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## Enhancing Staff Wellbeing Through Cost Management in the Crisis Period

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### Abstract

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In the crisis period among the enterprises there are consistent price rises – primarily on resources and then on the end product. Increase in costs on production aggravates the problem of the enterprise survival on the market and heightens the necessity to optimize them. Cost reduction on staff, conducted in the traditional way, which is often a main cost ratio of the enterprise, leads to staff wellbeing reduction. That is why it is necessary to use an effective alternative – cost management. Cost management is considered as an integrated enterprise activity aimed to optimize its own costs with minimal losses. The cost classification used in lean production is described, as well as several cost optimization techniques are illustrated by describing the real experience of the Japanese company "Toyota". The experiment of introducing selected tools of lean production in the hotel-type dormitory No. 5 of the National Research Tomsk Polytechnic University is described. As a result of the project the 5S system was implemented at the maid's workplace and in the room. The most optimum alternative of maid's movement in the room while cleaning is visualized in spaghetti diagram. Time losses reduction allows creating cost-effective value for customers.

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### 1. Introduction

Under the conditions of stagnation of production in Russia (Fig. 1), reduced investment activity and capital outflow, as well as the abundance of unnerving forecasts about the future of the domestic economy, for many enterprises the issue of survival will be important in the coming years.



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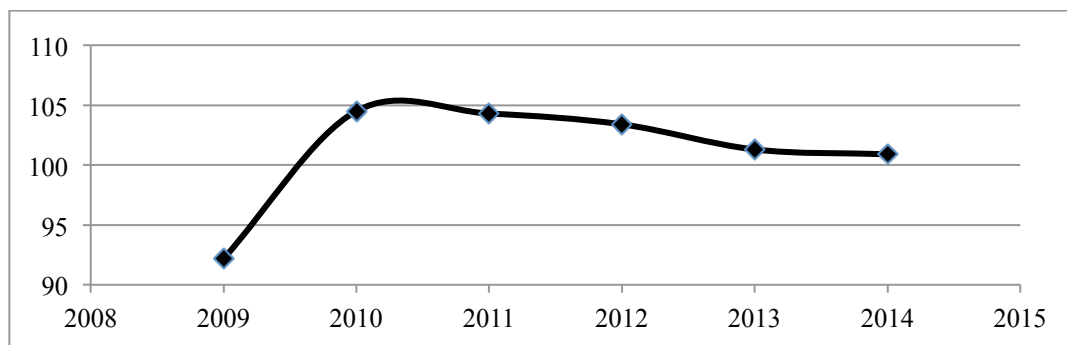


Fig.1 GDP growth in Russia, 2009 to 2014

The goal of this work is to show that cost control is an effective tool that allows company to survive in the crisis without reducing the welfare of the staff.

Tasks which are necessary To achieve this goal it is necessary to solve the following tasks:

- 1) to consider reducing the wellbeing of staff as a consequence of the traditional way of cost avoidance;
- 2) to consider cost management as a modern alternative to the traditional method, allowing the company to enhance the wellbeing of its personnel;
- 3) to consider the types of costs that occur during the enterprise activity, and their optimization techniques.

In the context of macroeconomic instability, the prices of incoming materials and services are increased. Production costs grow and are passed on to the price of output products. If these products are as resources for any company, then it is compelled to raise the price so as not to lose profit. As the result there is a chain reaction effect, a sequential prices increase for products of all companies on the market, which fosters inflationary development. Hence, the position of economy entities is aggravated much. To survive in such conditions, companies must have the financial stability, expressed in sufficient financial reserves. However, in most companies they are not required to overcome the crisis state quantity. Therefore, companies start saving expenditures.

Traditionally, personnel costs are among the largest expense items. They include:

- 1) wages and salary (depending on the accepted wage system);
- 2) payment for time off (paid vacation, sick leave, public signs);
- 3) bonus and money reward (annual bonus);
- 4) social security costs (pension, disablement payout or industrial injuries benefit);
- 5) costs of educating (cost of adaptation measures, payment of teachers, payment of training courses);
- 6) costs of "welfare" service (corporate catering, social activities, payment for sanatorium-resort treatment, the cost for work clothing, staff transportation costs, travel expenses);
- 7) non-monetary remuneration (food, drink, fuel for private vehicles, costs for accommodation of workers).

Therefore, the company is to "save on people" (GDP growth). Reducing personnel costs or conducting wholesale redundancy, the company may get a benefit in the near term. However in the future the negative impact of such actions can significantly reduce the efficiency of its activities, since the inevitable consequence of this traditional approach is reducing the level of personnel welfare.

To assess the level of human wellbeing in the workplace, it is possible to allocate the following groups of criteria:

- 1) psychological;
- 2) financial;
- 3) labour.

Next, we consider how this method of cost reduction affects the wellbeing of the staff in more detail. However, according to the authors, these groups of criteria are closely interrelated with each other, thus they should be considered as a whole.

The staff, dissatisfied with the reduction of its own wellbeing, psychologically perceives managerial personnel as "the enemy in his camp", as a result, the loyalty of subordinates to the top management is reduced. In the crisis period there is a major risk to lose job that is why the staff, driven by a sense of uncertainty, starts seeking incriminatory evidence on the other employees "just in case". Consequently, cultural communication in the team is destroyed. The dependence of the financial and employment criteria is specially visible in case when the question arises: employees have to work for a lower pay. In most cases, this decreases the workforce productivity.

Due to the diminish of the level of prosperity that is reflected in the dissatisfaction with the attitude to the management and colleagues, as well as wage level, employees turnover escalates, cause of the part staff withdrawal there is a "microskill drain". As a consequence, the level of personnel qualification decreases, it dramatically drops the market positioning of the enterprise, and then it becomes even more difficult to withstand the crisis. The table 1 shows the results of the studies conducted among 531 U.S. corporations, reflecting the gap between expected and obtained results from the staff reduction (Methods of saving on personnel).

Table 1. The research of the efficiency of U.S. corporations that have reduced their staff

	Sought to raise	Possible to increase
Profit	55%	46%
Productivity(efficiency)	58%	34%
Service	61%	31%
Note: Compiled by the author based on (Hlinina M.)		

As the above data show, reducing costs by the expense of ordinary layoffs in most cases does not bring the desired effect.

As it is noted in (The reduction of personnel costs. No man – no problem), the only serious concern to carrying out mass layoff is "significant qualitative or quantitative changing the asset management, in maintenance or operation of which the reducing staff involves."

If managers of the company understand that in the long term, "saving in people" is ineffective as a way to reduce production costs, since it reduces the criteria for the wellbeing of the staff. They try to find other ways to survive on the market during the crisis. Therefore, many international enterprises apply quite different, more efficient approach - not to save expenditure, but to manage them, i.e. do optimization.

There is no an unambiguous definition of the term "cost control". There are various approaches to its explanation (Cost management: philosophy and tools): cost management as a philosophy, as an attitude and as a set of techniques. However, the author is inclined to believe that cost management is a complex activity. If this concept is splitted into its component parts, the word "control" means directed impact on the object to produce the desired target. The costs are used as the object in this case. In a broad sense it is a monetary characteristic of resources used, and in the narrow sense – expenditures aimed to generate income in relevant period.

Thus, cost management is the activity of enterprises to optimize their own expenses, for the purpose of creating value for their clients with minimal costs for it.

Cost management is a set of techniques and tools for accounting, calculating and analyzing costs. It includes the following stages:

- 1) data collection on the cost structure of the enterprise;
- 2) data analysis on costs;
- 3) identify of upcoming trends for cost reduction;
- 4) development of measures to reduce costs;
- 5) detailed development of activities as investment projects.

We will consider the costs of the enterprise and methods of their optimization.

All costs of the enterprise are divided into two types: productive and non-productive. Productive costs add use value to the product while unproductive ones do not

The strategy that should be chosen by a company, will be determined by cost element. Thus, productive costs in the crisis period can be reduced in proportion to the reduction in the volume of manufactured products, and unproductive(overhead) costs need to be completely liquidated and it should be done regardless of the state of the economy While overhead costs are divided into 8 groups (Jeffrey K. Liker The Toyota Way):

- 1) overproduction (manufacturing the quantity of product exceeds the needs of the client);
- 2) waiting time (non-productive time);
- 3) unnecessary transportation (unnecessary transportation of the product without adding values);
- 4) supplement of unnecessary value (waste of resources to make the product properties, which the client does not need);
- 5) stock (waste to storage them);
- 6) unnecessary movement (actions performed by the employee due to the irrational equipment arrangement; they do not add value to the product);
- 7) defects (wasting resources on a product which is not valuable for the client because of the spoilage;
- 8) unimplemented creative potential of personnel (costs for uncaring and unlistening attitude to the staff).

To solve the problem of overproduction is possible to improve the production planning system, using the principle "just-in-time" (just-in time), to reduce the changeover time of equipment.

The principle of "just-in-time" involves the production oriented to the needs of customers, i.e. production based on actual demand. It is easy to explain on the example of the supermarket. On the

shelf there is a small amount of goods, customers gradually dismantle the product and as far as the quantity is reduced on the shelves, the supermarket staff restock shelves with goods regularly. This principle also reduces the stock of the company.

The principle of changeover involves the separating of actions on servicing internal, that can be performed while the equipment is still working, and external, i.e. those that can be performed with the equipment only after turning it off. Thus, it is necessary to convert as many external operations as possible into internal to readjust equipment during its work and not to stop it.

Process synchronization (drawing principle) will reduce the waiting time. Synchronization processes can be explained on the example of production of the car. It is necessary to configure the operation of the enterprise that almost immediately after stamping parts they do not go to the warehouse to lie, but are used for vehicle Assembly.

Rational planning of production facilities will allow us to reduce product handling and movement of employees to a minimum. A good example is the Japanese company "Toyota" in the shops where the machines are arranged in the shape of a horseshoe, not traditionally in a range that allows the employee not to make unnecessary movements and faster to cope with the work.

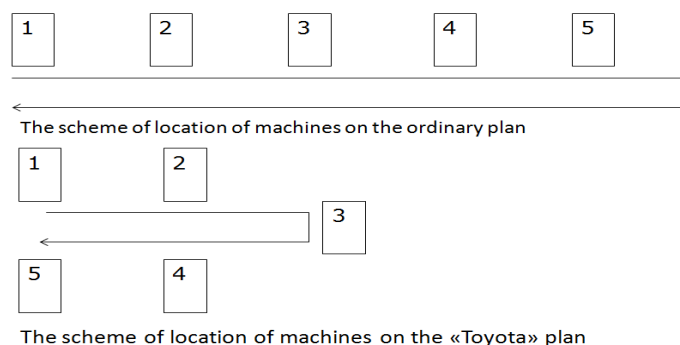


Fig.2 Scheme of efficient and inefficient arrangement of equipment

The number of unnecessary movements of employees can be reduced by the workplace arrangement on the 5S system (Jeffrey K. Liker The Toyota Way):

- 1) sort – sort items and leave only those you need, get rid of unnecessary;
- 2) stabilize – keep order;
- 3) shine – keep it clean – the cleaning process is often a form of testing to identify deviations and factors that can cause accidents and damage to the quality or equipment;
- 4) standardize – standardize everything - develop systems to maintain and monitor the first three S;
- 5) sustain – improve – maintain working in order, implement a continuous process improvement.

To reduce defects of the products, you need to use the system of "protection against the fool", which does not harm the finished product. It watches, whether made all employee, and when the deviation inherent in the program standards stops in the production to keep defective products on sale. For each company and each action requires a particular solution. Here is a similar system at the plant "Toyota" described by Jeffrey K. By liker, (The Toyota Way): "over the tray with the pins (special metal fixings – approx. the author was provided a photocell. If the operator does not have extended a

hand to take the tray from the cotter pin, the relay is tripped, the moving Assembly line would stop, fire light ... and play a beep alarm".

The article describes some ways to minimize wastage. The correct policy cost optimization involves a complex constant use of such methods.

## 2. Methods and Results

These elements were applied in the project of implementation of lean production tools in the Dormitory of the National Research Tomsk Polytechnic university No. 5. The research group developed a project to implement the 5S system for maid's workplace in the room, and visualized the best version of maid's movement in the living room while cleaning. It is presented in spaghetti - diagram. This experiment is described in the book of the author (Kuchkartaeva A.T. Lean productions and problems of modern Russian management). The main problem for the project group was to reduce the time losses during the maid's working process.

Firstly all things at the maid's workplace were sorted out into necessary and unnecessary, the latter were removed (figures 3, 4). All things to be deleted were marked with red flags, yellow flag meant that they may still come in handy, and green circles were maid' personal belongings. Construction trailer and truck were fixed. The method of visualization was used "then and now" to see changes clearly (figure 5).















































Necessary for work		Unnecessary for work	
A bucket		Bottles	
A bucket with detergents		Cotton	
A sponge	 	Wet wipes	 
An maid's instruction	 	A fragrance	 
A ladder	 	A battery charger	 
A rag	 	Iodine	 
A mop	 	An icon	 
		An artificial tree	 
	 	A cream	 
		A carpet	
		A dipper	 
		A box	 
		Closures	
			
			 
			 

Fig. 3 Sorting of things on maid's workspace, in household room (Kuchkartaeva A.T. Lean productions and problems of modern Russian management)

Necessary for work		Unnecessary for work
A jar with keys		A pencil
Detergents	▶	A Scotch
A measuring cup	▶	A wrapper
Gloves	▶	A tea bag
A pen	▶	A bottle stopper
List of rooms	▶	A book
Rags		
A mop		
A brush		
Disposable personal care products		

Fig. 4 Sorting of things on maid's truck (Kuchkartaeva A.T. Lean productions and problems of modern Russian management).



Fig. 5 Before-after (Kuchkartaeva A.T. Lean productions and problems of modern Russian management).

The next stage was diagramming, that visualize the maid's movement while cleaning rooms and preparing for cleaning the shed (figures 6, 7, 8, 9). These charts allow to track the movement of people in all stages of the process and identify those that spend the extra time. Having analyzed the diagrams the potential of the acceleration process was determined: the maid did many movements, such as frequently went to the truck for thing left in the shed, for bed linen, vacuum cleaner, personal belongings on the chair, she often could not find keys because of the mess, etc. In this regard, we proposed new versions of the truck (figure 10), where all the necessary things could be put, from vacuum cleaner up to linens, well as a universal portable device for detergents (figure 11), a convenient housekeeper instead of the usual cans (figure 12), a wardrobe instead of a chair (figure 4, shed after).The suggestions were made for moving furniture in the room and the shed, which reduced the

cleaning time (figures 7 and 9 present the maid's movement taking into account the changes in the rearrangement).

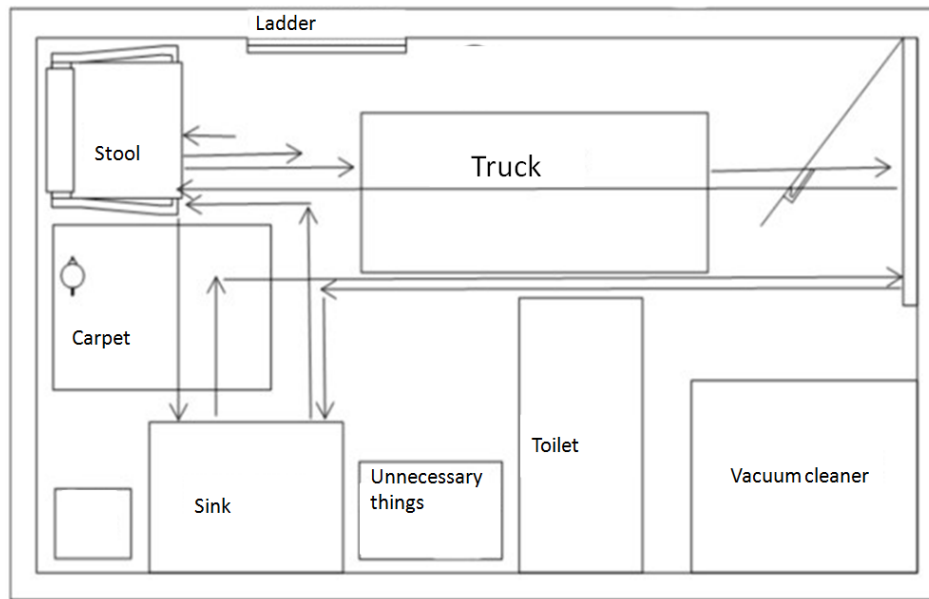


Fig. 6 Spaghetti diagram: household room before rearrangement (Kuchkartaeva A.T. Lean productions and problems of modern Russian management).

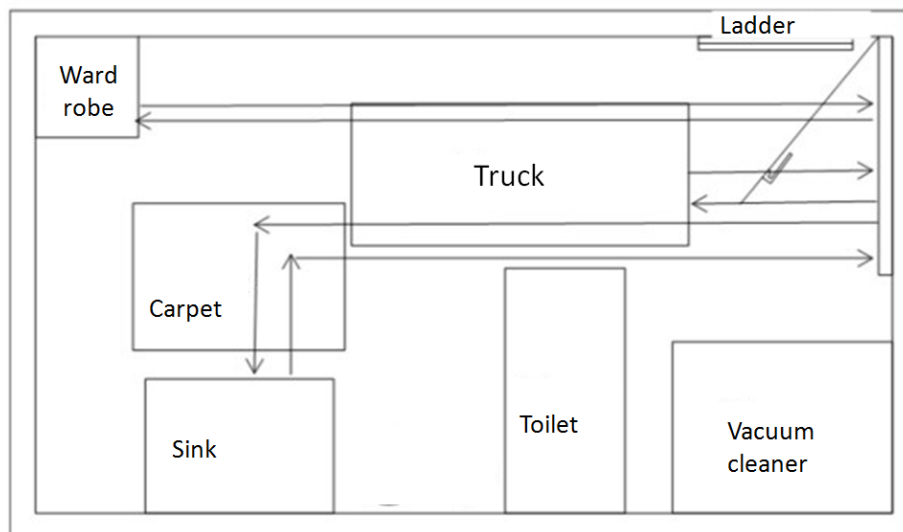


Fig. 7 Spaghetti - diagram: household room after rearrangement (Kuchkartaeva A.T. Lean productions and problems of modern Russian management).



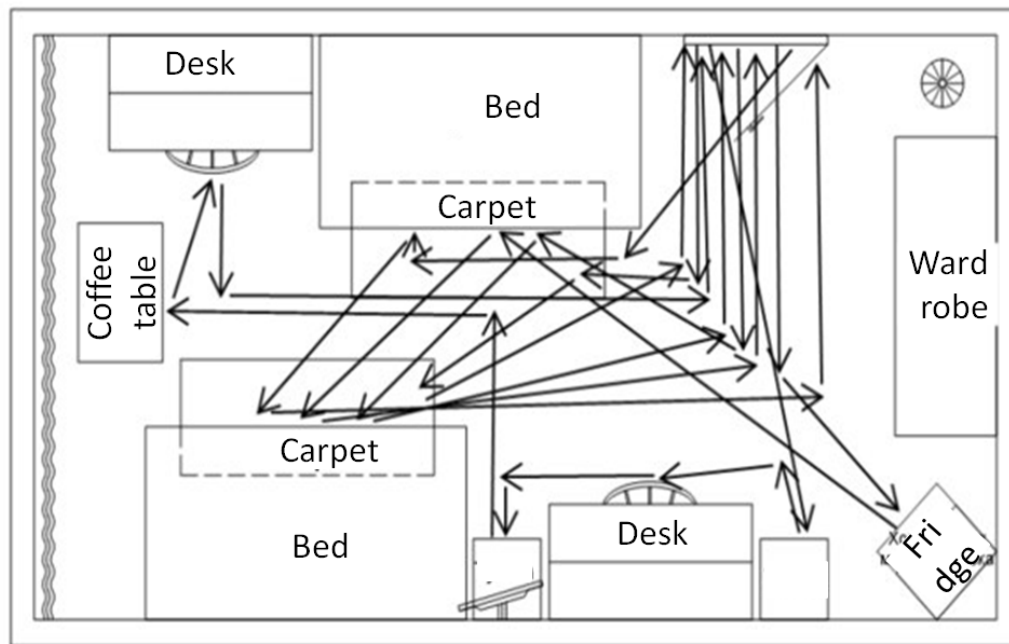


Fig. 8 Spaghetti diagram: household room before rearrangement (Kuchkartaeva A.T. Lean productions and problems of modern Russian management).

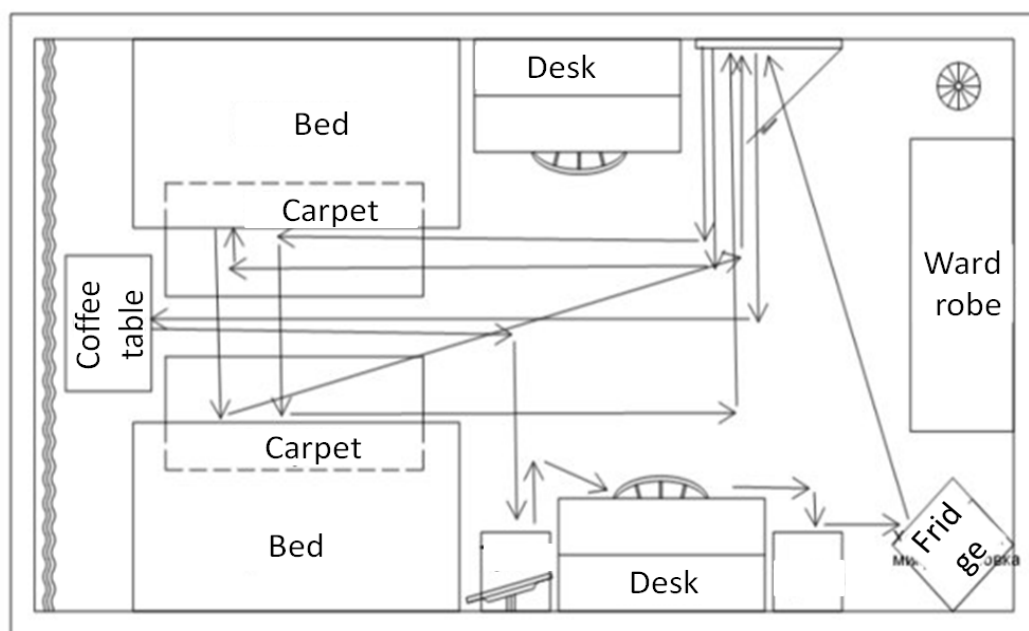


Fig. 9 Spaghetti diagram: hotel room after (Kuchkartaeva A.T. Lean productions and problems of modern Russian management).



Fig. 10 Universal trucks (Kuchkartaeva A.T. Lean productions and problems of modern Russian management)



Fig. 11 Universal portable device for detergents (Kuchkartaeva A.T. Lean productions and problems of modern Russian management)



Fig.12 Box for keys (Kuchkartaeva A.T. Lean productions and problems of modern Russian management)

As a result of all the rearrangements made, the time for performing each operation was reduced (table 2).

Table 2. The results of the 5S system implementation

Action	Time before, sec.	Time after, sec.
Redressing	300	270
Cleaning of the hotel room	3778	3163
Search for key	10	2
Note: Compiled by the author based on (Kuchkartaeva A.T. Lean productions and problems of modern Russian management).		

### 3. Conclusion

The project on implementing the 5S system was successfully completed. The time loss was identified and eliminated. It reduced the time for cleaning room to 16%.

As a result, the maid's welfare was grown from the psychological criteria. She can work faster, while receiving similar wages.

The authors did not carry out analysis according to other criterion.

To sum up, cost management is an efficient substitute for the traditional cost reduction at staff expense. On the one hand, it does not allow qualified personnel to leave the company. On the other hand, it helps to create customer value with minimum expense. All this stabilize the company in the crisis.

By implementing the tools of lean production the problem of cost optimization can be solved practically, as it was proved by the example of the described project.

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