How to optimize processes and customer satisfaction in CTT

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ABSTRACT

The evolution of technology over the past decades has changed the competitive landscape across markets. Postal services underwent considerable change. In Portugal the drop of letters mailed between 2001 and 2017 is driving CTT to rethink its strategy to adapt to this new reality. CTT's revenues have been dropping over the past few years due to falling mail volumes and footfall. CTT's transformation must start with increasing customer satisfaction in an environment of severe cost control. Increasing the efficiency of the operations is of utmost importance in this challenging environment. This thesis was based on the work developed at a pilot store (Store A) and if successful, it will be rolled out for the entire CTT network. It followed various steps, from the identification of the main efficiency constraints to the implementation of proposed solutions and subsequent measurement of results. The pilot project in Store A generated significant efficiency gains as evidenced by the improvement of selected Key Performance Indicators, namely a reduction in the Average Waiting Time of customers in the store of over 40%.

Keywords: Postal Services, Retail Stores, Process Optimization, Customer Service

1. INTRODUCTION

Postal services have more than four thousand years of history. Trade of information and materials has been one of the cornerstones of the development of societies (John, 2015). Postal services evolved and became a fundamental way of communication and transportation of goods. In fact, postal services continue to provide this type of service, although client's needs have changed over the last decades.

The growth of electronic communications is the main reason behind the decrease of mail volumes, and consequently revenues. This downward pressure on mail volumes has created an enormous pressure on postal services operators to focus on their efficiency (Tochkov, 2015).

The purpose of CTT is to supply the postal services across Portugal in the best way possible. This means the company must be able to receive, distribute and deliver letters, documents and parcels that customers need. These services are only available due to the large number of CTT stores and locations, which allow the CTT to reach a national and unique coverage.

Despite having a well-organized structure, CTT's main problem is the steep reduction in the number of letters sent per year, which is nowadays half of the number of letters sent in 2001. One possible solution to address falling mail volumes would be cost cutting, namely by closing some of CTT's branches. However, for regulatory reasons, service levels cannot be reduced. CTT, according to ANACOM guidelines, must provide services in a reduced time frame for a fixed price across the country. As a result, in order to offset the fall in mail volumes, CTT must increase efficiency, expand product offerings and increase service levels.

In order to overcome these challenges, CTT has entered an ambitious project to increase operational efficiency and improve client satisfaction. Considering that CTT has 587 stores throughout Portugal, and that these are the most important point of interaction of CTT with its clients, improving stores efficiency is naturally necessary for CTT general objectives.

This project is focused on improving operational efficiency of CTT stores. For this, a pilot store was selected (store A), where main problems were identified, and solutions were found, implemented and their success measured. The scale-up of these solutions for the rest of CTT stores will be the next stage of the project but is not in the scope of the present thesis.

2. State of the Art

In this section several aspects will be covered: processes standardization, stock management, cash replenishment and customer satisfaction.

Nowadays many specialists, believe that companies have a lot to gain with standardization (Darinet al., 2007). According to Hammer et al., (1999) the question is no longer between centralization and decentralization but rather, standardization versus process diversity. This is the real key structural issue enterprises face: should all

units do the same thing the same way?

To make the simplification of a system possible through standardization, Mĺkva et al., (2016) present 5S Method (Japanese origin) – described below – as one of the possible methodologies to be applied. This method is universal to all organizations and applied worldwide not only in production, but also in services. This methodology consists, in the following five sequential steps: sort, stabilize, shine, standardize and sustain. Visual Management is fundamental to the last step and is divided in several aspects, from the normalization and identification of sites to the visual tracking of performance indicators (Melton, 2005).

Some processes are fundamental to have a well-organized structure, like stock management and cash replenishment, especially if it concerns services.

Stock management is fundamental in a company organization. In a retail company, the stock often represents between 35% to 50% of total invested capital (Pettersson et al., 2011). There are two well-known models to deal with inventory, the continuous review model and the periodic review model. In the continuous review models there is a systematic review of stock levels while in periodic review models the inventory level is revised only at regular time intervals. According to Sanders (2012), all inventory systems must respond to two main decisions: when to place a replenishment order and the quantity involved. The policy (s, Q) is a continuous review policy and, whenever the stock position reaches a certain pre-specified point s (order point), a new replenishment request, fixed quantity, is launched. In the case of periodic review policies, such as policy (R, S), inventory revisions are carried out at regular intervals R.

Concerning cash replenishment, several studies regarding the ATM machines were done to investigate how to use the minimum resources such as the cash kept in ATMs, the trucks for loading cash and the people to do the replenishment (Ekinci et al., 2015).

Having in mind customer satisfaction, it is crucial to understand our client's loyalty.

Net Promoter Score (NPS) is the most recent technic to measure loyalty and predict revenue growth. Reichheld (2003) believed that the retention measures were a poor predictor and therefore created NPS. He believed that NPS has a good advantage since the companies only need to ask one question to manage the loyalty and to predict the future growth. That question is: "how likely is the client to recommend the company to a friend or a colleague". NPS has a scale of 11 points between 0 and 10. If a customer gives between 9-10 he is a promoter, if gives between 0-6 he is a detractor and

between 7-8 he is neutral. Keiningham et al., (2008) say that NPS allows the reduction of the long-time waiting for survey results, and also decreases the fatigue and the resources spent.

3. Case Study

CTT enjoyed a stable and closed market for many years. However, this situation has been changing and CTT is now facing a considerable challenge.

When a company like CTT has five hundred and eighty-seven stores, one of the most relevant aspects of its activity is the experience of customers when they go to the stores. A key indicator of such experience is the average waiting time (AWT) – which is of utmost importance not only for customer satisfaction, but also for regulatory reasons. Since CTT is a regulated company (by ANACOM, the National Regulatory Authority), it is required to assure minimum quality service levels, otherwise it may pay penalty fees. One of these indicators is IQS 10, which states that the AWT of a client in a CTT store should be lower than 10 minutes (ANACOM,2018).

The reduction of AWT is the most important objective of this work. For this to happen without increasing costs, increasing the efficiency of the stores is the only solution – activities and space must be optimized, employees must be well trained, motivated and aware of the store and clients' needs.

Some processes were considered critical since they take a lot of back office (BO) time in store thus reducing time available for front office (FO) activities. Three processes were identified: cash replenishment, acknowledgment system and stocks management.

Acknowledgement system - it is the process to manage letters/parcels that the postman was not able to deliver at the destination address and the items go back to CTT store for the client to collect. The delivery of the goods to the clients is often slow as employees normally have to search for the item and there is not an efficient system to organize those items and to promote an efficient delivery.

Cash replenishment – is the process that guarantees cash at the counter when serving clients. At least twice a day (beginning and end) employees have to meet the treasurer to receive cash needed for that day (25 minutes) or return excessive cash. If at any given time, additional cash is needed, employees have to meet the treasurer again. Employees normally ask or deliver money to the treasurer more than 2 times a day.

Stock management - this activity is mainly back-office and is not fully supported by an informatic system and therefore is highly manual. As such, it is time consuming

and it often causes stocks to be excessive or insufficient as there are no standard rules for the stock management. There were products with a total stock coverage of 19 months and other with less than a month.

Store demand - stores have daily, and monthly seasonality but employees' schedules are not adapted to this reality, in particular at lunch time, when stores have a high demand while employees have up to 2 hours lunch break (Figure 1). Stores also have an intense flux of contractual clients (companies that have a contract with CTT and that arrive once a day in the store with a lot of mail to send) during the afternoon when they also tend to have a higher flux of regular clients (Figure 2).

Sch. Nº	Service	Begin	Pause	Restart	Finish
H1	Store Manager	09:12	13:30	14:30	18:30
H2	Treasurer	08:45	11:30	13:30	18:45
H3	Bank Commercial	09:00	12:00	13:30	18:30
H4	Bank Commercial	09:30	13:30	14:30	18:30
H5	Postal Commercial	08:45	11:30	13:30	18:45
H6	Postal Commercial	09:45	13:30	14:30	18:45
H7	Postal Commercial	10:00	14:30	15:30	19:00

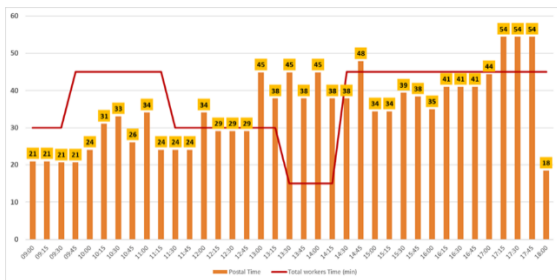Figure 1: Collaborators schedule

Figure 2: Supply and Store Demand

Another problem is in store communication - customers have little knowledge about CTT products and services as shown in a questionnaire done in 15 stores with more than 300 respondents.
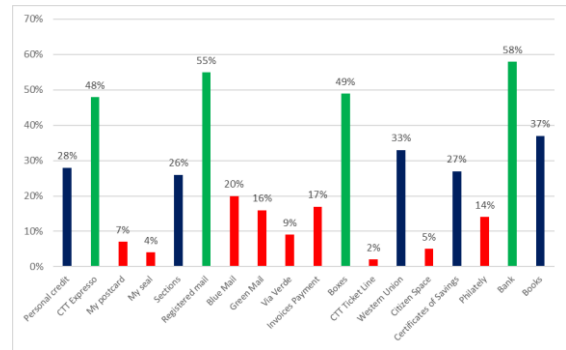

Figure 3: CTT products known by clients

As seen above, NPS is increasingly used to evaluate client satisfaction. Questioning "Would you recommend CTT to your family and friends?" allows us to calculate this metric. Considering the questionnaire, the number of detractors (0-6) is almost the same as the number of promoters (9-10).
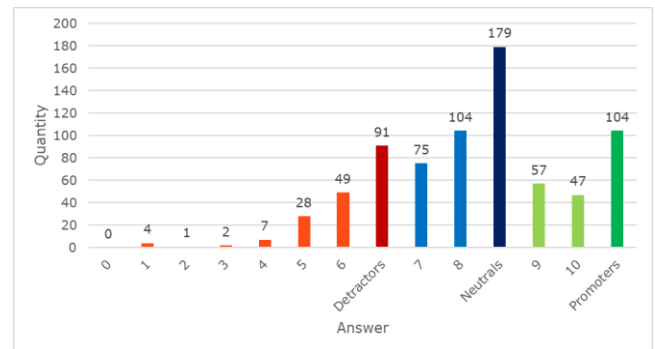

Figure 4: Answers of NPS

Using this information, we are able to calculate the NPS through the following formula (Krol et al., 2015).

$$NPS = \%promoters - \%detractors$$

CTT's final score is 3%, considerably below the overall average for delivery companies: UPS scored 39%, Fedex 56%, Chronopost 79%, Collect Plus 37%, Dropoff 87% and TNT 67% (Customer Guru, 2018). In NPS scale CTT is in the Improvement Zone as it is possible to see below:

- Excellence Zone - NPS between 76 and 100
- Quality Zone - NPS between 51 and 75
- Improvement Zone - NPS between 1 and 50
- Critical Zone - NPS between -100 and 0

The main objective of this project is to enhance CTT's customer service by improving its clients' experience while maintaining/reducing costs. In order to do so, time for back-office operations must be reduced and front-office time available must be increased in order to deliver the best service to the client. Another objective is to

3

improve in store communication - this will help the customer to know CTT products and services, and to have a better experience when visiting the store.

4. Improvements Implementation

Firstly, it was done a preliminary analysis of the improvement opportunities found for the various processes performed at pilot store A, helping to understand the initial situation.

Key Performance Indicators (KPI) were defined as a performance appraisal tool for the different improvement initiatives. Below are some of the KPIs defined.

Average Waiting Time - sum of the waiting time of the customers (i=1 to i=k) divided by the total number of customers (k).

$$AWT = \frac{\sum_i^k Time\ Waiting\ i}{k} \qquad (4.1)$$

% Clients - percentage of clients with an AWT superior to 10 minutes to evaluate the balance between offer of collaborators and store demand.

$$\% \ clients \qquad (4.2)$$
$$= \frac{Clients\ with\ AWT > 10'}{k}$$

Average Time Activity - time used during some activities, such as, the time taken to deliver the items to the client (i=1 to i=t).

$$Average\ Time\ Activity = \frac{\sum_i^t ATAi}{t} \quad (4.3)$$

Average Replenishment Requests per Day - how many times collaborators need to ask for cash per day, where k is the collaborator and RR the number of replenishment requests.

$$Average\ Replenishment\ Requests\ per\ Day \quad (4.4)$$
$$= \frac{\sum_i^k RRi}{k}$$

Money Invested in Stock – which is the quantity of a product (Qx) multiplied by its price (Px) was used to measure the impact of the actions on stocks.

$$Stock\ (\text{€}) = \sum_x^m Qx * Px \qquad (4.5)$$

Net Promoter Score (NPS) - used as measure of customer satisfaction.

$$NPS = \%promoters - \%detractors \qquad (4.6)$$

Then a solution was proposed:

Phase 1 – Daily meetings

The stores did not hold regular meetings with all employees, including time dedicated to the discussion of problems/solutions and employee training. To circumvent this problem, a cultural change process will be developed through the implementation of Daily Kaizen, according to which a culture of continuous improvement in the day-to-day of the people involved in the store will be introduced.

Phase 2 – Space Organization

The Organization of Spaces, related to the movement of people and materials, will be achieved using the 5S method which encompasses redesigning layouts to reduce wasted time. The aim is to improve the operations and flows developed in the stores through the usage of specific locations for the various materials, minimizing the distance traveled and concentrating the products with greater turnover near the employees.

Phase 3 – Process Normalization

One of the biggest objectives is to optimize and normalize the most critical processes, to free up time, reduce the duration of activities, and increase the availability of the front office.

• Acknowledgement System – it was proposed testing an alternative method to organize the items, based on the last number on their bar code and separating by size, orders and fine warnings, and also by day of arrival at the store.

• Cash replenishment - The goal of this initiative is to reduce cash transfers between the treasurer and employees to once a day. To do so, an estimation of daily cash needs will be distributed by the treasurer and during the day, the treasurer will perform 2 verifications to check for any additional cash needs. Such policy will free up time for both, the treasurer and the employees.

• Stock Management - The solution created for the optimization of inventories, was to create a method to control stock levels for saleable materials. The method aims to perform stock reviews monthly. As CTT stores did not have any standard method, introducing this periodic system will be simpler and a more effective way to change and gain new habits. The method consists of setting a stock target:

$$Target = Average\ Consumption\ (T + L) + SS \quad (4.7)$$

Target is equal to the average consumption multiplied by T, (a month, since stocks checks will be performed once a month) plus L (Lead Time, which according to CTT is 15 days); We will then add SS (safety stock which takes in consideration the ABC analysis considering the stock rotation, A – 50%, B and C -15%). At the end of the month Real Stock levels will be compared with Target Stock levels and the difference will be ordered, which should then be received on day 15 of the following month.

• <u>Employee Schedule -</u> Changing the employee schedule, adapting them adequately to the number and type of services expected throughout the day, should allow for a decrease in the average waiting time and an increase in client satisfaction.

Phase 4 – Customer Orientation

The lack of customer knowledge about CTT products and their expectation to receive news about CTT offering while in store is a problem but also an opportunity

Some ideas were developed to enhance customer awareness, improve in-store customer experience, which we expect, may trigger a purchase scale-up . Some of the initiatives are listed below:

• Altering the tops and detachable of the exhibition furniture

• Setting the service (digital and manual)

• Manual with exposure rules and good

• A4 stand-out display (featured products)

• Attendance practices of excellence

• Leverage of Corporate TV

These initiatives combined are believed to trigger a reduction in the perception of waiting time, enhance store communication, improve the way the products are exposed and achieve excellence in customer service.

After solutions proposal, the implementation phase began in store A.

Initial Situation in store A:

For confidentiality reasons, the results considering the AWT shown below assume fictitious values with an analogous tendency.

Table 1: Initial KPIs

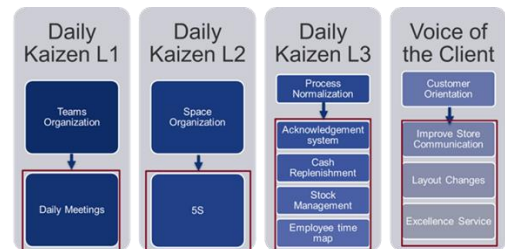| KPI	Begin	
	Period	Value
AWT	2017	15:42
%Clients>10'	Q4-2017	54,7%
Average Time Activity (Ack. Syst.)	March	5´
Average Replenishment Requests	March	2.75
Stock Invested	March	€ 26 325
NPS	April and May	3

Implementation scheme is shown below:

Figure 5: Implementation scheme

Daily Meetings - The Daily Kaizen is divided in four levels of sequential implementation: 1) Team management; 2) Organization of Spaces, 3) Adoption of Improved Work Practices and 4) Structured Resolution of Problems.

The first level of KD (Team Management) in CTT aims at establishing the habit of holding team meetings focused on the work plan of the various collaborators of each CTT store; these daily meetings are very focused, with a pre-defined agenda, an attendance map and a defined duration (10-15 min). In these team meetings, there is a set of metrics, including some of the indicators discussed above, that must be interpreted by everyone involved. The work plan and an improvement cycle are always discussed. Finally, the competencies matrix and a formation cycle are also included in the agenda regularly (not daily).

Spaces Organization - The implementation phase of 5S served to increase the productivity of the store by creating a line board in each of the workplaces adapted to the needs of the operations that are performed. The implementation of the 5S process began with the separation between the tools that are necessary for the execution of the tasks from those that do not add value to those operations. The second step is to define a place for each tool that adds value. The cleaning and normalization steps were subsequently carried out to ensure that the defined place is respected by all store employees. The 5S method is used not only in the front office, but also in back office, to help in all store organization aspects.

In Figure 6 below, it is possible to see the counter prior and after the 5S implementation. Counters at the store have now been normalized and are arranged in the

same way as the one in the figure on the right. The most requested items are on the counter, with labels on the drawers, which allows all the collaborators to be very familiar with the locations, gaining efficiency thus reducing AST (Average Service Time).

Figure 6: Counter after 5S

Acknowledgement system- As discussed before, the acknowledgement system needed to be changed and normalized. The new standard presented earlier was turned to reality:

i.   Creation of a new standard for storing fine warnings, by day and then by the last digit of the number of the bar code of the warning;
ii. Creation of a new standard for Reception and Storage of Orders using the last digit of the ID of the Request.

Following the creation of a new standard an OPL (One Piece Lesson), paper explaining all process, was also developed to help the collaborators that were not included in the implementation phase.
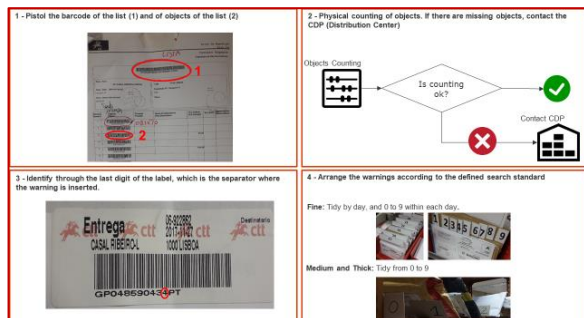

Figure 7: Acknowledgement system OPL

Cash Replenishment - The main objective of this initiative is to reduce the number of times the collaborators ask the treasurer for more money, while assuring acceptable security levels. Therefore, taking into consideration the cash needed for a given day (Figure 51), 70% is given to collaborators and rest is kept in the store safe.

The money distributed per collaborator is:

$$Commercial\ limit = \frac{70\%\ of\ all\ cash\ for\ the\ day}{n^{o}\ of\ commercials} \quad (4.8)$$

The other change that was implemented was a bi-daily verification of cash needs by the treasurer which allows foreseeing any cash reinforcement needs.

The first verification takes place before the treasurer's lunch break, where he will verify if a given employee has less than 50% of the cash required (in which case the cash will be reinforced) or if he has more than 100% cash (in which case the excess cash will go to the safe). The second verification is before the end of the day. This is to put all employees to the maximum limit for the next day and also to request the employees all the checks they have. This will allow the employees to start work next day without having to ask the treasurer for any cash.

To prevent employees from experiencing cash constraints, one more rule was imposed. If the employees reach 30% of the initial cash, they will have to ask for money from the treasurer.

Stock Control - Stocks should be managed using a periodic system during the first phase of the project.

All items that a customer can buy in store (stamps, boxes to send deliveries, etc.) are controlled via computer system. Every time a customer makes a purchase the system acknowledges it, and at the end of the month the treasurer sees the actual stock and performs the order according to the target stock.

Since we intended to test the process from the beginning, the first objective was to achieve the target value for all the salable materials. Therefore, to start the month in a normal (future) situation, for the items with excessive stocks, the excess quantity was returned and for the missing items, the required quantity was requested to reach the target level.

After this, the new values for cash invested in stock was calculated:

$$Money\ invested = (Initial\ stock \qquad (4.9)$$
$$- Actual\ stock)\ x\ Cost$$

This represented a reduction of more than €13,000 in stock value. Once these conditions were achieved, the system could be implemented.

The last step was the creation of a new routine for the treasurer to, once a month, see the quantities in stock and request the quantities needed (difference between the target and the actual stock).

Employee Schedule - It was possible to see that no adjustment on the collaborators schedules was in place that took into account the flux of clients. Two situations were clear: there were too many employees in the mornings and too few during lunch time.

Two solutions were found:

- Reduce the lunch period (by Portuguese Law this is possible if not smaller than 30 minutes)
- Postpone start time for some collaborators (For collaborators who don't have adaptability there is a maximum of 7:48 working hours per day)

An analysis of an alternative schedule was performed, and a more appropriate schedule was reformulated. With this new schedule, which is clearly more adapted to clients demand (Figure 9), we expect an improvement in the Average Waiting Time and in the percentage of clients with AWT above 10 min.

Another change in schedules was to grant adaptability to the treasurer to cope with the fact that there is increased demand in the store during the first 15 days of the month. The treasurer now has two possible schedules (Figure 8): work an extra half-hour during the first half of the month, and work half-hour less in the second half of the month.

Sch. Nº	Information	Service	Begin	Pause 1	Restart 1	Pause 2	Restart 2	Finish
H1		Store Manager	09:12	13:30	14:30			18:00
H2	a)	Treasurer	08:45	12:00	13:00	16:00	16:30	18:30
H3	a)	Treasurer	08:45	11:06	13:00	16:00	16:30	18:30
H4		Bank Commercial	09:00	13:00	14:30			18:18
H5		Bank Commercial	10:00	14:30	15:00			18:18
H6		Postal Commercial	08:45	11:33	13:30			18:30
H7		Postal Commercial	10:12	14:30	15:00			18:30
H8		Postal Commercial	10:12	15:00	15:30			18:30

a) Schedule under the adaptability regime under clause 56 of the CTT AE with rest intervals pursuant to paragraph 5 of clause 58 of the EA
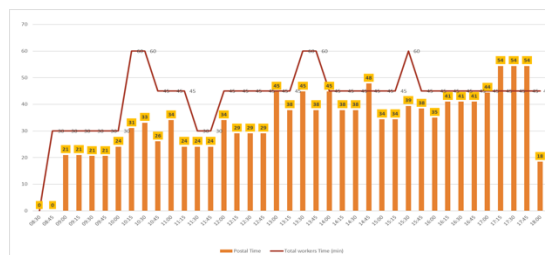
Figure 8: Collaborators new schedule

Figure 9: Supply and Store Demand after Implementation

In Store Communication - The last phase of the implementation was aimed at improving in-store communication, reducing the perception of time, and improving the client experience, using several ways. Altering the tops and the detachable parts of the exhibition furniture was the first change to be implemented. The second change was the way the books were organized - now they are with sub topics like, scholar, kids, well-being and cooking. The third change was creating a services panel, but this will only be implemented during October. The fifth change consists in having a service of excellence by improving the way employees interact with clients. For this some cards were created to be present at the counter to help collaborator contacting clients. The cards deal with four different moments: reception, farewell, complaint management and service of excellence. The last modification was to take advantage of the TV screens in CTT store. Some simple movies and online information were added to the screens as entertainment, to reduce the perception of in-store time (Figure 9).

Figure 10: CTT TV screens

5. Measure Benefits

The evaluation of the benefits obtained was carried out by analyzing the indicators established in Section 4 to support the monitoring of the performance of the implemented alternatives.

The following table presents the reference value of each KPI before and after the implementation:

Table 2: Project KPIs

KPI	Now	
	Period	Value
AWT	August	06:49
%Clients>10'	August	30%
Average Time Activity (Ack. Syst.)	August	2'30''
Average Replenishment Requests	August	0
Stock Invested	August	NA
NPS	N/A	N/A

- Acknowledgement system

It is possible to verify that in general the search and the delivery of the items to the clients is now quicker than before - the new AST for this activity is now 2.5 min, representing a decrease of 60%.

This means that the new organization method together with the new space organization are delivering good results.

• Cash Replenishment

The objective of avoiding the need for collaborators from requesting additional cash during the workday has been fully met. During August no additional cash request were recorded, while prior to the implementation of the policy 2.75 request were recorded per day. Consequently, more front office time was available, and client waiting times were reduced.

• Stock control

The stock control model has not yet been implemented since it also involves some changes in headquarters and supply chain. However, we expect results to be aligned with forecasts.

• Average waiting time

The AWT reduction is one of the most important objectives of the project, and a lot of the measures proposed are contributing to its improvement – reducing activity time, organizing spaces and the new scheduling (probably the most disruptive and difficult change to be implemented since it changes the collaborators habits).

In the following chart we can see the evolution of AWT from March to August – during this period the various measures were successively implemented, contributing to a reduction of AWT.
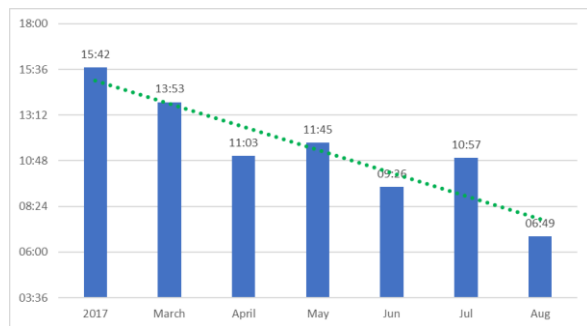

Figure 11: AWT evolution

August is the first month where all the measures contributing to AWT reduction were already implemented (the new schedules only started in August). During August AWT was 6:49 min, which compares with the 2017 average of 15:42. Furthermore, only 30% of clients had to wait for more than 10 min (47% in 2017).

A notable improvement (56% and 45% for these KPI's) has already been achieved, which has clearly resulted from the combined effect of all the measures. The results obtained were in line with expectations.

• NPS

The NPS will only be followed after all measures have been implemented, including communication, which are expected to be concluded during October.

6. Conclusions

CTT is the oldest Portuguese company, holding a large network of stores with the goal of providing the best customer service possible.

The challenges facing CTT are enormous: a shrinking market, new competitors coming in, demanding public service obligations as any listed company, pressure from the shareholders for results – more revenues and less costs, etc. Our project was designed to help CTT improve its stores' operations (i.e. increase performance and reduce costs) and improve in-store communication, which together will ultimately result in increased sales and customer satisfaction.

Our main objective was to reduce the Average Waiting Time of clients in the store. Thus far we already achieved a reduction of more than 40% - the AWT reduced from 15:42 to 6:49 and the number of clients waiting for more than 10 minutes fell from 47% to 30%. This is excellent considering that this was achieved solely by improving efficiency in operations – back-office, front-office, space and especially, people engagement. These improvements were visible in the reduction of time spent in the acknowledgement system (from 5 min to 2.5 min) and in the elimination of cash requests from the employees (2.75 per day before the implementation).

Measures related to communication and client experience are now being implemented and only after we will have a new NPS, as it will only be measured next month. In my opinion, NPS will increase but not yet to the level of CTT international peers.

One of the most relevant parts of Kaizen projects is that after helping boosting efficiency, it leaves a "continuous improvement philosophy" in the client company. This should ensure that more improvements will continue to happen in the forthcoming months.

The next steps to be implemented are divided into two main points: a) to complete the changes that could not be finalized, such as inventory management and in store communication; b) roll-out the implementation of all the measures, in phases, to all the CTT stores network.

As shown by the results after the schedule changes, these solutions do not ensure the level of service desired by ANACOM, nor do they create real conditions for further sales. For this, an additional set of solutions will need to be found – for example, alternative ways to

manage contractual mail, which uses a lot of front office time in periods with a lot of clients in the store or reinforcing personnel in the store at certain times of the day using people that may be "idle" in the central office.

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