PROCESS RENOVATION: CASE STUDY OF A LIQUIDITY PLANNING PROCESS OF THE NATIONAL BUDGET IN SLOVENIA

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Abstract: The constant development of new technologies and tools is forcing organizations to recast their processes. The paper examines the reengineering of the key processes in a public finance organization that cause bottlenecks and consequent ineffectiveness. The aim is to eliminate and reduce obstacles, as simulations and cash flow forecasts (reports) are prepared too slowly and are consequently reported late, certain operations are carried out manually and duplicated. This increases the chance of errors. Theoretical findings are presented for the case study of the liquidity planning process of the national budget. They present the renovation process and the effects of the improvements achieved using the Object-Oriented Method (TAD) approach, which is based on a tabular representation, and the Aris method for the graphic depiction of the model of the business process flow based on the BPMN standard for business process modelling. The renovated liquidity planning process of the national budget was found to be necessary. It proved to be 50% quicker, saving 466 hours a year through the elimination of the hard work tasks. It provides added value in the further forecasting of cash flows that effect the liquidity of the national budget.

Keywords: process renovation, TAD, ARIS method, BPMN, public finance organization, model, BPM

INTRODUCTION

We live in the age of globalisation, which is constantly introducing modern technologies and forcing us to recast business processes and adapt them to changes in order to keep up with the competition. Organizations are constantly looking for cost-effective improvements for their business processes (Wynn et al., 2013). Business Renovation (BR) is a useful method to help organizations cut operational costs and improve the quality of their processes. It provides organizations sustainable competitive advantage in the market (Bhaskar, & Singh, 2014). In order to be successful in business renovation, organizations utilize specific methodology for analysing and modelling the current state of the business process (AS-IS) and the effectiveness of the renovated process (TO-BE). This provides information regarding the executability of the process renovation, the weak points in the processes and resource bottlenecks, as well as suggests possible improvements.

Approaches that focus on analysing the current state of the business process (AS-IS) and the effectiveness of the renovated process (TO-BE) are combined in the TAD method. As stated by Damij (2009), the TAD method is based on a tabular representation of the state of the analysing processes. According to Damij, N., Damij, T., Grad, & Jelenc, (2008), it provides a lot of new ideas for process modelling (development of a design model) and process improvements.

The suggested method for business process modelling is the Aris method based on the BPMN standard for business process modelling (Ivandic Vidovic, & Bosilj Vuksic, 2003). This is a unique and internationally established method for the graphic modelling of a business process renovation (Scheer, 2000). Business process modelling has a number of positive effects, as it increases the model quality of the business processes (Hilt, 2007; Fettke &Loos, 2007; Kirchmer, 2009 in, Indihar Štemberger & Kovačič, 2011), facilitates improvements, and provides the opportunity to increase competition on the market (Dantis, 2019).

This paper presents a case study of the liquidity planning process of the Slovenian national budget. It details the procedure of the process renovation and the effects of the improvements achieved. Obstacles, i.e., bottlenecks (e.g., simulations and cash flow forecasts (reports) are prepared too slowly and are consequently reported late, certain operations are carried out manually and duplicated, leading to errors in the forecasts) are being encountered in the execution of the process, which in turn leads to the inefficiency of the liquidity planning process of the national budget.

Business Renovation Approach

Using the TAD method, the current state (AS-IS) and the renovated process state (TO-BE) were analysed for the liquidity planning process of the Slovenian national budget. The process involved preparing the work processes for the proposed liquidity plan (PLP) and the confirmed liquidity plan (CLP), the adjusted liquidity plan (ALP), and reporting adjustments to the LP and cash flow (CF) management. The effect of the renovated process was also measured.

The main goal of the renovation was to eliminate or reduce so-called bottlenecks. The data was acquired through interviews with 27 process users. The measurements of the current state of the process (AS-IS) and the renovated process (TO-BE) as recorded in the information system after the implemented improvements were both analysed. The process activities were evaluated according to the duration in minutes and the costs in EUR.

Table 1 presents the analysis of the properties of the activities in the current process (AS-IS) and the renovated process (TO-BE) of preparing the PLP and confirming the LP along with the measured effect of the renovated process.

Table 1: Properties of the current and renovated process of the PLP preparation and LP confirmation and measurements of the effect of the process renovation

Properties of the current PROCESS of PLP preparation and LP confirmation (AS-IS)			Properties of the renovated PROCESS of PLP preparation and LP confirmation (TO-BE)		Measuring the effect of the process renovation		
Activity	Time in minutes	Cost in EUR	Time in minutes	Cost in EUR	Reduced time in minutes	Reduced time in minutes	Reduced costs in % (TO-BE)
Initialising PLP documents	5	0.61	0	0.00	-5	-0.61	-100
Data review and preparation for PLP entry	85	10.33	82	9.96	-3	-0.36	-4
Entering and arranging a PLP document	37	4.50	35	4.25	-2	-0.24	-5
PLP rejection	10	1.22	5	0.61	-5	-0.61	-50
Data import/export	10	1.22	0	0.00	-10	-1.22	-100
PLP approval	5	0.61	5	0.61	0	0.00	0
Storage of data in a BLMS (budget liquidity management system] database	5	0.61	0	0.00	-5	-0.61	-100
Transfer of data from PLP to LP and ALP	10	1.22	0	0.00	-10	-1.22	-100
Total	167	20.29	127	15.43	-40	-4.86	-24

The analysis of the results from Table 1 indicates that the renovation process (TO-BE) eliminated 4 manual activities (initializing the process, importing and exporting data, data saving process, and the data transfer process). The TO-BE process execution was shorter by 24% relative to the existing current state (AS-IS).

We determined that the process of preparing the PLP and confirming the LP was also shortened by 40 minutes, constituting a lowered cost of EUR 4.86. It was also concluded that the process is carried out once a month, amounting to 12 times a year, which represents 8 fewer hours of unnecessary labour a year and EUR 58.12 lower costs a year as depicted in Table 4.

Compared to the current AS-IS process, the information and data flow of information in the renovated process (TO-BE) runs between the process participants through the unified MFERAC information system (with new and expanded functionalities) and eliminating manual entries (as illustrated by Figure 1 – graphically depicted process model). The manual activities (starting the processes of initialization, importing, exporting, entry of data) have been replaced by automated service procedures that are simultaneously implemented with each change in the system, which consequently means that the number of activities for the participants in the process has decreased. These improvements in the renovated process have influenced their effectiveness as presented in Figure 1.

The visualisation, i.e., the graphic process model, was created using the BPMN (business process management notation), which is standard for business process modelling in Aris. The main benefit of using BPMN is that it is allows for the flexible development of business processes (Rosing, White, Cummins, & Man, 2015).

Figure 1
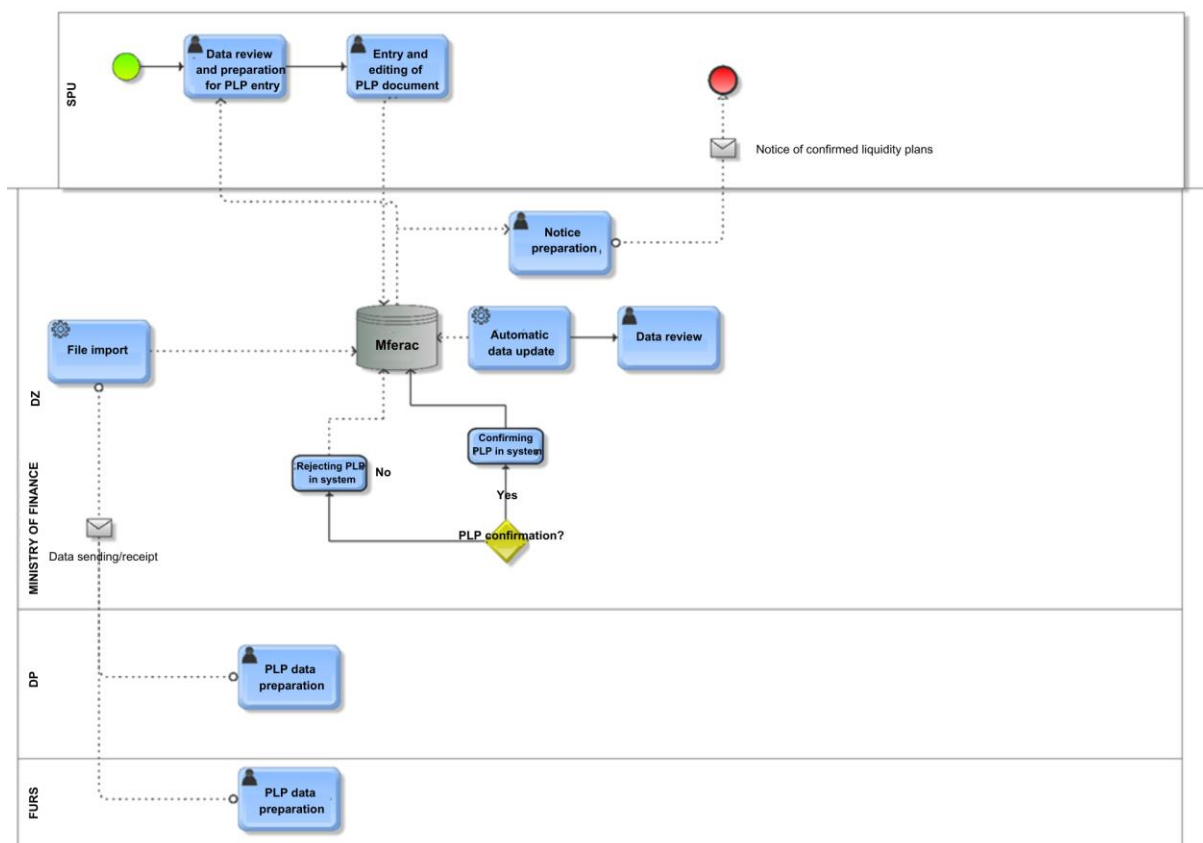Model of the renovated PLP process (TO-BE)

Table 2 presents the analysis of the properties of the implemented activities in the current process (AS-IS) versus the renovated process (TO-BE) or communicating adjustments to the liquidity plan and measuring the effects of the process renovation.

Table 2: The properties of the current and renovated process of communicating adjustments to the liquidity plan and measuring the effects of the process renovation

Properties for the existing LP adjustments reporting process (AS-IS)			Properties of the renovated LP adjustment reporting process (TO-BE)		Measuring the effect of the process renovation		
Activity	**Time in minutes**	**Cost in EUR**	**Time in minutes**	**Cost in EUR**	**Reduced time in minutes**	**Reduced time in minutes**	**Reduced costs in % (TO-BE)**
Verifying data for preparing the ALP	19	2.31	17	2.07	-2	-0.24	-11
Oversight and arrangement of the ALP document for the PU	20	2.43	10	1.22	-10	-1.22	-50
Preparing the increase application	5	0.61	3	0.36	-2	-0.24	-40
Confirming the increase application	5	0.61	5	0.61	0	0.00	0
Review and documentation of the submitted corrections	30	3.65	10	1.22	-20	-2.43	-67
Data entry in the auxiliary BLMS database	25	304	0	0.00	-25	-3.04	-100
Data entry into the BLMS database	10	1.22	0	0.00	-10	-1.22	-100
Total	**114**	**13.85**	**45**	**5.47**	**-69**	**-8.38**	**-61**

The analysis of the gathered results from Table 2 indicates that on average, the renovated process (TO-BE) is 61% shorter, which is an improvement of 15% from the analysis of the current process analysis (AS-IS). The shorter implementation time of the renovated process constitutes EUR 8.38 fewer costs. It was revealed that this process is executed daily, which sums up to EUR 175.98 EUR fewer costs a month and means EUR 2,111.76 EUR in cost savings a year (Table 4).

The main change of the renovated process of communicating corrections to the liquidity plan (TO-BE) that can be discerned from the graphically presented model on Figure 2 is that

in comparison to the AS-IS process, the communication flow of data between the process participants runs exclusively through the MFERAC information system. The manual activities (manual entries, data import and export) have been replaced by automatized service procedures concurrently with each change in the system, which has consequently decreased the number of activities for the process participants. The renovated process (TO-BE) has also introduced smaller organizational changes, for example, that in contrast to the AS-IS process, users in the TO-BE process can communicate a change for the 1st of the month, no longer on the 10th of the month. This change was implemented in order to acquire the most precise possible data for the national budget manager who plans, monitors, and coordinates the executed cash flow of the national budget and the users have smaller disparities between the realized and the forecast payments at the end of the month.

Figure 2
Model of the renovated ALP process
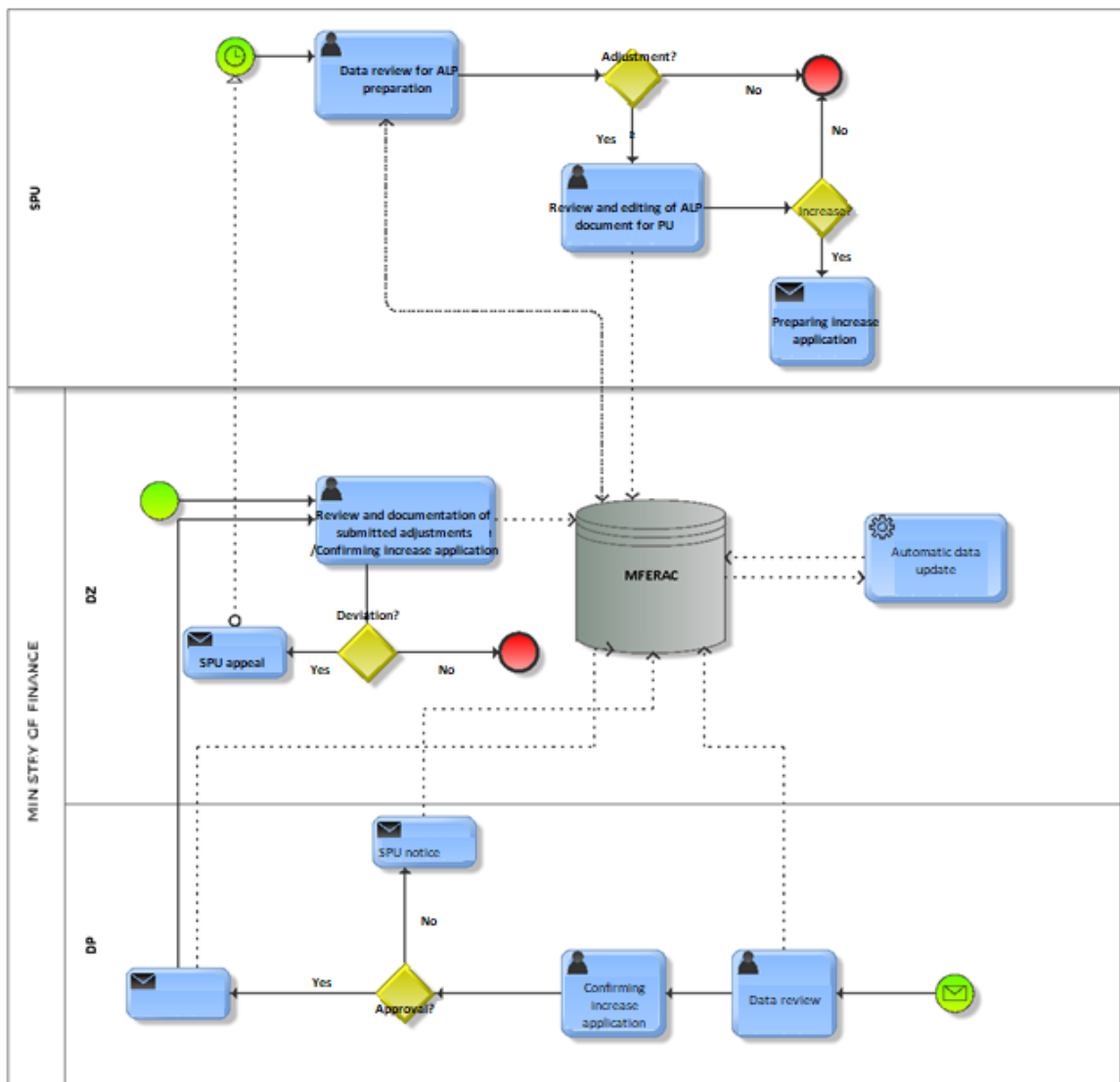
Table 3 contains the analysis of the properties of implementing activities in the existing process (AS-IS) and the renovated process (TO-BE) of cash flow management as well as measurements of the effect of renovated process (TO-BE).

Table 3: Properties of the existing and renovated process and the effects of the improvements to the renovated process of cash flow management

| Properties of the existing PROCESS of cash flow management (AS-IS)			Properties of the renovated PROCESS of cash flow management (TO-BE)		Measuring the effect of the process renovation		
Activity	Time in minutes	Cost in EUR	Time in minutes	Cost in EUR	Reduced time in minutes	Reduced time in minutes	Reduced costs in % (TO-BE)
Data collection and overview	30	3.65	15	1.82	-15	-1.82	50
Data entry	20	2.43	5	0.61	-15	-1.82	-75
Data import/export	10	1.22	0	0.00	-10	-1.22	-100
Total	60	7.29	20	2.43	-40	-4.86	-67

The analysis of the acquired results as displayed in Table 3 indicate that the renovated process (TO-BE) has shortened the process execution by 67% relative to the current state process (AS-IS).

It was determined that the process is executed on a daily basis, which constitutes EUR 102.06 fewer costs a month, i.e., EUR 1,224.72 fewer costs a year (Table 4).

The key substantive change in the renovated process (TO-BE) is the database that has been established at the economic classification level. It is no longer organized at the level of liquidity items as it used to be in the AS-IS process. Additionally, the TO-BE process is implemented in the new online environment of the MFERAC information system, which provides the required and necessary functionalities and an adjusted manner of executing individual activities (as depicted by Figure 3 – graphically presented model of the process). These improvements in the renovated process have also impacted their effectiveness as presented in Table 4.

Figure 3

Model of the renovated cash flow (CF) process (TO-BE)
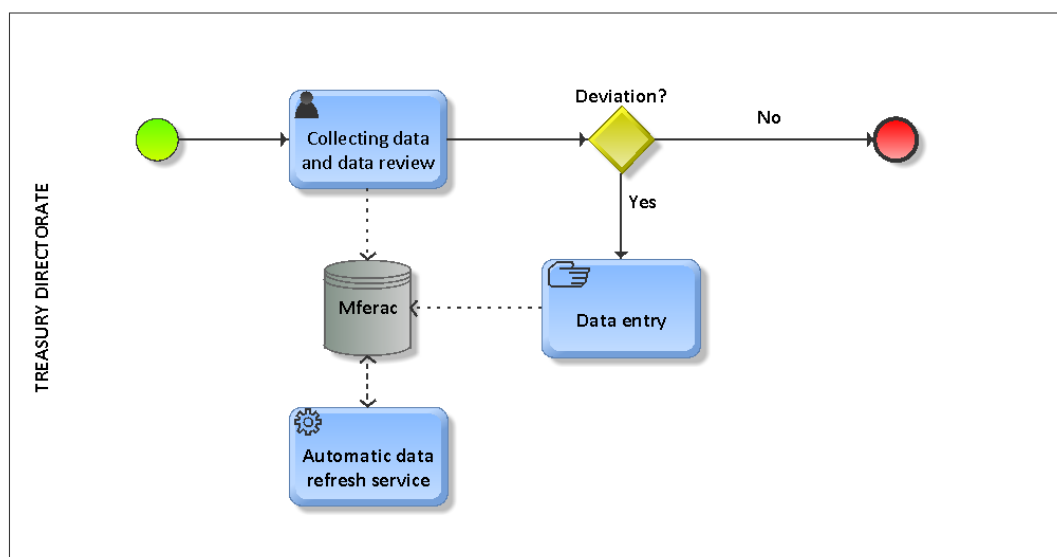
Discussion: Measuring the effect of the process renovation

Table 4 presents the effects of the renovated liquidity planning process of the national budget. Presented are the average values of executing individual work processes and the achieved impact – annual saving in hours and costs in EUR.

Table 4: Annual impact of the renovated liquidity planning process of the national budget (TO-BE)

Annual impact of the renovated Liquidity Planning Process of the National Budget TO-BE						
Process	No. of executions	Time change in min	Cost change in EUR	Cost change in %	Annual savings in hours	Annual savings in EUR
Process of preparing the PLP and confirming the LP	12	-40	-4.86	-24	-8	-58.32
Process of communicating adjustments to the LP	252	-69	-8.38	-61	-290	-2,111.76
Cash flow management process	252	-40	-4.86	-67	-168	-1,224.72
Total	516	-149	-18.11	-51	-466	-3,394.80

Source: Own (Gartner, 2020)

We have determined that the renovated process is executed 50% faster, consequently resulting in EUR 3,394.80 lower cost a year. It has been indicated that the renovated liquidity planning process of the national budget (including the new and expanded functionalities of MFERAC and in eliminating manual entries) saves 466 hours of time that had previously been dedicated to compiling the necessary analyses and preparing reports. The renovated process is executed 50% faster. The additional daily measurements of entry errors and discrepancies between the forecast liquidity plan and realized liquidity plan has also determined that the gathered data and information in the renovated process are 18% more accurate (which means 18% fewer discrepancies between the planned cash flow and actual realization) and as much as 72% fewer errors.

The renovation of the liquidity planning process of the national budget also provides added value for future cash flow forecasts and executing cash flow simulations by taking into account certain scenarios that can impact the liquidity of the national budget (Table 9).

The analysis of the answers of the interviewed users of the renovated liquidity planning process of the national budget (TO-BE) confirmed the advantages of the TO-BE process: 22% of the users share the opinion that user support is well established, 19% of the users recognize the advantage of implementing the economic classification that has replaced the liquidity items, which also shortens the time users need to spend on the review, collection, and preparation of the data. 9% of the users think the automatic nature of coordinating the dynamics on the last day of the month is an advantage that shortens the processing time, 9% of the users think the renovated system in more transparent. Furthermore, 9% of the users also believe that the renovation has shortened the time needed for the process execution, 6% are pleased with the enabled function of reporting corrections to be set for the 1st of the month, no longer on the 10th of the month as was customary in the AS-IS process.

CONCLUSIONS

This paper analysed the liquidity planning process of the Slovenian national budget. The core notion is that the process renovation has a significant impact in its efficiency. In practice, this means that the renovated process aims to eliminate and reduce the obstacles or so-called bottlenecks (i.e., simulations and forecasts (reports) of cash flows are prepared too slowly and are consequently reported too late, certain operations need to be carried out manually and are duplicated). This increases the chance for errors.

The proposed business renovation approach using the TAD and Aris method on Press and hold BPMN standard for modelling has proven to be valuable for understanding the current process (AS-IS), the renovated process, and the effects of the improvements.

The case study confirms that the renovated process is executed 50% faster. In addition, the data and information acquired through the renovated process are 18% more accurate (meaning 18% fewer discrepancies between the forecast cash flow and the actual realization) and present 72% fewer errors.

Tables 1, 2, and 3 reveal that the activities of duplicated data entry, import, and export that were executed several times a day upon each change of data or upon errors in the manual

data entry. In the TO-BE process, these activities have been automated or can only be executed only once when needed.

Furthermore, the renovation process has proven to be useful since it enables a faster and more precise preparation of future cash flow forecasts. The reached conclusion was that the shortened duration of the process execution and the eliminated manual activities saves 466 hours of labour a year that can be utilized in a more productive way for preparing different analyses and reports enabled by the renovated MFERAC information system. This constitutes added value for future cash flow estimates and preparing simulations by taking into account certain event scenarios that affect the liquidity of the state budget.

The limitation of the study is that the renovated liquidity planning process of the national budget including the new and expanded functionalities of the MFERAC information system is still in the implementation phase. In the future, the effects of the renovated process are expected to increase further (decreased hours spent and costs). For this reason, further research of the process remains necessary and advisable.

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