of neutral connotations. The final measure ranges from -1 (the most negative stance on pre-conditions and i-voting in Latvia) to 1 (the most positive stance of pre-conditions and i-voting in Latvia). The neutral connotation is added to the denominator to reduce the intensity of the positive or negative effect on the final outcome.

A comparison of the numeric values of the indexes of average connotations for governmental (IAC_{gov}) and non-governmental ($IAC_{non-gov}$) actors will provide a substantive evaluation of the approximate overall spectrum and direction of the Latvian national position regarding the introduction of the i-voting option to electoral processes.

Limitations

Before delving into the discussion of the observations and results drawn from the textual analysis of the selected documents, some limitations related to the methodological approach, as well as data collection and calculation, should be considered. Content analysis suffers from several disadvantages, both theoretical and procedural, including (i) the difficulty of automation or computerization of results for validation by external researchers; (ii) the lack of theoretical basis; and (iii) the potential for data interpretation errors, since it is the researcher themselves who decides and sets the boundaries and rules for the interpretation and coding of data, the units of analysis and the types of documents analysed. However, the potential for interpretation error can

be mitigated by investing effort in the accurate recording of data, by paying attention to details and by ensuring that a diverse group of actors and views are represented and recorded in the coding scheme.

Limitations related to data collection in this particular study include the following: (i) a relatively short time period for data analysis (between February 2012 and December 2015) will represent only a snapshot of governmental and non-governmental actors' positions on Internet voting; (ii) a relatively narrow representation of governmental and non-governmental perspectives on i-voting due to the selection of only the key and most relevant actors in forming the national position (i.e., if more governmental and non-governmental actors were taken into consideration, the results might have been different than those presented here); (iii) a limited availability of extensive data and detailed documentation on Internet voting from some central governmental and non-governmental actors;[10] and (iv) a predominance of Latvian language documents over English versions, which might cause accessibility difficulties for external researchers without an advanced knowledge of the Latvian language.

The final limitation is related to the calculation and evaluation of the national position. This study does not prove a direct measure for estimating the national position, but rather determines this position indirectly by comparing the numeric values of the indexes of average connotations (IAC) from governmental and non-governmental perspectives. This approach can be explained by reference to (i) the difficulty of implying that both perspectives would bear an equivalent value in the equation and, thus, that the final outcome could be determined by either the addition of indexes or their division, and (ii) the insufficiency of a mere numeric index to portray the significance of and reasons for a country's position on an issue, unless there is an established framework or scale that shows a clear distinction between different numeric indexes and their correlation with the national position on Internet voting. Now that the methodological framework has been laid out, the following chapter can discuss the main empirical observations found from the text and document analysis.

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[10]For example, the Information Technology Security Incident Response Institution of the Republic of Latvia is a central actor, responsible for the security provisions and checks of the i-voting system, but has no substantial documents or texts on Internet voting available for evaluation. References could be made only to secondary or indirect mentions and quotations in media outlets, as well as a Power Point presentations on the Latvian cyber security landscape and IT infrastructure available on the organization's website (see https://www.cert.lv/section/show/25).

Chapter III. Empirical Findings: Examining Data on the Latvian Position on Internet Voting

The main aim of this third chapter is to depict and summarize the data and empirical findings on the governmental and non-governmental actors' perspective on i-voting, obtained using the coding scheme outlined in the previous chapter.

To achieve this objective, the chapter has been organized around the following set of questions. (i) What are the pre-conditions for the introduction of i-voting most frequently mentioned by individual governmental and non-governmental actors? (ii) What are the pre-conditions most frequently mentioned by all governmental and non-governmental actors? (iii) What are the most favourable and unfavourable pre-conditions according to individual governmental and non-governmental actors? (iv) What are the most favourable and unfavourable pre-conditions according to all governmental and non-governmental actors? (iii) What is the index of average connotation for all governmental and non-governmental actors?

In this light, the chapter is divided into three section. The first section starts by presenting the empirical findings of the governmental actors' positions on i-voting, helping to substantiate hypothesis H1. The second section elaborates on data obtained from the analysis of the non-governmental actors' perspectives on i-voting, thereby presenting evidence to test hypothesis H2. In addition, a brief summary highlighting the main commonalities, trends and discrepancies in governmental and non-governmental actors' perspectives is made at the end of each of these sections. The final section of this chapter estimates the indexes of average connotations for governmental and non-governmental actors, which lay the ground for evaluating the overall national position on i-voting in Chapter IV.

Examining findings on governmental actors' positions on Internet voting

Elaborating on the findings from the coding scheme and looking at the frequency of i-voting pre-conditions, for both individual governmental actors and the group as a whole, the following observations can be made, based on Figure 3.1.

Figure 3.1. Governmental actors: frequency of pre-conditions

The coding scheme findings demonstrate that the most frequently mentioned pre-conditions for all governmental actors belong to the IT infrastructure category (70 mentions) and the Governance and identification system pre-condition (64 mentions), while the least mentioned pre-conditions fell under the Trust in government (four mentions) and Legal framework (16 mentions) categories. Delving deeper into the detailed breakdown of individual actors' distribution of i-voting pre-conditions, it can be noted that the IT infrastructure and security components predominated in the positions of the MT (29 mentions) and the CEC (20 mentions); while the Governance and identification system aspect was overwhelmingly highlighted in the LSRTC's discourse (22 mentions). Both of these pre-conditions are equally represented in the position of the MEPRD, scoring six mentions each.

The frequency of the Trust in technology category gained an overall score of 21 mentions by governmental actors overall, whereas the Trust in government category was mentioned only in the CEC's position (four mentions). Other governmental actors (the MT, the LSRTC and the MEPRD) neglected to emphasize these i-voting pre-conditions in their analyses.

Examination of findings regarding the level of favourability of various i-voting pre-conditions for governmental actors leads to the following results, depicted in Figure 3.2.

Figure 3.2. Governmental actors: level of favourability of pre-conditions (H1)

Based on the coding scheme findings, it can be argued that the most favourable pre-conditions, according to governmental actors, align with the Governance and identification system (31 points) and the Legal framework (14 points) categories. The most unfavourable pre-conditions were identified with the Trust in technology (-10 points) and the IT infrastructure and security (-4 points) categories.

Summarizing the main trends in all governmental actors' positions, it can be noted that most of the governmental actors assessed the i-voting pre-conditions positively. The sole exception was the CEC, which showed the most irregular distribution of points, placing two-thirds of the pre-conditions at the negative end of the scale.

The allocation of connotations also revealed that the highest number of favourable scores belongs to the LSRTC's position, with a ratio of 24 to 43, while the MT and the MEPRD have the largest concentration of neutral connotations ratios to the overall coding scheme lines (31 to 60 and nine to 17, respectively). Finally, the findings also highlighted the relationship dynamic between the governmental actors: the MT, the CEC and the LSRTC frequently mention each other in their discourses (mostly in formal and neutral contexts, except the CEC, which is more critical towards the MT and the LSRTC). The MEPRD is the only actor that does not refer to other relevant governmental actors in its reports.

Examining findings on non-governmental actors' positions on Internet voting

The main findings regarding the level of frequency of i-voting pre-conditions mentioned in the positions of both individual non-governmental actors and the group as a whole are illustrated in Figure 3.3.
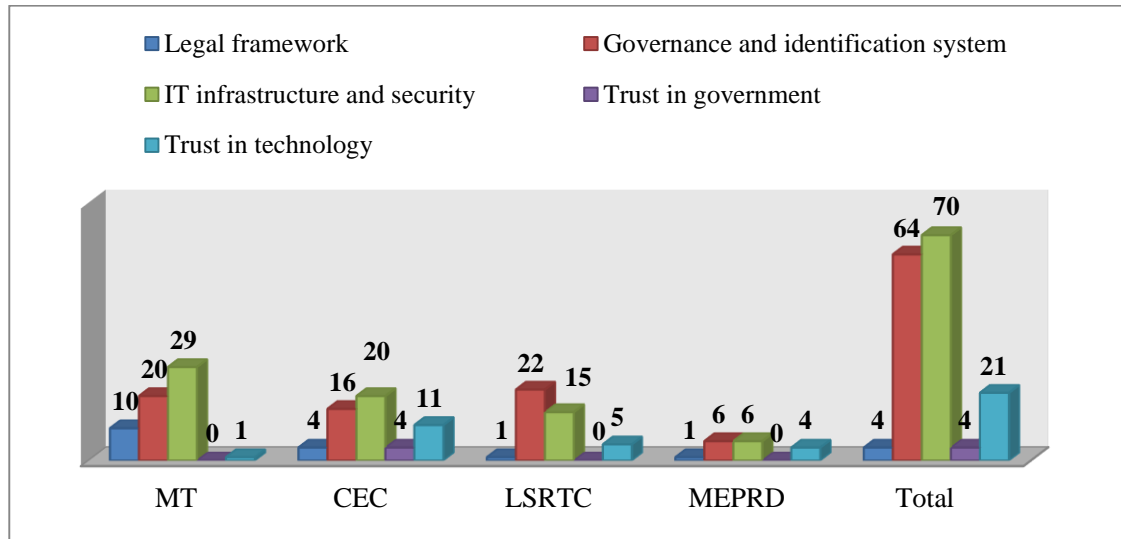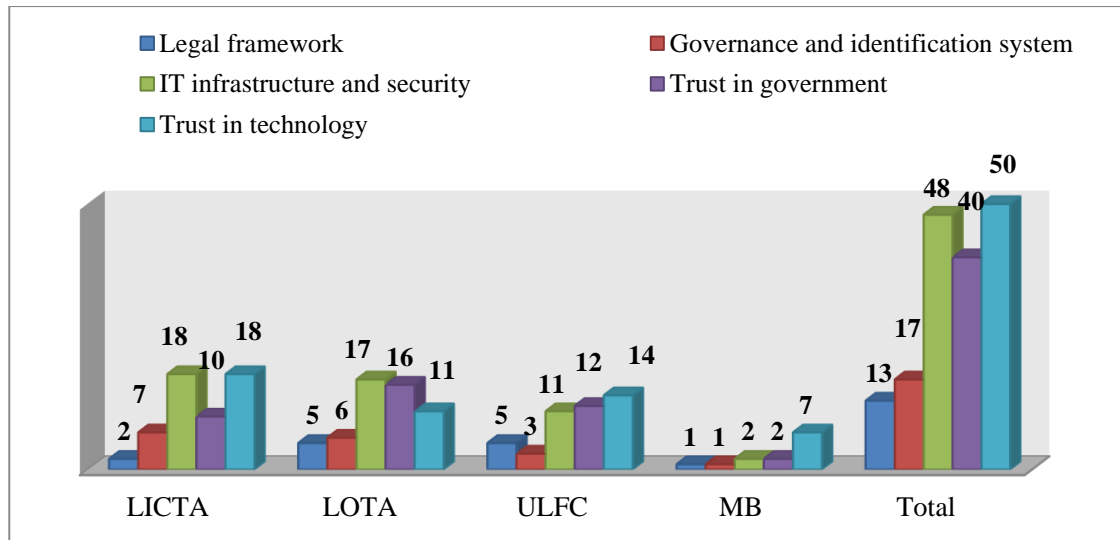

Figure 3.3. Non-governmental actors: frequency of pre-conditions

The findings indicate that the most frequently mentioned i-voting pre-condition among all non-governmental actors are in the Trust in technology (50 mentions), IT infrastructure and security (48 mentions) and Trust in government (40 mentions) categories. The least referenced pre-conditions in all non-governmental actors' discourses belonged to the Governance and identification system (17 mentions) and Legal framework (13 mentions) categories.

Comparing the level of mentions in individual actors' positions, it can be noted that, while the Trust in technology category gained a solid lead in almost all non-governmental actors' discourses, a more disproportionate and diverse allocation of mentions were given to the Governance and identification system and Legal framework pre-conditions: the LICTA and the LOTA granted more mentions to the Governance and identification system category (seven and six mentions, respectively), in contrast to the ULFC and MB, who assigned lower rates of mentions (three and one, respectively). The same observation applies to the Legal framework pre-condition, which garnered a

higher number of references in the positions of both the LOTA and the ULFC than in the LICTA and MB (two and one, respectively).

Shifting to the examination of the degree of favourability, Figure 3.4. depicts the main observations of the i-voting pre-conditions demonstrated in the non-governmental actors' analyses.
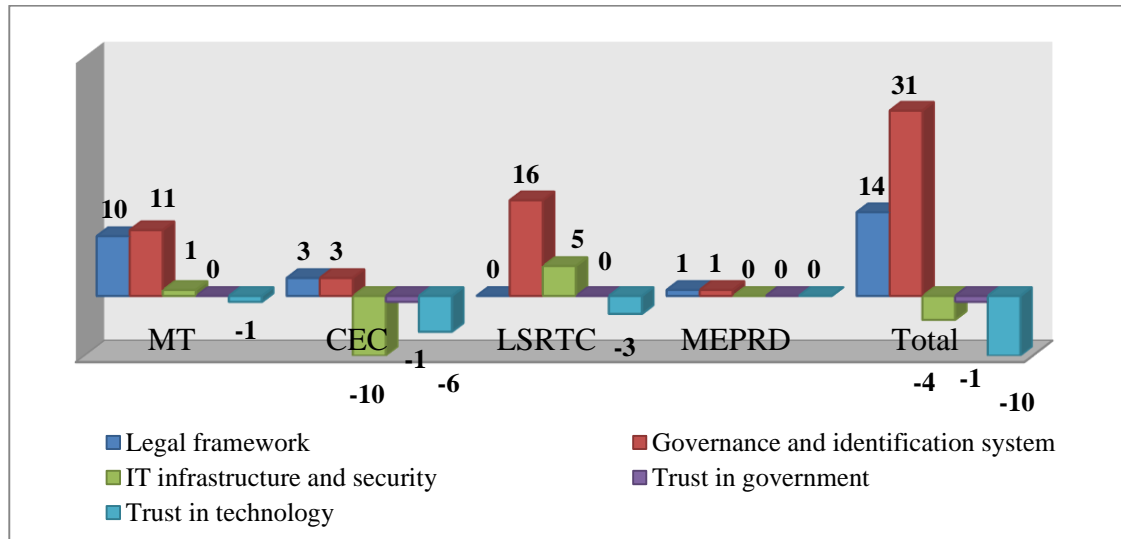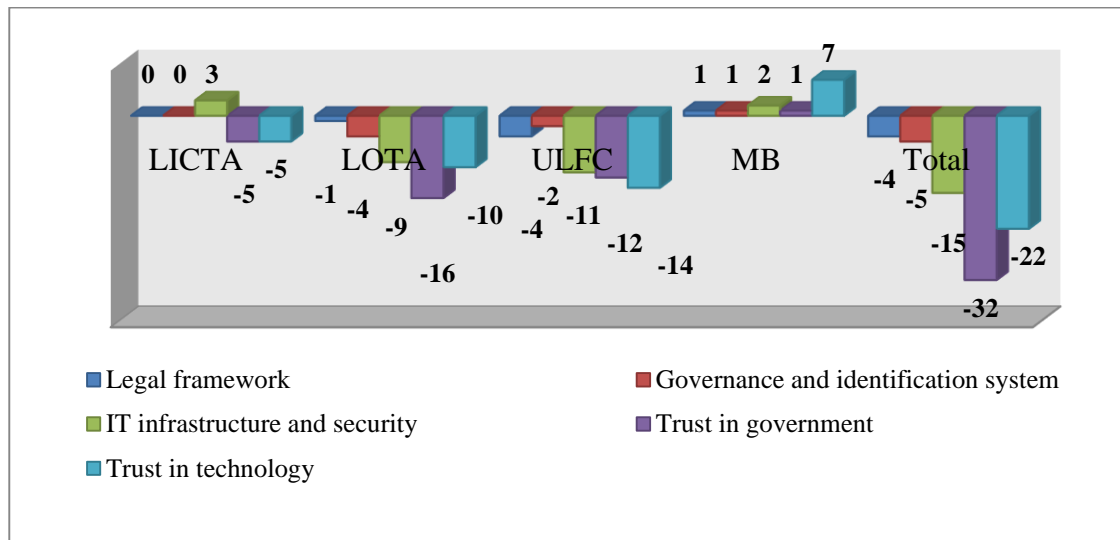

Figure 3.4. Non-governmental actors: level of favourability of pre-conditions (H2)

Based on these coding scheme findings, it can be argued that the most favourable pre-conditions for all non-governmental actors were distributed between the Legal framework (-4 points) and Governance and identification system (-5 points) categories. The least favourable pre-conditions were shared by the Trust in government (-32 points) and Trust in technology (-22 points) categories.

Building on these findings and further analysing the distribution of favourability ratings among individual non-governmental actors, it can be seen that the IT infrastructure and security and Legal framework categories received a divergent allocation of points: while the LICTA and MB placed these pre-conditions in the positive axis, the LOTA and the ULFC positioned them in the negative axis.

Summarizing the main observations and trends in the non-governmental actors' perspectives, it can be stated that the allocation of connotations is distributed differently by individual actors. The most 'irregular' pattern of assessment among the non-governmental actors belongs to MB, which evaluated all i-voting pre-conditions in the

positive axis and scored the highest number of positive connotations (12 to 13 ratio), while both the LOTA (41 to 55 ratio) and the ULFC (43 to 45 ratio) returned the most negative model of evaluation of the i-voting categories. In this context, the LICTA's position, which evaluated two out five pre-conditions in the negative axis, serves as the balance between the overwhelmingly negative stance of the LOTA and the ULFC, and the positive evaluation of MB. Finally, the findings demonstrated the relationship dynamics between the non-governmental actors. While the LICTA, the LOTA and, to a lesser extent, the ULFC cross-referenced one another in their analyses, MB did not refer to and was not mentioned by other non-governmental actors.

Examining findings on the national position on Internet voting

Switching to the examination of empirical findings on the national position, the indexes of average connotations for governmental and non-governmental actors, outlined in Chapter II, are here calculated and compared.

The favourable, neutral and unfavourable connotations of all the governmental actors from the coding scheme lead to the following results, depicted in Table 3.1.

Actors	Favourable	Unfavourable	Neutral
Governmental actors			
MT	25	4	31
CEC	14	26	15
LSRTC	24	6	13
MEPRD	5	3	9
Total	68	39	68

Table 3.1. Governmental actors: index of average connotation

Applying the formula introduced in the methodological chapter, the governmental index of average connotation can be estimated as follows:

$$\mathbf{IAC_{gov}} = \frac{(68-39)}{(68+68+39)} = 0.16$$

Though this index is above the negative axis, it should be noted that the final number gravitates towards zero in the scale between one and -1 and thus represents a broadly neutral position.

Conducting the same operation to calculate the index of average connotation for non-governmental actors, the following breakdown of findings is illustrated in Table 3.2.

Actors	Favourable	Unfavourable	Neutral
Non-governmental actors			
LICTA	10	17	28
LOTA	0	41	14
ULFC	0	43	2
MB	12	0	1
Total	22	101	45

Table 3.2. Non-governmental actors: index of average connotation

The final estimation of the index of average connotation for non-governmental actors can be calculated as follows:

$$\textbf{IAC}_{\textbf{non-gov}} = \frac{(22-101)}{(22+45+101)} = \textbf{-}0.47$$

This index is placed in the negative axis and can be averaged to almost -0.5, representing a relatively strong negative stance, considering that the most negative possible index of average connotation is -1.

These two indexes of average connotation provide the grounding for the next chapter's examination and elaboration on the main underpinnings of the national position. This analysis will include discussion of the main baseline commonalities, trends and discrepancies in governmental and non-governmental actors' perspectives on the issue.

Chapter IV. Discussion: Forming and Evaluating the Latvian Position on Internet Voting

The main aims of this fourth chapter are to analyse and examine the empirical findings in greater depth by comparing and demonstrating commonalities, differences and trends in governmental and non-governmental perspectives, which will help to clarify the Latvian national position on i-voting. To meet these objectives, the chapter is organized into two sections. The first section discusses the findings and locates them within a broader context, characterizing the governmental and non-governmental actors' patterns of evaluation of i-voting pre-conditions that were uncovered using the coding scheme, and evaluating their connections to the dissertation's hypotheses. The second section builds on these empirical findings described in Chapter III and the analytical patterns identified in the first section, drawing from them a whole narrative and perspective illustrating the Latvian national position on i-voting.

Discussing governmental and non-governmental perspectives on Internet voting

Empirical findings, described in the previous chapter, confirm that the governmental position is mostly influenced by a low level of trust in information technologies and security concerns regarding the i-voting system infrastructure, which coheres with the dissertation's first hypothesis. These findings re-confirm earlier studies demonstrating the impact of both the security risk factors and reliability of technologies pre-conditions on the formation of governmental positions and the likelihood of the introduction of i-voting (Evans and Yen 2006; Colesca 2009).

Further building on these findings, it can be concluded that the substance of the governmental actors' positions and evaluations of the i-voting pre-conditions, in most instances, are affected by the nature of the actor's responsibilities in the implementation of the i-voting project and by the evaluation of the project's potential benefits and risks to the actor. For instance, the high concentration of neutral connotations in the positions of the MT and the MEPRD can be attributed to their coordinating and supervisory responsibilities in the strategy formulation, requiring a certain level of neutrality and objectivity from the actors' perspectives. Thus, it is unsurprising that their reports are filled with recommendational rather than oppositional phrases and verbs, such as 'have

to pay attention to', 'the need to meet the requirements', 'to ensure the rule of law' and 'to guarantee security' (Ministry of Transportation 2012a: 10-17; Ministry of Transportation 2012b; MEPRD 2013). By the same reasoning, the LSRTC's overwhelmingly positive position on the readiness of i-voting pre-conditions stems from both its function as the main e-signature provider and the crucial role assigned to it in the project, which will increase the organization's capacities in the electoral process in the long-term. In this context, the actor reaffirms its reliability by crediting its services with such descriptions as 'secure', 'widely used' and 'guarantees security' (LSRTC 2012a; LSRTC 2012b; LSRTC 2015). On the other hand, the scepticism of the CEC might be rooted in a potential conflict of interest with the LSRTC, as the implementation of the i-voting option would reduce this actor's role and administrative responsibilities in the election process regarding vote counting and polling, eventually leading to working staff reductions. The CEC is thus the only organization in the governmental actor category to raise the issue of the government's reliability in managing the i-voting strategy and its reluctance to rush or dramatically change the status quo with regard to voting coordination, insisting instead on a 'pragmatic approach' and warning that there is 'no need to re-define what is already working' (CEC 2012a; CEC 2012b).

As a result, the findings also revealed discrepancies in the relationship dynamics between different governmental actors (conflicting relations of CEC with MT/LSRTC, which calls the actors' vision and strategy of i-voting implementation 'flattering delusions', CEC 2012b) as well as distant contact or lack of close coordination between key supervising governmental actors (MT's formal reference to other governmental actors only in the context of their responsibilities; and MEPRD's absence of mentions).

The similar observations could be applied to the relationship progression with external actors: taking into account that almost all governmental actors predominantly refer to a small group of relevant governmental bodies inside the country (OCMA, CERT.lv, Latvian Parliament and Government), who are also involved in the conceptualisation of the i-voting strategy; the role and impact of external (regional and international) actors seems to be limited. The only exception applies to LSRTC, which tries to signify and reaffirm their credibility by presenting Estonian experts' opinion about the reliability of the Centre's services and technical resolution behind e-signature with the aim of adding

legitimacy and credibility to the Centre's activities in the field as well as its role in the i-voting project implementation since the confirmation is expressed by the leaders in the realm of e-governance and e-services (LSRTC 2015).

These findings have important implications for the future projection of the governmental actors' positions and the prospects of introducing the i-voting procedure in Latvia. Despite the fact that the same i-voting pre-conditions tend to shape all governmental actors' discourses, the current disparity in actors' evaluations of the i-voting pre-conditions and lack of closer coordination and communication affects the overall coherence and commitment of governmental institutions to forming accountable, stable and consistent i-voting policies. This lack of consistency negatively affects citizens' and non-governmental actors' trust in the reliability of governmental actors to conduct and proceed with the project. At the same time, this lack of coherence and commitment in governmental actors' perspectives can also be attributed to broader issues associated with the overall state of development of the party system in Latvia, which, due to its modest stability, negatively impacts the work of political parties and ministries in developing and achieving stable political decisions, including those related to the i-voting agenda.

In order to move forward, governmental actors should try to improve the level of coordination and communication between different governmental bodies and create common guidelines for evaluating policies so as to reduce 'zero-sum' judgements and potential conflicts of interests. At a broader level, more attention should be paid to improving the overall stability of the party system in the country.

Shifting to the interpretation of empirical findings from the non-governmental actors' perspectives, it can be stated that the data confirm their position is predominantly affected by acceptance of information and communication technologies and low levels of trust in the government, which coheres with this dissertation's second hypothesis. These findings also align with earlier works illustrating the effects of the trust factor on the degree of non-governmental actors' favourability towards and approval of i-voting introduction (Evans and Yen 2006; Colesca 2009).

Further elaborating on these empirical findings, it can be noted that, in contrast to the governmental actors, non-governmental organizations primarily form their positions on

the basis of either personal/peer knowledge or practical experience in the field (e.g., feasibility studies, cooperation/interaction with other actors), which can generate premises that are either favourable or unfavourable to i-voting. This insight helps to explain the allocation and distribution of favourable and unfavourable connotations among most of the non-governmental actors. The analysis of documents shows that non-governmental actors very often cross-reference each others' opinions, write op-eds together (ULFC and LOTA) or use the similar line of reasoning in their reports when talking about certain aspects of i-voting procedure adaptation, especially in relation to the security concerns organisational component of i-voting strategy conceptualisation – actors point, most of the time, to 'possible vote fraud', 'insufficient level of security', and 'difficulty of verifying results' (LOTA 2012b; ULFC 2013; ULFC 2014c; LICTA 2015).

Moreover, peer-influence stretches beyond local partners, and thus, it could be stated that the role of external (international) actors, in contrast to the governmental perspective, plays more significant role in shaping non-governmental actors' positions. For instance, it can be noted that the reports of the LICTA, the LOTA and the ULFC regularly cite and refer to other regional and international feasibility studies (US, Germany; Finland; Netherlands), which very often do not result in the adoption of the i-voting procedure due to 'lack of transparency' and 'high risk of results manipulation' (LOTA 2012b; LOTA 2013; LICTA 2013; ULFC 2014a:1-3; ULFC 2014b).

Moreover, the same group of non-governmental actors, based on their experiences of providing expertise to official bodies, often criticize the governmental approach to managing the process by pointing to the 'lack of inclusive debates with a broader group of IT experts', 'lack of coordination', 'conflict of interests between governmental bodies' and the fact that the government 'ignores the dialogue' and 'does not listen to the opinion of experts' (LOTA 2012a: 1-4; LOTA 2012b; ULFC 2014c; LICTA 2015).

By contrast, MB shows the opposite pattern and reasoning behind its points allocation. The organization bases its evaluation on its direct experience of the positive impact of its platform's role (and technology in general) in increasing citizens' e-participation in governance and helping to collect more than 10,000 signatures in favour of i-voting introduction. However, it is important to bear in mind that MB's most recent document

evaluating the favourability of i-voting was issued in November of 2014, before the petition in favour of i-voting adaptation was rejected by the Latvian Parliament. Thus, the distribution of connotations and the overall position of MB might be different today in light of analysis of the post-December 2014 documents.

In sum, it can be argued that these findings, for the majority of non-governmental actors, cohere with and re-confirm the arguments expressed at the beginning of the section concerning the effect of inconsistencies in governmental actors' judgements and commitments to i-voting strategy on the overall reliability of these organizations in the eyes of the non-governmental actors and ordinary citizens.

The findings also unveil the relationship dynamics between the non-governmental actors. Taking into account that most of these actors (the LICTA, LOTA and ULFCO) base their analyses on peer knowledge, it is not unexpected that they often refer to and cross-reference one another, indicating a high level of trust, cooperation and overall consistency between the actors' positions. The following cohesion could be explained by the non-governmental actors' willingness to work as a united block to increase their say and influence in the process of debating the i-voting strategy adaptation.

However, the same observation cannot be applied to MB, which is not included in the other non-governmental actors' discourses. This can be partly explained by reference to the rather distinct nature of this actor, which is more accurately understood as a civil society organization, rather than a non-governmental organization specializing in ICT expertise, like the others.

The findings presented here have major implications for estimating the further progression of the non-governmental actors' positions and hint at potential recommendations for these organizations. The findings demonstrate that most of the non-governmental actors depicted in this study can be seen as 'united entities' that tends to rely on and value the knowledge of 'similar other'. Therefore, a concern or criticism of one organization might lead to a 'domino effect' and impact the thinking of other non-governmental actors. Thus, for governmental actors, it is crucial to maintain consistency in their positions to mitigate negative chain effects originating from the perception of their lack of reliability.

Discussing and forming a national perspective on Internet voting

The analysis of governmental and non-governmental actors' patterns of evaluation of i-voting pre-conditions and relationship dynamics allows for elaboration on the main underpinnings of the Latvian national stance on i-voting in regard to: (i) factors and pre-conditions influencing the position; (ii) coherence; (iii) the overall connotation of the national perspective; and (iv) possible implications and recommendations that might impact the further direction of the position.

Discussion of the presence and frequency of the pre-conditions in both governmental and non-governmental actors' discourses indicates that the national position can be seen to be primarily influenced by the trust pre-conditions (both regarding government and technology) as well as IT infrastructure and security factors. This conclusion is grounded in the observations of the previous chapter and the impact of the identified pre-conditions on the nature and substance of both actor groups' perspectives. In other words, the strong presence and influence of the pre-conditions in governmental and non-governmental actors' positions strongly implies that the national stance is affected by the same factors.

In this context, the coherence of the national position can be outlined and evaluated by taking into account two dimensions – the relationship dynamics between the governmental and non-governmental actors and the premises on which the actors base their positions. Incorporating the analysis of the preceding section, it can be stated that the findings point to mismatches in both of these dimensions. The relationship dynamics between the two groups of actors are conflicting and lead to a lack of close cooperation – while the governmental actors either refer to the non-governmental actors only in the context of their responsibilities (MT, MEPRD), or do not mention them at all (CEC, LSRTC), the non-governmental actors (LICTA, LOTA, ULFC) question the competence of the various governmental institutions to coordinate the project, due to their lack of inclusive debates and governmental representatives' neglection of experts' opinions.

Moreover, the findings pinpoint a mismatch in the principles of both groups of actors, and the means by which they form their positions. This results in a clash between the governmental actors' approach of evaluating pre-conditions on the basis of their direct

responsibilities in the project and the potential gains or risks to them, and non-governmental actors' tendency to formulate their positions in light of personal or peer knowledge, or practical experience in the field.

These mismatches in judgment occurring from the different nature and responsibilities of the organisations affected not only the allocation of connotations, but, sometimes, had an impact on the ways the pre-condition is conceptualised: the most illustrative example here is the case with the legal framework pre-condition. Even though the following category received a high number of favourable connotations compared to other pre-conditions; the reference points to what should be considered the most important part of legislative framework when it comes to i-voting procedure as well as how certain parts of legal acts should be interpreted – differed among the governmental and non-governmental actors. For instance, MT evaluated compliance of i-voting option within the existing electoral laws (such as those outlined in the first part of the dissertation - *Identity Documents Act, Electronic Document Act, etc.);* while ULFC took cross-examination at a higher level and implied that i-voting procedure would collide with the Latvian constitution and the principles of international treaties such as those outlined in the UN's declaration of human rights under 21st article (ULFC 2014c).

These inconsistencies and mismatches, constituting the national position, bear significant implications for the further progression of the i-voting strategy in Latvia. The theoretical framework demonstrates how important consistency and commitment to the i-voting agenda was in the Estonian case. The Estonian government's dedication to the development of e-services and e-governance infrastructure and policies, along with a close partnership with the private sector and citizens' belief in the reliability of e-services and the government's competence, created a common interest and a favourable environment for the adaptation and introduction of the i-voting option in electoral processes (Vassil 2015). Currently, these elements are missing in the Latvian case.

Finally, the estimations of the indexes of average connotations for governmental and non-governmental actors demonstrated an approximate direction of the connotation for the national position, located in the range between the more neutral index of 0.16, based on the governmental actors' analyses, and a more negative index of − 0.47 from the non-governmental actors. Due to the limitations of providing an alternative measure of

estimating the national position and a lack of a threshold or scale determining a direct connection between the value of an index and the level of favourability of the national stance, further studies should be performed to test the associated approach in other EU member states. This could potentially lead to the creation of a model classifying and clarifying the connections between these variables.

Taking these observations into account, it can be argued that the study has re-affirmed the claim introduced in the theoretical aspect of this dissertation, which suggested that the trust pre-condition is the most insufficiently developed of those surveyed, constituting a major obstacle to the i-voting initiative. On this basis, it can be concluded that, in order to increase the future prospects of introducing the i-voting option to the electoral system of Latvia, more attention should be paid to developing and strengthening trust in the reliability of the government and relevant technologies. The perceived reliability of the pertinent actors could be improved by setting a common agenda and improving communication channels and coordination efforts between different actor groups, while the perceived reliability of the technology could be enhanced by increasing the use of eID cards and expanding e-services in less 'politically sensitive' areas, until a sufficient level of trust is amassed to turn again to the development of the i-voting system.

Following this identification and discussion of the Latvian national perspective on Internet voting, the next and final chapter will summarize the main findings of the dissertation and appraise the Latvian national position in relation to regional and European contexts.

Chapter V. Conclusions: Framing the Latvian National Position on Internet Voting in a Broader Context

The main aim of this last chapter is to summarize and combine the key findings from both the theoretical and empirical elements of the dissertation, casting light on the state of development of the pre-conditions of and Latvian stance on i-voting, as well as framing the national position within broader regional and European contexts. In order to meet this objective, the chapter is organized as follows. It starts by revising the conceptualization and core components of i-voting and the impact of its pre-conditions on forming governmental and non-governmental positions on the issue. It proceeds by looking at the level of development of each i-voting pre-condition in Latvia, merging theoretical findings and data observations from the coding scheme. After each i-voting pre-condition is evaluated, the discussion is continued by summarizing the governmental, non-governmental and national position on i-voting through the evaluation of results obtained from the formulas aimed at calculating indexes of average connotations (IAC). The final section of the chapter compares the Latvian national position and level of progress on i-voting to the situation in Estonia, along with other regional and international examples, and provides further comments and recommendations on the Latvian path towards development of the i-voting strategy.

Revising the conceptualization and core components of i-voting

The theoretical framework identified two types of Internet voting, these being (i) *on-site i-voting*, which is performed in high-traffic areas under the supervision of election officials or independent electoral authorities, and (ii) *remote i-voting*, which is performed within the voter's sole influence through an Internet-connected personal computer, smartphone, tablet or other electronic device (Elections BC 2011: 3; University of Maryland 2001: 6-9). The current study focused particularly on the later type of i-voting, since this was the type chosen for policy evaluation in the Latvian case and, therefore, better fit the objectives of the dissertation.

The theoretical chapter also established that any type of voting, in order to be considered legitimate, must meet the basic legal requirements stipulated in electoral laws that ensure elections are universal, equal, free, secret and direct. In this respect, i-voting should be aimed at meeting these conditions and closely imitating traditional

voting mechanisms. On these grounds, some general pre-conditions regarding the introduction of i-voting can be specified. Based on the findings of Kotka et al. (2015) and the Estonian National Electoral Committee (2005), this dissertation proposed four general pre-conditions, vital for the implementation of the i-voting option in electoral processes: (i) *the legal framework*, which serves to establish coherent and comprehensive norms to guide the process of i-voting implementation; (ii) *the governance framework and prerequisites for the creation of an integrated identification system*, which help to establish the mechanisms behind i-voting authentication and verification processes; (iii) *decent information technology and public key infrastructure*, which builds solid technical and security grounds upon which to implement the procedure; and (iv) *a sufficient degree of trust in both the government and technology*, which provides confidence and credibility in undertaking the i-voting strategy (Kotka et al. 2015; ENEC 2005). The sufficient development of all these pre-conditions plays an important role in determining the success or failure of i-voting adaptation.

The theoretical part of the dissertation also highlighted that the evaluation of the national position on i-voting in a democratic society must be examined from both governmental and non-governmental perspectives, since both play a crucial role in the policy implementation and adaptation process. The coherence between the willingness and acceptance of these two groups of actors determines the final outcome of the policy implementation.

These theoretical remarks also argued that the listed i-voting pre-conditions tend to shape the perspectives of each actor to varying degrees: the non-governmental position can be seen to be most influenced by the level of development of the *Internet infrastructure, reliance on technology* and *trust in government* pre-conditions, while the governmental perspective is mostly influenced by the pre-conditions regarding *legal and governmental resources*, *security risk factors* and *reliability of technologies* (Evans and Yen 2006: 207-235).

The level of development of pre-conditions and the national position on i-voting

Combining both theoretical and coding scheme findings, the following conclusions could be made on the state of development of each i-voting pre-condition in Latvia:

1) *Legal framework* – the theoretical remarks and coding scheme data presented in the preceding chapters re-confirm the proposition that the legal foundation can be considered the most comprehensively developed pre-condition in the Latvian case. The first chapter demonstrated that Latvia has introduced and enforced the most fundamentally required laws for the implementation of the i-voting procedure, covering such issues as data protection, personal and electronic identification, population registration and digital signatures (see Appendix 3). Even though some of the legal acts and laws would require amendment if the i-voting option were to be adopted, the overall structure and substance of the Latvian legal framework is comparable to the Estonian model (Ministry of Transportation 2012a).

In this respect, the coding scheme data show not only that the legal framework has received the largest number of positive connotations as compared to other pre-conditions (it scored the highest number of positive points in five out of eight actors' positions, including the MT, CEC, MEPRD, LICTA and LOTA), but also that most of the actors agree Latvian legislation 'meets basic requirements', 'does not contradict with legislature' and 'complies with the rules' necessary for i-voting introduction (Ministry of Transpiration 2012a; LICTA 2013; LOTA 2013). At the same time, the findings also illustrated there is some disagreements between certain actors (MT versus ULFC) as to what should be considered the most important part of legislative framework when it comes to i-voting procedure as well as to how certain parts of legal acts should be interpreted.

2) *Governance framework and the integrated identification system* – this pre-condition can be said to be at a partial level of development, based on the theoretical and data findings of this thesis. Even though the first part of the dissertation concluded that Latvia has established the most vital components necessary for the i-voting system implementation, such as the integrated Population Register and issuance of eID cards, these elements must yet be updated and improved to ensure the effective functioning of the i-voting procedure (Ministry of Transportation 2012a; Ministry of Transportation 2014; OCMA 2016a).

The coding scheme findings show that, despite a solid level of mentions in actors' discourses (81 mentions) and an overall level of favourability (26 points) compared to

other i-voting pre-conditions, the governance and identification system pre-condition has one of the widest disparities of points between governmental and non-governmental actors (31 to -5), which demonstrates that the readiness of governmental and identification systems frameworks are evaluated differently by the two groups.

3) *Information technology and public key infrastructure (including security)* - both theoretical remarks and coding scheme data point to a modest level of development of this pre-condition. The first chapter of this dissertation indicated that Latvia belongs to the low performance cluster of the EU's Digital Economy and Society Index (2016). Even though the MT has developed the conceptual model behind the i-voting mechanism and outlined a list of technical and organizational security requirements for the transparent, fair and legitimate provision of the i-voting option (comparable to the rules identified in the Estonian National Electoral Committee's report '*E-System Overview*' (2005)), no physical prototype of the i-voting model has yet been implemented (Ministry of Transportation 2012a).

The coding scheme findings confirm this theory: concerns regarding the state of development of the IT infrastructure and security pre-condition have been raised by all actors, granting this precondition the highest number of mentions (118 mentions) of those surveyed, and one of the most strongly unfavourable rankings from both governmental (-4 points) and non-governmental (-15 points) actors.

4) *Trust in government, as well as acceptance and belief in the reliability of technological solutions* – this can be considered as the most weakly-developed pre-condition, based on the theoretical and data findings. The theoretical part of this dissertation noted that Latvian citizens have both the lowest approval ranking for governmental bodies and the least trust in Internet voting, according to the Eurobarometer (2015) and Marketing and Public Opinion Research Centre (2011) surveys.

Data findings from the coding scheme correlate with these theoretical remarks. The data show that this pre-condition was raised in all actors' discourses, granting it the second highest mention score of the pre-conditions studied, at 115 mentions. Moreover, this pre-condition received the most negative score in terms of the favourability rankings: trust in technology gained the largest number of negative points in the governmental

actors' positions (-10 points), and among the non-governmental actors the trust in government and trust in technology categories scored the highest in terms of unfavourable connotations, with -32 and -22 points respectively.

Summarizing these observations, it can be seen that the data findings confirmed the level of development of the i-voting pre-conditions outlined in the theoretical part of the dissertation. The coding scheme findings also helped to indicate the more general governmental, non-governmental and national positions on i-voting. Evaluating the main coding scheme findings, the following conclusions about both actor groups' perspectives and the national position on i-voting can be drawn:

1) *Governmental position* – the empirical findings presented in this dissertation confirmed that the governmental position is mostly impacted by a low level of trust in information technologies and security concerns regarding key i-voting system infrastructure, which directly corresponds with the dissertation's first hypothesis. Further analysis of these findings reveal that the substance of the governmental actors' positions and evaluations of the i-voting pre-conditions, in most cases, was impacted either by the nature of the actor's own responsibilities in the i-voting project implementation (MT, MEPRD) and/or by the evaluation of the potential gains and losses for that actor (CEC, LSRTC).

The findings also revealed the discrepancies in the relationship dynamics between different governmental actors (e.g., the combative relationships between the CEC and the MT/LSRTC) and a lack of close coordination between key supervising governmental actors (e.g., the MEPRD's absence of mentions and references to other actors), which affected the overall consistency and coherence of the governmental perspective.

2) *Non-governmental position* – The findings confirmed that the non-governmental actors' position is predominantly affected by a low level of trust in government and an acceptance of information and communication technologies, which coheres with the dissertation's second hypothesis. Through further interpretation of its findings the study has shown that, in contrast to the governmental actors, non-governmental organizations form their positions on the basis of personal/peer knowledge and/or practical experience in the field, which can result in favourable (MB) or unfavourable (LICTA, LOTA,

ULFC) premises. This helps to explain the allocation and distribution of favourable and unfavourable connotations among the non-governmental actors.

The findings also depicted close relationship dynamics and reliability between the actors (LICTA, LOTA and ULFC, specifically). These observations are not surprising given that most of the actors base their analyses, at least in part, on peer knowledge and expertise. .

3) *National position* – the national position was determined by comparing governmental and non-governmental actors' positions so as to estimate their IAC. In this way, the national position can be seen to be influenced by the trust pre-conditions (both in relation to the government and technology) and IT infrastructure and security factors. This conclusion stems from the strong presence and influence of these pre-conditions in the positions of both actor groups, grounding the inference that the national stance is affected by these same factors.

Taking into account the discrepancies and mismatches in the governmental and non-governmental actors' means of forming their judgements regarding the i-voting pre-conditions, as well as the different relationship dynamics of the two groups, it can be asserted that the national position suffers from a high degree of incoherence.

Finally, the estimations of the indexes of average connotations for governmental and non-governmental actors suggest that the connotation of the national position could be approximately placed between the more neutral governmental index of 0.16 and the more negative non-governmental index of − 0.47. However, this is as yet an imprecise measure, due to a lack of direct formula estimation, and further testing is required to expand this approach of measuring the level of favourability of a country towards i-voting introduction.

Framing the Latvian position in a broader context and future implications

Now the Latvian national position has been identified, its position in comparison to other regional and international examples of i-voting implementation can be ascertained.

Analysis of the key enablers behind i-voting implementation in Estonia as compared to the Latvian situation, performed in the theoretical part of the dissertation, led to the

conclusion that these countries varied in their success and progress despite their similar socio-economic and institutional structures. Not only did Estonia fully introduce and enforce i-voting in its electoral process, but the level of development of the pre-conditions of i-voting also appear to be different in each country.

The Estonian case study demonstrated that most of the pre-conditions vital for i-voting introduction were sufficiently developed before the implementation of the i-voting strategy: (i) *the legal framework* had already introduced, in the late 1990s and early 2000s, the laws necessary for i-voting adaptation, serving as an important normative basis for the implementation of the strategy (Vassil 2015: 7-8); (ii) *the governance framework and the integrated identification system* had been developed to a more advanced level than in the Latvian case thanks to the X-Road system and the mandatory issuance of eIDs (Vassil 2015: 7-8); (iii) *information technology and public key infrastructure* granted Estonia a high ranking in both the Digital Access Index and, later, in the EU's Digital Economy and Society Index, due to the efficient development of IT infrastructure and a high level of Internet connectivity (Madise and Martens 2005: 16); and (iv) *trust in governance and technology* had been ranked at a higher level than in the Latvian case due to Estonian citizens' greater belief in the reliability and credibility of the government in undertaking the i-voting strategy implementation, and their greater satisfaction in and use of other e-governance services (EMEAC 2014).

Another important variable that played a significant role in the final outcome of the Estonian i-voting procedure implementation was the role and political will of the government in undertaking necessary reforms, due both to its consistency and commitment to an e-governance agenda and the support and involvement of the private sector in the development of the i-voting infrastructure. It can thus be concluded that the favourable environment created for i-voting adaptation was attributable to the strong development of the i-voting pre-conditions, a sufficient level of support and trust in government and technologies among Estonian citizens, the governments' commitment to an e-governance agenda and the private sectors' support of the strategy implementation.

Evaluating Latvia's standing on i-voting in regional/European settings, it could be argued that even though it was mentioned in the previous chapters that there is no

established scale measuring the direct correlation between index of favourability and readiness of i-voting introduction – one of the alternative options of comparing the regional development in the realm of i-voting adaptation could be an analysis of the ICTs in Elections Database developed by the International Institute for Democracy and Electoral Assistance (International IDEA 2014).

The following database contains information on 32 European countries by evaluating a general state of development of i-voting (or e-voting) procedures in electoral process and categorising the countries into such classifications as - 'E-voting has never been used', 'E-voting had been used but has been abandoned', 'E-voting is not used but feasibility studies and/or tests are being carried out', 'Other' and 'Not applicable'. The database demonstrates that the highest percentage of European countries did not use e-voting in electoral process – 40.6% (or 13 countries) (International IDEA 2014). Other countries either used e-voting but abandoned it (18.8% of countries) or conducted testing/feasibility studies (also 18.8%) (International IDEA 2014). Latvia belongs to this latter category, as does Lithuania, the United Kingdom, Italy, Spain and Portugal. Taking into account the data and empirical findings of the study, it could be argued that even though Latvia's position from a national perspective seems to be sceptical and not compelling to introduce i-voting, compared to the European context, where majority of the countries have not attempted to use e-voting, Latvian stance could be placed in the medium level of development.

All in all, evaluating the future prospects of i-voting introduction in Latvia, it can be concluded that this dissertation has shown that, at present, neither governmental nor non-governmental actors are ready to fully embrace the possibility of implementing an i-voting option in electoral processes, mostly due to concerns regarding trust factors, which significantly lag behind other i-voting pre-conditions. In order to move forward, both the governmental and non-governmental institutions should work on improving the reliability and trust in technologies pre-condition, which could be achieved by expanding other less 'politically-sensitive' e-services (potentially with the help of the private sector) and/or strengthening the IT skills of citizens and public officials, as was done in Estonia.

At the same time, the government stands to improve its current low approval ranking (Eurobarometer 2015) by being more committed and willing to enforce the i-voting agenda, building its credibility among non-governmental bodies and ordinary citizens by undertaking and managing the process of the i-voting procedure implementation.

When the trust pre-condition reaches a sufficient and stable level, the next step should focus on strengthening the IT infrastructure and security component of the mechanisms and systems behind the i-voting procedure. Improvements in governance and identification system frameworks, with particular attention to increasing and expanding the issuance of eID cards and updating the system of the integrated Population Register, are also recommended. By making progress and improving the state of development of the i-voting pre-conditions, the implementation of the i-voting strategy could be made possible in Latvia.

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Appendix 1

Scenarios: trust factor in i-voting implementation

Scenario	Trust in government	Trust in information and communication technologies
1) Unfavourable environment for the initiation, implementation and acceptance of the i-voting processes	Low	Low
2) Citizens might use the technology solutions against the government, while the implementation of i-voting system by the government might be perceived with suspicion by the citizens	Low	High
3) Inhibited cooperation between citizens and government on i-voting implementation	High	Low
4) Collaborative environment and gradual lead to a successful adaptation of i-voting system	High	High

Source: Colesca, S. E. (2009) Understanding Trust in e-Government. *Inzinerine Ekonomika-Engineering Economics*, Vol.3, pp.8-9.

Appendix 2

The two-envelope concept behind Estonian and Latvian Internet voting systems

a. Estonian model

Source: Estonian National Electoral Committee. (2005) *E-Voting System Overview*, Tallinn, p. 10.

b. Latvian model

Source: Ministry of Transportation. (2012) *Conceptual Project 'On the Establishment of the Internet Voting System'* [Koncepcijas projekts "Par interneta vēlēšanu sistēmas izveidi"], VSS-271, TA-1647, 8 March.

Appendix 3

Legal framework and acts enabling i-voting system implementation

Name of legal act	Brief summary
Personal Data Protection Act (Fizisko personu datu aizsardzības likums), 2000	Outlines provisions clarifying (i) the conditions and procedure for processing of personal data; (ii) the procedure for the exercise of state supervision upon processing of personal data; and (iii) liability for the violation of the requirements for processing of personal data.
Identity Documents Act (Personu apliecinošu dokumentu likums)2012 *Electronic Identification Act (Fizisko personu elektroniskās identifikācijas likums), 2015*	Establishes (electronic) identity document requirements and regulates the issue of identity documents to Latvian citizens and aliens by the Republic of Latvia.
Population Register Act (Iedzīvotāju reģistra likums), 1998	Provides for the composition of data in the Population Register and the procedure for the introduction and maintenance of the Population Register, processing of data and access to data in the Population Register, entry of data on residence in the Population Register and exercise of supervision over the maintenance of the Population Register.
Electronic Document Act (Elektronisko dokumentu likums), 2003	Establishes the conditions necessary for using digital signatures and digital seals, and the procedure for exercising supervision over the provision of certification services and time-stamping services.
Information Technology Protection Act (Informācijas tehnoloģiju drošības likums), 2011	Outlines the security requirements for the protection of ICTs infrastructure
Information Society Services Act (Informācijas sabiedrības pakalpojumu likums), 2004 *Electronic Communications Act (Elektronisko sakaru likums), 2004*	Ensures that the public and every person has the opportunity to access information intended for public use, based on the principles of a democratic and social rule of law and an open society, and to create opportunities for the public to monitor the performance of public duties

Source: Legislative acts are taken and translated from the legislative database (Likumi.lv), see http://likumi.lv/

Appendix 4

Latvia's performance in the Digital Economy and Society Index, 2015

a. overall score
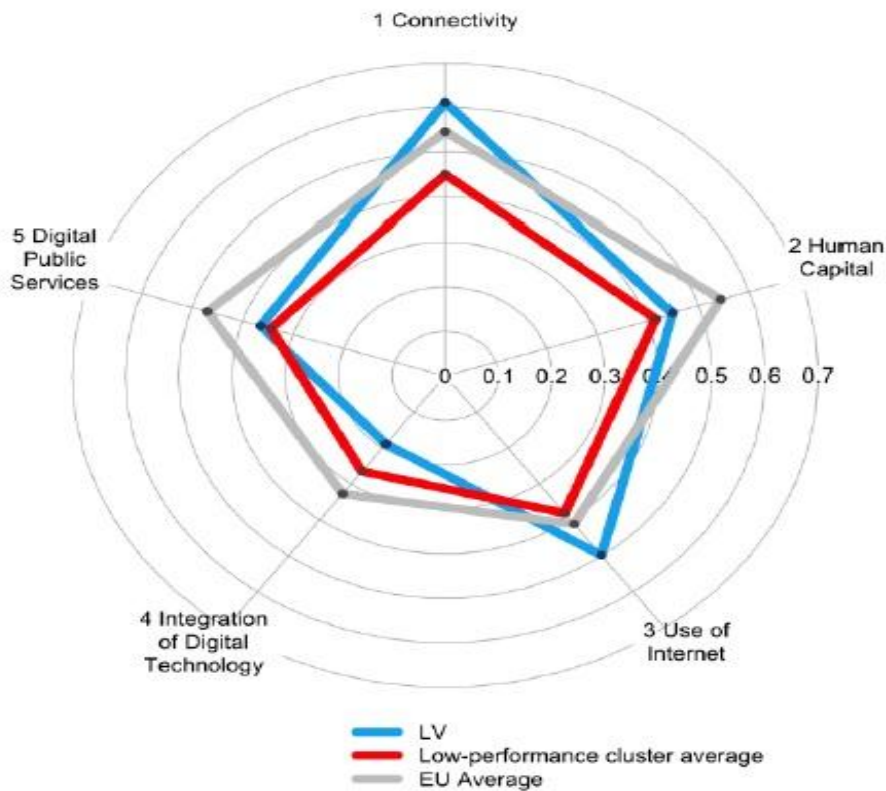
b. Latvia's performance in the Human Capital category, DESI 2015

| | Latvia | | | | EU |
| | DESI 2015 | | DESI 2014 | | DESI 2015 |
	value	rank	value	rank	value
2a1 Internet Users % individuals (aged 16-74)	72% ↑ (2014)	16	71% (2013)	14	75% (2014)
2a2 Basic Digital Skills % individuals (aged 16-74)	57% ↑ (2014)	16	54% (2012)	16	59% (2014)
2b1 ICT Specialists % employed individuals	1.7% → (2013)	25	1.7% (2012)	25	2.8% (2013)
2b2 STEM Graduates Graduates in STEM per 1000 individuals (aged 20 to 29)	14 (2012)	19	14 (2012)	19	17 (2012)

Source: Digital Economy and Society Index (2016) *Country Profile, Latvia*, available at https://ec.europa.eu/digital-agenda/en/scoreboard/latvia [Accessed on 29 January 2016].

Appendix 5

Trust in the results of Internet voting among Latvian citizens, 2011
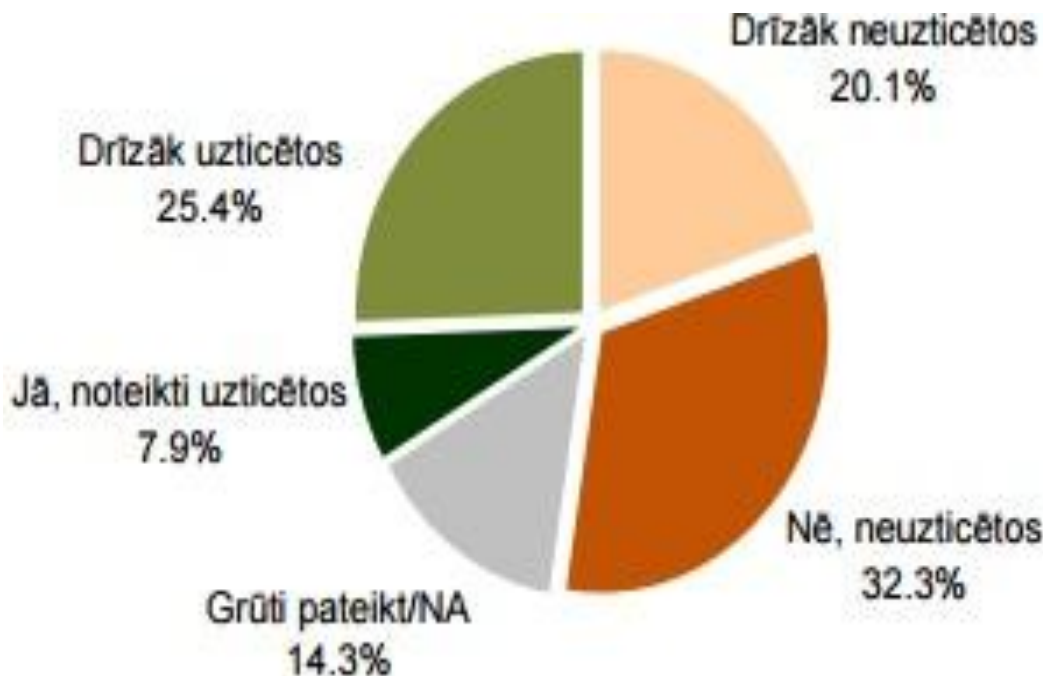
N.B: 856 of Latvian citizens participated in the survey, of whom 20.1% replied that they tend to not trust in the results of i-voting; 32.3% of respondents answered that they do not trust in the results of i-voting procedure; 33.3% identified that they either tend to trust or trust completely in the results of i-voting, while 14.3% were not able to identify their position on the issue.

Source: Marketing and Public Opinion Research Centre. (2011) *Report on Voters' Attitudes* [Vēlētāju attieksmju pētījums], pp.18-26. Available at: https://www.cvk.lv/pub/upload_file/atskaite_CVK_102011.pdf [Accessed on 16 February 2016].

Appendix 6

Database of documents produced by governmental and non-governmental actors on i-voting in Latvia

Actors	Documents (year of publication)	Code of the document
Governmental		
Ministry of Transportation [MT]	1. *Conceptual Project 'On the Establishment of the Internet Voting System'* [Koncepcijas projekts "Par interneta vēlēšanu sistēmas izveidi"], VSS-271, TA-1647, 8 March, 2012, pp.10-17.	MT1
	2. *Policy summary, 'the Establishment of the Internet Voting system'* [Kopsavilkums "Par interneta vēlēšanu sistēmas izveidi"], VSS-271, TA-1647, 8 March, 2012.	MT2
	3. Attachment to *the Establishment of the Internet Voting system'* [Pielikums koncepcijai "Par interneta vēlēšanu sistēmas izveidi"], VSS-271, TA-1647, 8 March, 2012, pp.1-2.	MT3
	4. *Policy statement 'Feasibility study for I-voting system'* [Par internet vēlēšanu sistēmas priekšizētes projektu], No.10-03/4207, 13 October, 2014, Riga.	MT4
	5. Development of Internet voting in Latvia <u>In:</u> *Description of electronic communications and governance policy* [Interneta vēlēšamu sistēmas izveide Latvijā; Jomas raksturojums, Elektronisko sakaru politika], 22 May, 2015.	MT5
Central Election Commission of Latvia [CEC]	1. *I-voting – free, secret and secure* [Balsošana internetā - brīva, aizklāta un droša], 23 March, 2012.	CEC1
	2. *CVK chairperson about eID suspension and e-voting* [<u>CVK priekšsēdētājs par eID atlikšanu, e-vēlēšanām un parakstījušos deputātu atklāšanu</u>], 1 April, 2012.	CEC2
	3. *Experts evaluate potential issues with introducing Internet voting* [Eksperti vērtē	CEC3

	interneta vēlēšanu ieviešanas problēmas], 20 August, 2012.	
	4. *Voting development problems and IT solutions* [Vēlēšanu norises problēmas un IT risinājumi], 24 September, 2012.	CEC4
	5. *Internet voting will be successful only when voters support it* [Balsošana internetā būs veiksmīga tikai tad, ja to atbalstīs vēlētāji], 24 April, 2013.	CEC5
Latvia State Radio and Television Centre [LSRTC]	1. *The concept for the implementation of the Internet voting system has been formulated* [Izstrādāta koncepcija interneta vēlēšanu sistēmas ieviešanai], 8 March, 2012.	LSRTC1
	2. *Discussion about Internet voting system, when it is going to be adopted and how impactful is experts' opinion about security concerns* [Par interneta vēlēšanu sistēmas koncepciju, kad varētu ieviest, kā atspēko ekspertu iebildumus par drošību], 20 August, 2012.	LSRTC2
	3. *LVRTC prepared to ensure electronic voting in elections* [LVRTC gatavs nodrošināt balsošanu vēlēšanās elektroniski], 13 October, 2012.	LSRTC3
	4. *Portal Latvija.lv offers new e-service – 'signature for voters' initiatives'* [Portālā Latvija.lv pieejams jauns e-pakalpojums 'parakstīšanās par vēlētāju iniciatīvām'], 18 September, 2015.	LSRTC4
	5. *eSignature is currently being used once every ten seconds* [eParaksts šobrīd tiek lietots reizi desmit sekundēs], 25 November, 2015.	LSRTC5
Ministry of Environmental Protection and Regional Development [MEPRD]	1. *VARAM suggests new thinking approach towards e-governance development* [VARAM piesaka jaunu domāšanas veidu e-pārvaldes attīstībai], 10 October, 2013.	MEPRD1
	2. *E-services increase in popularity in Latvia* [Latvijā pieaug elektronisko pakalpjumu popularitāte], 1 August, 2013.	MEPRD2

Non-governmental actors		
Latvian Information and Communication Technology Association [LICTA]	1. *In technological terms, Latvia is ready to introduce a secure and transparent i-voting process* [LIKTA: tehnoloģiski Latvija ir gatava ieviest drošu un caurskatāmu e-vēlēšanu procesu], 29 February, 2012.	LICTA1
	2. *I-voting strategy requires concrete strategy* [E-vēlēšanu ieviešanai nepieciešama konkrēta stratēģija], 23 January, 2013.	LICTA2
	3. *Internet voting is only one of the many possible electronic voting methods* [Interneta vēlēšanas ir tikai viens no iespejamiem elektoniskās balsošans scenārijiem], December 2015.	LICTA3
	4. *Latvian IT experts are invited to evaluate Estonian i-voting prototype* [Latvijas IT eksperti tiek aicināti vērtēt Igaunijas i-vēlēšanu pirmkodu], 4 September, 2013.	LICTA4
	5. *Majority of Latvian population does not comply with a secure use of the Internet* [Liela daļa Latvijas iedzīvotāju neievēro pietiekamus drošības pasākumus internetā], 8 July, 2014.	LICTA5
Latvian Open Technology Association [LOTA]	1. *Discussion on the conception of i-voting system implementation* [Diskusija par koncepciju "Par interneta vēlēšanu sistēmas izveidi"], 15 April, 2012, Riga.	LOTA1
	2. *No to Internet Voting* [Demokrātija ir tiesības skaitīt: nē interneta vēlēšanām], 20 July, 2012, pp.1-4.	LOTA2
	3. *LATA suggests not to introduce Internet voting* [LATA aicina interneta vēlēšanas pašlaik Latvijā neieviest], 17 August, 2012.	LOTA3
	4. *Statement on further prospects of Internet Voting 'Dreams about Internet voting continue to attract'* [Sapnis par interneta vēlēšanām turpina vilināt'], 29 August, 2013, Riga.	LOTA4

	5. *LATA strongly opposed i-voting* [LATA kategoriski iebilst vēlēšanām internet], 28 September, 2014.	LOTA5
University of Latvia, Faculty of Computing [ULFC]	1. *Internet voting minuses* [Interneta vēlēšanu mīnusi], 12 September, 2013.	ULFC1
	2. *Juris Borzovs (University of Latvia, Computing faculty Dean): Internet voting is very easy to trick* [Juris Borzovs (Latvijas Universitātes Datorikas fakultātes dekāns): interneta vēlēšanas ir ļoti viegli noviltot], 8 October, 2014, pp.1-3.	ULFC2
	3. *Lecturers of the Faculty of Computing – against i-voting* [DF docētāji - pret i-vēlēšanām], 15 October, 2012.	ULFC3
	4. *Should there be an electronic option introduced in Latvian elections?* [Vai Latvijā vēlēšanās ir jāievieš elektroniskā balsošana?] 11 November, 2014.	ULFC4
	5. *LATA and LU Computing Faculty's open letter to the Prime Minister* [LATA un LU DF atklātā vēstule Ministru prezidentei Dr. Laimdotai Straujumai], 4 December, 2014.	ULFC5
Manabalss.lv [MB]	1. *Latvian developed Manabalss.lv - – a global-wide success story of electronic participation* [Latvijā veidotā ManaBalss.lv - pasaules mēroga veiksmes stāsts elektroniskajai līdzdalībai, un gada laikā radušās atziņas no tās autoriem], 24 September, 2012.	MB1
	2. *Should there be an electronic option introduced in Latvian elections?* [Vai Latvijā vēlēšanās ir jāievieš elektroniskā balsošana?] 11 November, 2014.	MB2

Appendix 7

Coding scheme and coding guidelines

Code of the document	Paragraph	Lines	Actors	Pre-condition	Connotation	Positive expressions	Negative expressions	Other involved actors	External actors
			Governmental actors						
			MT	Legal framework	Favourable				
			CEC	Governance and identification system	Unfavourable				
			LSRTC	IT infrastructure and security	Neutral				
			MEPRD	Trust in government					
				Trust in technology					
			Civil society actors						
					Favourable				
			LICTA	Legal framework	Unfavourable				
			LOTA	Governance and identification system	Neutral				
			ULFC	IT infrastructure and security					
			MB	Trust in government					
				Trust in technology					

a. General rules for coding sentences:

Sentences that do not mention or contain information about pre-conditions will not be coded in the scheme. In this respect, a sentence in which several pre-conditions are mentioned, will be coded each time based on the number of pre-conditions. For instance, if in a sentence contain both *legal* and *trust in government* pre-conditions, the sentence will be coded twice – first time for *legal* pre-condition; and the second time for *trust in government* pre-condition.

b. Code of the document:

Each document is assigned with a particular code which consists of actor's abbreviation as well as chronological number of a document.

c. Actors:

Actors are divided into two broad categories – governmental and non-governmental actors – and are labelled with an abbreviation. The governmental actors consist of (i) Ministry of Transportation [MT]; (ii) Central Election Commission [CEC]; (iii) Latvia State Radio and Television Centre [LSRTC]; (iv) Ministry of Environmental Protection and Regional Development [MEPRD]. The non-governmental actors are (i) Latvian Information and Communication Technology Association [LICTA]; (ii) Latvian Open Technology Association [LOTA]; (iii) University of Latvia, Faculty of Computing [ULFC]; (iv) Manabalss.lv platform [MB].

d. Pre-conditions:

Pre-conditions have been selected and correlated with the theoretical part of the dissertation and consist of (i) legal framework; (ii) governance and identification system; (iii) IT infrastructure and security; (iv) trust in government; (v) trust in technology. Each pre-condition will be identified based on the context and key words mentioned in the sentence. For instance, legal precondition will be identified if references to the legal text and procedures would be made; governance and identification system pre-condition will be outlined if mentions to eID cards and verification mechanisms will be pointed out in the text; while IT infrastructure and security pre-condition will be defined if mentions to issues with technological implementation of the i-voting system, level of connectivity or cyber-security will be made.

e. Overall connotation

The overall connotation of a sentence will be characterizes based on the three connotations: positive, negative and neutral. Each connotation bear a numeric value: positive connotation gives 1 point; neural – 0, while negative gives -1 point. All sentences, especially those consisting of two or more parts and divided by punctuation (i.e. commas or semicolon) are coded as a single sentence/string and are not split or cut into separate parts. In this respect, the overall connotation in these sentences depends on the intensity and character of each part: if one part of the sentence is connoted negatively and the other is connoted positively, while both parts have the same level of intensity – then the sentence will be coded as neutral. However, if one of the parts is clearly stronger than the other – the sentence will be coded taking into account the stronger part.

f. Positive and negative expressions:

Positive expressions are coded taking into consideration the overall positive and favourable tone and nature of the words which might include examples as (nouns) 'success'; 'commitment', 'trust'; (verbs) 'to support'; 'to encourage'; 'to favour'; (phrases) 'peaceful solution', 'reach a consensus', etc. Negative expressions are coded taking into account the overall negative and unfavourable character of the words including the examples as (nouns) 'failure', 'violation', 'crisis'; (verbs) 'to condemn', 'to oppose', 'to sabotage'; (phrases) 'strongly against', 'significant costs', etc.

g. External actors:

They include all the 'secondary actors' that are not mentioned in the list of the main governmental and non-governmental actors. It can be: (i) an international organization (EU, UN); (ii) a state (Estonia, Switzerland); (iii) a non-state actor (Red Cross, Microsoft); (iv) a political/institutional figure (Junker, the Chairman of the Parliament); (v) an institution (the Parliament of Latvia, the Constitutional Court). The key requirement that has to be met in order to be defined as an actor is the notion that an actor has to carry an individual/collective will or preferences, so it cannot be a geographical expression (i.e. case of Crimea vs. Republic of Crimea).

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