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IMPLEMENTATION OF LEAN MANAGEMENT IN NON-GOVERNMENTAL ORGANISATIONS. WROCŁAW FOOD BANK CASE STUDY

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Abstract

Background. Lean management is nowadays one of the most dominating management concepts within the industrial and service environment, providing compelling business benefits to many companies. At the same time, its potential application in the non-governmental organisations, has not been extensively researched, yet. Filling this gap may significantly improve the operational performance of many NGOs.

Research aims. The goal of this paper is to verify applicability of the 5-step lean management process in the NGO environment and identify potential barriers, which may impede this process.

Methodology. The method used in the research is a single-case study of a lean thinking implementation project within the Wrocław Food Bank. During this project, the Bank went through the full 5-step lean management process, which consists of value identification, value stream mapping, creation of flow, establishing pull, and seeking perfection. Participation in the project enabled the author to gather qualitative and quantitative data, which was used to the answer research question and achieve the research objective.

Key findings. The research shows that application of the 5-step lean management process in NGO environment is possible, however physical implementation of its guidelines can be strongly impeded due to multiple constraints, which non-governmental organisations are facing. The main lean implementation barriers include lack of traditional customer-supplier relationship, project-based activity, complicated operational rules and regulations, and limited budget. Successful lean implementation requires, therefore, strong leadership commitment, which would drive transformation efforts and remove these obstacles.

Keywords: lean management, lean thinking, NGO, continuous improvement.

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INTRODUCTION AND BACKGROUND

In the modern era of highly competitive markets, cost reduction and efficiency improvement become one of the key targets for every organisation. These challenges are needed to be taken not only by commercial companies, but also and maybe foremost, by non-governmental organisations (NGOs). Struggling with frequent issues of underfunding, insufficient number of employees, and lack of proper equipment, NGOs are forced to get the most out of their limited resources. This fact highlights the necessity of an efficient management system in non-governmental organisations. The answer to this need may be the lean management concept, which proved to be very successful in production companies and is getting more and more popular in various environments.

Lean management (also known as lean thinking) is the concept originated from the Toyota Production System, which core idea is to maximise customer value while minimising waste. In other words, it means creating more value with fewer resources. The lean management implementation process consists of five steps and is illustrated in the Figure 1 (Womack & Jones, 2003):

1) Value identification – identifying value from the perspective of the end customer.
2) Value stream mapping – identifying all the steps in the value stream, eliminating whenever possible those steps that do not create value.
3) Creating flow – making the value-creating steps occur in tight sequence, so the product will flow smoothly toward the customer.
4) Establishing pull – letting the customers pull value from the next upstream activity.
5) Seeking perfection – as value is specified, value streams are identified, wasted steps are removed, and flow and pull are introduced, repeating this process again and continue it until a state of perfection is reached, in which perfect value is created with no waste.

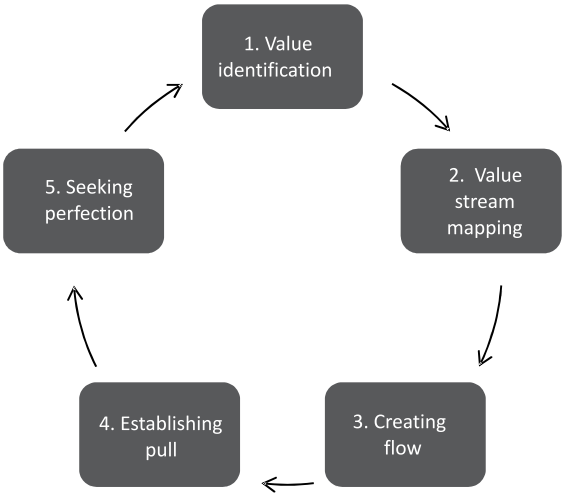


Figure 1. 5-step lean management implementation cycle

Source: own study.

Lean thinking is nowadays one of the most dominating management concepts in both industrial and service environments. As the concept was getting more and more popular, also first attempts to implement lean in the NGO environment were made. Glover, Poopunsri, and Hurley identified eight case studies performed in the public sector and non-profit organisations (mainly from North America and Asia), which focused on application of chosen lean tools and techniques. As a result, the organisations showed a significant improvement of their performance metrics (Glover, Poopunsri & Hurley, 2014). Interesting source of information regarding lean implementation in non-governmental environment is also the website lean4NGO.org. It gathers multiple examples of lean implementation it the discussed sector, however most of them are very general and do not take form of an academic research.

Despite the examples mentioned earlier, application of lean management in the NGO environment still remains relatively undiscovered. Based on existing literature review, following gaps were found:

- Most of existing papers concentrate only on the implementation of chosen tools and techniques of lean. There is a lack of studies describing complex implementation of the whole concept, which will reveal potential applicability of the full 5-step lean management process in the NGO environment.

- Very few case studies performed in Europe and not even one performed in Poland. It would be beneficial to verify potential application of lean thinking in European/Polish conditions.
- None from existing studies analyses characteristics of NGO environment, which may potentially influence the lean transformation process. It is important to know what are the barriers and obstacles, which may impede the lean implementation.

Following the identified gaps, the leading research question of this paper was stated as follows: "How does the 5-step lean management process apply to the NGO environment?" Answering this question will be beneficial to both researchers and practitioners working in the NGO environment. It will provide valuable information to managers who want to improve their operational performance and will enhance theoretical knowledge of the ean application in NGOs.

Moreover, after additional studies of available theory, a hypothesis was formulated to support answering the research question:

H1: There is a certain set of barriers, which NGOs have to overcome in order to successfully apply the full 5-step lean management process.

The goal of this paper is to verify applicability of the 5-step lean management process in the NGO environment and identify potential barriers, which may impede this process. The basis to achieve this objective, is a case study of the lean implementation project in the Wrocław Food Bank in Poland. The paper carefully describes a design, progress, and results of the project and later draws conclusions regarding the research question and hypothesis.

Before the case study can be described, it is necessary to present the methodological foundations of the paper.

METHOD

The research method

In order to answer the research question, a case study was used as the leading research method. The main reasons for this selection were the nature of the research question ("how?") and the fact that the collected data is contemporary, with no need to being controlled

(Yin, 2013). Moreover, a case study has proven to be a useful method of studying various organisational transformation projects (Piekkari & Welch, 2011).

The general framework of the research consists of six steps:

1) Literature review and research question definition – the research begins with an overall review of the existing theory of lean management implementation in the NGO environment. The existing papers and studies were found through a search of main academic databases (Emerald, Science Direct, and Springer). Based on the gaps identified through theory analysis, the research question was defined.
2) Additional literature review and hypothesis definition – as a second step, additional literature review was performed, in order to find more detailed information regarding previously defined research questions. Based on the obtained information, the research hypothesis was defined.
3) Selection of the case study – after definition of the research question and hypothesis, the object of the case study was selected. The single-case study was chosen as a form of research due to exploratory character of the study and a low number of available research objects (Yin, 2014). The Wrocław Food Bank was selected as the case study unit due to their interest in performing the lean implementation project (as described later in the chapter).
4) Data collection – data relevant to the research was collected primarily during the lean implementation project in the Wrocław Food Bank. The gathered information took form of both qualitative and quantitative data. The main source of qualitative data were interviews with Wrocław Food Bank's employees and participation in the lean implementation workshops. The quantitative data, which regarded performance metrics before and after lean implementation project, was collected based on archive materials (before) and regular measurements (after).
5) Data interpretation – after the end of the lean implementation project, the collected data was analyzed and interpreted in order to answer the research question and verify the hypothesis. lean management applicability in the NGO environment was verified by the number of implemented steps from 5-step lean thinking process and performance metrics improvement. Moreover, based on the gathered data, barriers for the lean NGO were defined.

6) Conclusions – finally, all data was gathered and interpreted, final conclusions were drawn, the hypothesis verified and the research question answered.

The presented framework provides a link between the research question of the study and the data necessary to be collected. Following it will ensure a smooth transition from the beginning to the end of the research. However, in order to complete a proper methodological background, it is necessary to describe the unit of the study – The Wrocław Food Bank, and the overall methodology of the lean implementation project, which was performed in this organisation.

The Wrocław Food Bank characteristic

The Food Bank in Wrocław was founded in 2003 and is a part of the Polish Federation of Food Banks, which gathers 32 organisations across the country. The mission of the Bank is preventing food waste and reducing malnutrition areas by conducting activities supporting the part of society with a difficult financial and family situation.

The main activity of the Wrocław Food Bank covers food collection from donors and distribution to customers. There are four main sources of donations: European Union programs, supplies of products close to the expiration date, periodical food raising events, and supplies of unsold fruits and vegetables from farmers. The received food is stored and later distributed to beneficiary organisations like homeless shelters, social welfare centres, or hospices. The Bank does not distribute food directly to the people in need.

The overall Wrocław Food Bank activity includes the following processes:

- food receipt from the suppliers (donors) and its storage;
- food disposal to the associated organisations (without shipment; the customers collect the food themselves);
- seeking for new donors and partners;
- performing administration processes (accounting, purchasing, controlling fulfilment of EU programs, etc.);
- organising periodical food raising events;
- promotion of anti-food waste.

In the spring of 2015, when the project was performed, the Bank was under preparation for entering the new EU program called FEAD (Fund for European Aid to the Most Deprived). The program provided

the organisationwith supply of 13 types of products in total of over 1500 tones within the year 2015. Facing the challenge of managing an increased amount of products with limited resources, the Food Bank board realised the need for improving its operational efficiency. In order to do so, the management team decided to implement lean management concept in the organisation.

Methodology of the lean management implementation project

The scope of the lean implementation project included application of the lean thinking in the processes of food receipt and disposal, as both were selected key to the Wrocław Food Bank operational performance. The selected areas were dedicated to go through the full 5-step lean implementation process. The successful application of lean management in both processes was supposed to constitute a model example for other processes performed by the organisationand trigger their future transformation.

The project was launched in April 2015 during the Food Bank preparation to enter the FEAD program. In order to go through the 5-step lean application process, the project was divided into two core phases: designing and implementation. The goal of the first phase was to analyse the current state and design the desired future state map. It covered theoretical aspects of each of the process steps: value definition, value stream mapping, introducing flow, establishing pull, and seeking perfection. Consequently, the second phase aimed at implementation of previously defined actions and verification of its effect on the Food Bank performance.

The next chapter contains a detailed description of both phases and provides information about the achieved results.

RESULTS

Designing phase

As mentioned above, the designing phase aimed at analysing the current state and design of the desired future state map. It covered theoretical aspects of all five steps from the lean thinking implementation process. Below, the characteristic and design of these steps is presented.

Value identification

The term "value" is critical to the lean management concept. It is described as the inherent worth of a product as judged by the customer and reflected in its selling price and market demand. In other words, "value" is every activity performed by an organisationthat the customer is willing to pay for; everything else is waste. The objective of lean Thinking is to eliminate the non-value added activities while preserving or enhancing the value added ones (Womack, Jones & Ross, 1990).

Following the lean implementation method, the first step of the project was to define value in the analysed processes: food receipt and disposal. In order to fulfil this step, the project team looked from the perspective of the customers of the processes. As a result, the value was defined as delivery of the right products, at the right quantity, to the right place, and at the right time.

According to this definition, the food receipt and disposal processes performed by the Wrocław Food Bank do not add value to the customer, who would rather have the products delivered directly to them from suppliers, without any additional stoppage. This confirms the fact, that all transportation and warehousing activities are typically considered as wasteful. However, the processes performed by the Food Bank should be perceived as an unavoidable waste (type one Muda), which cannot be eliminated, but should be reduced as much as possible. Due to this fact, in order to improve its performance, the Bank should aim at maximum reduction of the time and resources needed to perform the warehousing processes.

Consequently to this statement, the following goals for the lean implementation project were defined:

- reduction of the storage area;
- reduction of average time of products stocked in the warehouse;
- reduction of receipt time (consisted of all steps necessary to perform the process);
- reduction of packaging time;
- visualization and standardisation of the receipt and disposal processes.

Value stream mapping

The second step of the lean implementation process is value stream mapping. The Value Stream Map (VSM) is a simple diagram showing all of the actions, both value-creating and non-value-creating, required

to bring a product from order to delivery (Marchwinski, Schroeder & Shook, 2004). The maps include actions to process information from the customer and actions to transform the product on its way to the customer. Value stream mapping can be performed to determine the current state conditions (Current State VSM) and the desired future outcomes (Future State VSM).

After the value was defined, the project team created the Current State Value Stream Map for the food receipt and disposal processes (Figure 2). Both processes are displayed on the same map as they cover the beginning and the end of the same value stream. The food receipt process includes the following steps: unloading the delivery van, quantity/quality verification, issuing delivery documentation, and material storage. Meanwhile, the food disposal process covers such steps as: packaging and preparation of proper product packages, quantity verification, loading of the van, and issuing shipping documentation.

The map includes material and information flow necessary to move the food products from the supplier to the customer. It also highlights the time needed to perform each step of the value stream. Additionally, current state mapping was an excellent opportunity to identify all of the issues existing in the value stream. Thanks to the information from the VSM, it became apparent that the food receipt and disposal processes generate over 2 months of waiting time. Meanwhile, the actual processing time of each step within the value stream takes only from 33 to 97 minutes per one delivery. As a summary of the Current State VSM, the project team diagnosed the following challenges:

- lack of standard and visualised areas to store the food products;
- uncontrolled time for food storage (up to 2 months);
- lack of connection between food storage and distribution processes, which are managed independently with two separate daily schedules;
- the First-In-First-Out rule is not followed;
- orders to the suppliers are commissioned based on a forecast, not the actual consumption of products;
- unstable processes of storage and distribution, big variation in processing time,
- lack of visual management tools, no information about the plan and status for incoming and outgoing deliveries.

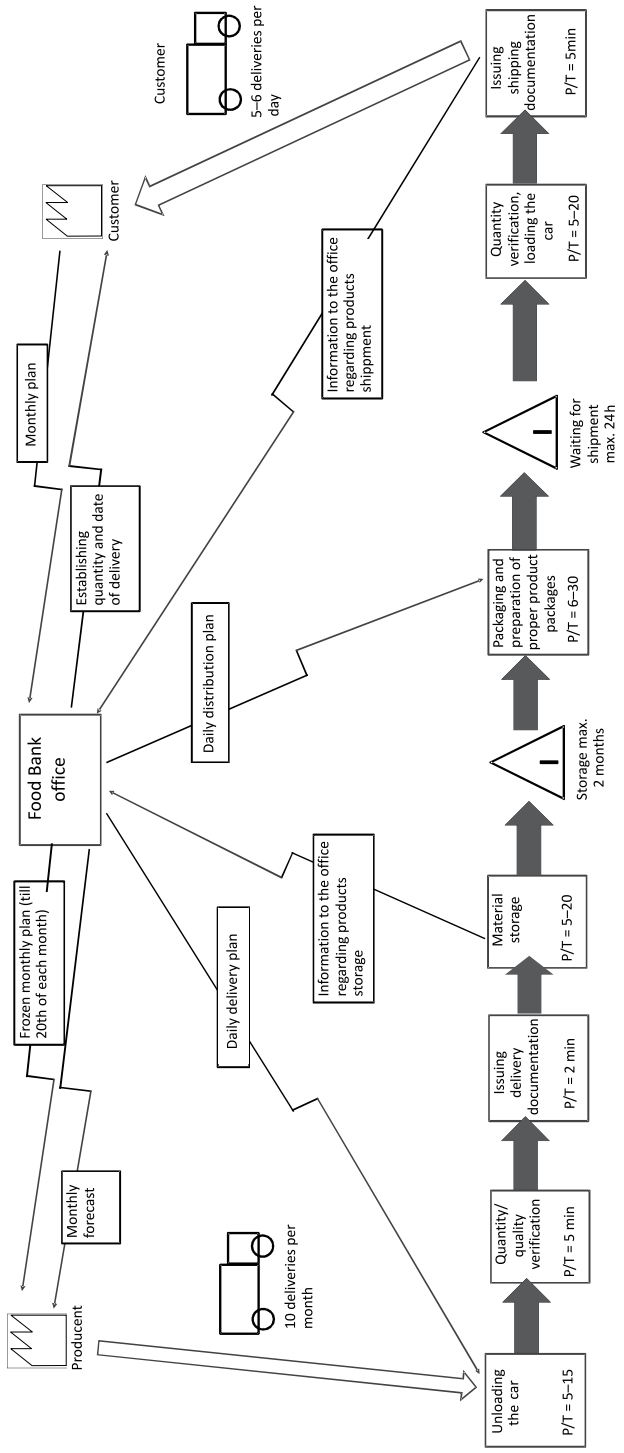


Figure 2. Current State Value Stream Map

Source: own study.

The issues mentioned above constituted a basis for further improvement actions. All of them were addressed during the third and fourth step of the lean implementation process.

Creating flow

According to the 5-step lean implementation process, current state mapping is followed by flow creation. The goal of this step is to make sure that each operation of the value stream occurs in a tight sequence so that the product can move smoothly toward the customer. Flow is created by elimination or reduction of inventory between value stream operations, leading consequently to reduction of the waste of waiting (Marchwinski, Schroeder & Shook, 2004).

As visualised on the Current State Value Stream Map, flow of the products in the receipt and disposal processes was disturbed by high inventory levels. The food products could wait up to two months before they were taken by the customers. This situation was caused by the fact that each product was delivered to the Food Bank in big batch sizes (to minimise the supplier's transport cost). Consequently, the Bank had to store excessive amount of food products being unable to distribute it quickly enough to the customers.

Another important issue hindering achieving flow of the analysed processes was a lack of proper standardisation of the storage area. Only 2 out of 13 food products from the FEAD program had fixed locations within the warehouse (dairy products were kept in a freezer), the rest of them was located based on current space availability. As a result, pallets with food were frequently moved from one place to another, in order to find an empty space for new deliveries. This situation disturbed flow by making employees waste time on searching for targeted location and perform excessive activities.

In order to establish the flow in the receipt and disposal processes, the project team decided that it was necessary to reduce the batch sizes of each delivery. However, two obstacles were recorded. First, the suppliers were unlikely to deliver products without fully loaded trucks. Second, bigger frequency of deliveries could overburden the warehouse employees, who would work above their capacity. To answer these issues, the idea of establishing the "Milk Runner cycle" was created. The solution indicated that twice a month a delivery truck (Milk Runner) should use one round trip to collect goods from several suppliers and transport them to the Wrocław Food Bank.

Thanks to this solution, the Bank would receive smaller batch sizes, not increasing the frequency of incoming food conveyances. Having smaller batch sizes would allow the Bank to reduce the inventory to the level equal to the delivery frequency (2 weeks).

Addressing the issue of a lack of proper standardisation, the project team established a standard location for each FEAD product and calculated minimum and maximum inventory levels. It was decided that the food products should always be located in the same place with a fixed number of square meters available, sufficient to accommodate the maximum level of each product. Additionally, the proper Standard Work Sheets were to be created, to describe the best method of performing receipt and packaging steps. This solutions was meant to significantly improve the material flow within the analyzed processes, by establishing standardised steps order and preventing employees from wasting time on any non-value added activities.

Establishing pull

Establishing pull is the fourth step of the lean implementation process and is inseparably connected with the previously created flow. The pull system is a method of flow control in which downstream activities signal their needs to upstream activities. It strives to eliminate overproduction by planning activities based on actual demand and consumption, not forecasts. Consequently, nothing is performed by the upstream supplier process until the downstream customer process signals a need (Marchwinski, Schroeder & Shook, 2004).

As visualized on the Current State Value Stream Map, the Wrocław Food Band did not organise their food receipt and disposal processes according to the pull system. Planning of both of them was performed based on monthly forecasts and frozen plans developed at the very beginning of the FEAD project. What is more, there was no pacemaker of the value stream, because both analysed processes receive separate plans, which were not connected with each other. This created a situation, where all planning activities were detached from the actual consumption of food products by the customers.

In order to develop a pull system and combine it with the previously designed flow, the project team decided to establish one pacemaker of the value stream – the products packaging step of the disposal process. The newly created pull system was designed as follows:

1) The packaging area receives a daily distribution plan, based on weekly agreements with the customers.
2) In order to prepare the desired packages, the employees collect a proper amount of food from the storage area.
3) After the minimum level of inventory for chosen food product is exceeded, information (Kanban) about replenishment necessity is sent to the Food Bank Office.
4) The Food Bank Office contacts the supplier and informs them about replenishment necessity for a chosen amount of food (based on the established maximum inventory levels).
5) Twice a month the milk runner delivers the ordered types and amounts of food products.

The developed system is based on the supermarket concept, which requires establishing minimum and maximum level of inventory for every food product. As stated above, once the minimum level is exceeded, the information on replenishment necessity should be send to the suppliers. Thanks to this solution, the planning of food receipt and disposal processes are linked together to reflect the actual consumption by the customers.

Seeking perfection

The goal of the fifth step – "seeking perfection", is to constantly repeat the first four steps in order to reach an ideal state. Despite the fact, that the ideal state may never be achieved, this step simply stresses the necessity for the continuous improvement cycle. For the sake of the project, the "seeking perfection" phase was understood as standardisation of the previously designed concepts and creation of an action plan necessary to reach the future state.

In order to standardise and visualise the desired state, the Future State Value Stream Map was created (Figure 3). It summarised all solutions developed during the flow and pull establishing phases. As visible on the map, the future state material and information flow is significantly simplified. The food receipt process is condensed into one working cell which contains all necessary steps, organised in a continuous flow manner. The food disposal process is divided into two cells: packaging and distribution (quantity verification, van loading, and assuring shipping documentation), which are connected with each other by the FIFO line.

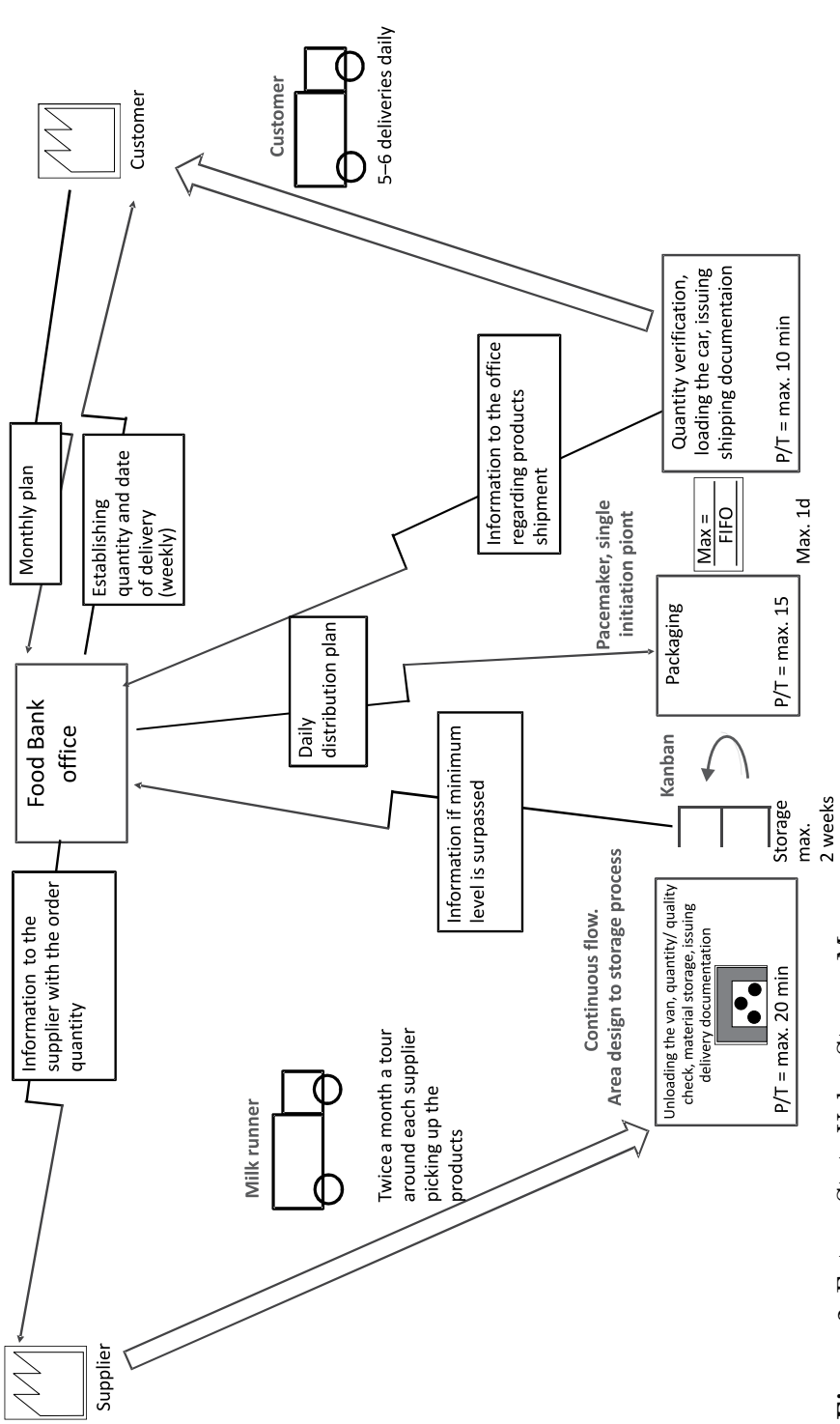


Figure 3. Future State Value Stream Map

Source: own study.

The last task performed by the project team was creation of an action plan. It consisted of 6 main action items necessary to convert the current state into the desired future state.

1) Establishing minimum and maximum inventory levels for each food product of the FEAD program.
2) Standardisation and visualisation of food products location within the warehouse.
3) Creation of Standard Work Sheets for food receipt and packaging.
4) Establishing one initiation point in the packaging area, which receives a daily shipment schedule (including visualisation of the plan and its status).
5) Creating of a storage area based on the Supermarket concept, where exceeding the minimum level impacts immediate information to the supplier, who ships proper product to the organisation.
6) Establishing the "milk runner cycle", which includes dealing with supplier agreements and achieving approval from the Food Bank Federation.

The following action items constituted a final summary of the one-month workshop phase of the project, which was dedicated to designing of a roadmap to implement lean management in the analysed processes. As the plan was created in mid-May 2015, the second phase of the project aimed at implementation of the actions within a 3-month period, until mid-August 2015. The implementation phase and achieved results are described below.

Implementation phase

The implementation phase of the project was conducted in a different manner, than the previous one. Instead of the workshop model, the team decided to create the implementation plan and systematically monitor its progress. The goal of the management team was to close all the actions within the 3-month period.

The implementation plan was divided into two groups:

1) Internal actions, which can be applied within the organisationwithout external interference. This group was dedicated to be implemented first and included action items which concern standardisation, visualisation, and flow creation (actions 1, 2, 3, and 4 from the list above).

2) External actions, which application depends on agreement with the suppliers. This group was dedicated to be implemented after the internal action. It included actions 5 and 6 from the list above, which concern pull implementation.

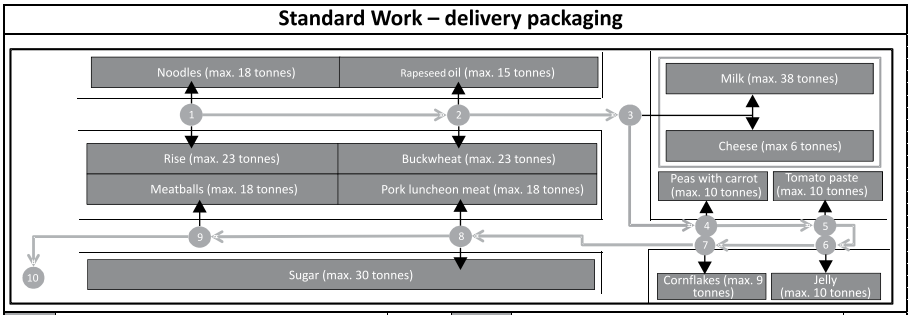
Implementation of the internal actions was performed according to the plan. The minimum and maximum levels of each FEAD product were established, which in turn allowed the project team to define standard locations within the warehouse. This action went along with the 5S workshop, which resulted in better organisationand visualisation of the working area. An exemplary outcome of these efforts is presented in Table 1.

Table 1. 5S workshop results

Before	After
	
	
	

Source: own study.

Standardisation of products location allowed the project team to develop the Standard Work Sheet for the food receipt and packaging processes (Picture 4). The standard work contributed to the fact that the processes became more stable and predictable. The observations revealed that the time needed to perform the receipt process dropped from 17–42 minutes to a maximum of 25 minutes, while the packaging process time was reduced from 6–30 minutes to a maximum of 20 minutes.



1	Picking up noodles and rice	2 min	6	Picking up jelly	1 min
2	Picking up grapeseed oil and buckwheat	2 min	7	Picking up Cornflakes	1 min
3	Picking up milk and cheese	2 min	8	Picking up pork luncheon meat and sugar	2 min
4	Picking up peas with carrot	1 min	9	Picking up meatballs	1 min
5	Picking up tomato paste	1 min	10	Packaging and preparation for shipment	7 min

Figure 4. Standard Work Sheet for packaging

Source: own study.

The last action from the internal group list concerned creation of an initiation point in the packaging area, which would become the pacemaker of the whole value stream. Because of the fact that establishing the pacemaker depended partly on the supermarket installation (action item number 5 from the list), the team managed only to improve visualisation of the daily packaging schedule. Following the team preferences, Google Calendar was used for this purpose. Thanks to this tool, daily packaging plan and its status were clearly communicated not only to the Bank's administration, but also and foremost, to the warehouse employees, who have access to the computer.

The implementation of the external actions turned out to be much more challenging for the project team. Due to the fact, that the relation between Food Bank and its donors is far different than the traditional customer-supplier agreement, many problems surfaced

during an attempt to modify the cooperation terms. Installation of the supermarket concept, which would send delivery order to the supplier based on actual consumption, turned out to be impossible, because of frozen delivery conditions within the FEAD agreement. The lack of the supermarket system prevented creation of the Milk Runner cycle. Further investigation of this subject revealed that not only the agreement constrained, but also the long distance between suppliers and the Bank (up to 500 km), significantly hindered its application. As a consequence of all those issues, the pull system was not created within the Wrocław Food Bank.

As it turned out later within the project, problems with establishing the pull system strongly influenced the previously implemented internal actions. The lack of the supermarket system made it impossible to establish the pacemaker in the packaging area. Moreover, further reliance on the forecast and not actual consumption impeded maintaining the minimum and maximum inventory levels of the products. This in turn, led to situation were the previously established standard works were difficult to follow.

In order to stop this situation and sustain the newly created standards, proper corrective actions were taken. The project team rejected the minimum inventory level concept, which excess would trigger delivery order from suppliers, and settled down with defying maximum inventory levels for each FEAD product. By doing so, the Wrocław Food Bank gave up implementation of the pull system, but supported sustenance of standard food location and enabled further standardisation of the disposal and receipt processes.

Goals' realisation

After three months from the start of the implementation phase, the project team reviewed the first results of the project. In order to do so, the team evaluated the realisation of each of the goals, which were defined at the beginning of the project. The results reflect the difference between the initial state (first month of the FEAD program) and the future state (third month of the FEAD program). The outcome of this assessment is presented in Table 2.

Table 2. Goals realization summary

Goal	Result
Reduction of storage area.	Initial state storage area usage: 300–500 m^2 Future state storage area usage: max. 500 m^2 The storage area used for FEAD products has not been reduced.
Reduction of the average time of products being stored in the warehouse.	Initial state average storage time: 1–2 months Future state average storage time: 1–2 months The average storage time of FEAD products in the warehouse has not been reduced.
Reduction of receipt time (consisted of all the steps necessary to perform the process).	Initial state receipt time: 17–42 minutes Future state receipt time: max. 25 minutes The receipt time of FEAD products has been reduced and stabilised.
Reduction of the packaging time.	Initial state packaging time: 6–30 minutes Future state packaging time: max. 20 minutes The packaging time of FEAD products has been reduced and stabilised.
Visualisation and standardisation of the receipt and disposal processes.	The visualisation and standardisation of the receipt and disposal processes have been significantly improved through such solutions as: Standard Work Sheets for receipt and packaging, standardisation of products' location, visualisation of the packaging plan and its status, visualisation of the warehouse area, and visualisation of a FIFO order.

Source: own study.

To summarize, the results of the implementation phase were mixed. The project team managed to implement four out of six action items from the plan, which contributed to lead time reduction, improvement of visualisation and standardization. However, a lack of completion of actions regarding pull creation, made it impossible to achieve the goals related to inventory and average storage time reduction.

Based on the achieved results, the Wrocław Food Bank decided to continue its lean implementation journey, but focusing primarily on standardisation and visualization of the processes. The management team came to conclusion that implementation of the full 5-step lean thinking cycle is too difficult due to various organisational and federal constraints. It was realised however that proper use of chosen tools and methods of lean management may lead to multiple benefits and further improvements within the Wrocław Food Bank.

CONCLUSION

The goal of the paper was to verify applicability of the 5-step lean management process in the NGO environment and identify potential barriers, which may impede this process. In order to achieve this objective, a case study of a lean implementation project in the Wrocław Food Bank was performed. During the project, the Bank successfully went through the design phase of every step of the lean management process, which consists of value identification, value stream mapping, creation of flow, establishing pull, and seeking perfection. However, having completed the design phase, the Bank was able to implement only the first three steps of the process, failing to establish pull and consequently perfection. Despite this shortcoming, the general efforts connected with the lean implementation project resulted in lead time reduction, improvement of visualisation and standardisation of the organisation. The observations and conclusions made based on the case study are presented below.

First of all, it is valuable to point out an interesting observation regarding the general flexibility of the lean concept. It turned out that there is a clear correlation between each of the five lean thinking steps. It is impossible to implement the lean concept when even one of the steps is missing. This situation was very visible within the Wrocław Food Bank project, when the lack of establishing pull prevented the team from achieving the desired future state. It also seriously impeded sustenance of the previously created flow and caused the reoccurrence of waste. This interdependence between lean steps emphasises the fact that in order to achieve full potential of the concept, it is essential to apply each and every step of the lean implementation process.

The second conclusion, which can be drawn based on the case study, is a significant difference between the design phase of the project and the results of its implementation. On the one hand, establishing theoretical aspects of each of the five steps was relatively easily performed. The desired concept was clearly stated on the Future State Value Stream Map. On the other hand, the implementation of the actions necessary to achieve it, turned out to be deeply impeded, because of multiple technical constrains. It appears therefore, that the theoretical aspects of lean thinking are quite flexible and adoptable in various environments. However, the physical implementation of its guidelines can often be

withheld due to unfavourable conditions. In relation to this point, the project revealed plenty of challenges, which non-governmental organisations have to face while implementing the lean management concept:

- Lack of traditional customer-supplier relationship. The NGOs are strongly dependent on voluntary donations, where suppliers often dictate the sizes and frequencies of each delivery. This consequently leads to a situation where non-profit organisations have to agree to terms of the suppliers, not otherwise like in the traditional model.
- Lots of rules and regulations. In order to receive donations and funds necessary to perform their activity, the NGOs have to agree to multiple terms and agreements. The agreements constrain freedom of non-profit organisations to make independent choices and adjust their operational model.
- Project-based activity. Many NGOs lead their activities based on multiple projects, causing low repeatability of performed processes. This fact strongly hinders the application of the flow and pull steps of the lean implementation process.
- No correlation between organisational efficiency and obtained funds. The NGOs are often financed regardless of their performance. Due to this fact, many non-profit organisations often do not realize their poor performance and need for improvement.
- Limited budget. Many NGOs operate on very limited resources, which are barely enough to perform their core activities. It is often very difficult for these organisations to stop fire fighting and focus on continuous improvement.
- Organisational structure based on volunteers. Very few employees of the NGOs are full time workers. High rotation of staff hinders long-term planning.
- Centralisation. NGOs often belong to various federations, which gather multiple organisations with similar profiles. This fact constrains independence of one organisation, since most strategic decisions are made on the central level.

Considering all the challenges listed above, it may appear that the application of the full 5-step lean implementation process in NGO environment can be very difficult. Due to multiple constraints, non-profit organisations may decide not to continue the full transformation process and settle down with utilisation of such lean tools like 5S, Standardization, or Visual Management. These techniques

seem to be the most flexible ones and will provide tangible benefits in every organisation.

However, based on the evidence gathered during the project in the Wrocław Food Bank, it seems clear that the application of the 5-step lean management process in NGOs is not impossible. If only the bureaucratic and organisational barriers are overcome, implementation of the full lean concept can be successfully completed, which confirms the research hypothesis (H1) and answers the research question.

Successful lean management implementation requires, therefore, strong leadership support, which would drive transformation efforts and remove various barriers and constrains. The key aspect here is to establish a continuous improvement and problem solving culture within the organisation. The culture should be even greater, than in commercial companies, due to bigger number of challenges which NGOs have to face. The combination of strong leadership support and a continuous improvement culture should ensure successful lean implementation regardless of unfavourable conditions.

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WDRAŻANIE *LEAN MANAGEMENT* W ORGANIZACJACH POZARZĄDOWYCH. STUDIUM PRZYPADKU WROCŁAWSKIEGO BANKU ŻYWNOŚCI

Abstrakt

Tło badań. *Lean management* jest obecnie jedną z dominujących koncepcji zarządzania w środowisku przemysłowym i usługowym, zapewniając wymierne korzyści biznesowe dla przedsiębiorstw ją stosujących. Jednocześnie potencjalne zastosowanie tej koncepcji w organizacjach pozarządowych nie zostało jeszcze dogłębnie zbadane. Uzupełnienie tej luki może znacząco przyczynić się do poprawy sprawności operacyjnej wielu organizacji typu NGO.

Cel badań. Celem badania jest zweryfikowanie możliwości wdrożenia pięcioetapowego procesu *lean management* w środowisku NGO oraz zweryfikowanie potencjalnych barier, które mogą ten proces utrudnić.

Metodologia. Metodą użytą w tym badaniu jest pojedyncze studium przypadku, które opisuje projekt wdrożenia koncepcji *lean thinking* we Wrocławskim Banku Żywności. W trakcie projektu organizacja ta przeszła przez pełen pięcioetapowy proces *lean management*, składający się ze zidentyfikowania wartości, mapowania stanu przyszłego, stworzenia przepływu, ustanowienia przepływu ssącego oraz dążenia do doskonałości. Udział w tym projekcie umożliwił autorowi zebranie danych jakościowych i ilościowych, wykorzystanych później w celu udzielenia odpowiedzi na pytanie i zrealizowanie celu badawczego.

Kluczowe wnioski. Badanie wykazuje, że zastosowanie pięcioetapowego procesu *lean management* w środowisku NGO jest możliwe, jednak fizyczne wdrożenie jej zasad może być znacząco utrudnione z powodu wielu wyzwań, z jakimi borykają się organizacje pozarządowe. Do głównych barier wdrożenia koncepcji *lean* należą brak tradycyjnych relacji na linii klient–dostawca, działalność opierająca się na projektach, duża liczba biurokratycznych regulacji oraz ograniczony budżet. Skuteczne wdrożenie *lean management* wymaga więc pełnego zaangażowania kierownictwa, które powinno przewodzić transformacji, usuwając bariery i przeszkody stające na drodze organizacji.

Słowa kluczowe: *lean management*, *lean thinking*, NGO, ciągłe doskonalenie.