

# Highlights of the Thesis

**Title:** Servitization of Public Services: Examination of Hungarian Public Services in a Process Management Approach

**PhD Student:** László Buics

**Supervisor:** Edit Süle, Associate Professor, Széchenyi István University

## Objectives and Methodology of the Dissertation

The scope of public services and the way public services are provided have undergone a significant transformation in recent decades. The role of the state and public administration, the relationship between the public administration and society can be examined from several approaches. In addition to the traditional values of legitimacy, impartiality and operation according to formalized rules and procedures, in the last decades types of expectations have emerged towards the operation of public administration. These expectations include more transparency, greater accountability, the more efficient operation of public services and the provision of "personalized" public services that are better tailored to the needs of citizens.

According to Frederickson (1996), the main aspects that public service providers must keep in mind are economy and efficiency regarding the available resources such as time, money, human resources, etc. Public service providers should pursue the most reasonable, optimal use of these resources while providing public service meaning that during the operation the amount of expenditure and wasted resources should be minimal.

The purpose of the thesis is to approach Hungarian public services from a managerial angle, focusing on service process management with the help of Servitization (Vandermerwe, Rada, 1988) and Unified Services Theory (Sampson, 2001, 2010). The thesis aims to offer a combination of practical tools for analysis in order to improve the efficiency and effectiveness of public service delivery, thus affecting customer satisfaction positively.

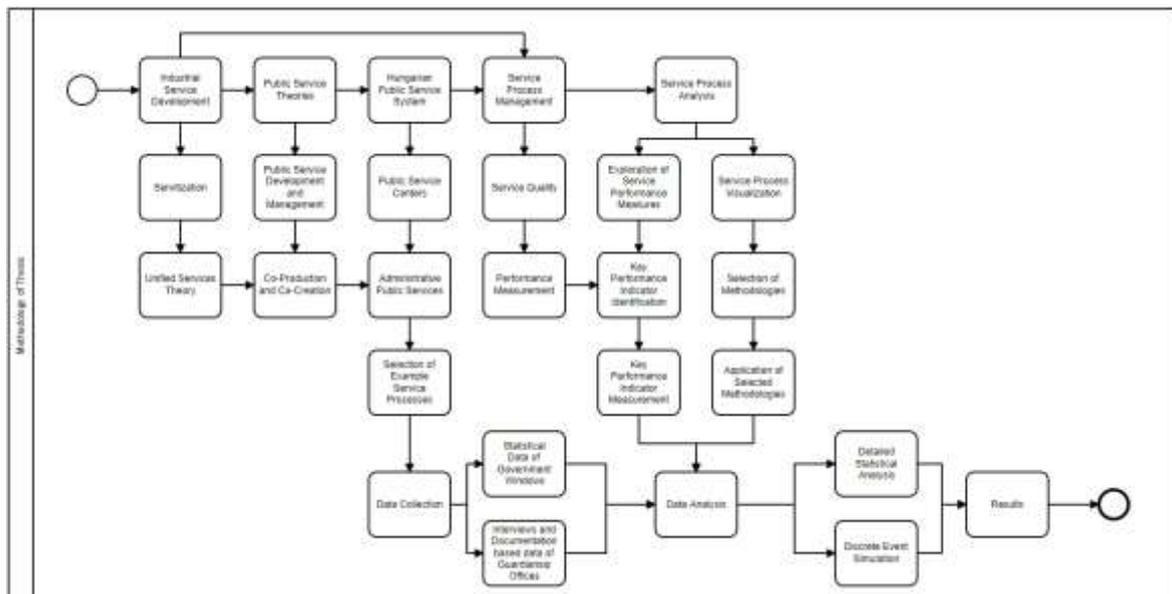


Figure 1: Research Methodology of the Thesis

Source: Author's own creation

The thesis uses a grounded theory (Glaser, Strauss, 1967) approach to examine the literature of public services and industrial service process management in order to formulate new connections, to find research gaps and to develop research questions in the process.

According to Goulding (2002), this research strategy is particularly helpful to explore a wide range of business and management issues.

The grounded theory methodology offers systematic and at the same time flexible guidelines for data collection and analysis as according to Eisenhard and Grabener, (2007) this process works as a recursive cycling between literature reviews, theory conceptualization and data collection, thus it can be interpreted as a sequential research process in order to find connections and discover research gaps.

There are several grounded theory approaches (Collis, Hussey, 2003; Suddaby, 2006; Eisenhardt; Graebner, 2007; Bryman, Bell, 2007), but generally grounded theory is an interpretive process, as a highly creative one according to Suddaby (2006) which requires researchers to develop a tacit knowledge of, or feel for, their data. According to Bailey et al. (2017), this methodological approach is appropriate to examine organizational operations from an employee perspective and according to Charmaz (2006), it is a good approach when studying individuals and their interactions with larger processes.

According to Edmondson and McManus (2007) grounded theory applies particularly well in underdeveloped research areas where the research is focusing on answering research questions that address “what”, “how” and “why” type questions.

Service development and performance measurement has a large international literature as measuring service quality and performance bear key importance for private companies. The quality and performance of service delivery is also an important issue for public service providers, however we know little about the quality and functions of these selected services in details. By using performance indicators these services become measurable and descriptive and the measured values can be associated with the perceived level of service delivery which impacts customer satisfaction.

Performance measurement is a broad topic, and the measurement of efficiency and effectiveness bears key importance in any organizations life in order to be successful. One aspect of the dissertation is why it is difficult to interpret and measure service processes compared to physical processes. The thesis shows how the necessary data from the service processes can be extracted in order to be measured under different conditions, and how does analyzing this statistical data contribute to determine the efficiency and effectiveness of the system with the help of an industrial approach. The thesis draw attention to the fact that the available data is not uniform, based on the characteristics and complexity, different approaches are needed but nevertheless the same measurement methods can be applied.

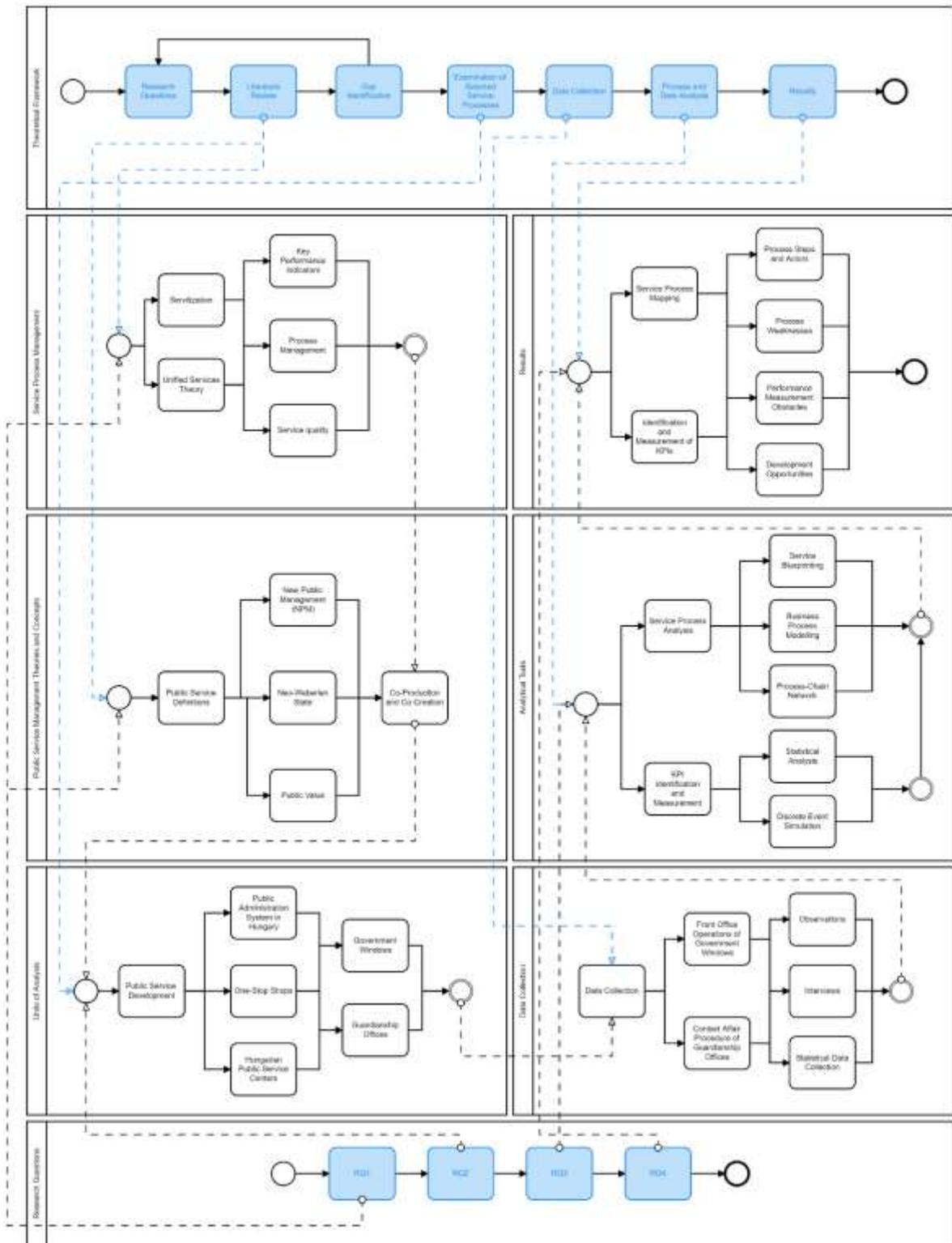


Figure 2: Structure of the Thesis

Source: Author's own creation

The major objectives of the dissertation can be summarized as follows:

**To show how Hungarian public services can be examined comprehensively by providing a new approach towards public service management.**

- The structure of Hungarian administrative public service system is examined in details
- Two service process examples were selected for analysis
- Analysis is based on data collected by observation, interviews and statistics
- Selected combination of analytical tools were used to map and analyze public service processes

**To provide a theoretical approach and methodological toolkit with which these services can be measured and improved.**

- The dissertation presents how the selected methods and measures can be used generally to review processes based on the collected data

**To identify and measure objective time-related key performance indicators in public service context.**

- Quality and performance of service delivery is important issue for public service providers as well to enhance measurability/quantifiability of public services
- KPIs help to measure and describe important service characteristics and the perceived level of service delivery which affects customer satisfaction
- For better design, planning, development and delivering of public services we need to know the main indicators, which define these service processes

For the better planning, developing and delivering of public services we need to know the performance indicators, which define these service processes. The thesis aims to provide help for public service managers by connecting private and public service development theories and by providing a set of practical tools which can be used together to analyze service processes in order to understand and manage them better. The goal of the thesis is to offer an analogy by presenting how the selected methods and measures can be used generally to review processes whether we are speaking about an industrial, manufacturing or a public service if we use a holistical management approach.

The thesis aims to show how Hungarian public services can be examined comprehensively through two examples with a selected combination of analytical tools based on the international public service, and process management literature. The goal of the thesis is to recommend the application of these tools in public service development. The thesis present how these tools can be applied together to map and analyze public service processes, building on observations, interviews and available statistical data in order to identify and measure objective time-related key performance indicators. The results of the thesis can be useful for decision-makers and legalisators to evaluate service processes to gain deeper insights about the level of service quality and efficiency based on the analyzed data, using an industrial process management perspective.

The thesis aims to provide a cross-sectional picture of the actual service operation in case of the selected public services based on real data collected by observation, interviews and statistics. The thesis aims to show how these services are typically conducted, and to present how process mapping and analyzing can contribute to the better understanding of the selected processes, and thus result in the better delivery of public services.

The thesis analyze selected service processes from the Hungarian public services to show the way of service delivery from the point of view of the service provider and to show what are the most important service phenomenon which can describe the service characteristics and performance based on the available data. The thesis do not aim to give a complete picture about the national public service system, it only analyzes the selected types of services to gain insights

about service quality by emphasizing the importance of the used key performance indicators as they show how the customer perceives the examined services.

The thesis examines both simple and more complicated public services and to create a comprehensive picture of the service process of the selected public services. As an example, the thesis is using the front office operations of Government Windows and the Contact Affair Procedure of Guardianship Offices as examples of simple and more complex services. The thesis performs an international literature review to identify theoretical connections and objective key performance indicators, then performs a detailed statistical analysis to show how the data needed to measure the KPIs can be extracted from the available dataset. The thesis also applies service process mapping methodologies to map and visualize the selected service processes in order to create a comprehensive overlook.

Government Windows, as part of the Hungarian administrative reforms, were established almost a decade ago and serve as the main access point between the citizens and the state ever since (Buics, Süle, 2020). The thesis statistically analyze collected data (45234 records) from a Government Window and identify key performance indicators regarding service quality and excellence based on the related literature. The analyzed data contains the arrival times, waiting for times and processing times of citizens and their cases during the front office operations between 1st December 2016 and 31st November 2017. The processed data is not open source, it was provided by higher authorities and government window officials upon request during the KÖFOP project.

In a Contact Affair Procedure separated parents are involved to settle their differences with the help of the Guardianship Office administrator. The thesis presented and analyzed an individual case to show the complexity of this procedure as customers can submit several applications and appeals against previous decisions, which altogether can trigger the process multiple times. The processed data is not open source, it was provided by higher authorities and guardianship office administrators upon request during the KÖFOP project.

In case of the contact affair procedure, we collected both qualitative and quantitative data by making deep interviews with Guardianship Office administrators and by processing systematic information of individual contact affair procedures. We presented and analyzed an individual case in order to show the complexity of the process. According to Buics and Eisingerné Balassa (2020) due to legal restrictions, the administrators have 60 days to finish a process or they have to pay a fine. Partially because of this burden and because other service inefficiencies administrators are sometimes forced to exclude the involvement of outside parties from the process as waiting for their response could potentially lengthen the process beyond the deadline. Administrators generally consider this process very stressful as they have to manage multiple cases at the same time and especially because due to the dissatisfaction of the customers regarding the result they often submit applications to trigger the start of the process again, which can lead to the distortion of a family case for several months, even a year in extreme cases.

The intention of the thesis is to provide a new approach towards public service management by examining the special environment and components of these kinds of services from the point of view of process management and offering a set of management tools never used together before on Hungarian public services in order to analyze them and to increase their efficiency and effectiveness resulting in the increase of customer satisfaction as well.

The theoretical and methodological background of the thesis stands on three main pillars:

- Public service management theories and concepts (New Public Management, Neo-Weberian State, E-Government, E-Governance, Public Value, Co-Production, Co-Creation)
- Service process management and the importance of customer involvement in service processes (Servitization, Unified Services Theory, Process Management, Service Quality)

- Process analysis centered approach by using analytical service process management methods (Service Blueprinting, Business Process Modeling, Process-Chain Network, Discrete Event Simulation)

The thesis aims to examine how these selected public service processes could be servitized in order to make them more effective, efficient and customer centric both on a broader level (Government Window front office operations) and on a deeper more specialized level (Contact Affair Procedure). By using the same set of tools, the thesis aims to show the usefulness of the combined theoretical and methodological approach on both levels.

The thesis builds on the theory of Co-Production and Co-Creation in case of public service development and delivery presenting its importance whether we are speaking about a New Public Management or a Neo-Weberian State approach. After establishing the theoretical background, the thesis presents the methods used to model, analyze and evaluate public service processes:

- Service Blueprinting (Shostack, 1981a, 1981b, 1984, 1987; Kazemzadeh et al., 2015; Zeithaml et al., 2009; Fließ and Kleinaltenkamp, 2004) is based on the customer view and can be used to map and visualize the interactions between the service providers and service users to get a whole picture about a given service from the start to the end.
- Business Process Modeling (Ko, Lee & Lee, 2009; Recker, 2010, 2011) categorizes activities in a way to represent organizational responsibilities and communications between participant entities (especially customer and provider), organizational departments, systems, and roles, and has a higher capability to add additional information about concepts when it is needed.
- Process-Chain Network (Sampson 2011, 2012a, 2012b; Kazemzadeh et al., 2015) is another process visualizing method, which helps to identify and link actors of a given process in a systematic way. It has several similarities with service blueprinting but it differs from blueprinting in terms of line of visibility for example and has advantages in terms of representing the internal complexities of the processes
- Discrete Event Simulation (Zeigler et al., 2000; Bohács, 2012; Vuksic et al., 2017) The purpose of discrete event simulation is to analyze the behavior of a given system as it allows us to apply changes during experiments to see how the system reacts without affecting the real system.

## Research Questions and Research Gaps

The topic of the thesis is the service process analysis and development of public services with a special focus on selected public service processes. The units of analysis are within the Hungarian public administration system, more closely the front office operations of the Government Window system and a complex service process of Guardianship Offices called contact affair procedure. The thesis aims to use these selected service processes as examples to demonstrate the usefulness of the combined analytical methods and approaches.

The aim of the thesis is to find answers for the following research questions:

### **RQ-1: What are the relevant theories in public service management and how can it benefit from the industrial process management perspective?**

The first (2.1.) and second (2.2.) subchapters of the Literature review chapter are connected to research question one (RQ-1). The first subchapter (2.1.) addresses the public service theories and approaches providing an overview of important definitions and theories. The second subchapter (2.2.) addresses service process management concepts providing an overview of the importance of service quality and key performance indicator measurement.

**RQ-2: How does the current Hungarian public service system look like and how does it perform compared to other European Union countries?**

The third subchapter (2.3.) of the Literature review chapter is connected to research question two (RQ-2). This subchapter provides an overview of the Hungarian public service system, its development compared to other EU countries and discusses the background of the selected public service processes, which are analyzed later.

**RQ-3: What methods are suitable for the exploration and mapping of the structure and process of public services?**

The fourth subchapter (2.4.) of the Literature review chapter is connected to research question three (RQ-3). This subchapter provides an overview of the methods used to map, visualize and analyze the selected public services, providing details on process mapping methodologies and discrete event simulation, regarding advantages, disadvantages and applicability in public service context.

**RQ-4: How can the public service performance be measured? What performance indicators could best be used to describe the quality and performance of public services?**

The first (3.1.) and second (3.2.) subchapters of the Results chapter are connected to research question one (RQ-1). The first subchapter (3.1.) discusses the application of selected process mapping methodologies on Government Window front office operations, the statistical analysis of the collected data, and an example of the application of discrete event simulation based on the analyzed data by using the ProcessSim program. The processed data is not open source, it was provided by higher authorities and government window officials upon request during the KÖFOP project.

The second subchapter (3.2.) discusses the application of selected process mapping methodologies on the Contact Affair Procedure of Guardianship Offices, the statistical analysis of the collected data regarding a complex case with multiple sub-cases, and an example of the application of discrete event simulation based on the analyzed data by using the Plant Simulation program. The processed data is not open source, it was provided by higher authorities and guardianship office administrators upon request during the KÖFOP project.

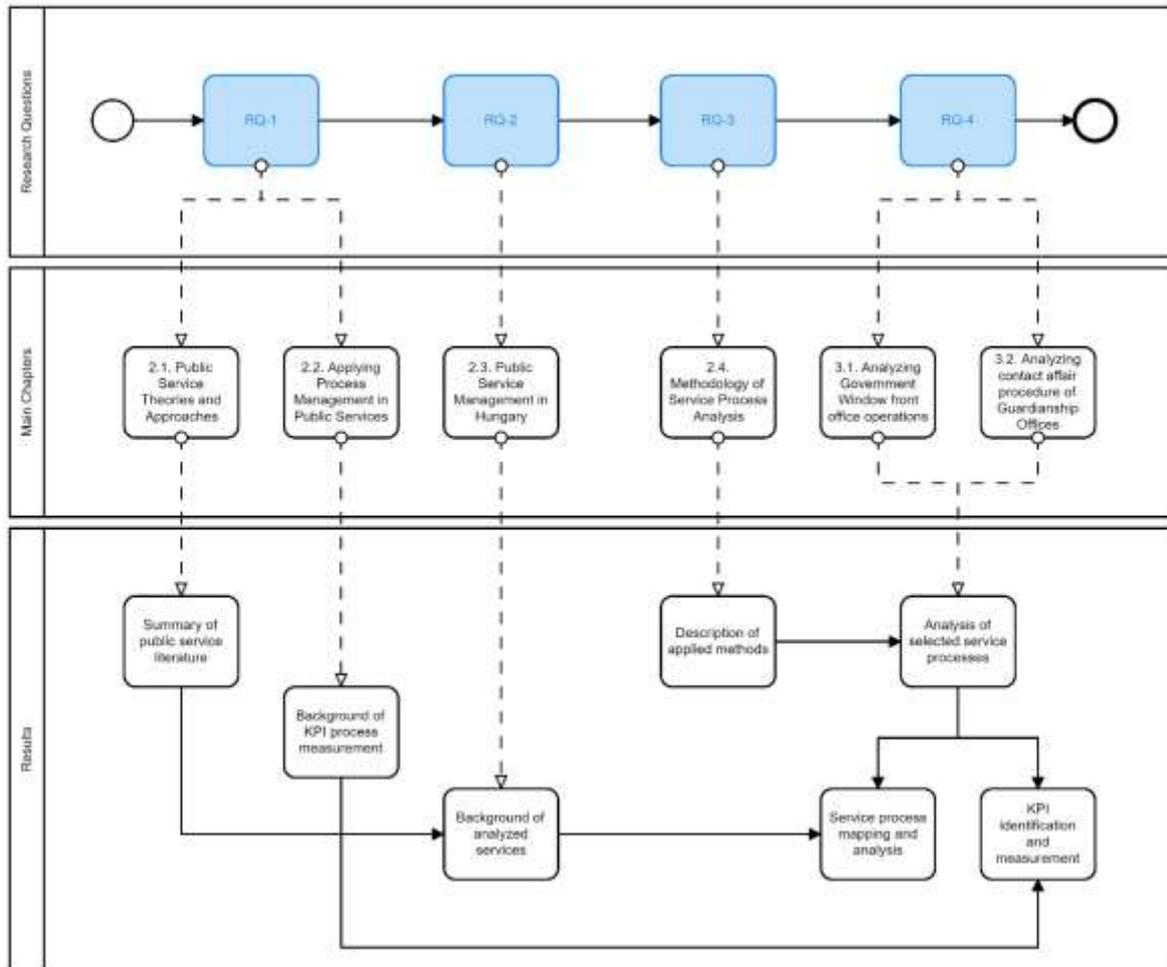


Figure 3: Research Questions and Main Chapters

Source: Author's own creation

Figure 3 shows the connections between the research questions, the main chapters of the dissertation and also the conceptual link between the results and each other.

The first research question (RQ-1) serves the goal to provide the theoretical framework for both the context of public service management and for the service process quality and performance measurement on a macro level. These both are serving as the background of the topic of the dissertation regarding the examined services and the applied methods.

The second research question (RQ-2) serves the goal to provide the details of the Hungarian public service system with a focus on the context of the selected service processes (Government Window front office operations, Contact Affair Procedure of Guardianship Offices) to show the major characteristics and environment of these service processes.

The third research question (RQ-3) serves the goal to provide the description of the methodologies, which are applied during the analysis of the selected service processes, and present how these methodologies can be connected and used in case of public services and why they are valuable in public service development.

The fourth research question (RQ-4) serves the goal to provide examples on the micro level by analyzing the selected public service processes, building on the topics of the previous research questions and connecting the results to each other. Collected data is analyzed both in case of Government Window front office operations and Contact Affair Procedure of Guardianship Offices do measure key performance indicators identified previously.

Findings of RQ-1 show that the current Hungarian public service system is built on the Neo-Weberian State concept, which emphasizes efficiency and effectiveness and for the successful service development co-production with the customers is vital, but due to the special context cooperation does not necessarily work which makes performance improvement especially difficult. However, performance of service processes can be measured in this context as well by applying key performance indicators well known in the private sector.

Findings of RQ-2 show the current structure of the Hungarian public service system itself, presenting the details necessary to understand the background and context of the later analyzed selected services. It also shows the current development level of the Hungarian public service delivery system compared to other EU countries, emphasizing on the importance of digitalization which is currently the major direction of service process development. Advantages and disadvantages of E-government are also discussed in details.

Findings of RQ-3 show how the used process mapping and simulation methods can be used together to uncover the important steps of service processes in order to find key points where development can be executed for example by the help of digitalization, building on the results and findings of research question two (RQ-2), in order to increase efficiency and effectiveness. Findings of RQ-4 show the application of the selected methodologies on the selected public service processes (Government Window front office operations and Contact Affair Procedure of Guardianship Offices) providing examples of how the collected data can be used to measure key performance indicators. The thesis presents results in case of simple and more complex service processes, building on the findings of both research question one (RQ-1), research question two (RQ-2) and research question three (RQ-3).

The thesis aims to contribute towards public service literature in several ways.

It is highly difficult to optimize these service processes, and analyze their elements. The NPM cannot provide practical solutions for this problem, so we have to find other methods and approaches. The theory of Co-Production and Co-Creation (Boyle & Harris 2009; Durose et al., 2013; Nambisan & Nambisan 2013; Osborne et al., 2013, 2016) gives us a practical way to plan and deliver public services, and by the application of servitization a unique approach can be used to involve new methods into the analysis and development of public services.

Servitization (Vandermerwe, Rada, 1988; Neely, 2009; Neely et al., 2011) can be defined as the innovation of an organization's capabilities and processes to better create mutual value. Numerous good examples show in different sectors including finance, transportation, manufacturing (Dachs et al., 2012) and in education (Arantes, 2020) how to create better service offerings that deliver value in use and increase customer satisfaction.

According to Sampson (2001) and Sampson and Froehle (2006) the Unified Services Theory states that services are made service by the significant contribution of customers to the "production" process. Customer input is a necessary and sufficient condition for defining a production process as a service process.

Customer satisfaction bears key importance in successful service delivery and in the public administration and management literature the theory of Co-Production aims to put more focus on customer involvement in service processes. According to Osborne et al. (2016), in this theory the focus is on the way of adding service user participation to the whole service process, and Nabatchi et al. (2017) defines co-production as the involvement of both users and public sector professionals in the delivery of public services.

First of all the thesis aims to link the process development approach of Servitization (Vandermerwe, Rada, 1988; Neely, 2008; Neely et al., 2011) with public services by using Unified Services Theory (Sampson, 2001, 2010) to generally define service processes and by connecting it with the theory of Co-Production (Ostrom, 1972; Alford, 2014; Osborne et al., 2016) from public service literature. These industrial and public service development and

delivery methodologies share the similar approach, which emphasizes both the importance of customer participation and the fact that customer participation is actually an inseparable part of the production and consumption of services.

Hood and Peters (2004) pointed out the importance managerialization of public service delivery and its effects regarding the approach of New Public Management. After the regime changing in Eastern European Countries the governments started to improve the public sectors according to the principles of the New Public Management model to change the public services as international literature provided many positive examples from developed western countries (Barberis, 1988; Kettl, 1995; O'Toole, 1997; Kaboolian, 1998; Terry, 1999; Lindquist, Paquet, 2000; Stark, 2002; Hood, Peters, 2004). However later the approach of NPM proved to be ineffective, sometimes even contradictive especially in case of Eastern European countries (Bouckaert et al., 2011; Drechsler & Randma-Liiv, 2014; Drechsler, 2005; Drechsler and Kattel, 2008; Hajnal, 2004; Nemec, 2010).

A critical trend called the Neo-Weberian State (NWS) emerged against NPM at the beginning of the 21st century (Frederickson, 1996; Pollitt, Bouckaert, 2004; 2011; Byrkjeflot et al., 2018). While NPM supports the concept of "small state", NWS supports the concept of a "strong state". The NWS approach seeks to strengthen the state and administration through regulation and the restoration of moral values. Nowadays the dominant approach in the public service sector is the Neo-Weberian model both in Hungary and in other Eastern European countries (Jenei, 2009; Drechsler, 2014; Hajnal et al., 2018). However, the efficiency in case of the use of resources, and customer focus and satisfaction are important aspects of the Neo-Weberian State approach as well (Torma, 2014).

Despite of this according to Nemec et al. (2019) while there are many research papers focused on Co-Production and Co-Creation in the international literature, few of these are coming from the Central and Eastern European region. Because of this, secondly, the thesis aims to contribute to literature by the application of Co-Production in the Hungarian public service context by the above mentioned way as the theoretical approach of Co-Production and Co-Creation were not applied before in Hungary during the close examination of public service processes and highlight the importance of customer and provider participation in the process. The thesis aims to help filling in this gap by focusing on selected public services, emphasizing how important is the role of public service employees in such service processes, as they are essential part of the service just as the customers themselves.

In the second part, the thesis uses three service process mapping methodologies, Service Blueprinting, Business Process Modeling and Process-Chain Network to examine, map and visualize public service processes. These methods are commonly used in international literature and there are several examples of using them specifically in public service literature as well regarding Western European countries.

However, these methods, except the proposal of the Electronical Administrative Supervision of Hungary, which highlights the advantages of BPM and marks it as a suitable tool for potential public service development, there were not applied before in Hungary to map, visualize and analyze public service processes in order to increase efficiency and effectiveness. Hence, thirdly, the thesis aims to contribute to literature by the application of these methodologies in a Hungarian context, both to reflect on the previous proposal of the Electronical Administrative Supervision of Hungary, and to provide detailed information about Hungarian public service processes, which could be used to create comparisons with other countries' public services, which bear similar purposes.

Building on the theoretical background and analytical methodologies the thesis aims to examine the front office operations of Government Windows more closely on an every-day level, create a comprehensive picture and identify key performance indicators regarding service quality and excellence based on the related literature. As part of the Hungarian administrative reforms,

these service centers were established almost a decade ago and serve as the main access point between the citizens and the state ever since. The analyzed data contains the arrival times, waiting for times and processing times of citizens and their cases during the front office operations between 1st December 2016 and 31st November 2017.

While numerous articles and books discuss the details and effectiveness of the different levels of the newly reformed Hungarian administration system, only a few of them offer an inside (statistical) look into the daily operations of a Government Windows, based on time-related numerical data. Therefore, the thesis aims to contribute to the literature by analyzing the front office operations of Government Windows from this point of view and provide statistical details. Besides this, so far there was no detailed statistical and service process analysis in case of the contact affair procedure of Guardianship Offices, therefore the thesis also aims to contribute to the literature by analyzing this complicated public service in details.

The goal of the thesis is to identify objective key performance indicators and to demonstrate how these KPIs can be measured in a public service context nevertheless of the type and complexity of the given service. The thesis aims to contribute to the literature by applying these performance measurement indicators to public service processes, which bear different characteristics and complexity. The thesis presents how these commonly used KPIs can be measured in different conditions to provide valuable insights about these service processes, which can be used by legalisators to adjust the services in order to increase efficiency and effectiveness.

The thesis also aims to contribute to literature by applying discrete event simulation in public service context to further analyze the selected public service processes and to provide additional details regarding key performance measures. According to literature, there are a few examples in the Eastern-European literature of applying discrete event simulation to public services (Devjak, Peček, 2012; Kovačič, Peček, 2007; Comas et al., 2008), however this thesis is the first, which applies this approach in a Hungarian context in case of the selected and discussed public service processes.

## **Conclusion**

Nowadays there are significant changes in the public sector. Due to the fact that customers have higher expectations of more flexible and faster services, there is an increasing pressure on governments who want to improve public services, and on service administrators as well to perform on a higher level of efficiency and effectiveness every day.

The thesis aims to show how Hungarian public services can be examined comprehensively through two examples with a selected combination of analytical tools based on the international public service, and process management literature. The goal of the thesis is to recommend the application of these tools in public service development. The thesis present how these tools can be applied together to map and analyze public service processes, building on observations, interviews and available statistical data in order to identify and measure objective time-related key performance indicators. The results of the thesis can be useful for decision-makers and legalisators to evaluate service processes to gain deeper insights about the level of service quality and efficiency based on the analyzed data, using an industrial process management perspective.

The thesis analyzes selected service processes from the Hungarian public services to show the way of service delivery from the point of view of the service provider and to show what are the most important service phenomenon which can describe the service characteristics and performance based on the available data. The thesis does not aim to give a complete picture about the national public service system, it only analyzes the selected types of services to gain insights about service quality by emphasizing the importance of the used key performance indicators as they show how the customer perceives the examined services.

The thesis aims to provide a cross-sectional picture of the actual service operation in case of the selected public services based on real data collected by observation, interviews and statistics. The thesis aims to show how these services are typically conducted, and to present how process mapping and analyzing can contribute to the better understanding of the selected processes, and thus result in the better delivery of public services.

The units of analysis are within the Hungarian public administration system, more closely the front office operations of the Government Window system and a complex service process of Guardianship Offices called contact affair procedure. The thesis aims to use these selected service processes as examples to demonstrate the usefulness of the combined analytical methods and approaches.

**The answer to the first research question (RQ-1) regarding what are the relevant theories in public service management and how can it benefit from the industrial process management perspective is as follows.**

The first research question (RQ-1) serves the goal to provide the theoretical framework for both the context of public service management and for the service process quality and performance measurement on a macro level. These both are serving as the background of the topic of the dissertation regarding the examined services and the applied methods.

The first (2.1.) and second (2.2.) subchapters of the Literature review chapter are connected to research question one (RQ-1). The first subchapter (2.1.) addresses the public service theories and approaches providing an overview of important definitions and theories. The second subchapter (2.2.) addresses service process management concepts providing an overview of the importance of service quality and key performance indicator measurement.

The quality of service delivery is critical for both the government and the citizens. Because of this, most governments struggle to respond to present day needs driven by complex challenges. Findings of RQ-1 show that the current Hungarian public service system is built on the Neo-Weberian State concept, which emphasizes efficiency and effectiveness and for the successful service development co-production with the customers is vital, but due to the special context cooperation does not necessarily work which makes performance improvement especially difficult. However, performance of service processes can be measured in this context as well by applying key performance indicators well known in the private sector.

According to the literature in the last decades three major theories emerged, the New Public Management, The Neo-Weberian State approach and the New Public Governance model.

The New Public Management model was based on the efficiency-oriented business model of the private sector, it emphasizes neoliberal values and puts the market, the creation of a competitive situation, the suppression of direct state intervention at the center of public service management. Among the guiding values are consumer focus, competition between public service providers, which enables consumers to make decisions, the need for performance management of public service organizations, and service and result focus based on consumer satisfaction. The approach of New Public Management was a quite popular theory with numerous positive examples, however it proved to be ineffective, sometimes even contradictory especially in case of Eastern European as NPM was not able to provide practical solutions for the problem of assessing and improving public service processes.

In response to the failures of New Public Management a trend called the Neo-Weberian State (NWS) emerged against NPM at the beginning of the 21st century. While NPM supports the concept of “small/minimal state”, NWS supports the concept of a strong state, emphasizes the renewal of traditional bureaucratic values and puts the state at the center. The NWS approach seeks to strengthen the state and administration through regulation and the restoration of moral values. The NWS model treats the principles of efficiency and the operation of a citizen- and customer-friendly administration as a key aspect in the use of financial resources for the

performance of community tasks. Based on the above, the Hungarian public administration reform, the structural transformation of the institutional system, the highly centralized apparatus, and the concept of the service state, customer-centered public administration appearing in the Magyary Program and the Public Administration Development Strategy are most in line with the Neo-Weberian approach.

The governance models following the New Governance model approached public administration based on values and participation. Regarding these approaches besides the values of economy, effectiveness, efficiency, equity, and environment controllers, we usually talk about co-creation, co-design, co-production, collaboration in service delivery, and co – responsibility. In governance models, the service culture remains as a value, but the design, organization, production, and delivery of public services itself emerges as a result of cross-sectoral collaboration.

According to the literature, we can find the approach of Co-production in New Public Management as consumerism, it can be also found in the literature of New Public Governance as well as a system level approach to public service delivery methods. In case of the Neo-Weberian State as well as the focus on customer participation and efficiency regarding the use of resources.

Co-Production is defined as the voluntary or involuntary involvement of public service users in the design, management, delivery and/or evaluation of public services, thus co-production is an intrinsic process of interaction between service providers and users when the service delivery happens. Overall, the theory of Co-Production gives us a practical way to plan and deliver public services with focus on the process steps and its participants. According to Nemec et al. (2019) while there are many research papers focused on co-production and co-creation in the international literature, few of these are coming from the Central and Eastern European region. Because of this, secondly, the thesis aims to contribute to literature by the application of Co-Production in the Hungarian public service context by the above mentioned way as the theoretical approach of Co-Production and Co-Creation were not applied before in Hungary during the close examination of public service processes and highlight the importance of customer and provider participation in the process. The thesis aims to help filling in this gap by focusing on selected public services, emphasizing how important is the role of public service employees in such service processes, as they are essential part of the service just as the customers themselves.

The customer satisfaction depends greatly on the level of the service and the quality of the product and the private companies do everything they can to acquire information about citizens needs in order to convert these expressed needs into new kind of products, shorter lead times, increased service levels. While the governments are trying to meet the growing expectations of the citizens, the relations between the citizen and the public institution become more and more complex and they have mutual influence on each other.

Servitization generally means developing innovative capabilities that could complement and enhance product offerings in the industrial context, however based on the literature this approach can be applied in the public service context as well by using Unified Services Theory as a bridge to generally define service processes and in order to connect servitization with the theory of Co-Production. These industrial and public service development and delivery methodologies share the similar approach, which emphasizes both the importance of customer participation and the fact that customer participation is actually an inseparable part of the production and consumption of services. According to the Unified Services Theory customer input is a necessary and sufficient condition for defining a production process as a service process. A very important part of the servitization concept is that it treats people (providers and customers) as essential parts of the service providing process because their needs and feedbacks shape the creation process in order to improve the performance and profitability of a company.

By using the theory of Co-Production to examine a public service process and its steps and participants and combining it with a servitization approach public services can be seen from a new angle. In case of complicated public services where administrators are an inseparable part of the process, their feedback and experience can be used from the inside to map and analyze the process and find improvement possibilities.

In the private sector, companies are often use key performance indicators as a tool to measure the performance of individual processes or whole departments, with their help they can determine whether they meet with the expectations, perform above the expectations or they fail to meet with the expectations, which require intervention to deal with the consequences. As the demand for quality services is increasing from the citizens the performance measurement also becoming a hot debate in public sector as well, because a performance management system positively influences positively both the organizational behavior, the organizational efficiency and the organizational effectiveness.

KPIs are useful to measure the organization performance not only for private sector companies but also in the public sector. KPIs can ensure the effective and transparent service delivery by setting appropriate targets thus helping public institutions to meet with customer demands. With their help, we can measure efficiency in terms of how fast and accurate is the service provided and delivered to customers by using objective measures like waiting time, process duration time and lead time.

Each of the discussed public service theories and approaches, the New Public Management, the Neo-Weberian State and the theory of Co-Production and Co-Creation strengths and limitations, advantages and disadvantages. Depending on the development level, economic environment, community attitude and authorial arrangement not every country is suited for every approach. As we seen, the New Public Management was flourishing in developed western countries but other countries like Hungary were unable to adapt it to the local conditions right after the regime change. However nevertheless of the concept of the system level approach of a country as technology evolves and the customers' need is growing for better, faster, more efficient and more comfortable service delivery. In order to develop and provide these services governments have to address the need of citizens on a new, immediate level, which can only be achieved by applying the principles of Co-Production in service development.

In order to create more effective and efficient services, better tailored to the needs of citizens, the first step should be always to thoroughly examine the existing processes in order to be able to determine what should be changed to achieve the development goals. In this process measuring service characteristics with the help of key performance indicators are vital. Private businesses are well aware of the importance of performance measurement because fulfilling customer needs is the only way of survival on the market. While in case of public services in most cases there are no competitors, the way of service delivery is also should be important for governments, because a better-developed service process could also save costs, resources, work force and eliminate administrative burdens hindering the system. Because of this key performance indicator measurement is also very important in case of public service management as well.

**The answer to the second research question (RQ-2) regarding how does the current Hungarian public service system look like and how does it perform compared to other European Union countries is as follows.**

The second research question (RQ-2) serves the goal to provide the details of the Hungarian public service system with a focus on the context of the selected service processes (Government Window front office operations, Contact Affair Procedure of Guardianship Offices) to show the major characteristics and environment of these service processes.

The third subchapter (2.3.) of the Literature review chapter is connected to research question two (RQ-2). This subchapter provides an overview of the Hungarian public service system, its development compared to other EU countries and discusses the background of the selected public service processes, which are analyzed later.

Findings of RQ-2 show the current structure of the Hungarian public service system itself, presenting the details necessary to understand the background and context of the later analyzed selected services. It also shows the current development level of the Hungarian public service delivery system compared to other EU countries, emphasizing on the importance of digitalization, which is currently the major direction of service process development. Advantages and disadvantages of E-government are also discussed in details.

In 2010 and before, the middle level of the Hungarian public administration system was fragmented, in which the realization of organizational integration was hindered. One of the first steps of the public administration reform was organizational integration, in the framework of which the government offices of the capital and the counties were established, laying the foundations for the transformation of the public administration system.

Organizations with county-level competencies have been formed from the former regional state administration offices, into which the individual territorial administrative bodies have been integrated. The county government offices thus established have become the highest-level organizational units of the central administration organized on a territorial basis.

The district offices were established as general, first-instance authorities and organizational units of the capital and county government offices. The aim of the state was to create districts of the modern age that would contribute to the creation of a system with a lower social cost than the previously existed administrative system. With the comprehensive transformation of the public administration, the modern districts were established as the lowest territorial level of the public administration, which can thus provide the vast majority of public administration activities and services in close proximity and high quality to all Hungarian citizens.

The government has also decided on the tasks to be transferred to the district offices. The most important task of the district offices is to perform administrative public administration tasks at a lower level than the county level. The district offices took over mainly document office tasks, child protection and guardianship matters, as well as the administration of certain social, environmental and nature conservation administrative matters from the municipalities. The majority of cases referred to the district office are document office tasks, such as personal data and address registration, passport administration and vehicle administration. These administrative services are provided by the Government Window System, which is a separate department of each district office, and operate as One-Stop Shop service centers. One-Stop Shops (OSS) were first established in the 1980s, typically in the Anglo-Saxon countries.

The aim of the wave of reforms launched within the framework of the Zoltán Magyary Public Administration Development Program (Magyary Program) was to establish a customer-centric service operation that takes into account the needs and interests of customers. In the Magyary Program, the legislators set the goal of simplifying procedures, reducing customer burdens and creating uniformly high-quality services accessible to all citizens. In order to raise the standard of public services, a multi-channel government customer service system was created through the establishment of one-stop shops, the so-called Government Windows.

The creation of Government Windows introduced the One-Stop Shop model into the Hungarian public administration, which already exists as a common administrative solution in several countries. The essence of the system is that customers can settle several cases at the same time at one point of administration, in the case of a more complex procedure; they can initiate the procedure or receive information. Since then Government Windows are the customer service offices of the county government offices and district offices that form the backbone of the

territorial administration, where citizens can handle, initiate and receive information on the progress of many administrative procedures.

However while there are a lot of available at a single place the digitalization and developing E-Governmental solutions are also becoming more and more important for customers. The concept of E-Government focuses on the use of information and communication technologies as a tool to achieve a better working government and it tries to optimize service delivery, constituency participation and governance by transforming internal and external relationships through technology. In electronic government systems, government operations are supported by web-based services. It involves the use of information technology, specifically the Internet, to facilitate the communication between the government and its citizens. The customer satisfaction depends greatly on the level of the service quality. Due to the complexity of digitalization and the specificities of public administration, these types of developments pose a huge and complex challenge for countries. At the same time, the ever-changing needs of citizens are forcing their administrations to constantly innovate.

In the European Union the Digital Economy and Society Index (DESI) is a practical online tool to measure the achievements of the EU Member States in building a digital economy and society. With DESI, European Union member states have the opportunity to identify the areas where further development needed to achieve the main objectives of the Union.

According to the conducted research in the thesis based on the data of the 2019 Digital Economy and Social Index, Hungary still lags significantly behind. Within the European Union, Hungary is the 23rd (out of 27) in the case of the composite index, and the most challenging area remains digital public service development. As it can be clearly seen from the data, Hungary is at a disadvantage in the field of electronic public services compared to most countries of the European Union according to the DESI indicator. In the case of the composite index, the position worsened from 23rd to 24th since 2014, while in the case of the digital public services subdimension it is currently 26th compared to the initial 22nd place, but the trend also shows a very slow improvement.

Adopting the concept of One-Stop Shop was one of the most important changes during the development of administrative public service delivery. Making all kind of services available under a single roof was a major step in creating a more efficient service delivery and accessibility for the citizens. However as seen according to the DESI indicator Hungary still lags behind most of the EU member countries because the next level of service development, the digitalization of public services still needs to be achieved. While now many services are available at one place, many of them have the same kind of process as before the OSS creation, meaning that the services themselves did not change too much. Of course there are several efforts to enhance digitalization levels of selected services, but as the international comparison shows, Hungary has still a long road ahead compared for example to Estonia, which is considered one of the most developed EU countries regarding digital public service availability, as it developed a digital OSS for its public services during the last decade. However, we must not forget that development of digital services also requires the population to be able to access these services on a large enough scale in order to become economically viable the development itself.

**The answer to the third research question (RQ-3) regarding what methods are suitable for the exploration and mapping of the structure and process of public services is as follows.**

The third research question (RQ-3) serves the goal to provide the description of the methodologies, which are applied during the analysis of the selected service processes, and present how these methodologies can be connected and used in case of public services and why they are valuable in public service development.

The fourth subchapter (2.4.) of the Literature review chapter is connected to research question three (RQ-3). This subchapter provides an overview of the methods used to map, visualize and analyze the selected public services, providing details on process mapping methodologies and discrete event simulation, regarding advantages, disadvantages and applicability in public service context.

Findings of RQ-3 show how the used process mapping and simulation methods can be used together to uncover the important steps of service processes in order to find key points where development can be executed for example by the help of digitalization, building on the results and findings of research question two (RQ-2), in order to increase efficiency and effectiveness. There is a sophisticated and extensive toolkit for designing, managing and measuring industrial processes, which is constantly expanding and striving to meet the new possibilities as a result of the almost limitless amount of data offered by the digitalizing industrial environment. Services, on the other hand, are managed under harsher conditions, both in terms of expectations and measurability, and in terms of the modeling techniques used for them.

In the second part, the thesis uses three service process mapping methodologies, Service Blueprinting, Business Process Modeling and Process-Chain Network to examine, map and visualize public service processes. These methods are commonly used in international literature and there are several examples of using them specifically in public service literature as well regarding Western European countries.

However, these methods, except the proposal of the Electronical Administrative Supervision of Hungary, which highlights the advantages of BPM and marks it as a suitable tool for potential public service development, there were not applied before in Hungary to map, visualize and analyze public service processes in order to increase efficiency and effectiveness. Hence, the thesis aims to contribute to literature by the application of these methodologies in a Hungarian context, both to reflect on the previous proposal of the Electronical Administrative Supervision of Hungary, and to provide detailed information about Hungarian public service processes, which could be used to create comparisons with other countries' public services, which bear similar purposes.

Service Blueprinting is based on the customer view and can be used to map and visualize the interactions between the service providers and service users to get a whole picture about a given service from the start to the end. Business Process Modeling categorizes activities in a way to represent organizational responsibilities and communications between participant entities (especially customer and provider), organizational departments, systems, and roles, and has a higher capability than PCN to add additional information about concepts when it is needed.

Process-Chain Network is another process visualizing method, which helps to identify and link actors of a given process in a systematic way. It has several similarities with service blueprinting but it differs from blueprinting in terms of line of visibility for example and has advantages in terms of representing the internal complexities of the processes. PCN differentiates between process steps based on their nature of interaction to understand how the provider can reconfigure process steps across each process region and improve the performance of service processes.

The thesis also aims to contribute to literature by applying discrete event simulation in public service context to further analyze the selected public service processes and to provide additional details regarding key performance measures. According to literature, there are a few examples in the Eastern-European literature of applying discrete event simulation to public services, however this thesis is the first, which applies this approach in a Hungarian context in case of the selected, and discussed public service processes. The purpose of discrete event simulation is to analyze the behavior of a given system as it allows us to apply changes during experiments to see how the system reacts without affecting the real system.

These methodologies offer insights regarding the service processes from the aspects of both the service provider and the user side. The aim of the research was to show what are the advantages regarding their most important characteristics and the method of usage of the discussed modeling methodologies. The goal of the thesis was to offer an analogy by presenting how the selected methods can be used generally to review processes whether we are speaking about an industrial, manufacturing or a public service if we use a holistic management approach.

Service visualization and mapping are very important parts of service process analysis, it helps to understand the connections between the service steps and helps to unravel aspects of key importance. The discussed methodologies help to examine service processes from different angles, allowing to study them from both the point of view of the facilitators and the customers. Once we understand a process, we can better measure its characteristics and performance, which ultimately helps to achieve better development opportunities. Simulation on the other hand can help in the analysis and in the development process as well, offering various possibilities to predict process behavior and to test different kind of development possibilities in order to find the best solution, without affecting the real process.

**The answer to the fourth research question (RQ-4) regarding how can the public service performance be measured and what performance indicators could best be used to describe the quality and performance of public services is as follows.**

The fourth research question (RQ-4) serves the goal to provide examples on the micro level by analyzing the selected public service processes, building on the topics of the previous research questions and connecting the results to each other. Collected data is analyzed both in case of Government Window front office operations and Contact Affair Procedure of Guardianship Offices do measure key performance indicators identified previously.

The first (3.1.) and second (3.2.) subchapters of the Results chapter are connected to research question one (RQ-1). The first subchapter (3.1.) discusses the application of selected process mapping methodologies on Government Window front office operations, the statistical analysis of the collected data, and an example of the application of discrete event simulation based on the analyzed data by using the ProcessSim program. The processed data is not open source, it was provided by higher authorities and government window officials upon request during the KÖFOP project.

The second subchapter (3.2.) discusses the application of selected process mapping methodologies on the Contact Affair Procedure of Guardianship Offices, the statistical analysis of the collected data regarding a complex case with multiple sub-cases, and an example of the application of discrete event simulation based on the analyzed data by using the Plant Simulation program. The processed data is not open source, it was provided by higher authorities and guardianship office administrators upon request during the KÖFOP project.

Findings of RQ-4 show the application of the selected methodologies on the selected public service processes (Government Window front office operations and Contact Affair Procedure of Guardianship Offices) providing examples of how the collected data can be used to measure key performance indicators. The thesis presents results in case of simple and more complex service processes, building on the findings of both research question one (RQ-1), research question two (RQ-2) and research question three (RQ-3).

Building on the theoretical background and analytical methodologies the thesis aims to examine the front office operations of Government Windows more closely on an every-day level, create a comprehensive picture and identify key performance indicators regarding service quality and excellence based on the related literature. As part of the Hungarian administrative reforms, these service centers were established almost a decade ago and serve as the main access point between the citizens and the state ever since.

While numerous articles and books discuss the details and effectiveness of the different levels of the newly reformed Hungarian administration system, only a few of them offer an inside (statistical) look into the daily operations of a Government Windows, based on time-related numerical data. Therefore, the thesis aims to contribute to the literature by analyzing the front office operations of Government Windows from this point of view and provide statistical details. Besides this, so far there was no detailed statistical and service process analysis in case of the contact affair procedure of Guardianship Offices, therefore the thesis also aims to contribute to the literature by analyzing this complicated public service in details.

In case of the front office operations of Government Windows the analyzed data contains the arrival times, waiting for times and processing times of citizens and their cases during the front office operations between 1st December 2016 and 31st November 2017. In case of the contact affair procedure of Guardianship Offices the data was collected in the Guardianship Office in Győr (Hungary), during the data collection process deep interviews were conducted, and administrators were asked to provide statistical information about contact affair cases.

The goal of the thesis was to identify objective key performance indicators and to demonstrate how these KPIs can be measured in a public service context nevertheless of the type and complexity of the given service. The thesis aims to contribute to the literature by applying these performance measurement indicators to public service processes, which bear different characteristics and complexity. The thesis presents how these commonly used KPIs can be measured in different conditions to provide valuable insights about these service processes, which can be used by legalisators to adjust the services in order to increase efficiency and effectiveness. The literature identifies several time performance indicators regarding business process models, which were frequently used by scholars in their research such as throughput, waiting time, process duration time and lead time.

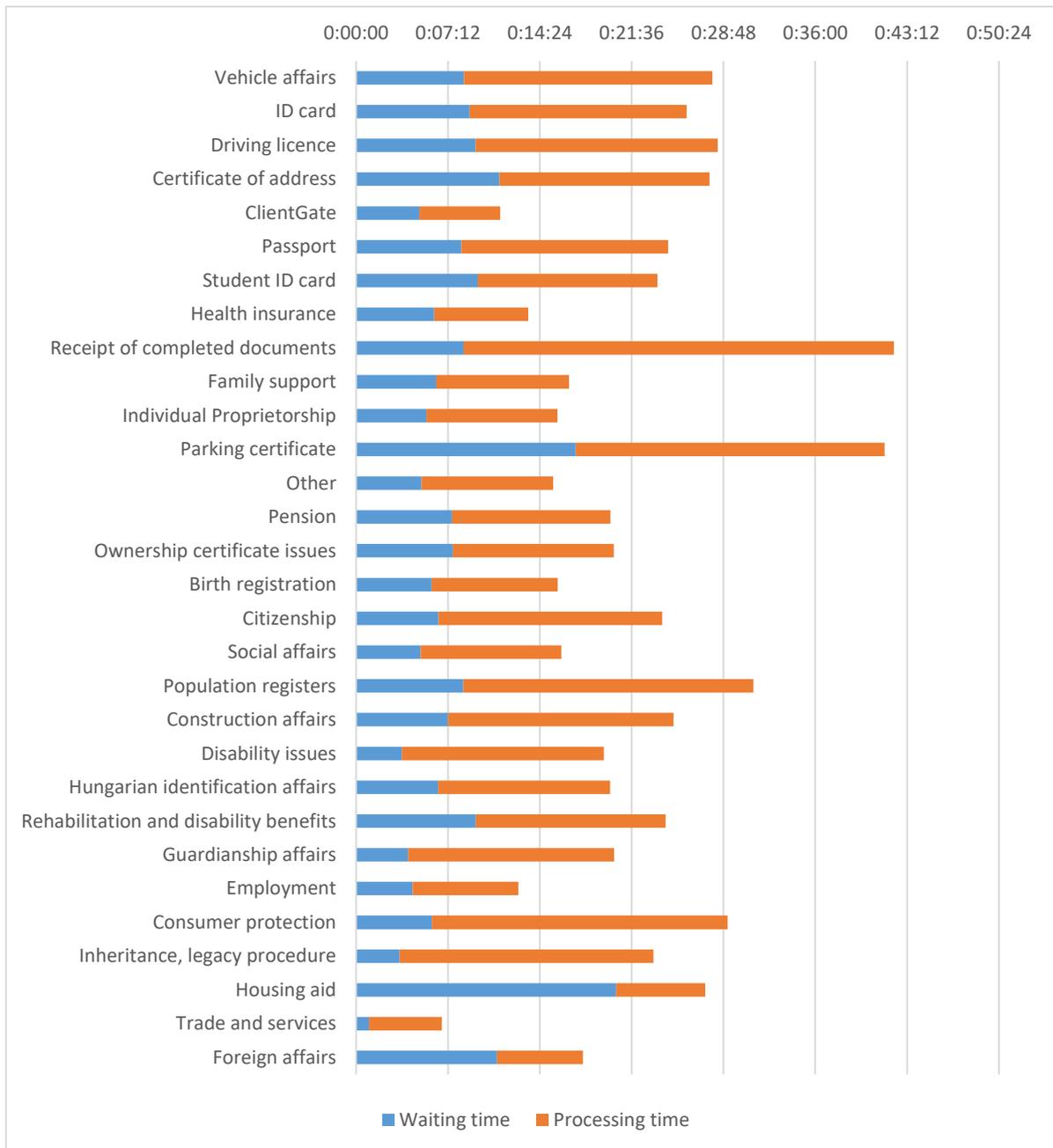


Figure 4: Lead time statistics of all case types

Source: Author's own creation

Through Government Windows citizens can access a wide variety of public services. Amongst the more than two thousand individual services, there are four main types of public service categories, which can be clearly distinguished from the others. Services related to personal identification documents (passport renewal, ID cards, etc.), services related to social issues (social security card issuing, application for family support, etc.), services related to taxation and services related to car issues. According to the literature, the personal identification document related services are the most frequently used while the social issue related services are the second biggest group of frequently used services.

During the process of front office operations, the flow unit is the demand or transaction represented by the citizen. These transactions are automatically recorded after the service is requested at the ticket machine. However because the system is not uniform depending on the

Government Window the dataset can be different in terms of details making the data extraction harder if we want to compare different service centers with each other.

From the dataset, the research identified thirty individual case categories, calculated the daily and monthly amount of records, the distribution of case categories, the average throughput per hour, and identified the most common case types. After that, by using the previously identified performance metrics, the values of key performance indicators like waiting times, processing times and lead times of each record were calculated in case of each case types.

The process of contact affair procedure has a more complex design compared to other public service types. The thesis is interested in finding new ways to examine these intricate public service processes, which were not analyzed before with process modeling approaches. By applying these methods on complex public services we are able to capture insights based on subjective perception and weaknesses in the process can be clearly identified.

The contact affair procedure of Guardianship Offices differ from the front office operations of Government Windows several ways. The first significant difference is the repeatability of this process during a single case, which is the main reason behind the complexity of this process. An individual case starts with the first submitted application but during the process the parties can submit new applications continuously as well thus several iterations of the process can run simultaneously within a single case. The case will be only closed if there are no more submissions and the decision for the last submission was made. These characteristics can make the contact affair procedure significantly longer and more complex and the administrators have to handle multiple cases at the same time.

The other main difference is that while in case of the front office operations of Government Windows we had a large and structured dataset containing the necessary information regarding time in case of the contact affair procedure there is no structured dataset, which could be used for simple data extraction. In this case, only their case numbers and their sub-numbers can identify the individual cases. Each application submission has a time stamp but as there is no structured central dataset with the necessary details, in each case we had to as the administrators to extract and create the raw dataset by hand.

The thesis analyzed an individual case in order to extract valuable data regarding the processing times of each step in order to see how long the individual iterations of this case were. The most complex case were chosen which had a sub-number of 133. There were 22 process iterations in this case and the whole process took 249 days to end.

In case of these types of public service, the employee's experience can contribute to enhancing the service due its complex nature and the customers involved. The sensitive nature of the cases and representing the best interests of the children place a heavy burden on the administrators involved who deal with personal relationships. Each decision can fundamentally change an individual's or the whole family's life. These types of decisions require highly qualified, professional, knowledgeable administrators in a greater number on a daily basis.

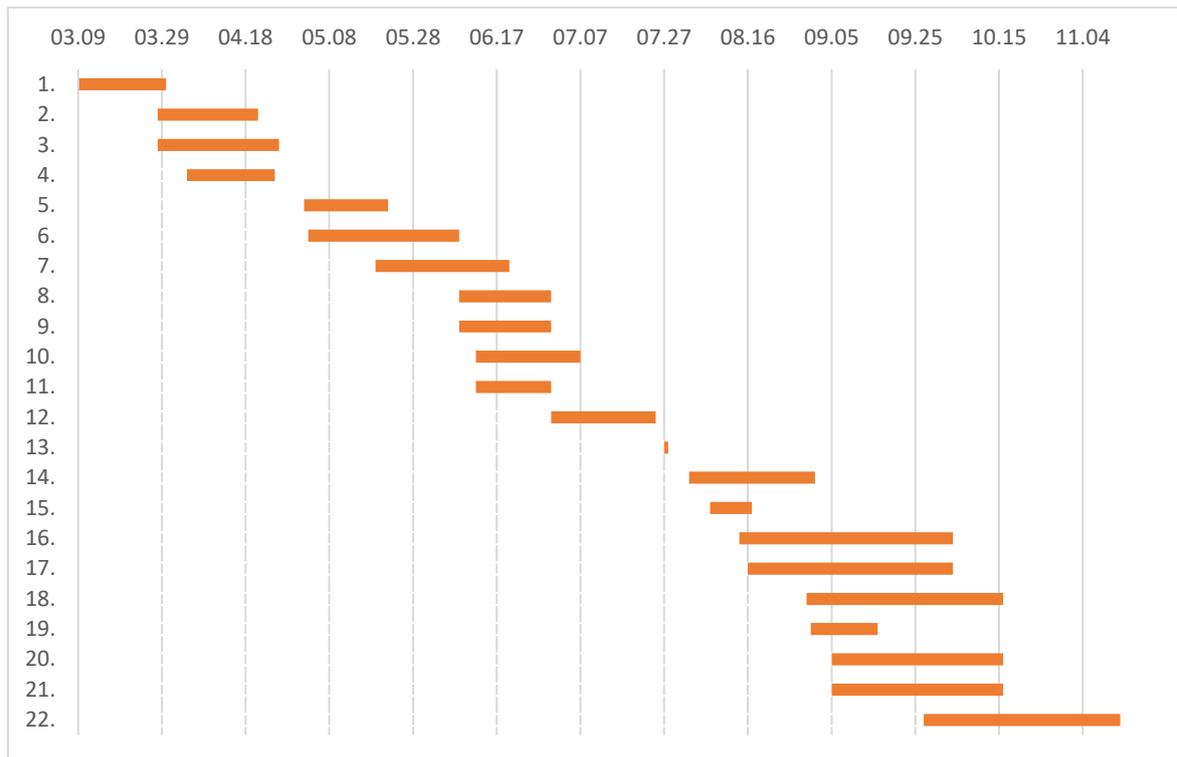


Figure 5: Gantt chart of the example case from the start of the first iteration until the end of the last iteration

Source: Author's own creation

We could see that contact affairs are very complex and lengthy processes. Due to legal restrictions, the administrators have 60 days to finish a process or they have to pay a fine. Partially because of this burden and because other service inefficiencies administrators are sometimes forced to exclude the involvement of outside parties from the process as waiting for their response could potentially lengthen the process beyond the deadline. Administrators generally consider this process very stressful as they have to manage multiple cases at the same time and especially because due to the dissatisfaction of the customers regarding the result they often submit applications to trigger the start of the process again, which can lead to the distortion of a family case for several months, even a year in extreme cases.

For the process analysis and simulation the research used the Plant simulation software based on a case study, selecting the most complicated example. As we could see according to the simulation model of the service process it takes longer time to finish than the allowed timeframe, which corresponds, with the collected data and experience of the Guardianship Office administrators. As we saw by analyzing the model it is clear that the time factor of the procedure is not indicated at all, furthermore, those procedural elements, which may repeat or induce further delay in the procedure are also not indicated. For example, we do not see that the different parties have to be summoned during the procedure, which may take a long time due to the complexity of posting and notification. It may increase the duration of the procedure by up to two weeks.

This situation can deeply affect the quality, efficiency and effectiveness of these processes as administrators are forced to shorten the process in some cases to save time which overall affects customer satisfaction as well. Our research is the first which provided real proof in case of the contact affair procedure that reality defies regulations thus steps should be made to reevaluate the process regulation in details and find ways to improve efficiency and effectiveness.

The purpose of the thesis was to approach Hungarian public services from a managerial angle, focusing on service process management with the help industrial approaches, by offering a combination of practical tools for analysis of both simple and more complicated public services, in order to improve the efficiency and effectiveness of public service delivery, thus affecting customer satisfaction positively. The thesis showed how Hungarian public services can be examined comprehensively through two examples with the selected combination of analytical tools based on the international public service, and private service process management literature. The goal of the thesis is to recommend the application of these tools in public service development by presenting how these tools can be applied together to map and analyze public service processes, building on observations, interviews and available statistical data in order to identify and measure objective time-related key performance indicators. The results of the thesis can be useful for decision-makers and legalisators to evaluate service processes to gain deeper insights about the level of service quality and efficiency based on the analyzed data, using an industrial process management perspective.

### List of publications related to the dissertation

During the writing of the dissertation based on the conducted research several papers were submitted and published by the author regarding the discussed topics. The following table contains the summary of these articles.

<b>Article</b>	<b>Status</b>	<b>Type</b>	<b>Methodology</b>	<b>Main contribution</b>
<b>The role of logistics management in public services</b>	Published	Conference paper published in International Journal of Engineering and Management Sciences	Short literature review on New Public Management, Logistics and Unified Services Theory	Discusses the usefulness of a logistical approach in public service development
<b>Improving “customer” satisfaction in public services with the help of information logistics</b>	Published	Conference paper published in Kautz Gyula conference proceedings	Short literature review on public service and digitalization	Discusses the importance of digitalization in public service development
<b>A szolgáltató állam szervezetének kialakulása</b>	Published	Book chapter published in Szolgáltatás- és folyamatmenedzsment a közigazgatásban book	Literature review on the development of the current centralized Hungarian public service system	Gives an overview on Hungarian public service development goals and results regarding District offices and

				Government Windows
<b>A járási gyámhivatalok fennhatósága alá tartozó Család-és Gyermekjóléti Központ működése</b>	Published	Case study published in the case study collection of Szolgáltatás- és folyamatmenedzsment a közigazgatásban book	Case study based on interviews about the processes of Guardianship Offices and child protection services	Summarizes the legal background and main types of service processes provided by these service centers
<b>Számítógépes, szimulációs esettanulmányok</b>	Published	Monography which is related to the Szolgáltatás- és folyamatmenedzsment a közigazgatásban book	Description of a simulation software (ProcessSim) designed for service center process simulations with examples	Introduction of process simulation in public service environment regarding Government Window operations
<b>The importance of digital public service development from the companies' point of view</b>	Published	Conference paper published in Law 4.0. conference proceedings	Literature review on Hungarian and EU programs regarding the development of digital public services	Discusses the advantages of public services which are accessible not just manually but also at least partially digitally
<b>Magyarország közszolgáltatásainak digitalizációja a DESI mutató tükrében</b>	Accepted for publication	Article accepted for publication in an EFOP study book	Comparison of EU member countries based on the DESI indicators	Shows where is Hungary in terms of digital public service development compared to other countries in the EU
<b>Applying new methods for analyzing public service processes</b>	Published	Article published in Pro Publico Bono – Magyar közigazgatás	Literature review on public service theories like Public Service Dominant Logic and Co-Production.	The article discusses the advantages of Co-production in public services and presents new ways to gain

			The article than analyses a complex Hungarian public service with Service Blueprinting and Process-Chain Network	insights about the selected service which were not used before in Hungarian context to analyze public service processes
<b>Service Process Excellence in Public Services</b>	Published ( <i>Intelligent Systems in Management Best Paper Award</i> )	Proceedings of the ENTRENOVA - ENTerprise REsearch InNOVAtion Conference	Literature review on One-Stop-Shops, Government Windows and service quality indicators. Analysis of a selected Government Window using statistical data and Business Process Modelling.	The article uses Unified Services Theory as a background to connect public service processes with quality and efficiency indicators used in the private sector. Raw data from a selected Government Window is used to statistically analyze front-office operations, and Business Process Modelling is used to describe the service process.
<b>Service Process Excellence in Public Services (extended version)</b>	Accepted for publication	Article accepted for publication in Interdisciplinary Description of Complex Systems (INDECS)	Literature review on One-Stop-Shops, Government Windows and service quality indicators.	The article uses Unified Services Theory as a background to connect public service processes with quality

			Analysis of a selected Government Window using statistical data and Business Process Modelling.	and efficiency indicators used in the private sector. Raw data from a selected Government Window is used to statistically analyze front-office operations, and Business Process Modelling is used to describe the service process.
<b>Servitization of public service processes with a simulation modelling approach</b>	Published	Article accepted for publication in Engineering Management in Production and Services (EMPAS)	Literature review on Co-production, Servitization and Discrete Event simulation. Detailed analysis of a selected complex public service based on interviews using DES.	The article connects Co-production and Servitization and uses discrete event simulation (Plant simulation software) to demonstrate the discrepancies between process regulation and reality.
<b>Analyzing Public Service Processes from Customer and Employee Perspectives by Using Service Blueprinting and Business Process Modelling</b>	Published	Article accepted for publication in Proceedings of the ENTRENOVA - ENTERprise REsearch InNOVation Conference	The article uses Service Blueprinting and Business Process Modelling to map the selected public service process and	The article highlight how different aspects of the selected service could affect lead times and how satisfaction is

			uses an example to show the internal complexity of the service process	affected by this on both the customer and provider side.
<b>Analyzing Public Service Processes from Customer and Employee Perspectives by Using Service Blueprinting and Business Process Modelling (extended version)</b>	Accepted for publication	Article accepted for publication in Journal of Theoretical and Applied Electronic Commerce Research	The article uses Service Blueprinting and Business Process Modelling to map the selected public service process and uses an example to show the internal complexity of the service process	The article highlight how different aspects of the selected service could affect lead times and how satisfaction is affected by this on both the customer and provider side.
<b>Service modeling possibilities - process-based approach with a public service example</b>	Published	Article published in Magyar Logisztikai Évkönyv (MLE)	The article demonstrates how queuing theory can be applied to public service processes and how Service Blueprinting, Business Process Modelling and Process-Chain Network methodologies can be used to map service processes.	The article describes the advantages of the selected methodologies, using the Government Window front operations as an example, presenting different aspects can be used to gain additional information about the customer and provider side of the service process.
<b>Statistical analysis of public service processes for key performance</b>	Published	Article published in Hungarian Statistical Review	The article uses Business Process Modelling to	The article highlights how commonly

<b>indicator measurement</b>			visualize Government Window front operations and the contact affair procedure of Guardianship Offices then uses a statistical analysis to measure key performance indicators in case of both services	used KPIs in the public sector (waiting time, processing time, lead time) can be measured in the chosen simple and complex service processes based on the available dataset.
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Source: Author's own creation

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