Service Process Excellence in Public Services

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Abstract

The goal of this paper is to create a comprehensive picture of the service process structure of a typical Hungarian Government Window, which functions as a one-stop shop service centre for administrative public services. The research is focusing on process management details regarding service quality, and excellence in public services. Performance indicators are identified through a literature review based on the similarities and differences of private and public services. We are using collected data from a Government Window to visualize front office operations with Business Process Modelling and we analyse the time-related data by using performance metrics identified in service quality literature. Our research provides useful insights into the Hungarian public service centre operations that can be useful as a basis of comparison with other countries' similar service systems.

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Introduction

Compared to the situation before 2010, the Hungarian public administration system has undergone several significant changes at both the central and regional levels and the concept of this service-centric, customer-focused public administration system fits well into the trend of Neo-Weberism (Pollitt & Bouckaert, 2011). As part of these reforms, the Government Window system was created based on one-stop shop like service centres used by several countries worldwide (Buics, 2019; Jenei, 2019; Kovács, 2019).

The purpose of our article is to examine the operations of Government Windows more closely and create a comprehensive picture of the service process structure of this service centres. As part of the Hungarian administrative reforms, these service centres were established almost a decade ago and serve as the main access point between the citizens and the state ever since.

The goal of our paper is to visualize the Government Window operations by using the Unified Services Theory (Sampson, 2010) as a theoretical background and the Business Process Modelling (BPM) (Ko et al., 2009; Recker et al., 2010; Recker, 2011; Vuksic et al., 2017) to visualize front office operations daily. In our paper, we statistically analyse collected data (45234 records) from a Government Window and identify key performance indicators regarding service quality and excellence based on the related literature. The analysed 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 look into the daily operations of a Government Window, based on time-related numerical data. Therefore, our article aims to contribute to the literature by analysing the front office operations of a Government Window from this point of view. Based on that, our aim in this article is to find answers for the following research questions:

- **RQ1:** What is the distribution and composition of the offered administrative public services?
- **RQ2:** What performance indicators could best be used to describe the quality of service?
- **RQ3:** What do the key performance indicators show about service performance in case of the most common administrative services?

In our article, first, we provide details about the one-stop shops in general than we discuss the Hungarian Government Window system and its role within the administrative system. After that, we describe the Unified Services Theory, service quality and the BPM methodology with the help of a literature review, then we provide the description of daily processes of a Government Window and the results of our statistical analysis based on the collected data. The paper concludes with the discussion remarks.

Literature review

One-Stop Shops and Government Windows

One-stop shops (OSS) were first established in the 1980s, typically in the Anglo-Saxon countries representing the principles of New Public Management. Although according to the World Bank Report (2017), the administrations of 82 countries provide citizens with a one-stop shop, there is a significant difference in the

operation of the "windows". Depending on the administration system in a given country, administrative customer services may appear at different levels.

There are also differences regarding the name (multifunctional center", "citizens' window", "government window""', the type of work performed (some only have a front office, others have front office and back office as well), in the range of services, in transparency and traceability, and in the level of integration between systems and databases. Customer satisfaction is also measured differently.

In Hungary the reforms launched in 2010 within the framework of the Zoltán Magyary Public Administration Development Program (Magyary Program). 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 (Buics, 2019; Jenei, 2019; Kovács, 2019).

The image of the Government Windows is uniform, their services are the same everywhere. The available services of the Government Windows have been constantly expanding since their establishment, as of 2020 the Government Windows can provide help for citizens in over 2000 different available cases, which can be classified into several categories: (i) submissions that can be dealt with immediately (for example: issuing an official identity card for a new identity and address card); (ii) submissions that can be dealt with within the authority of the Government Window (for example issuance of a driving license, issuance of a passport); (iii) submissions that cannot be dealt with within the authority of the Government Window but can be transferred by the Government Window to the higher authority (for example a request for the issuance of a birth certificate); (iv) providing information in case of submissions which cannot be handled or transferred by the Government Window (for example establishment of a registered partnership); and (v) providing additional services (for example ClientGate registration).

Methodology

In our research, we are using the Business Process Modelling methodology to map and visualize the general administrative process of a Government Window. Business Process Modelling (Ko et al., 2009; Recker et al., 2010) categorizes the activities of the service participants based on their responsibilities and based on the communication between these participants.

We collected both qualitative and quantitative data. In our article, we are examining the front-office processes of a Government Window with the help of the collected data regarding the service processes of the Government Windows.

In our current study first discussed the Unified Services Theory to confirm that every service can be considered as a process than we used the Business Process Modelling methodology to provide the visual diagram of the process from the organizational perspective.

Second, we presented and analysed the collected quantitative data of a chosen Government Window to provide detail about the everyday processes of this complex institute. The collected data consist of the arrival times, waiting times and processing times of 45234 individual records divided into 30 main case categories. Based on this data set we are focusing on time-related performance indicators. For the statistical analysis, Microsoft Excel and SAS JMP statistical software was used.

Service processes and Unified Services Theory

Services have been defined in many ways in the past decades. The previous definitions distinguished services from production based on three characteristics. First, services are considered intangible as nothing tangible remains, for example

after a teaching class. Second, services cannot be stored like products thus in case of services the production and consumption take place at the same time. Third, the nature and intensity of the customer relationship, for example, some services require high-level customer relationships (for example restaurants) or low-level relationships (for example back-office operations in a bank) (Sampson & Froehle, 2006).

According to 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.

The basis of UST is the process itself (and not the company or industry in which service and production processes are mixed) that transforms customer inputs. Service processes based on customer inputs are fundamentally different from production processes and require other management methods. These discrepancies can be captured by the previously mentioned characteristics related to customer contributions, which were also used to varying degrees in the previous service definitions, but the UST includes all of them and puts them in a single framework (Sampson, 2010).

In summary, in services, the customer (all customers) has a significant contribution to the "production" process, while in production, typically only customer groups are asked for their opinion on product design; customers are only individuals involved in the selection and consumption of the product. Accordingly, Sampson calls service supply chains two-way compared to typical production chains, whose downstream side is shorter compared to typical production networks (Sampson, 2010)(Figure 2).

Service quality and excellence

Providing quality service is considered essential in the private sector to secure survival and success (Reichheld & Sasser, 1990; Zeithaml et al., 1990), and performance measurement is an important issue for both scholars and practitioners (Neely 2005; Richard et al., 2009). Regarding the public sector, the urge to deliver quality public service is not related to a profit goal in the majority of the most cases; nevertheless, public service providers are also under pressure to improve service quality, efficiency and effectiveness (Ramseook-Munhurrun et al., 2010; Robinson, 2003).

Service quality can be defined as the ability of an organization to meet or exceed customer expectations. According to Zeithaml et al. (1990), the service quality perceived by customers is the result of comparing their expectations with their observations. If the experienced service is not on par with the expectations, it will result in customer dissatisfaction (Parasuraman et al., 1991). According to Johnston (2004), service excellence can be defined as the ability to handle challenges and problems well and efficiently.

Besides organizational performance measurement models which aims to provide a holistic view of an organization's performance by considering different performance perspectives (EFQM, 2010; Kaplan & Norton, 2001), there are also business process performance measurement models which are less holistic and mostly focus on a single business process, such as statistical process control, or process performance measurement systems (Kueng, 2000; Neely, 2005). Dumas et al. (2013) identify time, cost, quality and flexibility as the typical performance perspectives of business process performance measurement.

Neely (2005) and Richard et al. (2009) both present evaluation criteria for performance indicators, which summarize the consensus in the performance literature. The literature strongly agrees that performance indicators are organization dependent and should be derived from an organization's objectives, strategy,

mission and vision. There is also a consensus in the literature regarding the need to combine financial and non-financial performance indicators. Nonetheless, disagreement still seems to exist in terms of whether objective and subjective indicators need to be combined, with objective indicators preferred by most advocates.

Van Looy and Shafagatova (2016) 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.

Business Process Modelling

Business Process Modelling is a widely used modelling approach to analyse and improve business processes (Kazemzadeh et al., 2015; Milton & Johnson, 2012; Vuksic et al., 2013) and for public service processes as well (Chinosi & Trombetta, 2012).

According to Kazemzadeh et al. (2015), the basic construct of BPM consists of four categories: flow objects (event, activity, gateway), connecting objects (sequence flow, message flow, association), swimlanes (pools, lanes) and artefacts (data object, group, text annotation) In Business Process Modelling an event (which is shown by a circle) can be triggered three different ways: when the process begins (start event), in the middle of the process (intermediate event) and when the process ends (end event) (Kazemzadeh et al., 2015). In BPM activities are shown with rounded rectangles and can be organized by sequence flows. These activities can be specific which cannot be broken down to further individual steps, or they can be complex activities as well. In the process, gateways are shown by diamonds and they allow the divergence or convergence of process flows. Depending on their type, they are differentiated by their markings inside of the diamond (Kazemzadeh et al., 2015).

Results

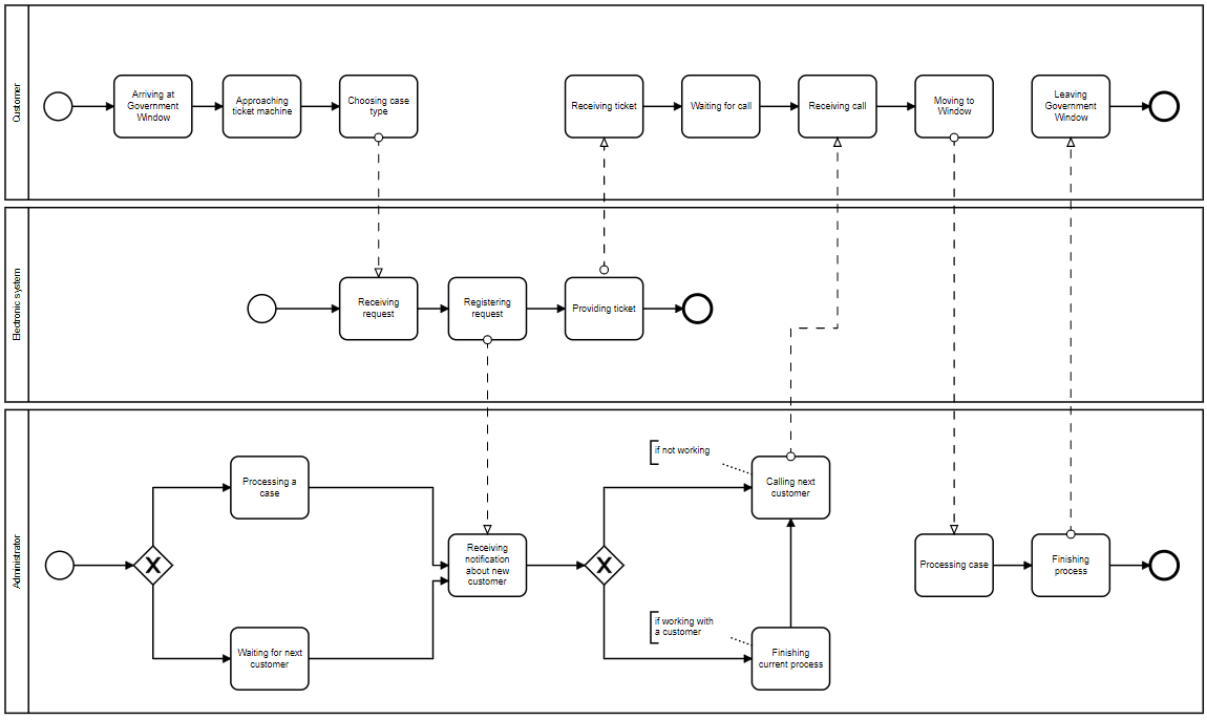
Government Windows operate like service centres where multiple issues can be solved or information can be provided in case of more complex issues about where to go and what to do. The interior design is similar in case of each Government Window and cases can be handled in any window so citizens can assess their issues in any of them, they are not tied to the place of living as in case of the previous system.

Because of this Government Windows which are in central locations like county capitals or the capital city are usually handle a larger number of cases on average as people usually tend to their administrative issues before or after work.

As shown in Figure 1, after the citizens arrive in a Government Window they have to choose what is the reason of their coming. There is a ticket machine next to the entrance of each Government Window, where they can choose from different categories. Some categories are specific like ID card issues or passport issues and some categories are general like issues related to vehicles or social issues. After choosing, they get a ticket with their waiting number. Several windows are working simultaneously where issues can be processed. When a new customer arrives, the system registers the time of arriving and notifies the administrators. Not every administrator is tasked to handle every upcoming issue thus customers have to wait until one of the windows, where the issue can be handled, becomes free. When the administrator calls the customer, the system again registers the time, then the administrator processes the case provided by the customer. As discussed before several outcomes can happen at this point, either the issue can be handled directly by the administrator (for example in case of a driving licence renewal) or the case

can be handled partially and the administrator sends it to another department, or the administrator can provide only information about where the customer should go to handle the issue. However, in each case, there is a processing time, which depends on the type and complexity of the issue.

Figure 1
Business Process Modelling representation of the Government Window front office procedure



Source: Author's work

In our current study, we choose to process the collected data of a Government Window located in the capital city. We examined the processed cases from 2016 December to 2017 November. During this period, the Government Window administrators processed 45234 individual cases. Each record contains the date of the case, the time of arrival, the number of the window where the customer was directed, the time when the customer was called and the time when the record was closed. During data, cleaning and sorting, we have excluded records with extreme values where the processing times were shorter than 30 seconds did or longer than three hours (3543 records), which left 41691 records after data cleaning. According to the administrators, after calling a new customer they usually have to wait sometime because the customer has to realize that his/her case number was called, then they have to find the right window and go there to start the actual process. However, there are examples when the customer does not show up. In this case, the administrators wait usually 20-30 seconds after the call before calling a new customer. Table 1 shows the overall distribution of records based on processing time before exclusion.

Table 1
Distribution of records according to the processing time

Processing time	Number of records	Percentage
Below 30 seconds	3462	7.65%
Between 30 seconds and 3 hours	41691	92.17%
Over 3 hours	81	0.18%
Total	45234	100.00%

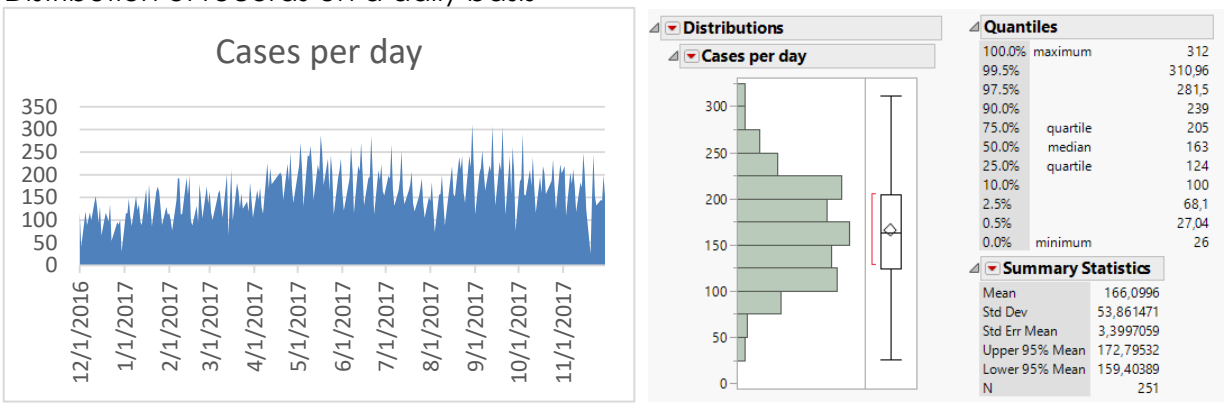
Source: Author's work

There are numerous reasons of why the customers do not show up, but the most common reason is that that they booked the time previously but for some reasons they cannot come or forget to come for their appointment when the administrators call their number. The other main reason is that they do not want to wait if the line is too long. From the 3543 excluded records 835 (23.56%) was a previously booked appointment. Besides, 78% of the records represent cases, which were not booked before, while 22% of the case was booked during the examined period.

Distribution of cases

As seen in Figure 2 the average distribution of cases was 166 cases per day with a maximum of 312 cases, which happened on 30th August 2017. Besides, with a minimum of 26 cases which happened on 20th November 2017 and the analysis of distribution shows a 54 case standard deviation in the records during the examined period. The analysis also shows that during the 75% of the examined days the number of daily cases was below 205 (upper quartile).

Figure 2
Distribution of records on a daily basis



Source: Author's work

We can also calculate the throughput of cases per hour based on daily processed cases. As we can see calculated with eight hour-long working days during the 251 workdays when the Government Window was open the average throughput per hour was 21 cases with a minimum of three and a maximum of 39 cases based on the dataset. According to the upper quartile during 75% of the working days, the throughput was below twenty-six cases per hour in the examined Government Window.

Most common causes

Table 2 shows the distribution of each case types. In this table, we can see that there are 30 different case categories from which the citizens can choose when they

arrive at the Government Window. Some of them are general categories like Vehicle affairs, which can mean several case types like license plate issues or car registration. There are also specific categories Student ID card, Passport or ClientGate and we can find the specific category of driving license here as well which means that this is an emphasized category of vehicle-related affairs.

As we can see there are case types which are rare like Disability-related issues in which case there were only 30 cases during the examined period of time while Vehicle Affairs and Driving licence cases together generated 33.51% of the whole dataset.

Table 2
Distribution of all cases according to the case type

Case types	Number of cases	Distribution
Disability issues	30	0.07%
Citizenship	141	0.34%
Birth registration	148	0.35%
Family support	745	1.79%
Student ID card	1528	3.67%
Health insurance	1425	3.42%
Other	296	0.71%
Individual Proprietorship	487	1.17%
Receipt of completed documents	934	2.24%
Construction affairs	47	0.11%
Employment	18	0.04%
Consumer protection	10	0.02%
Vehicle affairs	8267	19.83%
Guardianship affairs	20	0.05%
Foreign affairs	5	0.01%
Driving licence	5703	13.68%
Trade and services	6	0.01%
Housing aid	8	0.02%
Certificate of address	5049	12.11%
Hungarian identification affairs	30	0.07%
Population registers	105	0.25%
Pension	272	0.65%
Inheritance, legacy procedure	10	0.02%
Parking certificate	303	0.73%
Rehabilitation and disability benefits	29	0.07%
ID card	6915	16.59%
Social affairs	120	0.29%
Ownership certificate issues	212	0.51%
Passport	4381	10.51%
ClientGate	4447	10.67%

Source: Author's work

Table 3 shows that the six most common case types together generated 83.38% of all cases during the examined period of time. The seventh most common cause was the Student ID card related issues with 1528 cases in total but this number is only one-third of the sixth most common case type which were the Passport related issues.

As discussed before Vehicle affairs is a general category, which includes several case types like license plate issues or car registration. ID card related cases are when a customer wants to renew the personal identification card or apply for a new one if lost, but customers have to choose this category as well if they want to report the theft of their identification documents for example.

Certificate of address is another identification document, which contains information regarding the valid address of citizens. If someone moves to a new location, a new city and the address changes, they have to apply for a new card by choosing this case category.

CientGate related issues are also very common. ClientGate functions as a valid digital identification method for citizens and it is commonly used for example during the process of digital taxation or by students to identify themselves digitally when they are applying for university online. It is also widely used by companies as identification and contact channel with different state authorities.

Table 3
Distribution of most common case types

Case types	Number of cases	Distribution
Vehicle affairs	8267	19.83%
ID card	6915	16.59%
Driving licence	5703	13.68%
Certificate of address	5049	12.11%
ClientGate	4447	10.67%
Passport	4381	10.51%
Total	34762	83.38%

Source: Author's work

Waiting time statistics

Waiting times are calculated with the help of arrival times and calling times. Arrival time is the time of the moment when the customer uses the ticket machine and chooses the type of the issue. Calling time is the momentum when the administrator calls the issued ticket number and the customer can go to the window to start the service process. Waiting time is calculated as the difference between the calling time and the arrival time.

In Table 4 we can see the statistical details of the six most common case types regarding the waiting times. According to the data from the six different case types, the issues regarding the certificate of address had the longest average waiting time while costumers had to wait only 5 minutes on an average if they came to the Government Window with ClientGate issues like registration or renewal.

As we can see in case of each case categories the average waiting time was between five and eleven minutes and according to the upper quartiles, 75% of the arrived customers had to wait for less than fifteen minutes before the process of their issues started.

Table 4
Waiting for time statistics of most common case types

Case types	Mean	Std. Deviation	Median	Lower quartile	Upper quartile
Vehicle affairs	0:08:27	0:11:43	0:04:15	0:01:11	0:11:10
ID card	0:08:54	0:10:22	0:05:12	0:01:50	0:12:05
Driving licence	0:09:21	0:10:38	0:05:38	0:01:55	0:12:43
Certificate of address	0:11:14	0:12:13	0:07:10	0:02:31	0:15:53
ClientGate	0:04:58	0:07:08	0:01:56	0:00:26	0:06:45
Passport	0:08:15	0:12:05	0:04:49	0:01:43	0:10:48

Source: Author's work

Processing time statistics

Processing times are calculated with the help of calling times and closing times. Calling time is the moment when the customer is called by the administrator and goes to the window to start the process. Closing time is the moment when the process is finished and the administrator uses the system to close the record. Processing time is calculated as the difference between the closing time and the calling time.

In Table 5, we can see the statistical details of the six most common case types regarding the processing times.

Table 5
Processing time of most common case types

Case types	Mean	Deviation	Median	Lower quartile	Upper quartile
Vehicle affairs	0:19:28	0:21:49	0:12:23	0:05:35	0:25:12
ID card	0:17:00	0:18:47	0:12:26	0:04:02	0:21:35
Driving licence	0:18:59	0:19:59	0:12:56	0:08:46	0:22:00
Certificate of address	0:16:28	0:18:49	0:11:03	0:05:14	0:20:37
ClientGate	0:06:20	0:09:36	0:03:56	0:02:52	0:05:59
Passport	0:16:13	0:17:44	0:11:38	0:04:42	0:20:28

Source: Author's work

ClientGate related cases had the lowest processing time on average. Generally, most of these cases were new registrations in either the system or renewal of outdated previous registrations. The vehicle-related affair had the longest average processing times and the processing times of identification-related issues (ID card, driving licence, passport, address certificate) were between sixteen and ninety minutes. According to the upper quartiles, 75% of the customers' cases were processed under 20-25 minutes in general, in case of ClientGate under six minutes in particular.

Lead time statistics

Lead times are calculated with the help of arrival times and closing times. Arrival time is the moment when the customer arrives and uses the ticket machine to choose the goal of the arrival. Closing time is the moment when the process is finished and the administrator uses the system to close the record. Lead time is calculated as the difference between the closing time and the arrival time.

Table 6
Lead time statistics of the most common case type

Case types	Mean	Deviation	Median	Lower quartile	Upper quartile
Vehicle affairs	0:27:55	0:24:19	0:21:10	0:11:35	0:36:05
ID card	0:25:54	0:20:39	0:20:57	0:12:31	0:33:45
Driving licence	0:28:20	0:21:47	0:22:15	0:14:29	0:35:47
Certificate of address	0:27:42	0:21:13	0:22:34	0:13:53	0:35:30
ClientGate	0:11:18	0:11:59	0:07:34	0:04:25	0:13:52
Passport	0:24:28	0:20:33	0:19:26	0:11:58	0:31:28

Source: Author's work

In Table 6, we can see the statistical details of the six most common case types regarding the lead times. As we can see the average lead time of the six most common case categories were between 24-29 minutes except for ClientGate cases which hade the average lead time of eleven-minute in total. Upper quartiles show

that 75% of the customers were finished after 31-36 minutes after their arrival thus they had to spend half an hour in general in a Government Window to handle their issues.

Discussion

The goal of this paper is to create a comprehensive picture of the service process structure of a typical Hungarian Government Window, which functions as a one-stop shop service centre for administrative public services.

The answer to the first research question (RQ1) regarding the distribution and composition of the offered administrative public services is as follows. According to the examined dataset, the Government Window system operates with main case categories. Some of them are rather specific case types like driving licence related issues while others are collected categories like vehicle affairs, which can include many types of subcategories. Based on the dataset we can make difference between thirty categories of cases from which we can highlight six different categories (vehicle affairs, driving licence, ID card, certificate of address, passport, ClientGate) which are the most common ones. Together these categories covered 83.38% of all records in the examined timeframe.

Second research question (RQ2) about the performance indicators that could best be used to describe the quality of service is answered as follows. According to the literature of service quality and excellence based on several authors, we identified the most frequently used time-related key performance indicators frequently used by scholars in their research. These measures include throughput, waiting time, process duration time and lead time, which can be used as performance metrics in case of the Government Windows as well based on the available dataset.

Finally, the third research question (RQ3) about the key performance indicators regarding service performance in case of the most common administrative services is answered as follows. Based on the results of research question one and two we used the available dataset to calculate the values of the identified performance indicators in case of the most common case types of the examined Government Window. We statistically analysed the dataset by using Microsoft Excel and SAS JMP software. As seen in Table 7, we calculated that on average in case of the six most common cases the waiting time ranges from 4 to 12 minutes, the processing time ranges from 6 to 20 minutes and the lead time ranges from 11 to 29 minutes in total. However, if we exclude ClientGate issues as seen in Table 7, the value ranges change. In this case, the waiting time ranges from 8 to 12 minutes, the processing time ranges from 16 to 20 minutes and the lead time ranges from 24 to 29 minutes in total.

Table 7
Average values of KPI-'s of

	The most common case types	The most common case types, excluding ClientGate
Waiting time	4-12 minutes	8-12 minutes
Processing time	6-20 minutes	16-20 minutes
Lead time	11-29 minutes	24-29 minutes

Source: Author's work

Conclusion

The goal of this paper was to create a comprehensive picture of the service process structure of a typical Hungarian Government Window, which functions as a one-stop shop service centre for administrative public services.

We used the framework of Unified Services Theory to define service processes and with the help of a literature review, we identified time-related performance metrics, which can be used to measure the quality and efficiency in case of service processes like Government Window operations. We discussed the details and creation of Government Windows based on the model one-stop shop service centres than we used Business Process Modelling to visualize front office operations on a daily basis.

In the second part of the paper, we statistically analysed the collected data from a Government Window, which was located in one of the districts of the capital city of Hungary. The dataset contained the arrival times, call-in times and closing times of 45234 cases, which were recorded from 2016.12.01 to 2017.11.31.

From the dataset, we identified thirty individual case categories, calculated 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 we calculated the values of key performance indicators like waiting times, processing times and lead times of the most common case types.

Numerous articles and books discussed the details and effectiveness of the different levels of the reformed Hungarian administration system but our research provides new deep-level insight into the daily operations of a Government Window. Our article aims to contribute to the literature by analysing the front office operations of a Government Window from this point of view.

As a limitation, our research only used the dataset of one singe Government Window as a unit of analysis but our research showed how performance metrics could be extracted from the available data. Our plan is in the future to acquire and analyse several more datasets from other Government Windows in order to collect and use more quantitative data regarding the key performance indicators. We aim to use the extracted data to create a detailed simulation, which can represent the daily operations of the Government Window and use it to simulate the front office operations on a complex and more detailed level. Our goal is to be able to identify improvement possibilities and based on that give a general recommendation for the legislators on how to improve these processes in the public sector.

References

1. Buics, L. (2019), "A szolgáltató állam szervezetének kialakulása" (Formation of the organization of the service state), in Vastag, G. (Ed.), Szolgáltatás- és folyamatmenedzsment a közigazgatásban (Service and Process Management in Public Administration), Ludovika Egyetemi Kiadó, Budapest, pp. 75-86.
2. Chinosi, M., Trombetta, A. (2012), "BPMN: an introduction to the standard", Computer Standards & Interfaces, Vol. 34, No. 1, pp. 124-134.
3. Dumas, M., La Rosa, M., Mendling, J., Reijers, H. A. (2013), Fundamentals of Business Process Management, Springer, Berlin.
4. European Foundation for Quality Management. (2010), "Homepage", available at: http://www.efqm.org (Mar 15, 2020)
5. Jenei, Á. (2019), "Kultúraváltás a közigazgatásban" (Cultural change in public administration), in Vastag, G. (Ed.), Szolgáltatás- és folyamatmenedzsment a közigazgatásban (Service and Process Management in Public Administration), Ludovika Egyetemi Kiadó, Budapest, pp. 63-71.

6. Johnston, R. (2004), "Towards a better understanding of service excellence", Managing Service Quality: An International Journal, Vol. 14, No. 2-3, pp. 129-133.
7. Kaplan, R. S., Norton, D. P. (2001), The Strategy-Focused Organization: How Balanced Scorecard Companies Thrive in the New Business Environment, Harvard Business School Press, Boston.
8. Kazemzadeh, Y., Milton, S. K., Johnson, L. (2015), "A conceptual comparison of service blueprinting and Business Process Modeling Notation (BPMN)", Asian Social Science, Vol. 11, No. 12, pp. 307-318.
9. Ko, R. K. L., Lee, S. S. G., Lee, E. W. (2009), "Business process management (BPM) standards: a survey", Business Process Management Journal, Vol. 15, No. 5, pp. 744-791.
10. Kovács, É. (2019), "Közszolgáltatási modellek és közszolgáltatások menedzsmentje Magyarországon" (Public service models and public service management in Hungary) in Vastag, G. (Ed.), Szolgáltatás- és folyamatmenedzsment a közigazgatásban (Service and Process Management in Public Administration), Ludovika Egyetemi Kiadó, Budapest, pp. 39-61.
11. Kueng, P. (2000), "Process performance measurement system: a tool to support process-based organizations", Total Quality Management, Vol. 11, No. 1, pp. 67-85.
12. Milton, S. K., Johnson, L. W. (2012), "Service blueprinting and BPMN: a comparison". Managing Service Quality, Vol. 22, No. 6, pp. 606-621.
13. Neely, A. (2005), "The evolution of performance measurement research", International Journal of Operations & Production Management, Vol. 5, No. 12, pp. 1264-1277.
14. Parasuraman, A., Berry, L. L., Zeithaml, V. A. (1991), "Refinement and reassessment of the SERVQUAL scale", Journal of Retailing, Vol. 67, No. 4, pp. 420-450.
15. Pollitt, C., Bouckaert, G. (2011), Public Management Reform. A Comparative Analysis: New Public Management, Governance, and the Neo-Weberian State (3rd ed.). Oxford University Press, Oxford.
16. Ramseook-Munhurrun, P., Lukea-Bhiwajee, S. D., Naidoo, P. (2010), "Service quality in the public service", International Journal of Management and Marketing Research, Vol. 3, No. 1, pp. 37-50.
17. Recker, J. (2011), Evaluations of Process Modeling Grammars: Ontological, Qualitative and Quantitative Analyses Using the Example of BPMN, Springer Science & Business Media, Berlin.
18. Recker, J., Indulska, M., Rosemann, M., Green, P. (2010), "The ontological deficiencies of process modeling in practice", European Journal of Information Systems, Vol. 19, No. 5, pp. 501-525.
19. Reichheld, F. F., Sasser, W. E. (1990), "Zero defections: quality comes to services", Harvard Business Review, Vol. 68, No. 5, pp. 105-111.
20. Richard, P., Devinney T., Yip G., Johnson, G. (2009), "Measuring organizational performance: towards methodological best practice", Journal of Management, Vol. 35, No. 3, pp. 718-804.
21. Robinson, L. (2003), "Committed to quality: the use of quality schemes in UK public leisure services", Managing Service Quality: An International Journal, Vol. 13, No. 3, pp. 247-255.
22. Sampson, S. E. (2010), "The unified service theory: A Paradigm for Service Science", in Maglio, P., Kieliszewski, C., Spohrer, J. (Eds.), Handbook of Service Science. Service Science: Research and Innovations in the Service Economy. Springer, Boston, pp. 107-131.
23. Sampson, S. E., Froehle, C. M. (2006), "Foundations and implications of a proposed unified services theory", Production and Operations Management, Vol. 15, No. 2, pp. 329-343.
24. The World Bank. (2017), Annual Report 2017, available at: http://pubdocs.worldbank.org/en/908481507403754670/Annual-Report-2017-WBG.pdf (Mar 15, 2020)

25. Van Looy, A., Shafagatova, A. (2016), "Business process performance measurement: a structured literature review of indicators, measures and metrics", SpringerPlus, Vol. 5, Article 1797.
26. Vuksic, V., Pejic Bach, M., Popovič, A. (2013), "Supporting performance management with business process management and business intelligence: a case analysis of integration and orchestration", International Journal of Information Management, Vol. 33, No. 4, pp. 613-619.
27. Vuksic, V., Pejić Bach, M., Tomicic-Pupek, K. (2017), "Utilization of discrete event simulation in business processes management projects: a literature review", Journal of Information and Organizational Sciences, Vol. 41, No. 2, pp. 137-159.
28. Zeithaml, V. A., Parasuraman, A., Berry, L. L. (1990), Delivering Quality Service, The Free Press, New York.

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