

CDSSES 2020**IV International Scientific Conference "Competitiveness and the development of socio-economic systems" dedicated to the memory of Alexander Tatarkin****SOCIOCULTURAL FEATURES OF LEAN TECHNIQUE
ADOPTION AT RUSSIAN ENTERPRISES**

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(a) Ural State University of Economics, 62/45, 8 Marta St., Yekaterinburg, Russia, jadransky@yandex.ru(b) Ural State University of Economics, 62/45, 8 Marta St., Yekaterinburg, Russia, lena22021977@yandex.ru**Abstract**

The article deals with practical aspects of adopting the lean process tools in Russian enterprises' operations. The key scientific problem is the need for adapting existing tools for the conditions at implementation site. It has determined the dichotomy of research goals. The practical goal of this research was to adopt a Toyota production system at a Russian enterprise located in the North Caucasus region. Its epistemological goal was to study the employees' sociocultural responses to the adoption of this system in an established mental space. The following objectives have been set: to select appropriate TPS tools; to adjust them to the conditions of the particular enterprise; to adopt the developed tools in its commercial activity; and to manage the entrenchment ('survivability') of the tools being adopted. The research methods used are general scientific methods of analysis and synthesis, induction and deduction; as well as specialized methods of observation, economic analysis and qualitative methods of sociological research (semi-structured interviews). The investigation has shown that the employees' marked mental specifics and their high religious devoutness brings about significant peculiarities to the adoption process, while making certain tools altogether non-applicable. The main conclusion is that even versatile lean process tools cannot be adopted in an efficient manner without making allowances for the existing specifics. Meanwhile, key factors determining the specifics are not production realm factors but the features of sociocultural space and mental differences of the enterprise's employees.

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1. Introduction

Modern Russian enterprises adopt massively the developments in the sphere of lean tools and techniques. However, the hands-on experience in adopting them often remains outside the scope of scientific analysis as the data obtained as a result of such adoption have an integrated character and it is quite difficult to identify the efficiency of one particular tool. There are significant distinctive features of adoption methods and timeframes, which also affects the outcomes of applying the above tools. It should also be noted that the very system of lean techniques is based on the sociocultural features of the company's employees. In other words, certain lean process tools may have quite significant differences in similar companies of different states or regions. The attempts of adopting some 'versatile system' are, in our opinion, non-productive, as they fail to become a part of the employee's axiological sphere and will be supported by an outside coercion only.

2. Problem Statement

The authors have carried out a number of projects in lean technique adoption in the operations of Russian companies. While doing so, we have not identified any significant differences in various regions of the Ural and Siberian part of Russia. However, the authors are currently implementing lean process tools at an enterprise located in the Chechen Republic where the employees' sociocultural (religious, mental, value-based) differences precondition the need for a significant adjustment of conventional methods and techniques. It should be noted that this enterprise is an industrial one with a relatively new technological base, while the core HR management system is based on the principles of Islam and has quite little in common with the conventional approaches to management practice. Without going into details of the company's HR management system features, we shall only note that one of key criteria to determine the wages is the hours worked, a promotion criterion is that of being loyal to the management, and an efficiency criterion is industrial output growth.

3. Research Questions

Modern developments in the field of Lean techniques are focused on the use in the environment of workers with certain value and semantic orientations. Provided that the socio-cultural, value-semantic orientations of workers are different, it will be necessary to fundamentally adapt these technologies to new conditions.

4. Purpose of the Study

The practical goal of this research was to adopt a TPS (Toyota production system) at this enterprise. Its epistemological goal was to study the employees' sociocultural responses to the adoption of this system in an established mental space. The following objectives have been set for this investigation: to select appropriate TPS tools; to adjust them to the conditions of the particular enterprise; to adopt the developed tools in its commercial activity; and to manage the entrenchment ('survivability') of the tools being adopted.

5. Research Methods

The research methods used are general scientific methods of analysis and synthesis, induction and deduction; as well as specialized methods of observation, economic analysis and qualitative methods of sociological research (semi-structured interviews). For the purpose of implementing this program, the researcher spent one week per month at the enterprise itself, running seminars, training sessions, developing guidance materials and teaching local specialists.

6. Findings

Regarding the adoption practice viewed from the perspective of the key purpose of lean process tools, it can be stated that a number of tools proved to be virtually impractical, while other tools were significantly upgraded (adjusted) – Table 1.

Table 1. Lean process tools implemented within Islamic culture

	Goal	Tool	
		Planned	Successfully implemented
1	to improve product quality	5S; Root Cause Analysis; Kanban	5S (!); Kanban (!)
2	to increase managerial process transparency	Hoshin Kanri; Gemba; Kaizen	Hoshin Kanri; Kaizen
3	to increase the level of customer satisfaction with the company's products	SMART; VSM (Value Stream Mapping)	VSM (Value Stream Mapping)
4	to make the company's employees more engaged in production process and more motivated	Root Cause Analysis; SMART; Hoshin Kanri; Gemba; Kaizen	Hoshin Kanri; Kaizen
5	to reduce resource losses	Continuous Flow; Heijunka; Poka-Yoke; Kaizen; Root Cause Analysis, TPM	Kaizen; Muda
6	to reduce product quality control costs	Root Cause Analysis; Kaizen	Kaizen; Muda

! – tools implemented with certain deviations from the classical description

Note should be made of the problem of identifying a leader ready to take on the responsibility for embracing the change. This leader was appointed by the owner, and early into the project he did not have sufficient skills in implementing lean methodology tools. The knowledge of lean methodology was obtained only through our teaching the people potentially engaged in adopting particular tools. We were also the ones identifying the most critical segments of the company's activity on the basis of problem analysis, work time studies and QCD reports. Current and future status mapping was done by a third-party observer (project leader, ourselves), while the employees were only familiarized with it (having the

right to introduce adjustments). Visual aids during lean methodology adoption were provided by visualization tools but without using employee photographing methods (they were discouraged by the management and corporate mufti). Identification of the company's current priority areas which are not sufficiently detailed was done by the owner. Improvement tools were selected using the method of logical analysis and, partially, experiment.

During the adoption we faced the fact that almost all logical concepts of adoption known to us today are irrelevant (Dey Prasanta, 2020). Thus, the most widespread element of lean techniques – Kaizen – was also adopted with certain peculiar features. As Lyashko and co-authors are just to state, Kaizen philosophy lives within us and is not fulfilled only in case of rigid limitations. It is the formal character of improvements that hinders the progress of optimizing the production process and cutting down its costs. On the part of the workers there is always a fear of 'the best being an enemy of the good': cutting down the timeframe for an operation will lead to having smaller wages, inventing a technological novelty will lead to my replacement with a machine. (Lyashko et al., 2017). However, in our case, the key problem was that a significant part of the workers had no writing skills.

A serious problem of lean production adoption linked with employee training, which lies in the absence of striving for training and improvement on the part of the personnel, as well as in the lack of financing of this process (Timofeev & Kuznetsova, 2016), in our case was connected with the absence of training facilities and experts having the knowledge to provide such training.

According to Womack and Jones (2015), the existing enterprise management system transformation should be based on a strong encouragement of employees to develop and implement innovation, but in our case it proved impossible due to the violation of basic principles of the social hierarchy of the Islamic society.

Some authors Express the idea are, training and training again with continuous learning from the best practice of the best enterprises, both domestic and foreign (Alves et al., 2016). In lean production the main thing is not the techniques but the people and the ability to build a system of a continuous employee involvement and motivation; it's 80% of success'. While the company's management constantly visit all possible exhibitions, advances enterprises, and study the experience of the Russian companies leading the market, in practice it turns out that this experience is simply 'worn out with talk.' During the meetings where potential features of this experience to be implemented are discussed, this experience starts being criticized with proofs of its non-applicability (for the reason of contradicting the values, non-compliance with infrastructure, lack of human potential, etc.). Eventually, the information obtained does not reach the production floor and remains on the level of CEO meetings. Our attempts to send the actual doers (foremen and even workers) to training courses gave only a local short-term effect of shaping the desire for change.

We see the reasons of such refusal to change (fear) in the situation described by (Dolzhenko, 2014). Before taking the final decision on embracing a change in the organization, the executive should know exactly what benefits and costs it will bring to the company. If the decision is not well thought-over, its aftermath will reach far beyond the optimized process – transformations of an employee's labor activity may cause loss of self-confidence, jealousy of those who were not optimized. Considering the overall relatively low level of labor discipline, disturbance of balance in the management system might

really bring about high risks for the company. However, the inefficient system of production setup was forming a distorted internal environment of the company where (due to the impossibility of making it right and better) self-confidence was being lost just the same. It was especially evident with the people the company sent to training courses.

During Kanban adoption we virtually faced the situation described by Ono (2012): “And when I practically forced plant foremen to look deep into Kanban system operations, the company’s management – my boss – received very many complaints. People said that this Ono guy was doing some foolish stuff and he had to be stopped.” (pp. 68-69) After six months of such a ‘war’ Kanban did emerge, by primarily not as a tool of a pull system but as a quality control tool where Kanban accompanied a product so that every person dealing with this item would confirm the fact in writing. As a result, as much as 99.5% of products would pass QC at first attempt (with the number not exceeding 50% before that).

The main reason for the complicated situation we have described that was connected with lean production tools, in our opinion, was not the cultural and religious differences (which were undoubtedly articulated as the main reason for the impossibility of change) but the situation described by George. The company’s unwillingness to embrace innovation can be caused by a whole array of factors: the company’s monopoly on the market – ‘why change if everything is fine any way?’ (George, 2007). According to the author, this is not the most widespread reason but we believe it is the most difficult one to solve as it is not connected with management consultant’s activity. Similar ideas were put forward by another author (Meng, 2019).

One more reason described above (George, 2007) should also be noted. In fact, the company lacked production culture as a wholesome formation. All standards and values were set in a dual manner: for the one part, by the founder himself, and for the other, by the laws of Islam as interpreted by the company’s full-time mufti. We do not know if the mufti had had any connection with production before becoming a mufti, but we know of his participation in production meetings as a voting member. For the one part, such a phenomenon reflects a high level of spirituality in the company, but, on the other hand, it is a factor hindering the processes of organizational change. The 5S system was also modified with the help of religious laws, where the ‘shine’ S3 item was brought down to cleaning only one’s own tool and equipment but not the workplace and production floor. The ‘sustain’ S5 item also turned out to be quite original. As the workers’ qualification level made it impossible to talk seriously about their Kaizen proposals, once a month those workers who had defective products (or underproduction) were suggested to say (not to write) why such underproduction was allowed and what the company could do to keep it from happening again.

When developing and adopting lean techniques in the above company, we built a Hoshin Kanri X matrix adjusted to the company’s business profiles. This matrix was aimed at describing the process of strategic management of the group (the holding’s enterprises). Unfortunately, the turbulence caused by the corona virus pandemic kept us from assessing the efficiency of this tool. The only thing that can be stated is that the X matrix building process brought the company’s management to the need for rethinking the management model and the shift to decentralization.

Value Stream Mapping visualization tool before getting to know lean techniques was mostly regarded as an advertising tool (Yadranskiy, 2019). For this purpose, the company built an interactive

plant scale model. However, the company's management realized that Value Stream Mapping is a tool that, in addition to simple visualization of the process of transforming raw materials into finished products shipped to customers, enables optimization of material and information resource flows and time. So the management not only incorporated it but turned it into a sort of a 'cult.' We do not insist that the above element is a dominating one in the system of lean techniques but believe that the emerged true interest to one of the tools will necessarily lead to the need for using other tools, as well.

7. Conclusion

To sum up the described experience of adopting lean techniques in the industrial enterprise operations, it can be stated that sociocultural features of employees affect the possibility and efficiency of tool application along with the management's will. Technically, an executive is also part of the sociocultural space, therefore also being subject to its critical influence. We are not confident that the marked religious focus of the enterprise is a successful competition tool on an open market. On local monopolized markets, such a company seems quite viable but when such a company launches at external markets, its transfer to conventional management practices is inevitable. The use of such a tool as 5S proved to be the least painful for the company as it is associated with the demonstration of a visual kind. Meanwhile, the in-house practices are viewed by the company's top management through the prism of their own sociocultural notions and those of their employees, which leads to a low acclimatization of most classical tools such as: Continuous Flow; Heijunka; Poka-Yoke; TPM; Root Cause Analysis (Helmold, 2020; Parkhi, 2019). While the first two tools 'didn't go well' due to objective reasons connected with the chaotic character of orders received, complex logistics, etc., the latter two should be viewed in more detail. When new equipment is used but the employees' skill is inadequate, the equipment fails quite often. For this reason, its preventive inspection and maintenance in practice can solve this problem only in part. Root Cause Analysis is frequently viewed in an absolutely emotional manner and goes down to the search for the person to blame, which eventually contradicts the sociocultural values, and, as a result, this system is declared an alien one.

It should be acknowledged that the selection and adoption of lean manufacturing tools in western and Russian companies is simpler in many regards (Novikov & Veas Iniesta, 2019; Pavlova et al., 2018; Smirnov et al., 2019). It is connected, at least, with the fact that they are used to management (regular and consistent) and some transparency of internal and external processes. For the conditions described, the above features were almost non-existent altogether. Meanwhile, there were a significant number of various formal and bureaucratic procedures, while certain business processes were of situational (informal) character.

At the same time, the work aimed at changing the way of thinking and connected with the employees' abandoning the conservative patterns has been facing a lot of difficulties for the reason of exceptionally high passivity and absence of interest for change of the employees and line managers themselves.

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