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To cite this article: E A Kotlyarova *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **666** 062132

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Application Possibilities and Standardization Features for Lean Methods in Service Industries

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Abstract. The article attempts to analyze the application of lean manufacturing tools and techniques in the service sector for their further standardization. Initially, lean manufacturing arose and found application at industrial enterprises, and for some time it was believed that lean processes work effectively only in the manufacturing sector. However, the examples of the application of lean manufacturing tools in practice, given in this article, make it possible to show their effectiveness even in such an area of economic activity as the service sector, the specialty of which is the intangibility, intangibility of the service itself. The analysis showed that almost all the methods given in the standard are applicable and effective for the service sector. The peculiarity of the lean manufacturing tools and methods application for the service sector was at the initial stage the correct and reliable value determination of the service as a product. The possibilities of lean manufacturing tools using in various service sectors were analyzed on the specific examples, taking into account international and national standards in the field of lean manufacturing and activities classified at the national level. The main directions of standardization of lean manufacturing tools in the service sector are proposed.

1. Introduction

It is generally accepted that lean manufacturing methods are developed for large manufacturing companies. However, they are also successfully applicable to service organizations, providing an impetus to their development at the lowest implementation costs.

An analysis of sources devoted to the lean manufacturing methods practice shows not only the effectiveness of their implementation, but also the formation of best practices in certain services. Such an analysis will determine the standardization areas in the industries and lay the foundation for standardization of lean manufacturing tools and methods for specific types of service activities.

2. Data analysis

Considering lean methods in relation to the service sector, it should be guided by the main principle of the lean manufacturing concept - creating value for the consumer.



2.1. Hotel Services

According to researchers N.Yu. Kirsanova and B.A. Varlamova, the main element of lean manufacturing methods application in small and medium-sized businesses is to rethink the existing approach to organizing the business itself. It is necessary to correctly determine the value of the manufactured product and the flow of its creation [4]. The authors are studying a hotel chain of St. Petersburg, which, using several basic lean manufacturing methods in business organizing, has grown from one small hotel to a chain of hotels in the city center with an average price category.

First of all, the manufactured product value was determined, which included two components - this is the affordable cost and the expected quality level of the services provided. The hotels are located in the city center, so the main load is designed to accommodate tourists for 3-6 nights. For this consumers category inexpensive accommodation near historical sites is important. Particular attention was paid to the wording "expected level of quality". If the service or interior decoration is above the expectations of the client, then this can cause misunderstanding, guests will expect a trick. On the other hand, minor flaws and guest comments are resolved promptly by the hotel staff, which in turn increases customer satisfaction with the service and the number of positive reviews on the hotel website.

The second principle used in organizing the hotel business was the definition of the value stream. The creation of costs aimed at re-attracting the guest was excluded from the value stream. They also refused to brand the hotel, the use of corporate identity and design of the premises, excluded a wide range of services provided to the guest. By cutting costs by almost half, the company was able to provide the main component of the value of the provided product - affordable cost. The second component of the product value - the expected level of quality, was ensured by the typical design of hotel rooms and common areas, as well as by staff training and retraining, as a result of which they quickly responded to requests and comments from guests. Timely elimination of shortcomings in the hotel led to the improvement of the services provided and bringing them to the quality expected by the guests. Thus, the consumers of the product themselves participate in creating its value.

The third done thing was to ensure the continuous flow of the product value creation stream, which consists of two components: opening the hotel itself and selling the product. The continuity of the first component flow was solved through the use of typical solutions in interior design, which ensured the delivery of the necessary materials in the shortest possible time and the opening of the hotel in the shortest possible time. The second component of ensuring a continuous flow of sales was achieved due to the refusal to develop own website in favor of operational interaction with large accommodation sales operators, as well as high-quality education and training of personnel, including in the interaction of employees involved in commissioning and sales organizers. The fourth principle - to allow the consumer to draw out the product, - was ensured through effective interaction with large operators of accommodation sales and qualified and efficient (24 hours a day) processing of consumer requests by hotel staff. As a result of successful sales, the company began to receive requests from other hotels for effective sales management. This has led to the demand for low-cost accommodation in the city, thereby ensuring that the product is pulled by the consumer.

As part of the fifth principle used by the company - to strive for excellence - the success of the company in promotion and sales, to a large extent due to staff training, contributed to the fact that employees themselves began to turn to the management with requests for retraining and training. With successful teamwork they felt involved in creating a product value stream. The pursuit of the company's excellence was based on a steady reduction in losses and the maximum involvement of each company employee in the business optimization process.

The application of lean manufacturing methods in the hotel services sector is of particular relevance and complexity because it is first necessary to correctly determine the product being created, and then determine the flow of product value creation in the selected service sector.

2.2. Educational services

Most of the costs in organizations related to the satisfaction of consumer demand associated with the implementation of administrative functions. The introduction of lean manufacturing methods in the administration of an educational organization should help solve many internal problems.

At the Belgorod State National Research University, the concept of lean manufacturing is introduced - "Lean University" [1], including:

- the factory of "Lean" processes, the roadmap of which consists of 4 blocks: "lean"; creation and organization of factory's work; MSLP certification; educational". A particularly important part of this work was the creation of guidelines of the lean manufacturing principles and methods application in universities. In the framework of the factories, sociological surveys and training of university teachers and trainers in lean manufacturing technologies are conducted.

- organization of workplaces according to the 5S system: 1) clearly sort documents and things on the desktop, separating the necessary from the unnecessary; 2) keep order - each necessary thing has its place; 3) keep their workplace clean every day; 4) standardize the observance of order and cleanliness in the workplace; 5) improve adherence to the principles of 5S by bringing to a daily habit. This approach to SRU "BelSU" is prescribed by a specially created department of lean production in "Methodology for organizing an effective workplace for a university employee."

- personal accounts-dashboards for students and teachers in the local university network with an improved interface. A distinctive important addition used by the Belgorod State Research University is the inclusion of students and teachers personal data in personal dashboards, which allows them to accumulate all the data in one resource, reduce time loss when using paper workflow, and improving the interface helps reduce information processing time.

- creation and implementation of the Single Window principle for quick receipt of documents by university staff and students. First of all, the implementation of the Single Window project is determined by the location of the university buildings in different areas of the city. This project allows them to conduct electronic recording for admission to the structural units of the university, as well as to systematize the mechanisms of interaction between units.

- mobile application "My BelSU". The development of this application is a priority project in introducing the concept of "Lean University". Using the application on a mobile phone, which includes the following sections: timetable, performance, chat with the teacher, news, a university map with transition schemes, allows them to reduce the time to search for information, facilitate and make more accessible the form of communication with the teacher, freshmen adapt faster at the university.

- information and communication portal "Ideas Exchange". Based on the principle of Kaizen technology, each employee should contribute to the improvement of the enterprise's activities. It is proposed that the National Research University "BelSU" create an information and communication portal to which each participant in the educational process will be able to submit proposals for improving the university. This will allow the university leadership to see many problems from the bottom up, having examined them at the root and promptly make decisions to eliminate them.

2.3. Bank services

One of the first organizations in Russia that began to develop and implement the concept of lean manufacturing was Sberbank of Russia [6]. Assessing the inefficiency of labor organization as 52% behind the level of productivity in the US banking sector, in 2008 the Sberbank management came to the conclusion that the only development path is modernization and developing its own concept of "lean manufacturing" called "Sberbank Production System" (SPS). SPS is characterized by a universal approach to process optimization, including automation, changes in management approach and the way of each employee thinking. The catalyst for the transition to improving the activities of Sberbank of Russia has also been increasing competition in the banking services market. Therefore, the retail chain was in the priority of modernization. 40% of the bank's front office employees are involved in customer service. Optimization and improvement of their activities, primarily due to the introduction of the window unified operation, the cancellation of the lunch break several times increased the efficien-

cy. The introduced changes allowed for employees optimization and freed staff for the hall administrator introduction. In 2010, the process of optimizing production based on the SPS spread to all areas of the bank. Labor productivity at the same time increased by 20-30%. A similar lean manufacturing system was introduced at ALFA-BANK since 2011 under the name Alfa-Optimizer, which allows lean management tools and techniques implementation, seeking to eliminate losses, which ultimately resulted in savings of 6,5 million US dollars [3].

However, Sberbank-Crowdsourcing became the most large-scale project of Sberbank in the application of lean manufacturing methods and technologies. This is an innovative method that allows to solve complex problems using the "collective mind". Initially, in 2009, Sberbank of Russia created the Intra-Corporate System "Ideas Exchange", later the distributed intelligence system was expanded by the formation of working groups, link laboratories, professional communities and as a result seeks to reach all employees of the bank. The result of the crowdsourcing internal system of Sberbank was the introduction of innovative initiatives that allowed to obtain an economic effect of more than 50 million rubles [6].

The SPS introduction in Sberbank was accompanied by errors and miscalculations:

- many employees perceived this as additional responsibilities;
- introduction of depremiation system negatively affected employee motivation;
- consideration of faculty as a way to reduce staff;
- lack of understanding among all bank employees of the goals of the SPS system;
- success of the introduced changes is more dependent on the central team efforts;
- created regulations for the effective implementation of tasks and processes for some operations have increased the number of documents issued.

2.4. Trade services

Another area of application for lean manufacturing is marketing in trade. The objectives of Lean-marketing is the maximum elimination of losses, both in the production of a product, its delivery, and in the process of its consumption, involving consumers in the creating value process. The success of the company that produces the goods is determined by the highest value created for the consumer, which allows it to satisfy one or more of the customer's needs in a set of its properties in the best way and for a long time [5]. In the framework of the lean manufacturing in marketing concept, various approaches are widely used to attract customers to create the value of the consumed product. It is important to identify additional properties of goods that enhance the main purpose of the goods. The value of a product increases if, at the same cost, it acquires additional properties and qualities compared to peers. For the active involvement of the buyer in the creating the product value process, entertaining and gaming elements (lotteries, business games with customers) are used, the buyer is involved in the product creation (you can order a product of a certain color, choose the set of additional characteristics yourself or refuse them, make a furniture set from proposed modules, etc.). All this helps to build the product that is clear and necessary for the buyer. The measures used by manufacturers to minimize sales losses include lean technologies such as neuromarketing (including aromamarketing, which affects the emotional sphere of a person), marketing training (manufacturers teach consumers how to use their products for free, pursuing their intentions in the future see them among your customers), the distribution of various distribution channels for product sales (bringing products to the buyer by all means bubbled ways: shops, Internet, phone, e-mail, express delivery, etc.). All these technologies allow to add value to the product and to reduce losses in production and sales.

2.5. Car services

A separate type of lean manufacturing tools application in the service sector is the introduction of checklists on the quality of the provided services result and on the quality of car service, as well as the organization of jobs in the 5S system at a car service enterprise [7]. The analysis of the checklists data on the services quality and on the services result quality at the car-care center showed that large losses

of time when waiting / lack of materials, parts, tools negatively affects the quality of services. It is possible to eliminate these losses through the use of 5S in the organization of jobs for car mechanics.

2.6. Comparative analysis

An analysis of the lean manufacturing tools application (Table 1) by service sector showed that the most popular is 5S along with Visualization, which, in our opinion, is due to the process peculiarity of providing any service when the consumer and the manufacturer are connected by at least one action. Tools such as Work Standardization and Value Stream Mapping support the entire process, including determining the value of the service itself as a product.

Table 1. Analysis of lean manufacturing tools application by service sector.

Service Sector	Temporary residency activities	Higher education	Other monetary intermediation	Wholesale and retail trade
Lean Tool [2]				
Work standardization		+	+	+
Workspace Organization (5S)	+	+	+	+
Value Stream Mapping	+		+	+
Visualization	+	+		+
Single-Minute Exchange of Dies (SMED)	+			+
Protection against unintentional errors (Poka-Yoke)		+		
Kanban	+			+
Total Productive Maintenance (TPM)				+

Protection against unintentional errors (Poka-Yoke) is obviously weak for the service delivery process as a tool, since most often two people interact when rendering a service. Nevertheless, it has serious prospects for the development of automation and digitalization of the service delivery process, as well as SMED and TPM.

3. Conclusions

The practice of lean manufacturing tools application is quite wide, but its description is very incomplete and point-like in the service sectors and in different countries [8-10]. Therefore, there is a need to determine the standardization directions of such tools and practices at the national level. We believe that the Russian practice of lean manufacturing tools application is the broadest in education and the banking sector. In addition, one of the key conditions for standardization is state support, which is systemic in nature, and in these two sectors the state is pursuing the most saturated with projects policy. Therefore, we believe that the following areas will be most demanded to standardize lean manufacturing tools: for small and medium-sized businesses, for specific areas of services, and the most popular of them will be priority, namely education, financial services, hotel and restaurant services.

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