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# THE USING OF FULL TIME EQUIVALENT IN WORKING TIME PLANNING

Case  
Study

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## Keywords

*Full Time Equivalent;*  
*Working process;*  
*Employees;*  
*Optimization;*

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## JEL Classification

*J21, J23, J24*

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## Abstract

*The complexity of working time management has led in time to the need of using the concept “Full Time Equivalent” (FTE). Whether it is about planning services or physical production, one FTE is the equivalent of eight hours of work per day for an employee in a month. Each activity can be managed through a certain number of FTEs per month. Starting from this unit of measure, whether one has full-time or part-time employees, working time is brought to the same common denominator (for example: one needs 12 FTEs per month). This paper presents a measurement of a working process based on FTEs, which is an increasingly used practice in corporations. It describes the methodology for a particular activity that conducted to a specific time for each step of the entire process of work, and then the required FTEs is calculated according to this data. Since there are differences between the required FTEs according to the actual measurements of the process and the number of FTEs from the previous year according to the workload, possible arguments for these differences are discussed. Finally, there are highlighted the time-consuming steps in order to make the working process more efficient.*

## WHAT FULL TIME EQUIVALENT (FTE) MEANS. LITERATURE REVIEW

Full time equivalent (FTE) calculation comes from the possibility of business process optimization (BPO). BPO depends on the competitive environment a company faces within the industry (Meyer, 2006). A business process consists of all the steps that are imperative in order to fulfill the tasks that define that work. It is important that business processes accomplish three key factors: to be efficient, agile and to meet the customer demands (Meyer, 2006). Also, it is vital for organizations to continuously focus on clear, correct and updated process documentation, which includes maps, input and output details, resource assignments, cycle times, etc. (Meyer, 2006). If initially the work process was not defined in documents, in time, this aspect became very useful for both, employees and employers. The more complex a work process is, the more order and simplicity are necessary within the process. Also, it is very important for the stakeholders that processes management is clear enough and understandable. A streamlined and well-understood process brings efficiency, effectiveness, safety in the performance of work tasks and good interdepartmental communication. A complex and complicated, rigid work process usually comes with problems mostly for the end customer of the product/service offered, stress for the employees and misunderstandings for stakeholders regarding the work environment and outputs.

There are quite old studies which state that information technologies are correlated with business process' efficiency and that innovation improves work processes (Adams, 1999). The author agrees with this opinion. In fact, the author fully supports the idea that information technology represents a basic pillar which allows improvements to work systems and processes as well. Without technology, communication between employees would not be such simple. Also, the customer interface becomes much more efficient, allowing the collection of feedback as quickly as possible. Information technology allows automation of redundant working tasks and improves a lot in reporting the organizational results. Information technology becomes a pillar that simplifies work processes by storing information and accessing it when needed.

Other organizational investigations are of opinion that accurate monitoring of the process ensures the successful completion of the work (Camo Analytics, 2020). Process improvements using FTEs measurements and calculations are correlated with Lean and Six Sigma concepts. The purpose of Six Sigma is not to reduce working time in the work process. Six Sigma focuses on reducing defects. Instead, the Lean concept focuses on eliminating waste from the system and implicitly on increasing

the working speed (Dasari, 2011). Finally, there are several variables through which working times can be reduced: machine breaks, transport times, etc. (Dasari, 2011).

There are connections even between calculation of FTEs and Project Time Management. According to the Project Management Institute, there are six steps that capture the processes used to timely manage the activities (Project Management Institute, 2020):

- To define the activities;
- To sequence the activities;
- To estimate the resources for the activities;
- To estimate the durations of each activity;
- To develop schedules;
- To control the whole process.

Defining activities and estimating the resource costs constitute the beginning from which any process improvement should start. Optimization always starts from what is known, and analyzes each process activity piece by piece, until it finds the redundant parts in order to eliminate them. Optimization is one of the final steps for Business Process Management (BPM) and does not imply a lower quality of the products/services offered, but the same quality, offered more efficiently (Tallyfy, 2020). Business Process Optimization implies constant process re-evaluations and improvements (Tallyfy, 2020).

A business process is characterized by three key factors: state, capability and design (Smith and Fingar, 2003). State is connected with executions of tasks within the work process, capability is an attribute that explains how far the work process can go, and design refers to the intentional characteristics of the process (Smith and Fingar, 2003). Trying to capture a work process (which is dynamic most of times) is almost impossible, because there are a lot of changings (Smith and Fingar, 2003). The author agrees with the authors Smith and Fingar (2003), because a work process is constantly changing. The only conditioning factor for this aspect would be that the managerial objectives should suppose and accept at the same time the continuous improvements. However, the organization should be too rigid and not accept a change that makes the working methods more efficient. Any process measurement is done at a certain time and is valid only for that moment, not for a period.

The existence of optimization process management is justified, since it has the main goal to reduce/eliminate time and/or resources, costs or mistakes (Heflo, 2020; Digital Workplace, 2020). Business process optimization represents a practice of increasing efficiency by improving processes (Digital Workplace, 2020). Optimization is a new discipline, which starts with needs/problems found in the organizations and finishes with solutions that improve the work process. The main questions that should always be asked when there are needs for

improvements within work processes are (Heflo, 2020):

- What is the final purpose of the process?
- Where does the process starts/ends?
- What activities are parts of the process?
- Which departments/people are involved in the process?
- Which information moves between steps?

## METHODOLOGY

### Instruments used

The current process measurement analyzed in terms of full time equivalent (FTE) was performed for a corporation that activates in the banking industry, for three categories of money bank transfers. A first step for measuring the work process of these bank transfers processed by employees was to conduct a focus group with 10 employees, which had the main purpose to define the working process for bank transfers that had to be measured. Subsequently, three worksheets were prepared to measure the process. These are presented in Table 1. Then, these worksheets were again verified in the second focus group with the same selected employees. The aim of these two focus groups was to establish as accurately as possible the steps of the work process for all the three categories of bank transfers measured in FTEs.

### Sample for realizing measurements

The research for this work process was carried out in 2017, and lasted about six months until the information obtained was presented to managers. The two focus groups were created during the first month of process analysis, and the people who participated in these activities were part of the analysis sample. Basically, two samples were made: the first one with the employees, and the second one with the measured bank transfers.

The first sample was made up of 10 employees and it was created taking into account multiple variables: the age of the people, their dexterity at the workplace, their perspicacity, respectively the quality and quantity of the daily achieved work. The aim was to choose employees as different as possible, in order to avoid influencing in any negative way the future directions for planning the working tasks in terms of FTEs (as each one has his own rhythm of work, this aspect should be understandable). The second sample considered the bank transfers chosen to be measured. This was chosen daily, for seven days, but not consecutive. It was completed during a month of work, and was assigned to each person via e-mail (not at the same time of the day, but in the morning, sometimes at noon or in the afternoon), including different bank transfers regarding the difficulty of performing them. In total, measurements for 401 bank transfers by 10 employees were made during one month.

## MAIN RESULTS

The synthetic results of the process measurements in hours, minutes and seconds are presented below. Table 2 shows the number of bank transfers measured, the average obtained and the median for each category of bank transfers.

As it can be seen, for both indicators (mean and median), the most time consuming type of bank transfer is the second category, with a mean of eight minutes and 19 seconds, respectively a median of five minutes and one second. Also, the least time consuming BT is registered for the first category of operations, while the last type of BT is the largest time consuming. The author considers that, in this process, analysis is more important to highlight the median than the average. And that's because the median excludes the extreme cases. For example, if a bank transfer was processed by an employee in 10 seconds or in three hours (compared to author's analysis that shows values between three and nine minutes), these cases represent the extremes, and will be excluded from the calculation of the median, based on the simple reasoning that are exceptions to the rule. Thus, using the median indicator for our case, the author considers that time statistics is much closer to reality.

Figure 1 shows the averages obtained (in minutes) for the first category of BT.

As it can be seen, the first operation (Encashment first operation) lasts the most (one minute and 31 seconds), and on the second place there are the searches in contracts that have the role to identify the client for whom the transfer is processed (one minute and seven seconds). The rest of the operations are below the limit of 34 seconds: design, send and archive e-mails; searches in the first and fourth window, in Archives, SEPA, on the Internet, Bios and other searches; encashment second operation; visualization and understanding the bank transfer; putting notes on the contract/bank transfer; updating Customer data. All searches and operations are specific to bank encasements processing from a particular program. Interestingly, the searches records have quite a high dispersion, with a cumulative time of two minutes and 38 seconds. Thus, if one was to group this category of searches, it would be placed on the first place in terms of time consuming from the entire process.

Figure 2 shows the averages obtained (in minutes) for the second category of BT.

For the second category of BT, searches in the fourth window last the most (two minutes and 26 seconds), and the inserts of bank transfer in the first window are on the second place (with one minute and 11 seconds). With almost the same timing are encashment first operation (with one minute and seven seconds), respectively the searches into the

Contracts (with one minute and six seconds). The rest of the operations are below the limit of 36 seconds: searches in the first window, in Archives and Gemo; encashment second operation; design, send and archive e-mails; visualization and understanding the bank transfer; putting notes on the contract/bank transfer.

Again, the searches records have quite a high dispersion, with a cumulative time of four minutes and 32 seconds. Thus, for the second time in this current analyze, if we cluster this category of searches, it would be placed on the first place in terms of time consuming from the entire process. However, the current rating places searches in the fourth window on the first place of time consuming process, which represents more than 50% from all the searches within the entire processing (four minutes 32 seconds).

Process pieces that were not registered by the employees in the sample for measuring the working process are not insignificant. This statistic indicates, in fact, that there is the possibility that these pieces are accessed in the program, and thus, the possibility of occurrence is not excluded. The author considers that such options in the program should be periodically checked by an expert, in order to see if they are still needed. If these are needed, then their utility is explained and they deserve to be left in the program. If not, these can be extracted from the program in order to simplify the work interface.

For the first category of BT, there were four operations with zero time reported, for the second category of BT there were eight operations with no time reported within process, and for the last category of transfers, the most timeless operations were recorded (more specific, there were 16 operations with zero time reported). This leads us to the following possible two conclusions: the sample for this category of transfers was not well structured (taking into account the fact that only 43 operations were measured for this category of BT, while for the first category of BT, 300 operations were measured), or the process is the most simplified in this case, or maybe for this category of operations (compared to the first two categories), the employees in the sample skipped the registration of the related times in the process.

However, as work processes are not always standard, it is natural to appear questions regarding steps in the working method that may be useful or not over time. Given that, in most cases, in corporations, several working teams work on a process, there appears the possibility that the changes made in the process over time (and not communicated on time) justify the uselessness of some steps/portions of the process. Of course, this is a particular case and does not represent a justification for the case study. However, the author would like to conclude that non-standard work processes are subject to change in the meantime, and

when process measurements are carried out and then small steps that improve the working methods are implemented, usually all these steps conduct to organizational standard processes.

Figure 3 shows the averages obtained (in minutes) for the third category of BT.

As it can be seen, the first operation (Insert bank transfer in the first window) lasts the most (one minute and 25 seconds), and the searches for the insertions of BT in the same window are on the second place (one minute and nine seconds). On the third place there is the first operation for the encashment (with one minute and four seconds). The rest of the operations are below the limit of 56 seconds: searches for the insertion of BT in the Contracts, in the Contracts in order to find out the Clients, in Archives, in the fourth and first window, in Gemo and other searches; visualization and understanding the bank transfer; encashment second operation. All the searches records have again, quite a large dispersion, with a cumulative time of two minutes and 58 seconds. Thus, if one was to group this category of searches, it would be placed on the first place in terms of time consuming from the entire process.

Since optimized processes conduct to optimized business goals (Digital Workplace, 2020), some examples of optimization include (Digital Workplace, 2020): eliminating redundancies; improving communication; streamlining workflows; forecasting changes. Optimization comes with a lot of benefits for companies: reduces costs, employees become more motivated, Clients more satisfied, the environment cleaner, risks are reduces and the transparency increases.

This type of BT registers many steps of the process that were registered with zero time. In fact, there are 16 steps from this category. Being the main category of BT with so many steps measured with zero time, the author considers that these steps should periodically be checked by experts, in order to approve if they are still needed.

Considering all the three categories of BT, with confidence of 95%, it can be stated that there are significant differences between the working times of the bank transfers ( $p = 0.00$ ). The results obtained for this statement are in the Table 3 and Table 4.

In practice, the results have indicated that between the measurements made and the working times calculated on these three categories of BT, there are differences, meaning that the times calculated in the last year are shorter than the measured ones. The arguments for these differences can be the following:

- The work process has become more difficult in the last two years since the measurements, in the sense that employees work much more qualitatively, which means “extra time”;
- Newcomers to the team have a slower pace of work;

· The activity began to be more complex. The most time consuming steps for all categories of BT are the grouped searches. So, in terms of optimization, we consider that possible optimizations should be made on the ways of searching data within the used programs at work. Also, if we were to choose between the mean and median calculation in order to get a realistic evidence of the time consuming steps, we consider that median it is more representative, because, it excludes the exception cases (the values too small or too high).

## CONCLUSIONS AND DISCUSSIONS

Full time equivalent (FTE) calculation comes from the possibility of business process optimization (BPO). Process improvements using FTEs measurements and calculations are correlated with Lean and Six Sigma concepts. The purpose of Six Sigma is not to reduce working time in the work process. Six Sigma focuses on reducing defects. Instead, the Lean concept focuses on eliminating waste from the system and implicitly, on increasing the working speed (Dasari, 2011).

Optimization always starts from what is known, and analyzes each process activity piece by piece, until it finds the redundant parts and eliminates them. Optimization is one of the final steps for Business Process Management (BPM) and does not imply a lower quality of the products or services offered, but the same quality, offered more efficiently (Tallyfy, 2020).

The author does agree with the authors Smith and Fingar (2003), because a work process is constantly changing. The only conditioning for this aspect would be that the managerial objectives suppose and accept at the same time the continuous improvements.

In this paper, a process measurement analyzed in terms of full time equivalent (FTE) for the banking industry is described for three categories of money bank transfers. The research for this work process was carried out in 2017, and lasted about six months until the information obtained was presented. Two focus groups were conducted, and the people who participated in these activities were part of the analysis sample. Basically, two samples were made: the first one with the 10 employees, and the second one with 401 bank transfers.

It seems that when it comes to optimize the work process, the key to success is to define and to continuously improve the process documentation. And for that, there are necessary the measurements of the processes. In this case study the author found that for the measured process, the searches represent the main consuming step within the whole work, so that further analysis should consist in finding causes

and improvements for reducing this type of operations.

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**TABLES & FIGURES**

Table 1  
**Table head of the worksheets for measuring the three categories of bank transfers (BT)**

Employee	Date (dd/mm/yy yy)	Bank transfer identifier	Amount	Start time (HH.MM.SS)	End time (HH.MM.SS)	Number of Clients	Number of e- mails	List of e- mails	Comments
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*Note: The worksheets had the same head of table, but the steps in the process for each type of bank transfer were different. For each person that participated in the sample these worksheets were listed and they completed by hand the measurements.*

Table 2  
**Means and medians for the types of measured bank transfers (BT)**

Typology	Number of banking transfers measured	Mean (in hours, minutes and seconds)	Median (in hours, minutes and seconds)
First type of BT	300	0:05:35	0:03:24
Second type of BT	58	0:08:19	0:05:01
Third type of BT	43	0:05:53	0:04:54
<b>Total</b>	<b>401</b>	<b>0:06:36</b>	<b>0:04:26</b>

Table 3  
**Kruskal Wallis Test for testing the significant differences between BT1, BT2 and BT3 for time process (minutes) (1)**

Typology	N	Mean Rank
First type of BT	300	182.67
Second type of BT	58	254.22
Third type of BT	43	257.07
<b>Total</b>	<b>401</b>	<b>-</b>

Table 4  
**Kruskal Wallis Test for testing the significant differences between BT1, BT2 and BT3 for time process (minutes) (2)**

Test Statistics <sup>a, b</sup>	Minutes
Chi-Square	29.80
df	2
p	0.00

*Notes: grouping variable = type of transfer (BT1, BT2, BT3); p < 0.05.*

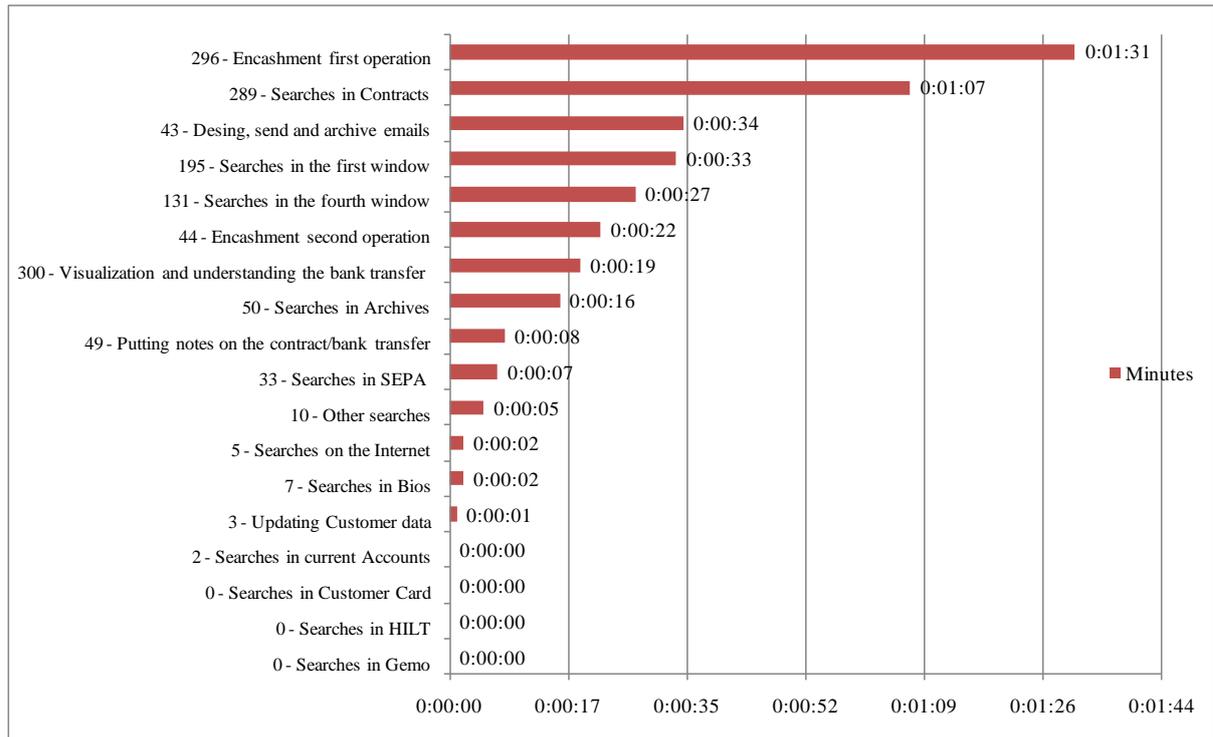


Figure 1  
**Means for all steps of the process for first type of BT (M = 300)**

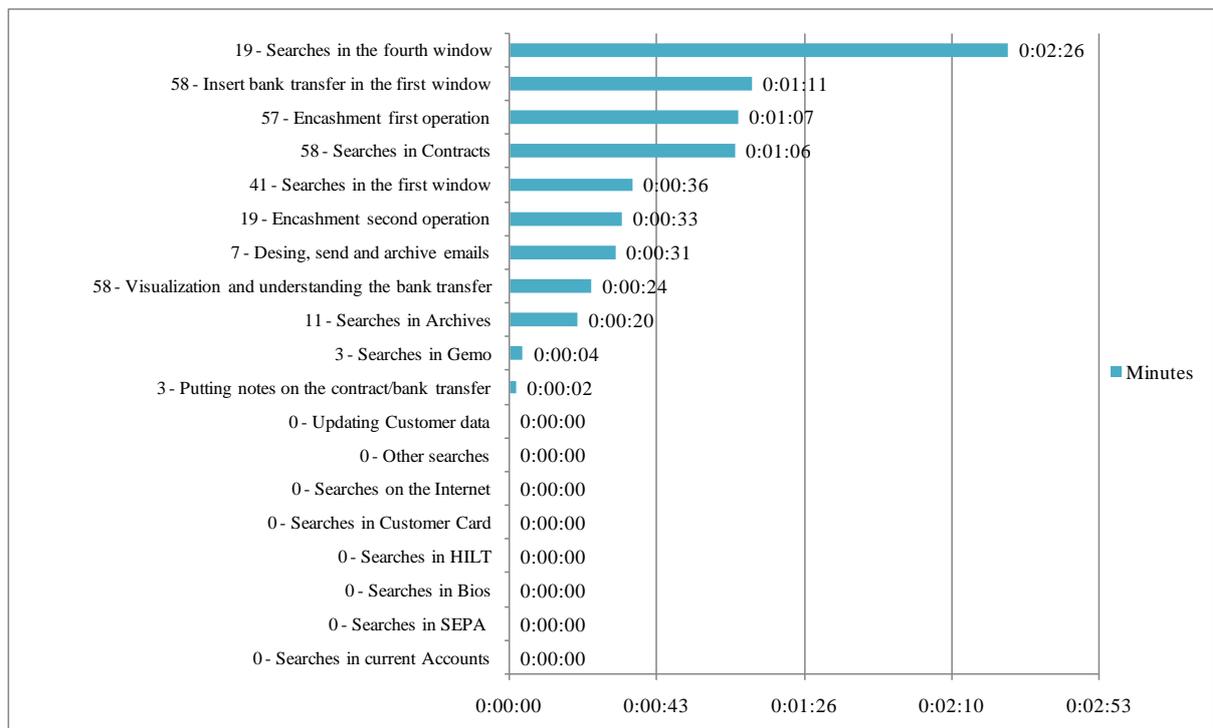


Figure 2  
**Means for all steps of the process for second type of BT (M = 58)**

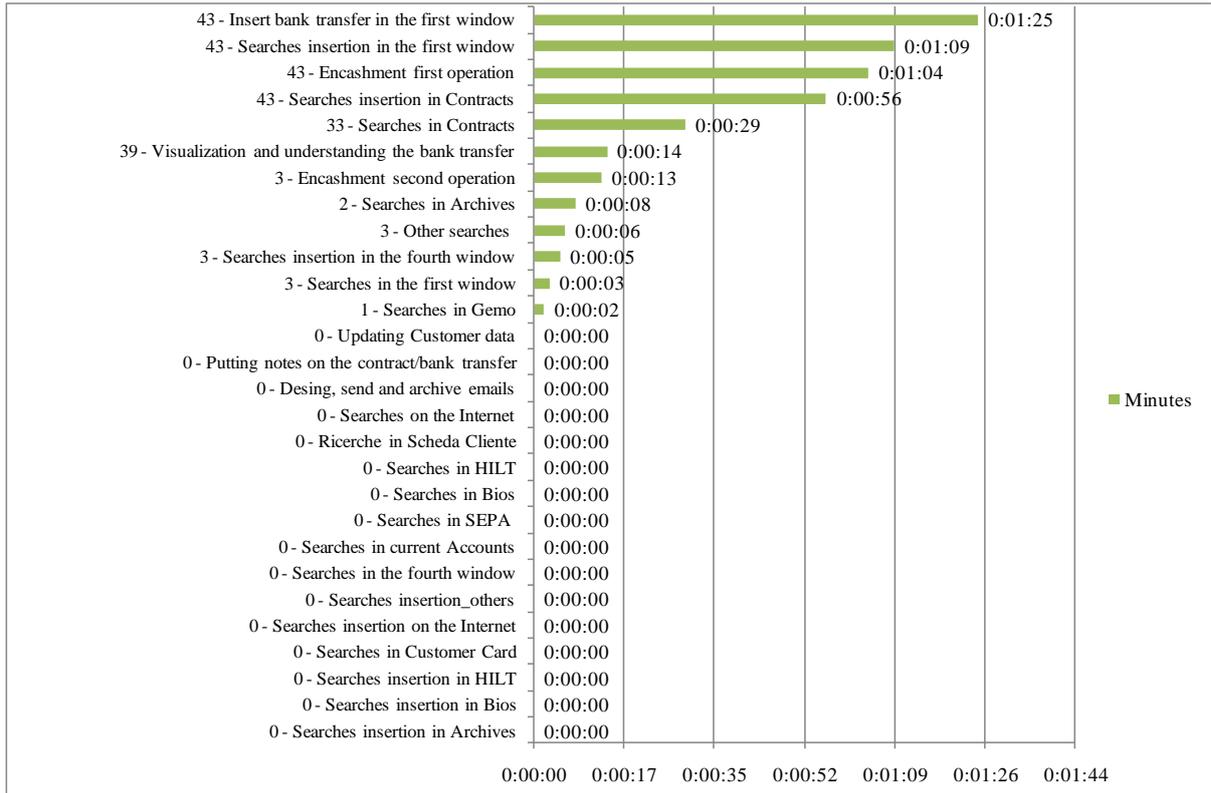


Figure 3  
Means for all steps of the process for third type of BT (M = 43)