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Implementing Lean Tools to Streamline Banking Operations: A Case Study of a Small Lebanese Bank

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ABSTRACT:
The purpose of this paper is to discuss the benefits generated from the application of lean tools in banking services. We will highlight on challenges, advantages, and principal success factors for lean implementation. As financial markets are experiencing changes so it's mandatory to create a streamlined bank to meet the new expectations in a timely manner while continuing to lower operational costs. The methodology used is a case study research based on a participant observation, in which we describe and analyze the implementation of VSM lean tool in a real banking environment. The main findings illustrate the great potential and capabilities of the lean tools when implemented. VSM is a very helpful Lean tool for banks to embrace disruptive technologies and create better experiences for customers and employees. We argue that to maintain and realize a sustainable achievement, lean practices must be adjusted and become a characteristic of bank culture.

Keywords: *Lean banking, Waste, VSM, Operational efficiency, Current map, Future map, Bank*

INTRODUCTION

After the international financial crises in 2008, banks were struggling to keep their countercyclical capital buffers, liquidity, and capital adequacy ratios within the limits set by local financial regulator (Central Bank) and international regulator (Basle Committee on Banking Supervision) requirements. In pursuing these objectives, all financial institutions started to reduce their operational cost by reducing their branches, installing call centers and relocating representative offices abroad. The result was a good improvement in their operational cost and thus their profitability, solvability, liquidity and net income ratios. These actions, imitated by other competitors, were insufficient to respond efficiently to more demanding customers, rising competition of new low-cost players and lower customer loyalty.

The emergences of new technologies as Artificial Intelligence, Robot advisors, Big Data, Distributed Ledger Technology (DLT), cryptography, cellphone, and mobile apps give rise to new applications in all types of financial functions. These technologies accelerated the rate of appearance of new type of unregulated players (FinTech) who benefited from the new trends in technologies to offer payment solutions, savings, borrowing, managing risk and offering financial advices (IMF, 2017). Citi Research analysts argue that FinTechs are even challenging the traditional banks in their retail and Small and Medium Enterprises (SME) portfolios (Citi GPS, 2016). They estimate that these portfolios that count about 50 percent of the profit pool for banks are targeted by FinTechs. They examined over a hundred of

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FinTechs investments and concluded that more than 70 percent are already in the market of retail and SME business segments.

The pressure on banks from regulators, the competition from FinTechs, and the emergence of new technologies, pushed the banks to turn into technological solutions to update, change their business models, and offer innovative products and services (Akhisar et al. 2015). All that in order to improve speed and quality of banking services, to increase flexibility, to respond better to evolving customer expectations. Larger financial institutions have invented their own digital banking service in collaborating with established FinTech companies to satisfy the more demanding customers, (E&Y, 2017); Charles Schwab's an American bank created Schwab intelligent Portfolio via Robot advisors; Visa created digital payment services such as Visa Token Service, Visa Digital Enablement program; J.P. Morgan in 2017 have launched a new mortgage digital platform –rocket mortgage- where customers can apply online and the application can perform mortgage approvals and rejections within minutes.

Despite the necessity for a digital transformation, smaller banks are stressed to find the desired results, expert estimates failures of digital transformation range from 64% to 84%, Rogers (2016). So how can small and medium banks create an operational efficiency to face this extreme competition? How can they protect their market share? How can they reduce their operational cost? How can they attract new customers?

The objective of this paper is to answer the above mentioned questions by applying one of the Lean tools to a small Lebanese bank in the Lebanese financial market in order to test the efficiency of Lean in creating operational efficiency with lower costs, fulfill regulatory requirements, and protect market share. Our implementation of Lean tool is founded on the Value streaming Map (VSM) introduced by the pioneers Womack, Jones, and Roos (1990), Womack and Jones (1996, 2005). Womack and jones (2005) argue that to achieve excellence and benefits from Lean advantages, VSM is the main tool of lean in service industry. Even with high technological advances and digitization, banking processes must be mapped correctly to eliminate the non-added value activities, thus eliminating waste and brings efficiency to its operational processes.

This paper is organized into five main sections. In section 2 we represent a literature review of the lean concepts and tools in the services industry. We will represent the principles of Lean, types of wastes, and tools used by companies in order to achieve the best productivity while reducing these wastes. We will clarify the "*Lean consumption*" principles, and focus on lean banking and its key characteristics; we will clarify the eight areas of waste and inefficiency within bank services and we will show how applying Value Streaming Map (VSM) can generate efficient solutions by representing some empirical studies that were done on financial services in this regard. Section 3 describes the research methodology that we have adapted. In section 4 we will represent the case study and will report the main findings, managerial implications. In section 5 we will conclude our paper by presenting future recommendations, and main limitations.

Literature Review

Lean Service

In 1990, Womack, Jones and Roos have presented the term Lean as a model for manufacturing companies, in the United States, in their book "*The Machine that Changed the World*". Lean was then popularized in their second book "*Lean Thinking*", Womack and Jones (1996). The authors based their studies on the Toyota Production System (TPS) that have been developed Lean in the 1950's, they have identified a new industrial model based on a persistent elimination of waste from industrial operations process. They involved a continuous improvement cycle that changes all front-line employees "*into problem solvers*".

Womack and Jones (1996) have categorized five principles of Lean manufacturing to decrease wastes which are value specification, VSM / waste eliminating, flow optimization, pull production system, and perfection or continuous enhancement. In order to have a smooth production and an efficient process in lean, waste or non-added value needs to be reduced and eliminated from the product life cycle. The principal seven types of waste identified in Lean are Waiting, Over-production,

Excess inventory, Over-processing Defects Transportation waste Motion. Recently and due to the evolution of technologies, there was an emergence of the digital waste in literature, (Romero et al., 2018) provided a new analysis of the digital waste that may occur in the new era of digitization because of the "*non-use (lost digital opportunities) and/or over-use (abused digital capabilities) of new digital manufacturing technologies*".

As for the services, in difference of the manufacturing area, it relies heavily on human resources, which are responsible and accountable for the prospection, preparation, and distribution of service to the customer, who expects in his turn to get an excellent service in terms of value and quality. Womack and Jones (1996) state that: "*Lean thinking…provides a way to do more and more with less and less…while coming closer and closer to providing customers with exactly what they want*." They argue that Lean play a major role in the service industry. They used the "*Lean Thinking*" title instead of Lean Management, Lean Methods, or Lean Tools because in services Lean is a state of mind; it integrates people, processes, and tools. In their book "*Lean Thinking*" 1996, they stated that the starting point in implementing Lean thinking efficiently is "*value*", defined and recognized by the final customer, in terms of a product and/or service that meets its needs and expectations.

Two years later, Bowen and Youngdahl (1998) were among the first authors to elaborate a basis that showed the convergence of industrial production processes to services. They perform three case studies in order to transfer Lean techniques used for industries to the service area. They argue that implementing Lean tools in services shows a great efficiency in terms of eliminating wastes and enhances value for final customers. They published their results of what became known as "*Lean service*" and represented the characteristics of the Lean service applied to a chain of restaurants (Taco Bell), medical services (Shouldice Hospital) and transport services (Southwest Airlines). They showed that services industries studied have mastered the "*Lean service*" by implementing Lean manufacturing principles to their own service operations.

When Bowen and Youngdahl (1998) published their article "*Lean service: in defense of a production-line approach*"; the term Lean service was born and became popular and important. It is considered among the first model of the Lean that focuses on services. These authors argue that the great convergence with Womack model is that lean service generates "*production flow process*" in services and also use "*pull systems*" by the customer. Mainly, their essential input for Lean is that they have incorporated the human resources in the Lean process because they propose the use of "*empowerment*" for employees and teams. By concentrating on human factors, achieving a good training for workers, redesigning work, and increasing autonomy of employees (empowerment), the service company will map its processes correctly; it will eliminate non-added value activities. Thus implementing Lean principles successfully will create positive outcomes and produce excellent service recognized by customers.

For Atkinson (2004), to create and implement Lean in service area, companies must install thinking and listening culture among employees and teams responsible for delivering the product or service. He argues that Lean thinking means to think about performing processes in an efficient way, faster, at a lower cost, eliminating all kinds of waste in time, loop-backs, rework and materials. Moreover, he contends that Lean thinking won't perform well by "*obsessing with process design, but obsessing about process design with those who produce the product or service. Calling upon and listening to how the team can design a process fit for purpose is the crux of Lean*." In other words, to implement Lean successfully, companies have to install Lean thinking and listening culture among team and employees responsible for the creation, design and delivery of the service.

In 2005, Womack and Jones published a study called "*Lean Solutions*" that focus on "*what consumers want*"; they presented the concept of the "*Lean Consumption*". They argue that consumer must shop efficiently with less disruption and difficulty. Companies must adopt strategies and business models that deliver consumption experience for customers more efficiently and that by eliminating wastes in the production processes. Even with new

technologies, most companies still have physical logistics problems. They presented some companies who implemented lean efficiently and thus succeeded in minimizing time and distance in their supply chains. These companies lowered their cost of shipping and distribution: companies like Nike – supermarket Tesco in U.K.'s - Seven-Eleven stores in Japan.

For a successful Lean implementation in the service industry, Womack and Jones (2005) precise 5 principles of Lean Consumption which are necessary for a successful implementation of Lean in services. The 5 principles are: 1) all services must operate and work in a coherent way and together, so the company will be able to solve the customers' problem completely, 2) eliminate the waste of time for customers, 3) Deliver accurately and exactly the service required by the customers, 4) Provide the accurate service wanted at the right place and exactly where it is wanted, 5) Provide the accurate service wanted, at the right place and at the right time.

However, in literature we found that there is no single model or same way to implement Lean service in every situation: "*it needs to be tailored to the particular characteristics of each sector*", Womack and Jones (2005). In Lean service, there is no reference, particular version, or standard steps to be applied for same service companies. In fact, several ways or models exist for implementing Lean service, and it all depends on the situation, nature of the service, and its characteristic. This can be proved by the presence of several types of the nature of service companies such as medical (hospitals), financial institutions (banks), food chain (restaurants), transportation (airlines, cargo), and technology (table 1).

Table 1: Chronological lists of lean literature review

Authors	Major contribution / results
Womack, J.P., Jones, D.T. and Roos, D. (1990)	The authors based their studies on the Toyota Production System and identified a new industrial model based on a persistent elimination of waste from industrial operations process. They involved a continuous improvement cycle that changes all front-line employees "*into problem solvers*".
Womack, J.P., and Jones, D.T. (1996)	They introduced the term "*Lean Thinking*" in service industry and emphasize on the maximization of the relative "*value*" that must be delivered to customers.
Bowen, D. and Youngdahl, W. (1998)	They showed the convergence of industrial production processes to services. They perform case studies to transfer Lean techniques to services. Their essential input is that they have incorporated the human resources in the Lean process because they propose the use of "*empowerment*" for employees and teams.
Atkinson, P. (2004)	This author pointed out that to implement Lean efficiently, companies must install Lean thinking and listening culture among team and employees responsible for the creation and delivery of service.
Womack, J.P., and Jones, D.T. (2005)	They introduced the "*Lean Consumption*" and its five principles. They argue that consumer must shop efficiently with less disruption and difficulty. Even with new technologies, the companies studied still have physical logistics problems. To overcome these problems, they must implement the VSM Lean tool.
Romero D., Gaiardelli P., Powell D., Wuest T., Thürer M., (2018)	They provided a new analysis of the digital waste that may occur in the new era of digitization because of the "*non-use (lost digital opportunities) and/or over-use (abused digital capabilities) of new digital manufacturing technologies*".

Lean Banking

One important area within the service sector that deserves attention for applying Lean principles is the banking sector. Banks are financial institutions with huge records of reports preparing and processing, data analysis, and are exposed to errors, rework, and loopbacks. Banks are institutions that act with a financial market that can produce direct losses or profits, and competition at this market depends strongly on customers. We can describe banks as service offices, with very talented and highly educated human resources, who are using latest software's and computers, to achieve banking operations, perform the required tasks, and finally, deliver the banking product to the consumer which is purely data and information. Banks are highly process-concentrated with a lot of information that is flowing across this process. So it is a pure process business and Lean is applicable to it. Lean service could offer an enormous potential for operational enhancement when implemented correctly with the appropriate technology. It can eliminate wastes through the whole process of banking operations. By doing this, banks can save time to focus on processes that create added value for the customer.

The objective of implementing Lean in banking area is to identify areas of waste and inefficiency, and then apply lean practices to generate solutions and eliminate those wastes. By applying this, the bank will improve customer experiences, generate a high level of efficiency from employees, improve operational controls and reduce monetary waste.

One of the challenges in implementing lean in banking are is that the nature of workflow system hides within it several processes such as emails, and phone calls. These activities cannot easily be identified. In other words, in the manufacturing area there is a line of production from first to the final step, so by following the line, companies can find, identify and eliminate waste. In the banking area, it is not as easy to identify as the waste in the manufacturing world where the good product is tangible and visible.

Oppenheim and Felbur (2014) address this challenge in their book and argue that in banking services, Lean is defined as "*strives to meet customer demands at minimum cost as quickly as possible while ensuring high-quality work and defect-free products*". These authors identify the eight areas of processing waste that banks can address and reduce by applying Lean principles such as waiting, defects and rework, over-production of information, unnecessary movement of people, Unnecessary movement of information, Over-processing of information, inventory of information, and finally expertise and enthusiasm when personnel are trapped in narrow and repetitive tasks. These authors focused on five Lean principles formulated by Womack and Jones (1996), which are defining value, VSM, Flow, Pull, and Perfection. They add a sixth principle, which is respect for people to emphasize the profound importance of good human relations at work. The efficient implementation of these six principles will permit to any bank to identify the eight areas of wastes, and thus improve its operational model, reduce wastes and satisfy customers.

Another challenge in implementing Lean in banking services is the presence of high resistance to their application from the management. Swank (2003) in her article "*the Lean service machine*" shows the resistance of managers in an insurance company (JPF) when top executives try to implement Lean. Swank argues that this obstacle "*if not treated with care*" will threaten the success of lean implementation. The solution is to attract the managers who resist the Lean thinking by incentives and implementing Lean culture, and this will be developed into a critical success factor that will be helpful in implementing Lean service. As the Lean implementations advanced, the performance improvements converted the resistant managers into "*true believers*" Swank (2003).

Delgado et al. (2010), similar to Swank (2003) work, argued that the main critical success factor (CSF) for lean strategy is the commitment of management. They conducted a case study of a service company called GE Consumer Finance, a unit of General Electric Company. They analyzed the (CSF) of lean and six-sigma implementation project. They highlighted on benefits generated from the implementation of Lean Six Sigma in his case study. The data are collected from interview. The results state the importance of lean tool such as VOC (Voice of customer), VOE (Voice of the Employee), BPMS (Business Process Management System), and Lean Week (five

days). The lean methods are considered a valid strategy for processes improvement correlated with better financial results.

Leyer and Moormann, (2014) emphasize on the importance of Lean culture by studying the implementation of lean in the financial service companies in Germany. Using a large-scale study based on 38 questions to examine eight principles that represent the main aspects of Lean Service philosophy (customer need, VSM, flow, pull, perfect creation, leadership style, individual responsibility, continuous improvement). The results show that employees believe to think to be leaner than actual behavior discloses. To implement Lean efficiently, employees are supposed to participate in the enhancement of all processes and operations by using their own experience and creativity; they must not do their work in a routine way.

Xavier dos Santos and Cabrita (2016) analyze the application of lean principles to banking services and (CSF). They performed a case study research by describing and analyzing the implementation of Lean principles and tool to one of the largest Portuguese banks. The bank studied has more than two million customers. The target was the front office of the banking process. The objective was to improve the efficiency and operational performance of the process. The authors conclude that implementing Lean have maximized the banking processes and argue that Lean practices must be adjusted and become intrinsic to the bank culture.

Kovacs (2016) studied the case of K&H Bank in Hungary, which is a subsidiary of the Belgian group KBC and considered as the second largest bank with more than 4000 employees. He describes the essential elements and keys for improving the processes in bank activities. The bank adopted a new lean strategy in 2005, that focus on: 1) customers first, following Womack and Jones (2005) argument "*what consumers want*"; 2) bank processes through VSM mapping; 3) cultural principle for all employees. The Lean strategy at K&H bank was based on serving the customers, simplify the processes, and to "*be the reference*" (using the "*best practice*" in the bank sector). The application of a set of lean Tools in K&H Bank (key performance indicator KPIs, KPI trees, visual management, VSM, performance management, usage of whiteboards and daily or weekly meetings, customer satisfaction measurement) has permitted a strong improvement of financial performance, reduced the operational cost by eliminating waste, and satisfied the customers (table 2).

Table 2: Chronological lists of lean banking literature review

Authors	Major contribution / results
Swank, S.K. (2003)	This author highlight on the presence of high resistance to the application of Lean from the management of a service company. The author emphasizes on the importance of incentives, and implemetation of Lean culture to attract the managers who resist the Lean thinking.
Delgado C., Branco M.C. and Ferreira M. (2010)	They argued that the main CSF for lean strategy is the commitment of management. They emphasize on the importance of lean tool such as VOC (Voice of customer), VOE (Voice of the Employee), BPMS (Business Process Management System), and Lean Week.
Oppenheim, B. W., and Felbur, M. (2014).	These authors identify the eight areas of processing waste that banks can address and reduce by applying Lean principles. They focused on five Lean principles and added a sixth principle, which is respect for people.
Leyer, M., and Moormann, J. (2014).	They emphasized on the importance of Lean culture by studying the implementation of lean in the financial service companies in Germany. They indicate that to implement Lean efficiently, employees are supposed to participate in the enhancement of all processes and operations by using their own experience and creativity.
Xavier dos Santos J. and Cabrita M. (2016)	They analyzed the application of lean principles to banking service. They concluded that implementing Lean have maximized the banking processes and argue that Lean practices must be adjusted and become intrinsic to the bank culture.
Kovacs, Z. (2016)	The author studied the case of a Bank by describing the essential elements for improving the processes in bank activities. The lean strategy adopted by the bank, based on serving the customers, simplify the processes, and to "*be the reference*" permitted a strong improvement of financial performance, reduced the operational cost by eliminating waste, and satisfied the customers.

VSM Lean Tool

For Womack and Jones (2005), the main tool for applying the principles of Lean is the VSM; it's drawing a present map and state of operation and suggesting further enhancement. They argue that it is necessary to perform the VSM in the production process applied for the service area. By achieving this, the service company will be able to view all stages in the process and thus map it efficiently. In banking, the implementation of VSM tool is very important and significant. All banks studied by the authors, in our literature review, have implemented new technological solution in their processes cycle and they didn't reach efficiency in their cycles until they have implemented the VSM to their processes.

So mapping the process step by step can help service companies to understand the value they deliver or destroy at each step. Mapping will show the companies the entire value stream. For example, after mapping a process, companies can easily notice the repeated entries or loopbacks that create a waste of time customers leading to a dissatisfaction and thus to customer loss.

Some authors insist on implementing Lean via VSM, as a first mandatory step, before going digital and automating processes. For Bortolotti et al. (2009), banks who want to succeed in the era of digitization, have to implement lean strategy and then automate / digitize their processes. They conducted three case studies and introduced a new model called "*lean first and then automate*". They emphasize on the importance of integrating the new mapped process with the activities of digitization. They argue that banking process must be streamlined using VSM tool and later on automate or digitize this process. They demonstrated a logical and consistent sequence of banking processes that can be streamlined and automated. As VSM tool can map the new process, so non-added value activities can be identified and eliminated. After elimination, banks can automate the added value activities only and that is recognized by the customer, and banks will avoid any delays or blocks in delivery process. The authors insist on VSM as a Lean tool that permit the avoidance of entering waste in the information system and in the automation flows.

Following their sequence of lean first and then automate, and to implement Lean efficiently in order to digitize correctly, we can argue that VSM lean tool, for banking services, is highly recommended to eliminate/reduce waste and generate efficiency of operational processes. It's a consistent solution of mapping the process step by step, documenting the flow of work items, and then analyze and quantify these processes and workflow to develop an improvement plan that eliminates unnecessary steps (wastes) through the value chain, increases operational efficiency and reduces cost for both bank and customers.

The concept of VSM is simple; according to Womack and Jones (2005), it consists of visualizing and drawing two maps (current and future). These maps are a graphical illustration of both documents and information flows within the banking process. The first one (current state map) represents the present situation and classifies all types of added value, and non-added value, activities in each step of the process in banking activities. The first state map is classically drawn by a specialized team in banking activities (operations – Information & Technology – compliance – risk – credit) to visualize how processes are actually done. The second map (future state map) represents the optimal process system that should be attained and must be done with the same specialized team. Once the current state map is drawn, the team must analyze it first. They need to identify areas of wastes and improvements. They need to demonstrate why these steps are identified as non-added value activities. Based on their findings, the team must suggest what must be changed in the banking process, information flow, methods of working. Then, they must draw a future map for the Lean process flow by eliminating the wastes (non-added value activities) and include process improvements. Finally, they must analyze the results after implementing the new mapping for the process. The results must be quantifiable in terms of reducing time of execution, increasing profits by reducing cost, increase customer satisfaction.

To achieve a perfect VSM implementation for banking activities, basically there are three critical tasks that have to be assigned to a specialized team: the first task is about designing

and planning the banking service, queue of the information flow, and value realization for both the bank and the final customer. For example, when a customer ask for retail loan, credit card, or other retail banking services, the bank must have a kind of efficient processes in place that permits to fulfill customer request quickly; then send the information flow to the appropriate employee; inform employees what are they required to do and when; and finally, through the efficient process, conduct the banking service to execution and delivering it to customers. In other words, VSM is about performing Lean process to create the value that meets customer needs.

According to Womack and Jones (2005), Oppenheim and Felbur (2014), the benefits for banks from applying successful VSM implementation are:

1) Classifying and removing inconsistencies between work arrival and employees levels. This will lead to better staff capacity planning. In order to guarantee that service levels can be met, directors can precisely staff for anticipated work periods without overstaffing. When the processes are found to have non-added value activities, these can be re-mapped to smooth the workflow;

2) Quantifying cost and value: When cost-to-value is quantified, this permits the bank to have precise reports about returns on investments (for new programs or process changes). By collecting empirical data regarding cost and value, banks can model changes, before execution, with a high level of confidence. This data can be helpful for bank management when it's used to readjust pricing for old and new banking products.

3) Enhancing human resources performance for both directors and subordinates. By relying on consistent and reliable reports and information, employees can have objective and straightforward conversations about individual performance. And this will lead to an improvement of workflow quality and the creation of best practices based on real-life experiences. Lean practices emphasize on a complete view of banking process, so individual staff members feel more like a critical part of a bigger process. Lean implementation reduces staff routine, improves their morale, and increases their enthusiasm through engaging them in the improvements of operational efficiency.

As for customers, the benefits from dealing with a bank that has implemented lean are: less time spent at the bank to get the task done; less cost in terms of time and effort in achieving business; delivering faster and better quality service which lead to increase satisfaction and meet customer needs;

RESEARCH METHOD

For our case study, as an observer and bank practitioner for more than 15 years in managerial field ranging from front office (Credit department) to back office (Risk department), we have chosen to select a real banking case study. We have chosen the methodology based on participant observation. The reason that lies behind our choice of this methodology is that in our paper, the observer is a bank practitioner and the observation arises from an ongoing working situation. We followed Evered and Louis (2001) methodology to collect information from two main sources. We examined detailed financial statements generated by the bank and operational risk reports, "*enquiry from the outside*", and we were involved in the mapping of current and future bank process and proposed further improvement, "*enquiry from the inside*".

In our case study, we will investigate the benefits, the managerial implications, and the future recommendations of applying the VSM on in-house level efficiently. Once achieved, the bank can move to the era of automation and digitization. As Bortolotti et al. (2009) concluded that lean must precede automation of the process in order to eliminate waste and satisfy consumers.

Case Study

Bank (X) is a small Lebanese financial institution fully governed and controlled by the Central Bank of Lebanon (regulator); it has less than 10 branches; number of employees is below 200. The core bank mate adopted is considered as the latest version as of 31/12/2017 and within Central Bank rules, norms, and requirements for issuing reports and data for regulatory purpose. The bank has e-solutions via internet and several ATM through the country.

After reviewing the end of year income

statement as of 31/12/2017 in terms of profit and loss, we've noticed that the main source of profits is generated from operations services (L/C – L/G – Transfers), corporate loans, and a small percentage from retail activities such as personal loans/ car loans/ housing loans. However, there was an issue regarding the execution of several banking operations and specifically the issuance of Letter of Credit (L/C), Letter of guarantee (L/G) and transferring moneys (T/T) to correspondent's banks via SWIFT.

Customers who imported raw materials (Steel, Wood, Oil, Chemicals…) and commodities (Wheat, sugar…) were complaining about the delays and penalties resulting from the banking processes, since most of them were importing goods whose prices are constantly changing according to prices listed in international markets. Delay was a critical factor that pushes the customers to go dealing with other banks. Managers were frustrated about these delays and started noticing the loss of their market share in terms of losing corporate customers.

To fix this issue, the management decided to form a team from the Head Office and the Main branch at the Headquarter, and the mission was to enhance the banking process via drawing a current map and a future one based on Lean. The team consisted of five seniors and 5 junior officers who were mainly involved in the issuance of L/C; head of operations department, IT manager, Risk manager, Credit manager, Main branch manager; officers were from mail, Credit, L/C, main branch, and risk departments.

As the import Letter of credit (L/C) generated more than 25% of total income as recorded in the income statement as of 31/12/2017, team mission was to map the current process of issuing L/C to evaluate its efficiencies, detect delays, and propose future improvements. In other words, the team must represent to the management the current state map situation and identify different kinds of added value and non-added value points within the process. Based on current map findings, the team will propose what must be changed and eliminated. And later on, the team must draw a future state map based on Lean concepts by eliminating non-added value activities.

Current State Map

To map the current state process of issuing L/C, the team draws the path and the steps of issuing the import L/C that is performed by several departments within the Head Office and the Main branch. As L/C's application are filled personally by customers with specific terms and conditions, and specific documents requirements, they usually deliver the original signed application by hand and the process of issuing L/C was divided into two principal phases which are the approval of issuing it and the process of issuing Operation:

The first phase is the approval of L/C that is performed by four departments and seven employees:

1. Receiving the application by mail department, registering with an inward number and date. This step requires an employee.
2. Delivering the application to the Main branch to authenticate the signature via specimen registered in the core bank mate, it requires two employees: first one to check authentication of the customer signature and the manager who will approve the authentication.
3. Resending back application to mail department to send it to Credit department to get their approval. Credit department study the client request for issuing L/C by examining his granted facilities in terms of L/C (comparing used and given amount of facilities). It includes two employees: the first one verifies and checks credit facilities via core bank mate and the manager who will approve to proceed with the L/C application.
4. If the client request is within the limits of its facilities, then the application is resent back to mail department in order to deliver it back to risk department for studying it in terms of credit risk terms and conditions and get their opinion. This includes two employees: first one, at risk department, who verifies if L/C terms and conditions requirements are within bank regulations and credit risk norms, and the second one is the manager who will give his final approval for the proceedings of the L/C application.
5. After getting credit and risk approvals, the L/C application is resent back to the mail department in order to deliver it to the Main branch for proceeding, this step requires an employee.

6. The Main branch checks approvals and signatures via an employee and resents it back the approved application to Operations department, via mail department too, to execute it; this step requires two employees, mail department and Main branch.

After receiving approved L/C application, the second phase is the issuance of L/C at the Operations department in terms of preparing it (the draft) on bank mate, issuing and sending it via SWIFT application to the beneficiary's bank. Within the Operations department, there are four employees involved:

1. An employee for the preparation of issued L/C on bank mate as a draft.
2. A manager who will approve the draft and therefore the issuance of the L/C.
3. An employee responsible for SWIFT Operations and who will send the issuing L/C in form of SWIFT message format to beneficiary bank.
4. Finally, the forth employee is the one responsible to send a copy by Fax to the customer for notification of issuance.

Figure (1) illustrates the current state map of issuing this single operation. After reviewing it, the team noticed that it takes about two days to issue L/C; starting from receiving the original application from customer until the execution and sending a copy of SWIFT by fax to the applicant. One Main branch and four departments (mail, credit, risk, and operations) are involved and more than 11 employees are incorporated and 23 steps for issuing.

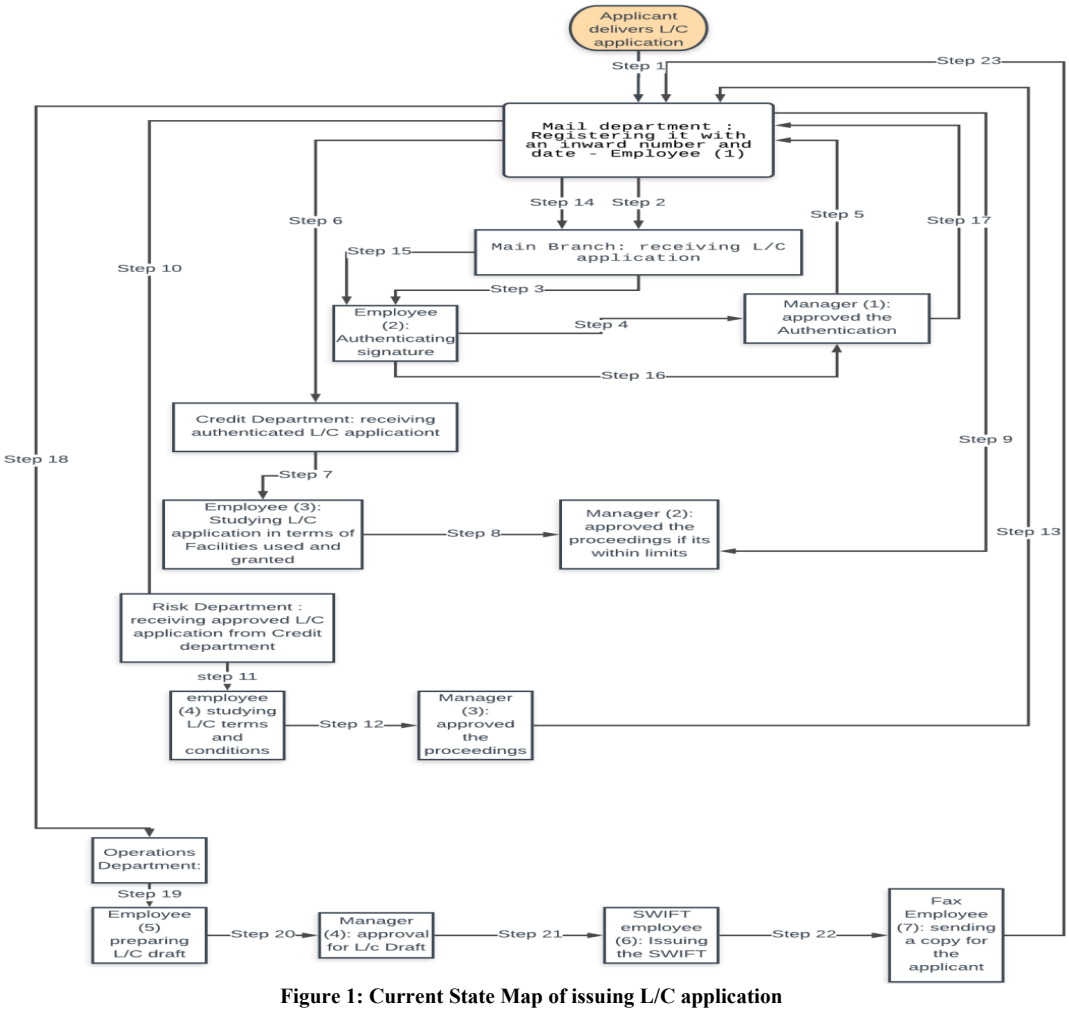

Figure 1: Current State Map of issuing L/C application

Source: Authors' own preparation based on Lucidchart.com

Is it a Lean Process?

Actually, it is far from Lean given that several entries and steps (actually 23 steps) generated into different systems that were not linked (mail, credit, risk, and Main branch). The team noticed that there are many steps in the process that were not really needed (credit department, risk department, Mail department). A lot of waste (time waste, work waste, cost waste) because several actions and approvals had to be done into different departments, there is no linkage into one system allowing the achievement of the process in less time and cost. A lot of loop-backs that create delays, L/C return to a previous step for further processing.

When we review the internal reports that record the operational risk incidents, we noticed that there are an increasing number of registered operational risk events, incidents, due to several entries. There were errors related to execution, delivery, and process management; we are talking about data logging error, incidents related to wrong amount entries, wrong values, and wrong amount of commission. These errors required re-corrections from managers and this was time and effort consuming. Moreover, after analyzing the operational risk incidents reports, we noticed repeated errors linked to several processes. These errors within processes are, in our opinion, a considered a hinder that contribute to the reduction of Bank (X) profits, market share, and lead to dissatisfaction of customers.

However, the team noticed that within the L/C's process, the unnecessary steps that have to be eliminated can be easily identified by its type such as approvals, checkpoints, and loop-backs that are non-added value points for this process. We think that these steps were basically designed by the management of the bank because managers did not have a full confidence and trust in their employees. So they added several unnecessary elements of inspection and approval to the bank processes.

Future Map for L/C Issuance

The team proposed to develop an Internal Mailing System (IMS) designated especially for Bank (X) with a high-security level, linked to core bank mate and with a different access level for employees depending on their responsibilities, duties, and positions. The IMS solution should be founded on the basis of ABBYY technology (an artificial intelligence solution), meaning that customers instructions and requests (L/C – L/G – T/T application, credit card, car loans, personal loans, foreign exchange) are all sent to the Main branch and scanned by its staff, and then sent via IMS to the Operations department staff in order to be processed.

IT department created additional pages on core bank mate enabling the credit and risk department to register conditions and criteria specific to each customer; Credit department recorded explicitly the granted facilities on the core bank mate as a memo by type/amount/expiry date; Risk department listed the terms and conditions by customer on bank mate on core bank mate in terms of credit/operational risk. This way, the officer at the Main branch can access easily to the facilities and conditions applied to each customer with no need to resend it back to credit and risk departments.

With the assistance of the supplier and developer of the core bank mate, the team was able to develop and install the desired system (IMS), linked it to the core bank mate. In doing this, the team was able to map the new future process flow as follow:

1. Customer delivers the original L/C application to the mail department. The application will be registered by an employee with an inward number and date, scanned and uploaded as an attachment and forwarded via IMS to the Main branch. At the Main branch, an employee authenticate the signature of the customer via core bank mate, since IMS is directly linked to it, compared granted facilities (by comparing used facilities with limits) with L/C amount request; Then, he can check if L/C terms and conditions are within bank regulations. If all conditions apply, the employee will send the scanned L/C application with his recommendations via IMS to his manager in order to get the approval to proceed.
2. The Main branch sends the scanned approved application to Operations department via IMS to execute it, the issuing the L/C requires two employees: the first one is responsible for the preparation of issued L/C on bank mate and sending it via SWIFT message format to beneficiary bank after getting approval

from his manager; the second employee is the manager of Operations department who will approve the issuance of the L/C (figure 2).

3. Within the IMS, all data regarding customers were installed, so once the SWIFT is approved and sent to beneficiary's bank, the employee can scan it and upload it to IMS and send it by one click to customer's email.

RESULTS

After mapping the future process, the main findings are the follows:

1. Time for issuing L/C was reduced from 2 working days to 1 single day (50%).
2. An elimination of non-added value steps: from 23 to 13 steps by removing the involvement of the credit, and risk department from the process needed.
3. The process is achieved by 3 departments instead of 5.
4. Faster services are delivered by fewer employees (6 instead of 11), by eliminating unnecessary loop-back, in which L/C has to be returned to a previous step to be processed, which creates delays.
5. Reducing operational cost, by installing a feature of electronic archiving for IMS, employees can save time by accessing electronically to customers files and documents whenever needed. So it can save space/time/cost by storing electronically these documents.
6. Increase of customer satisfaction is achieved (faster service).
7. Decrease the variability's and probability of errors and thus reduce operational risk incidents.
8. Separating performing from non-performing employees for remuneration and appraisals issues: according to IT, by recording the time necessary to get answer/reply/action from sender to receiver, we can easily identify the non-performing employees who waste times. For example, when sending L/C application, IMS can record the time it took from receiving the L/C application in mail department to the final execution at Operations department in each step and via users/employees. This makes it easier for Human Resources Department to evaluate employees.

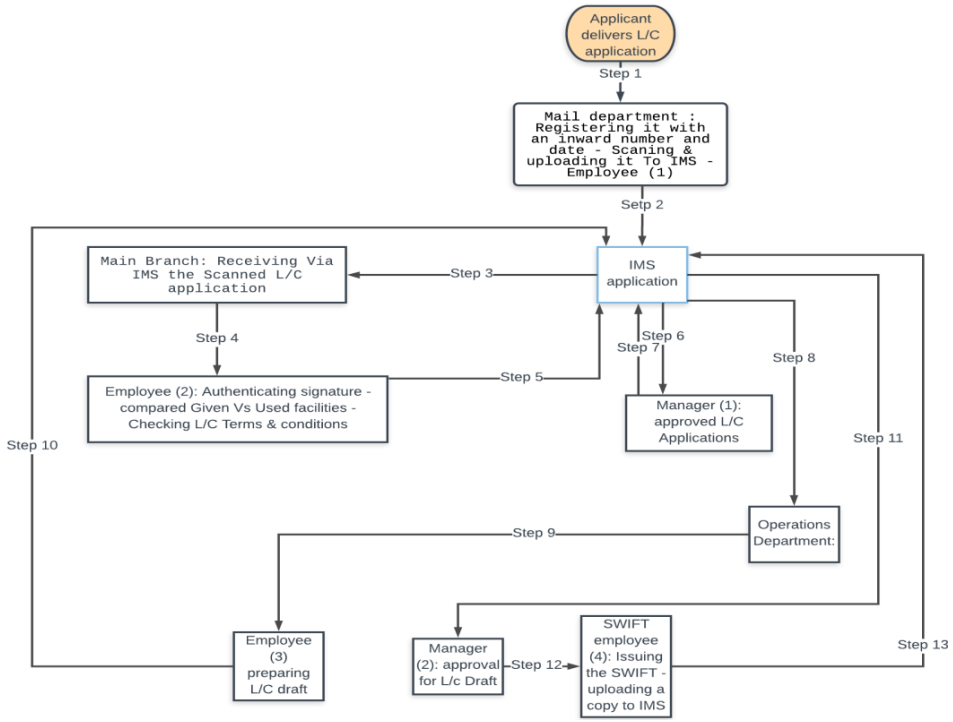

Figure 2: Future State Map of Issuing L/C Application

Source: Authors' own preparation based on Lucidchart.com

Managerial Implications

Several implications and benefits are generated from the application of the new map:

1. The management will benefits from enhanced efficiencies, better retention of customers, reduction of operational costs and expansion of the profits.
2. The management can reduce fixed cost by archiving electronically the bank advices generated from several processes, so more spaces are saved, only original applications signed by the customers are stored.
3. Human Resources Department can identify easily the performing employees from non-performing through time-records and it can reduce the number of employees too which reduce operational cost for the bank.
4. It became easier for the top level management to visualize the whole process at sight and identify any abnormalities if occurred.
5. It increases the level of engagement from all employees at the bank, and this encourages the concept that all employees at the bank are a part of one team.

CONCLUSION

In our literature review, we showed that Lean implementation demonstrated to be very positive. In banking, all researchers encourage the adoption of Lean in operations and culture. When implemented correctly, several case studies in banking have benefited from huge success. We found out that in Lean service, there is no reference, particular version, or standard steps to be applied for same service companies. Each author has used specific Lean tool and practice, that in his opinion, best serves in an operation. In our case study, we chose the methodology based on participant observation to evaluate the importance of using VSM tool that does not require significant capital investment.

So the solution for small and medium banks is the implementation of Lean Methods and culture in order to create an operational efficiency to face this extreme competition, to protect their market share, to reduce their operational cost, and finally to attract new customers.

We showed how Bank (X) team managed to draw a current and a future map for the process of issuing L/C. The target is to deliver "*business process excellence*" and to streamline business processes with customer's needs. They succeeded in linking the result obtained from the adoption of new process to cycle time (time per each task) and lead time (process time). These metrics were used as performance indicators by Bank (X) to evaluate the performance of their processes and to assess as well the employee's performance. The results were a lower cost, a faster issuing time, and increasing profits, protecting market share, and retaining customers.

RECOMMENDATIONS

So, if bank management wants to generalize the VSM solution to all operations and redesign more than 50 business internal processes, the required success factors are:

1. Eliminating variability that is inherent to the nature of bank process that tends to be variable, with multi-tasking that goes on. Bank management must define the Value (recognized by customer) of their product/service to eliminate variability.
2. Focusing on customer satisfaction and needs (putting the customer first and know exactly what kind of service he wants) and reduce waste (time) and cost. So the bank can improve the upper part of the income statement (revenues) by increasing customer retention rate, and in the lower part reducing costs by eliminating the unnecessary steps.
3. Improving employee confidence and eagerness by engaging them within the process of improvement and application of enhancements to reach operational efficiency. This lead to reduce costs and released capacity, meaning that lean banking improves the performance of employee, and drives them to be more creative. Bank staff has to be trained to Lean methods, to provide the bank a boost in internal capability to address process operations issues and inefficiencies.
4. IT department has to offer continuously technological solution to reduce complexity in operations process that fails to add value, saving time and money.
5. Lean practices must be applied from the top to the bottom of the bank pyramid because only top executives can initiate and organize a transformation to lean limitation.

The limit of our case study is that it analyzes only a case of a single organization with a

unique situation. It lacks generalizability which refers to which extent the results obtained from Bank (X) is applicable to other financial institutions (Saunders et al., 2016). These authors argued that the study of a single case usually has a low degree of generalizability. These types of studies focused generally on distinctive characteristics of one case study, though there are cases when the outcome obtained from a one case study can be generalized due to the reason that there is some similarity between different case studies. The banking industry in Lebanon is a good example, where the small banks are similar in terms of number of employees, organizational structure, networks; same criteria is applicable in terms of similarity for the smaller banks in Lebanon.

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