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Business Sustainability through Employees Involvement: A Case Study

Business sustainability is dependent on many factors but one of the most uncontrollable factor is employee's involvement and collaboration. Frequently employees are working and acting like "androids" day-after-day, repeating the same routines with no motivation or enthusiasm, feeling that any requests would not be attended by their supervisors. The objective of this paper is to present how some simple ideas could connect and involve employees and supervisors in a continuous improvement journey in an inbound logistics area of an automotive sector company. The new ideas were implemented through an action-research methodology. Results achieved included new ideas and contributions for the problems (59 problems identified) of their sector promoting the company's financial and social sustainability.

Keywords: Lean Production, Continuous improvement; Employees Involvement; Sustainability; People.

1. INTRODUCTION

More and more frequently, companies are faced with the scenario of mass customization of the products [1]. This situation has originated that companies have to adapt themselves to increasingly competitive markets and more demanding customers.

According to Bhamu and Sangwan [1] companies have been looking for new tools and methodologies in order to stay competitive in the market and achieve business excellence. In this sense, many have begun to adopt the concept of Lean Production (LP), a management philosophy that is based on the TPS - Toyota Production System [2][3]. The TPS was created by the Japanese managers Taiichi Ohno and Shigeo Shingo [1] at the end of World War II.

The main objective of LP is to free production of any type of waste [4]. According to Ohno [3], waste is any activity that does not create value to the final product, that is, any activity in which the use of resources, materials, equipment or processing time exceeds what is necessary to obtain a good or a service, thus contributing to the company's cost increase.

Lean Production philosophy will be the standard manufacturing model of the 21st century [4][5][6] and it is defined as an integrated social-technology system that requires an organizational change, such as in organizational structure, as in tasks, requiring a change of intra and inter relationship between organizations, in order to achieve the main objective of continuously waste elimination and value-adding creation[7].

This paper aims to show that, often, companies forget basic rules in order to involve employees, in spite of being in a long-time Lean implementation journey, as the company addressed in this case. Moreover, the fact that the company has, for a long time, being involved in

a continuous improvement process worsens the problem since employees are expecting more from the company and feel their expectations were frustrated. In spite of successively training actions, people felt demotivated because their simple requests were not attended and they felt that are not involved on the continuous improvement process of the company.

The focus of the project developed by this research was to improve the Ship-To-Line supply strategy using Lean Logistic [8], but the success of this project could not be achieved without involvement of the employees of the Inbound Logistics area from the Logistics Department.

The importance of employees' support in this project has been identified in an early stage of the project and some actions have been developed to promote this support across the incoming and warehouse areas.

Through simple but effective ideas that guided employees to actively contribute to a problem-solving process, nearly 60 problems have been identified, almost all of them solved immediately or after being validated by the group's supervisor. So, this paper presents these ideas and mechanisms that alert for the importance of people in the success of the Lean Production implementation, realizing its impact on financial and social sustainability of the company and on the continuous improvement in a long-term philosophy.

This paper is organized in six sections. After this introduction, a brief literature review is presented. Research methodology is presented in section 3 and fourth section presents the industrial application. Discussion of results and limitations are presented in the section 5. Finally, section 6 outlines some conclusions.

2. LITERATURE REVIEW

Business excellence is a state of long-term sustained competitive success, which an organization aspires [9]. According to Vadari and Parandker [9], sustainability refers to the company's ability and strategic

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management to prepare successfully for future business, market and operating environment.

Ohno [3] said that Lean Production (LP) can eliminate all wastes, reducing the costs of the products and increasing the profit – financial sustainability. Marwan and Mahound [10] point out that it is easy to understand the concepts of LP, as Just in Time (JIT), in theory, but it is difficult to implement them, because a culture change is required.

Many companies have implemented LP and some studies reveal the reasons why they do it. For example, Jasti and Kodali [11] conducted a review of some of these studies and concluded that from the sample of companies in the study: 62% were intended to avoid defects and 60% to reduce stock. They also revealed that the companies did not give the same importance to other wastes: transports (38%), over-processing (26%), over-production (23%) and unnecessary movements (23%).

Another study from Bhasin [12] concluded that about 10% of United Kingdom (UK) companies that have implemented LP have been successful. In Walter and Turbino [13] paper it is stated that in the US, 70% of companies that have implemented LP as an improvement strategy, only 2% have fully achieved their goals and 74% of them admit to not being a big check progress. Other publications discuss the simplicity or difficulty on implementing Lean. For example, Pavnaskar, Gershenson, and Jambekar [14] refer that the implementation of LP is not as simple as it sounds, and often is made a wrong application of the tools inherent to this philosophy of management., resulting in additional waste resources. Several studies according to Walter and Tubino [13] corroborate this statement, and report that most companies waste about 70-90% of its resources implementing LP, even those who are in better implementation situations; they have waste resources of about 30%.

So, LP aims to maximizing value and reducing waste through the use of methods, techniques and specific tools for diagnosis and improvement [15]. However, waste elimination is not only associated with costs reduction but also to the improvement of the conditions and safety of the employees. Thus, according to New [16], employees should be considered as an active part in improving processes and products of a company, according to the TPS. Thus, the continuous improvement not only belongs to the managing board, but to all the company associates.

The TPS, and LP, suggests the involvement of every single employee in the continuous improvement process, encouraging associates to solve problems, giving them a sense of responsibility [17]. Jayaram, Das and Nicolae [18] demonstrate that this system aims the involvement of employees in the decision-making process.

Several studies about the TPS suggest that several authors focus only on the technical part of the philosophy, forgetting that in the centre of the TPS house are people [19]. Thus, in a Lean environment it is possible that people suffer some anxiety and psychological pressure [20], since the technical results to be achieved are associated with reduced cycle times,

for example. Neglecting aspects such as safety and the health of employees, fostering an increase in stress and pressure to achieve the goals [19].

Unlike what Parker [20] referred, other authors consider that, in companies that implement the LP, employees are not pressured to work harder, but to work more rationally [4]. In Womack, Jones and Roos [4] it is stated that the stress caused in a Lean environment can produce a positive pressure among associates, resulting in improved results in products and processes. Stress is associated with the lack of stock and machinery, and this leads to having to respond more quickly to the business changes, such as stops that could compromise customer orders. According to Sugimori et al. [17] Lean environment must create more robust processes through automation and balancing the workload by workers to avoid risky behaviour.

Implementing LP requires a cultural business change associated with the relentless pursuit of waste elimination. For more automated that the processes may be, these always depend on people. Therefore the focus on organizational culture must be created by investing in training and participation employees, giving them responsibility [21]. And for this, the most effective tool for a manager is knowledge process through its presence in *Gemba* [22]. Thus, to achieve business excellence, companies must develop an organizational culture of treating people as their most important asset and provide a consistent level of high quality products and services in every market in which they operate [23].

The TPS is a system of "*creation of people, not cars*" [24], and the truth is that all Lean is completed if managers know the employees and teams (not only the processes and tools) and promote a healthy and consistent organizational culture [22]. Consequently, the TPS presupposes the development and training of people, so that they can strongly contribute to the development of the organization, since, according to the TPS and LP, people should feel the need to identify and solve problems through the use of the scientific method [19].

The concept of "*thinking people*" was created by Ohno [3], this is related to the idea that: not listen and not involve the employees is considered a waste. So, it has to develop opportunities and optimize processes in companies to stimulate and engage employees. This can be enhanced through suggestion boxes and other practices, although this system cannot give the expected results if management do not comply with the raised problems [19].

Liker [24] refers to two pillars at the Toyota model: continuous improvement and people (associates, suppliers, etc.).

Leavitt cited in [7] proposed a four-dimensional organizational change model, where the four variables: people; structure; tasks and technology, are interdependent and interactional and, this model illustrates that the process of change in the companies does not always take into account the suppliers and the customers., but these two stakeholders influence the production effectiveness and organization's performance [7]. Following this, Panizzolo [25] made an extension of Leavitt's model showing the

relationship inside and outside the organization. This is very important to represent the organizational change, because LP is an operation system of organizing and managing production development, operations, including the relationship with suppliers and customers [7].

Continuous improvement consists of minor changes, which accumulated represent a "revolution" [19]. Thus, it is necessary to involve employees on improving day-to-day operations through training, informal conversations and meetings, etc.

The difficulties of implementation and success of the LP may depend of the industry, company, and the people themselves, which are the key element of change. The main barriers to implementation of LP include: the resistance to change by the employees, and their lack of involvement in the process, as the lack of sharing information, the lack of involvement of top management in the process and the lack of feedback to employees or even the gaps in financial analysis and risk.[26], [27].

3. RESEARCH METHODOLOGY

The work developed by the researcher followed the action-research methodology. This type of research is characterized by an involvement of the researcher [28] in the research, and by the theory and practice articulation by solving real problems [29]. This methodology is composed by five steps [30]: i) diagnosis; ii) action planning; iii) action taking; iv) evaluation and results discussion and v) learning specification.

The first author of this paper was a participant researcher [31] being an active participant throughout all the developed activities. The objectives to achieve in this company were mainly related with the improvement of the logistics processes efficiency. In order to achieve these objectives an important auxiliary objective was also established: include and involve the employees of the incoming and warehouse sector in the continuous improvement journey. An informal communication (dialog) and workshops were used to collect their opinions and complaints, and to promote their collaboration in the problems' solving process. Thus, this paper relates the practise research of the LP in a company with experience in this field, and the impact of employees and their involvement on it, realizing their impact on the financial sustainability too.

4. INDUSTRIAL APPLICATION

The company where this study was carried out is one of the largest producers of multimedia systems for the automotive industry and is managed by the principles of management philosophy of Lean Production (LP). The company's main values are: initiative and determination; responsibility; transparency; sincerity and trust; reliability; credibility and legality; and cultural diversity.

The company's production system focuses on waste reduction, and this is based on eight fundamental principles: flexibility; process orientation; pull system;

perfect quality; standardized and transparent processes; waste elimination and continuous improvement, and finally, the involvement and delegation of associates.

This production system makes a trade-off management of three variables considered essential to ensure the sustainability of the company: quality, price and delivery time of the final product.

In the Inbound Logistics Sector, the company receives, on a daily basis, several shipments of raw materials, about 700 boxes and 360 pallets per day that have to be stored in the warehouse or moved directly from the incoming area to the production warehouse (supermarket) – the Ship-To-Line concept. A milk-run ensures that raw materials are moved from the incoming area to the supermarket, in a twenty minutes cycle, running all day long in three shifts of eight hours in a total of 33 employees.

Demand fluctuations are a constant challenge for the logistics' sector. Logistics processes require high levels of flexibility and efficiency and therefore a continuous improvement methodology must be adopted to ensure raw materials availability, while scheduling all resources (people and machines) in a large set of simultaneous tasks, in a very dynamic environment.

The involvement and importance given to the employees arises in this context, as an element key to ensure the continuous improvement of processes in the company, implementing process improvements and consequently increasing the long-term sustainability.

This paper reports the activities made in LP context in the company in order to motivate and involve the shop-floor employees (operators) of the Logistics Department (warehouse workers).

4.1 Employees in the company: background

The company have been implementing LP principles for over a decade. During a continuous improvement project associated with the Ship-To-Line strategy, at Inbound and Internal Logistics section some issues associated with the role of people in this process were identified: the lack of motivation, the discrediting in concepts of the LP already implemented in the company, the disengagement concerning the activities and the failure to fulfil with standardized work, complaints about flaws in the company's communication and the perception of "no importance" given to employees. Employees reported that were "unheard", "they were not involved in continuous improvement projects", "their opinions were not prevalent or not taken into account in management decisions," considering they had only to "meet the standards" established by top management.

This was the context when the research has started. The logistics employees' didn't feel they were part of the logistics team and their level of motivation was very low and their "involvement" was almost imposed.

The hierarchical organization's structure of the Department of Logistics is presented in Figure 1. The employees of the incoming and warehouse area of the company (focus of study) are headed in the day-to-day tasks by a supervisor (one per shift), to whom they report directly.

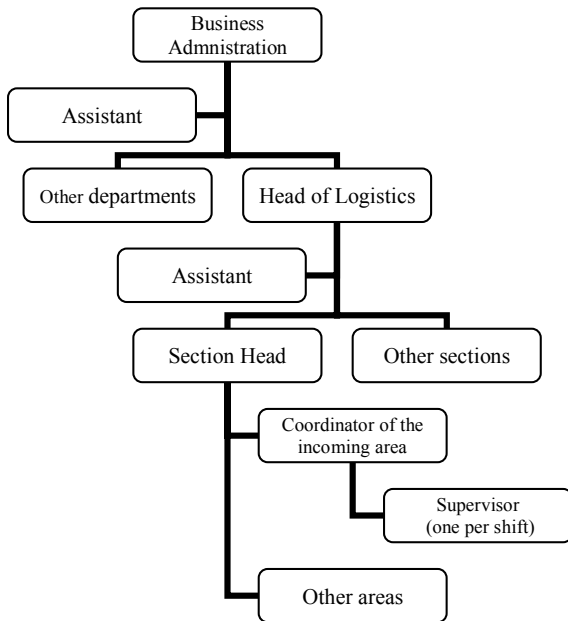


Figure 1. Hierarchical levels of the Department of Logistics of the company

4.2 Diagnosis of the involvement status of the employees

Initially, as a first step, a diagnosis of the current situation was necessary. To achieve this, informal workshops were organized, held in an outdoor and relaxed atmosphere. The workshops (WS) were not formally announced to the employees. Alternatively a countdown sign was placed to enhance curiosity among employees. The countdown was done in two different ways: using a poster display with a countdown until the day of the WS (Figure 2a) and through a box in which the employees could see through two holes an uncompleted sentence, that every day was becoming next to the final sentence, that was: "And you, are you connected?" (Figure 2b).

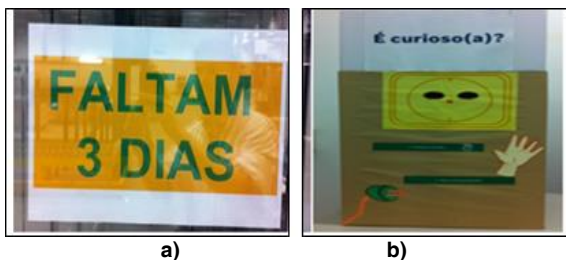


Figure 2. Ways used to announce the workshop: a) Example of the countdown poster, where it is written: "3 days left..."; b) Box used for the countdown

The sentence was related to the concept of WS that had as theme: "We are connected", whose objectives were:

- To foster teamwork;
- To identify daily problems (operational and communication) - taking into account the perspective of employees;
- To involve employees in the continuous improvement process/journey of the company.

The concept of "connected" has been defined to employees as the readiness to solve daily problems supported by the stakeholders, such as supervisor,

section head, working team and other teams. Thus, the operator would have to evaluate with a green (positive) or red (negative) pin each one of the stakeholders: coordinator, section head, its own team and other teams (other departments) of the plant. Further, he/she should identify specific positions and improvement proposals. An example of the results (for one shift) is represented in the Figure 3.



Figure 3. Results of the evaluation made by the employees

According to the definition above the associates marks are mainly negative for all the stakeholders. These results allowed to quantify and to realize the discomfort and lack of involvement of employees in the Lean journey and the organization change process. In the workshops, the employees worked together in teams, to identify problems or improvements, operational, communicational or teamwork problems identifying one possible solution and the main responsible for the implementation.

In a second stage, employees were able to present their ideas to company's top management, team leaders and coordinators, Figure 4.



Figure 4. An employee presenting the problems to the management board and his team

According to the employees this was a great opportunity to work in team, think about the organization and communicate with their management board.

4.3 Problems Identified by the employees

The problems initially identified in the workshops were related with salaries, lack of information and a no-open conversation with hierarchy. Thus, some group dynamics activities with employees organized in Kaizen small groups were developed to detail the various topics and to identify problems that allow continuous improvement.

Figure 6 shows some operational problems that arose from sessions of brainstorming with all

employees. The problems identified, in a total of 59, were divided into categories: salaries, involvement and communication, logistics incoming processes, atmospheric conditions of workspaces, improvement of the Ship-To-Line strategy (project that conducted this work), leisure room and other operational problems.

- Share results and indicators;
- Fostering the participation of employees in daily management.

In Figure 8 it can be seen an example of use of an A3 Report on a cork board related to a solved problem with the employees team.



Figure 6. Results of the brainstorming: operational problems

The Figure 7 shows the categories and problems defined by the employees using an Ishikawa Diagram.



Figure 7. Ishikawa diagram with the problems identified with the help of the incoming area employees

There were some complex problems to be solved like “the increase of the salaries”. But, many problems were simple problems like missing supports or places to organize the tools of daily work, a micro-wave or a coffee-machine in the leisure room.

Problems were analysed with employees and a cost-benefit matrix was made in order to work on the difficult ones (with a long time to implement) and the easy ones, that were implemented faster with the help of all Kaizen teams.

4.4 Visual Board and problem-solving proposals

At the operational incoming area and inspired on Visual Management Boards [32], a specific area was created with cork boards, that already existed in the company. This concept enables:

- Presentation of continuous improvement actions and discussions;
- Mapping process and discuss problems with workers (teamwork);
- Share information;

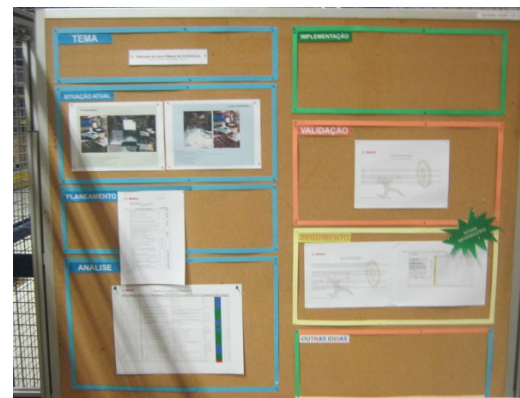


Figure 8. Example of a visual board used following A3 report

The A3 Report cork board was very important during the implementation of the solutions, because it was updated by the employees. These had to create and elaborate with the management some solutions for the problems identified before.

Many work stations have been improved, for example, with inclusion of lamps, cupboards for documents, support tables for trucks discharges. Several problems were studied together with all employees involved, such as the ability to change the work garment or the possibility to do the check in and check out in specific and strategic points of the company settings, for their benefit.

Additionally, gravity ramps for incoming pallets have been improved (buffer location for incoming pallets), causing them to slide alone until the processing work station, reducing the push force of the pallets as well as time in activity (60 secs/pallet) and distance (17 meters / pallet).



Figure 9. Workstation marked with postits

Employees actively participated in the whole process and were timely informed of any step that would be done. For example, Figure 9 shows the intervention in the conference workstations in the incoming area. Kaizen groups were organized with the function to identify with supervisor what was needed to

change, what was necessary to do, and make a presentation about 5S and its importance for the organization. Figure 9 shows the signalled post-its done in the analysis that are corresponding to the things in fault or that people need to work. The yellow and orange post-its represented, what to maintain and what to change (or in fault), respectively.

4.5 Monthly meeting with managers

It was determined that employees of all shifts, must meet monthly with the team leader, coordinator and head section to discuss open issues, understand the impact of performed implementations and what is still lacking and why.

On the Figure 10 it can be seen a timeline with the solved problems presented and discussed till May 2015 with the employees of the section in question.

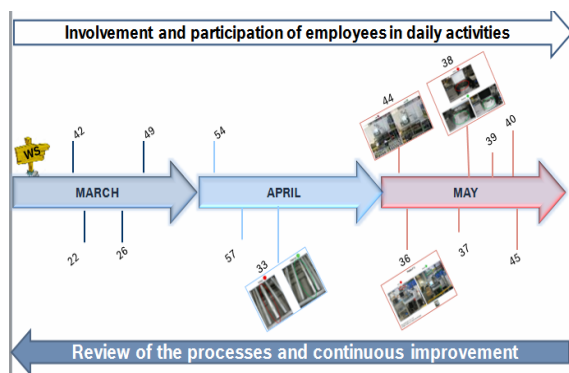


Figure 10. Example of information made for the monthly meeting with all employees

5. DISCUSSION OF RESULTS

All inbound flows were also revised and some processes have been redesigned allowing a more efficient logistics processes and a more friendly work environment.

In fact, an existing milk-run system showed to be not adequate for existing flows leading to work routines completely inappropriate and difficult to be accepted by employees involved. The implementation of the Visual Board and the involvement of the employees on continuous improvement allowed a different course on improvement project of Ship-to-Line (STL) strategy of the company, which consists of direct transfer of material from the incoming area to the warehouse closest to the production lines.

The solution for the new STL supply strategy allowed obtaining improvements in the following defined indicators presented on Table 1.

Table 1. Results achieved with the project of the STL strategy

Key Performance Indicator	Reduction (%)
Distance of the STL material	67
Walking distance	32
Transport time	24
Waiting	21
Handling of the STL material	40

This also led to the elimination of the milk-run transportation system previously used, incurring in the reduction of direct costs such as renting costs (5.000€/year) and energy costs (3.000€/year) by removing the logistics train (machine). A reduction of human resources is also foreseen, being improved the communication and coordination of processes by defining standards. In the table 1 it is possible to highlight the improvement on the indicators with direct influence on the day-to-day of employees, such as walking distance (-32%), waiting (-21%) and the handling of the material (-40%) in boxes with average weight of 16 kg.

In order to assess if the WS activities were useful for the employees a survey was carried out and results are presented in the Figure 11.

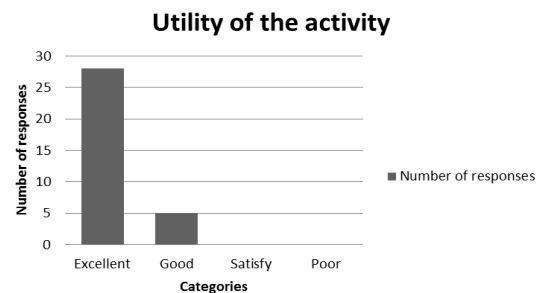


Figure 11. Results of the survey about the WS activity

About 85% of employees agreed that the activity and the opportunity to identify problems and exposed them to the management board was “excellent” and should be repeatedly very often.

There were also implemented various solutions and it was given information to the employees. They did not have this information before, like “*Why the safety shoes were changed by the company?*” or “*Why some standard work is that way?*”. The concern with the employees become one of the key of the success of these activities, they’ve felt part of the company again, and they could working in continuous improvement in addition to their routine work, learning and consolidating knowledge about LP.

Below, it can be seen an example of the workstation changing after 5S implementation made by employees of the section.



Figure 12. Before and after implementing 5S philosophy

According to employees the monthly meeting with the management it is very useful to “connect” them to the management and enabled a better communication and involvement, motivate them to improve their workstations.

In general, from all the points arose from the activities with the employees, 27% was solved with the ideas from the same. About 20% of the problems have not worked yet and 49% are in progress with the Kaizen groups, and about 4% of the problems, by the company's limitations, could not be solved. On the next chart it can see a summary of these results.

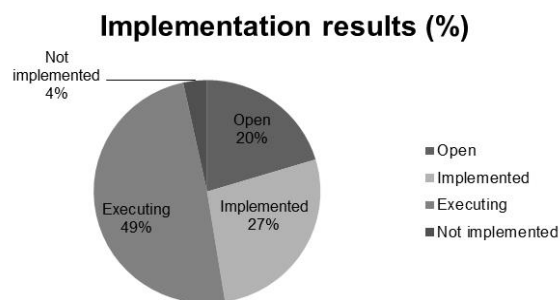


Figure 13. Results about the implementations and problems' status

During the problem solving process some obstacles arose, such the numerous approvals that were necessary in the company, some resistance from supervisors or lack of availability of the heads of other departments involved to discuss and collaborate.

Thus, the extremely high level hierarchical organization was appointed by the employees as a possible explanation for the inefficiency in communication and lack of involvement in the organization model. Also, this could be originating an obstacle and limitation to the successful implementation of the LP.

6. CONCLUSIONS

In this research work, new approaches to promote employee's involvement and commitment have been implemented in an inbound logistics area of an automotive industry. Simple tools such as visual boards, meetings with post-its and, mainly, the concern to ask the employees what should be improved and how, and explain to them the reason for not implementing a particular solution is important and can make the workers aware of their importance in the organization, waking them from their state of inertia.

Employees have identified several problems, and better working methods were created with their help and involvement.

With these small actions it was possible to see the implication of LP, and that involvement and support of employees leads to a better analysis and more careful diagnosis, simple solutions and gains for the company, taking into account the necessary involvement and motivation to the process improvement.

With this work, it was visible the impact and the role of people in the implementation of LP concepts and their impact on the long-term sustainability of the company. To continue this journey of continuous improvement and to create innovation on processes, and consequently maintain their business sustainability, companies have to listen, more and more, and create simple techniques to talk with their employees, involve

them in the decision-solving problems. See the processes through the eyes of the employees are one of the best ways to identify potential improvements (and solutions).

For the company concerned, communication and transmission of information has been crafted in various directions (up and down).

In terms of future work, it is important to research what extent the hierarchical structure can be an implicit variable in the LP successful implementation, and their impact on communication and transparency. It is important to realize what kind of techniques can motivate and make long-term curiosity, part of the day-to-day of the employees, without becoming numb and not contribute to the company's success.

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ОДРЖИВОСТ ПОСЛОВАЊА КРОЗ УЧЕШЋЕ ЗАПОСЛЕНИХ: СТУДИЈА СЛУЧАЈА

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Одрживост пословања зависи од многих фактора, али један од фактора који се најмање може контролисати јесте учешће и сарадња запослених. Запослени често раде рутински и свакодневно се понашају као „андроиди“, без мотивације и

ентузијазма, са осећањем да надређени неће обраћати пажњу на њихове захтеве. Циљ овог рада је да се покаже како неке једноставне идеје могу код запослених и њихових надређених у једној компанији за производњу аутомобила да подстакну спремност и учествовање у решавању свакодневних проблема непрекидним побољшањима у области улазне логистике. Нове идеје су примењене кроз методологију акционог истраживања. Добијени резултати укључују нове идеје и дају допринос решавању проблема (59 идентификованих проблема) унапређења финансијске и социјалне одрживости компаније.