Decision Making in Manufacturing and Services
Special Issue • 2024 • pp. 49–58

Case Study: Development of Employee Suggestion System at OKNOPLAST Manufacturing Company as Element of Process Improvement

Emilia Męcfel*

Abstract. This case study is focused on the development of the employee suggestion system at OKNOPLAST, a window joinery company. Based on the principles of the Kaizen philosophy, this system allows employees to make suggestions for improving the company's production processes and their work environment. In the course of the analysis, a decline in the number of suggestions that were made and a reduced rate of their acceptance were identified, which indicated the need to get to the root causes of this phenomenon using lean methodology and elements of business-process management (BPM). In response to these challenges, measures were taken that included spreading awareness among managers, promoting the employee suggestion system (ESS), training new employees, and providing technical and analytical support for process engineering; these increased the number of submitted and accepted suggestions. Visualizations of the results and transparent reports were used, which contributed to an increase in the number of submitted and successful applications. As a result, there was an increase in the acceptance rate and employee involvement in the continuous improvement process. The study showed that lean and Kaizen methods had positive impacts on the company's organizational culture and process efficiency. The results suggested that similar solutions could be successfully adapted in other manufacturing companies regardless of the industry. The study's conclusions underscore the importance of engaging employees and supporting their initiatives, which can be key to achieving long-term benefits and improving performance.

Keywords: Kaizen, continuous improvement, BPM

Mathematics Subject Classification: 90B90, 90B30

JEL Classification: M11, O32

Submitted: October 31, 2024

Revised: December 31, 2024

* AGH University of Krakow, Poland, e-mail: emilia.mecfel@agh.edu.pl.

1. INTRODUCTION

OKNOPLAST's window joinery business employs nearly 3000 people; each of them participates in various processes, but they are not always subjected to active analysis. In order to mobilize operators to join the improvement processes, an employee suggestion system (OKNOPLAST, 2016) was implemented in 2019. This was a structured way in which anyone could submit their solutions and improvements (Lean Partner, n.d.), and it helped develop creativity and innovation. This was based on the regulations that defined the method of submissions, the procedure for handling the submissions, and a system of evaluations and rewards; it was based on the Kaizen concept of small low-cost changes that are initiated by employees at all levels (Rother, 2010). The system was designed to support continuous improvement mainly by eliminating recurring problems, improving ergonomics on the job, introducing solutions that prevent mistakes (or detect them early), and improving the transfer of information or materials (Masaki, 2007). Aware of their work environment, operators and warehouse workers have the opportunity to make requests and suggestions, which are analyzed and implemented by process engineers. This gives them a real impact on their work and the entire work environment. The purpose of this system is to improve the situation and conditions in production and to increase the involvement of the employees in the improvement process by making requests and suggestions (Miller et al., 2018).

The case study was designed to identify weaknesses in the employee suggestion system (ESS) and develop actions that will help increase the number and quality of the applications that are submitted according to Kaizen principles. Business-process management (BPM) and lean methodologies are essential for managing and optimizing complex processes in manufacturing. By providing structured approaches for identifying inefficiencies and streamlining workflows, these methods enable organizations to enhance their productivity and foster cultures of continuous improvement. In this context, BPM complements the Kaizen philosophy by ensuring transparency and a systematic evaluation of improvement initiatives. Furthermore, this article aims to show how the identified issues were addressed in the context of OKNOPLAST, thus providing valuable insights for other companies that are considering similar improvements to their employee suggestion systems. The purpose of this article is to show how process-optimization efforts can lead to measurable improvements in employee engagement and the organizational culture.

2. DESCRIPTION OF CASE

The main goal of this case study is to identify any key challenges in the functioning of the employee suggestion system (ESS) at OKNOPLAST and propose targeted actions to improve its effectiveness and employee engagement. In addition, this study highlights aspects that other companies should consider, actions that they can take, and areas where their systems can be optimized.

After the implementation of ESS and a very active response from the employees, there was a decline in the number of improvements that were submitted as well

as a high percentage of rejected suggestions after a while. Table 1 shows that only 21 suggestions were received during the first two quarters of 2021 – 20 fewer than at the same time last year. On average, the acceptance rates of the suggestions decreased by 7.5%. Table 1 includes this data by quarter.

Table 1. *Summary of statuses between Q1 2020 and Q2 2021*

Quarter	Total	Accepted	Rejected	Accepted [%]
Q1 2020	42	31	11	74
Q2 2020	8	6	2	75
Q3 2020	22	13	9	59
Q4 2020	9	5	4	56
Q1 2021	15	10	5	67
Q2 2021	6	3	3	50

The program's rules and regulations, the application-processing process, and the statistics of the applications that have been received so far were fundamsentally reviewed in order to encourage employees to take part in the program. An area for improving the functioning of the employee suggestion system was recognized. The decline in the popularity of ESS indicated the need to take measures to promote not only the reporting opportunities themselves but also the correct presentations of their visions and ideas. The employees lack awareness of the effectiveness of improvement methods and how much impact they have on real production results. Increasing the engagement and awareness of the roles among the employees can also positively affect other aspects of their work (Miller et al., 2018). It was unequivocally demonstrated that the way ESS and its information were managed needed to be changed. The changes took place gradually, which made it possible to evaluate their effectiveness based on the obtained results.

The system is based on paper documents and is not augmented by a digital alternatives. In production areas, boxes are placed into which completed improvement sheets must be inserted. The boxes are then emptied by a coordinator, and the information from the sheets is manually transcribed into an Excel database. The documents are scanned into folders on a network drive, and the submitted ideas are reviewed at engineering meetings (which are held every two weeks). After an initial evaluation and approval decision, a person is assigned who is responsible for its implementation. Employees can use the engineer's assistance in preparing models, prototypes, analysis, and calculations. A selected employee is required to manually update the status of the project's implementation level. The final evaluation and the amount of the monetary reward is related to the results that are obtained in connection with the implementation of the employee's suggestion. In the case of a rejection, the decision is always accompanied by an appropriate comment. Figure 1 shows the process of implementing a request using BPMN notation. The application of BPM elements (including process mapping and data analysis) enables a systematic approach to identifying bottlenecks and inefficiencies in the ESS. These methods facilitate the better monitoring, evaluation, and optimization of the suggestion-handling process.

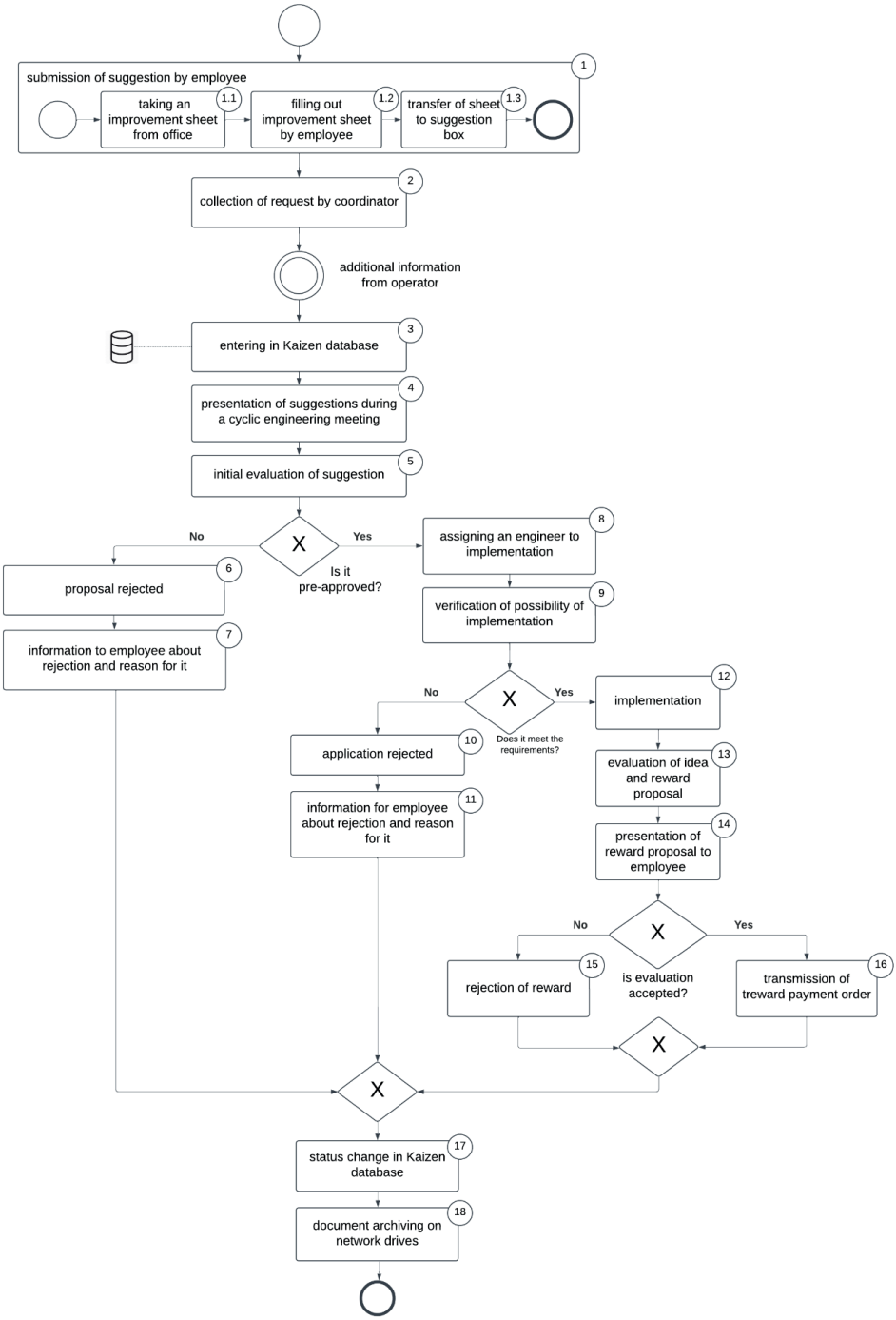

Fig. 1. *Process flow of employee suggestion system*

3. UNDERTAKEN ACTIONS

The Five Whys tool was used to get to the root causes of the problems; it allowed for the selection of those activities that generated obstacles. Then, by way of brainstorming, various solutions were invented for them, which were given points. Based on this, priority actions were determined.

A combination of Kaizen, lean tools, and BPM elements was employed to address the challenges that were identified within ESS and played a crucial role in identifying the root causes and guiding targeted actions to improve system efficiency and employee engagement.

The applications were sorted by their status and the area from which they were reported. Considering the dates of the applications, the trend of the popularity and the development of ESS can be deduced. This indicated the need to implement promotional activities, which were accomplished by displaying posters that advertised ESS on TV screens at the site. In addition, a presentation to newly hired employees on continuous improvement was made more attractive to get them interested in the subject from the beginning of their work at the plant. A major role was played by the presentation of opportunities for implementation support from process engineering. In addition to the purchase of tools, changes in ESS, and improvements in the ergonomics of the workstation, one can also take advantage of the possibility of performing performance analyses and reports. Rapid prototyping methods are available, which include 3D printing. With its help, many gauges and templates have been made to avoid errors and improve the repeatability of operations. One of these is shown in Figure 2.

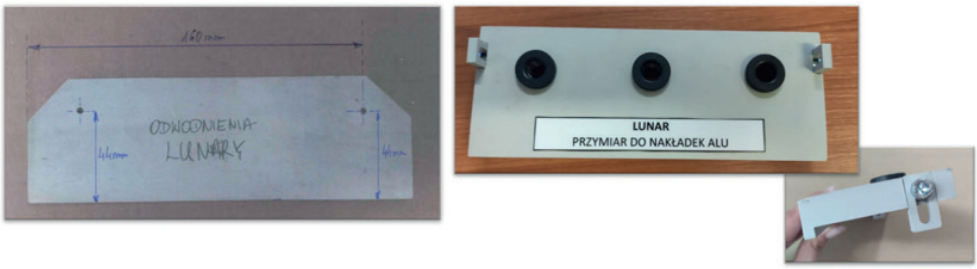

Fig. 2. *Gauge for drainage in aluminum caps and aluminum overlays*

By taking statuses into account, information on the scale of the rejected applications was obtained. They were divided by their reasons for rejection; this made it possible to detail the problems that the employees encountered when applying and take steps toward solving them. The most common reason for rejection turned out to be the introduction of another better solution; this meant that parallel work was already being carried out on this topic on a more favorable option. In these areas, there are boards with projects that are currently underway on which one can verify whether there were already activities on the topic. The employees were encouraged

to familiarize themselves with them before submitting. In a large part of the reports, there was no solution given, and reporting the problem itself was not treated in the Kaizen category. The company already has an issue-reporting platform for reporting bugs and defects, which should be used - especially if one does not have a proposal to solve them. There were also attempts to introduce proposals that did not work. Often, the proposals that were submitted required a disproportionate amount of work concerning the obtained benefits or simply indicated the purchase of additional equipment. This suggested problems with the proper use of the employee suggestion system.

A breakdown by production area highlighted the degree of their commitment to continuous improvement. The high percentage of applications that were rejected by the area also testified to the employees' unfamiliarity with ESS and the idea of Kaizen. Far fewer requests were received from those areas with higher levels of automation and digitization than from nested production. The area in charge of preparing material for production submitted many ideas for gauges with drill sleeves, which almost always received approval. These solutions were part of the poka-yoke idea. Depending on the nature of the processes being performed, examples of accepted submissions are shown, as something different is applicable in each area. Sometimes the key aspects are to improve ergonomics, standardize stored materials, reduce machine-changeover time, or raise the 5S standard. One such solution is shown in Figure 3.

Fig. 3. *Improving ergonomics and organization of materials on bench*

Through an analysis, solutions were selected that targeted the root problems. The focus was on the proper training of shift managers, foremen, and leaders so that they could support their employees during their daily work. When necessary, they will be able to answer questions and set examples for others. The contact information for the coordinators of the employee suggestion system and the range of support that they offered in making a prototype, model, or other part of the idea was also posted on bulletin boards. To show the past activities of the employees in a particular area, they were presented on boards next to the monthly results; this let the employees know that their ideas were being implemented and had real impacts on improving the workplace. Engineers and coordinators had a clearer view of the submitted ideas thanks to the properly completed applica-

tions; this translated into faster proposal turnaround times and less work. A year after the introduction of activities began, the managers were given the goal of mobilizing employees to submit proposals. The active participation of the direct supervisors significantly boosted operator morale and their willingness to share their thoughts.

Incorporating business-process management (BPM) into an employee suggestion system can bring many benefits. BPM enables the transparent management of each step in the process – from the time a suggestion is made to the time it is implemented. In the context of Kaizen and SSE, BPM allows for streamlining the entire suggestion cycle, thus providing better monitoring and improving the evaluations of requests. Key elements of BPM include process mapping (which identifies the critical steps) as well as analyses of request-flow data. This allows one to identify where the process is lengthening or blocking as well as to better understand why requests are being rejected. After analyzing the flow from Figure 1, it was perceived that an application spends most of its time waiting for processing; this includes checking the current operations and technical capabilities of the machines as well as compliance with any technological and quality requirements. As a result, it was determined that meetings should include representatives from the technology and quality control departments to help resolve a request right away or take over a topic for review. Dealing with submissions is no longer considered to be a side task and is not relegated to the background. Tasks are assigned to engineers by area and occupancy along with other tasks at a given time. Previously, there was often no clear assignment of a person to a notification, and the implementation dragged on.

4. RESULTS

The implemented measures yielded significant results, including improving the processes in the production halls. Process mapping and detailed data analysis facilitated a better understanding of bottlenecks, while the application of the Five Whys tool ensured that any implemented changes addressed the root causes effectively. These efforts resulted in increased employee participation, higher acceptance rates for suggestions, and a more transparent system for handling ideas. These results are shown in Table 2. In Q3 2021, only eight suggestions were submitted; of these, only three were accepted. The next quarter began to see a change in the results, as 12 suggestions were submitted (8 of them were accepted). The next obtained result was more than three-times-higher, with 38 received (including 24 accepted). Q2 2022 showed a significant improvement in the rate of accepted ideas; from the initial 38% (in Q3 2021), an improvement of as much as 41% (to 79% in Q2 2022) was achieved (i.e., more than twice as often, the submission was correct in its nature and contained accurate insights). This tested the impact of promoting ESS and expanding the knowledge of process improvement. The new management also had a positive impact on the work of the coordinators and engineers who were involved.

Table 2. *Summary of statuses between Q3 2021 and Q4 2022*

Quarter	Total	Accepted	Rejected	Accepted [%]
Q3 2021	8	3	5	38
Q4 2021	12	8	4	67
Q1 2022	38	24	14	63
Q2 2022	28	22	6	79
Q3 2022	8	5	3	63
Q4 2022	13	7	6	54

Table 3 shows that, between Q3 2022 and Q1 2023, there were again fewer requests. After the involvement of the shift managers, a record number of suggestions were recorded. Unfortunately, only 19 of the 49 submitted suggestions received approval. There were many suggestions, but this was not matched by their accuracy. In Q1 2023, the percentage of accepted proposals reached as high as 100%. Based on this, it was possible to judge that the involved employees were able to correctly prepare report cards with proposals that were in line with the ideology of the entire system. In the subsequent quarters, fewer ideas were flowing in; however, they were accepted more frequently. Without taking additional measures, 20 suggestions were submitted in Q2 2024; the acceptance rate was 60%.

Table 3. *Summary of statuses between Q4 2022 and Q2 2024*

Quarter	Total	Accepted	Rejected	Accepted [%]
Q4 2022	13	7	6	54
Q1 2023	8	8	0	100
Q2 2023	49	19	30	39
Q3 2023	32	15	17	47
Q4 2023	15	8	7	53
Q1 2024	19	12	7	63
Q2 2024	20	12	8	60

5. PRACTICAL AND SOCIAL IMPLICATIONS

The development of the employee suggestion system helped increase employee involvement and improve the organizational culture at the company. Practical implications include the possibility of applying similar measures to other companies – even from a completely different manufacturing industry. The use of BPM in combination with lean and Kaizen methods provided a robust framework for continuous improvement. The structured evaluations of suggestions not only improved process efficiency but also reinforced a culture of innovation and employee empowerment (which are critical for long-term organizational success). The use of visualization and transparent reports on activities influenced the mobilization of the employees. The use of business-process management allowed the company to gain a new perspective on the overall operation

of ESS. Less-obvious areas for improvement were seen, a confirmation was found for the positive impact of valuing employee initiatives, and the importance of involving employees in improvement processes was emphasized. The change in system management improved the work of the engineers and coordinators, who can implement changes more quickly and effectively thanks to information that is communicated more clearly.

6. SUMMARY

Quantitative and qualitative analyses of the submitted improvement cards made it possible to select appropriate paths for the development of the employee suggestion system at the enterprise. Examinations of the reasons for the rejections of proposals highlighted the problems that were encountered and the lack of adequate knowledge and awareness of improvement. The practical use of lean tools helped identify the causes of problems in ESS's operation as well as their sources. Some of the selected solutions were implemented immediately in accordance with the Kaizen concept. By integrating BPM tools with lean methodologies and Kaizen principles, this study has demonstrated how structured approaches can transform suggestion systems. These methods ensured that both technical and human aspects of the ESS were addressed effectively at Oknoplast, leading to sustainable improvements in the company's engagement and process outcomes.

Future research can focus on the long-term effects of the implemented changes and their adaptabilities in various industries. The lessons that were learned and the effects before and after the changes should be considered. Collaboration with other company departments should be undertaken to check the exact impacts on the culture and work environment, analyze social aspects, and employee turnover.

All the while, work is underway to find a balance between a qualitative and quantitative approach. It is planned to directly present the amounts of bonuses for specific applications; so far, the presentation of such data has been avoided. Markings will be introduced on projects that are completed under ESS; this will emphasize the materialization of ideas and the contribution of operators to the development of the company. The ESS may also find it useful to introduce a set of KPIs (key performance indicators) to monitor the effectiveness of the activities and the levels of employee involvement. If the numbers of submitted suggestions remain high, work will be undertaken on an electronic version of the suggestion submission. This would allow ideas to reach engineering faster. In addition, paper consumption and the needs for archiving paper documents and scanning them would be eliminated.

REFERENCES

Lean Partner (n.d.). System sugestii pracowniczych Kaizen. LeanPartner.pl. **URL:** https://leanpartner.pl/system-sugestii-pracowniczych [20.08.2024].

Masaki I. (2007). *Kaizen. Klucz do konkurencyjnego sukcesu Japonii*. Warszawa: MT Biznes.

Miller J., Wroblewski M. & Villafuerte J. (2018). *Kultura kaizen. Budowanie i utrzymanie kultury ciągłego doskonalenia*. Warszawa: MT Biznes.

OKNOPLAST (2016). Grupa OKNOPLAST stawia na zaangażowanie pracowników w funkcjonowanie firmy. Grupa OKNOPLAST, Pressroom. **URL:** https://oknoplast.com.pl/grupa-oknoplast-stawia-zaangazowanie-pracownikow-funkcjonowanie-firmy [20.08.2024].

Rother M. (2010). *Toyota Kata*. Wrocław: Lean Enterprise Institute Polska.