Organizational culture and Lean practices: analysis through a real case study

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Abstract

Nowadays, lean researchers are focused on the role of organizational culture and contingencies factors in the success and sustainability of lean management. This research aims at contributing to the academia debate by analysing through a deep case study whether organizational culture based on lean management can enable companies in overcoming differences related to the national culture. Moreover, the study wants to provide evidences that companies can leverage on lean practice in order to spread organizational culture among different country-based plants.

Keywords: Lean practices, organizational culture, case study.

Introduction and research context

People, practices and culture are strongly interrelated in lean mindset: extant literature shows that the large majority of companies that fail in implementing lean lacks in understanding the required relationship among these concepts (Netland, 2016). Toyota, with its Toyota Production System, represents indeed an outstanding example of how acting on the people, their mindset and company's culture will lead to success (Womack, Jones and Roos, 1990).

Companies have tried to reproduce this model but very few have been able to achieve the same performance levels (Spear, 2004): about two out of three organizational change projects fails (Netland, 2016) . The reason may lay on the fact that Toyota model has been specifically deployed to fit perfectly to the Japanese culture. National culture plays indeed an essential role while companies start lean journey. There are many contingencies that can prevent companies to a successful implementation of lean practices, and national culture is with no doubts one of the strongest (Pagell, Katz and Sheu, 2005). For a multinational company, that has to deal with different national cultures, understanding

how integrating plants located all over the world and which role is played by the underlying context and by different national cultures represents a key issue (e.g. Van Oudenhoven, 2001; Testa, 2009). Considering cultural differences for companies that are keen to grow at an international level is not an option. Cross-cultural communication is imperative: it involves a comprehensive understanding of how people from different cultures speak, communicate, and perceive the world around them (Wang, 2008).
A good leverage to act on in order to reduce existing differences in national cultures is represented by organizational culture. It conceives membership in the organization and not in a country (Bortolotti, Boscari and Danese, 2015). In 1996, Schein defines organizational culture as: "the basic tacit assumptions, on how the world is and should be, that a group of people share and that determine their perceptions, thoughts, sensations and, their evident behavior" (Schein and Graduate, 1996). According to this definition, organizational culture can be seen as a set of shared assumptions that guide what happens in organizations by defining appropriate behavior for various situations (Ravasi and Schultz, 2006). Organizational culture affects not only the way people and groups interact with each other, but also how much employees identify themselves with the organization (Schrodt, 2002). It is possible to point out a parallel between Schein model and lean philosophy: lean practices can be seen as the visible part of the organizational culture. The interaction of appropriate attitudes and group norms with lean principles contribute to nurturing commitment and engagement inside employees (Angelis *et al.*, 2011). Lean embraces the ability to constantly change as a keystone of organizational culture. However, change does not just happen, it must be managed, and the establishment of a lean culture need to be pushed by the top management, whose strong commitment is a must. According to Shook (2010), companies should consider that a change in organizational culture must be managed properly: “trying to directly change the culture” will lead companies to fail in their scope. A deep organizational shift will happen indeed only if the company acts on its behaviours, the way they do things. In this sense, lean practices and their implementation will easier the adoption of a new culture within a company. Even Schein (1996) theorized that the only way to change organizational culture is to change the artefacts, as the observable data of an organization, the way people do thinks and how they behave. Even if it seems that the academia reached the consensus on the positive role of lean practices on organizational culture, it still remains unclear how national culture can affect them. In recent years Netland (2016) declares that belonging to specific national culture does not negatively impact on the lean success or on the implementation of its practices. Unfortunately, there are still few contributions in this sense.

This research aims at contributing to the academia debate by analysing through a real case study whether organizational culture based on lean can enable companies in overcoming differences related to the national culture. Moreover, the study wants to provide evidence that companies can leverage on lean in order to spread organizational culture among different country-based plants.

Case study

A deep case study has been carried out in an Italian automotive company characterized by a strong organizational culture based on lean management. Data have been gathered through secondary data, survey and direct observations.

Company’s profile

The firm selected to conduct the study is the Italian “Prometeon Srl” (Prometeon), the former Pirelli Industrial, that operates in the automotive industry. It mainly produces and

commercializes Pirelli branded Industrial tyres for trucks, bus, agro and OTR under license. Prometeon's plants are spread all over the world, being two in South America, one in North Africa, one in Middle East and the headquarter in Europe.
Prometeon started its journey towards lean management in 2008 and adapted lean practices to its own production management system, formalizing it in the so-called Prometeon manufacturing system (PMS). Prometeon needed at that time to create a strategic model to assure standardized performance, culture and results of their operations located all over the world.

PMS is built upon a panel of selected lean practices and tools aimed at improving production performance in all the plants owned by Prometeon around the world.
All business units, and every single department (quality, R&D, processes, HR, logistics and production) are subjected to PMS. All functions are called to work together to optimize the whole process of value creation. PMS is shaped on people: every single employee highlights the difficulties, suggests improvements, feeling fully involved in the entire production process. Every plant is indeed embracing PMS and the related practices. When a plant outperforms in specific project, it becomes a model for the others. PMS brings together the experts of outperforming plants to other facilities to standardize processes, to share common practices and to spread culture.

Exactly in this direction, PMS comprehends a multi-plant improvement program, based on a full-immersion session on Gemba called Full Speed Day (FSD). FSD is aimed at improving a specific operational performance of a plant, supported by an internal and international benchmarking process. For its nature, FSD involves different functional teams belonging to different countries, that share knowledge among each other to reach the common goal of efficiency. Even though it is implemented in plants with very different national culture, being part of the same organization assures that all of them are oriented towards the common goal of improving the production process. Due to the stable structure and good results of the FSD, Prometeon considers it a strategic method for pursuing continuous improvement in the long term.
As PMS in general, FSD is based on lean approach and some practices are shared between the two. Among others, Kaizen event is of a strong importance for FSD, aimed at creating value for the company while addressing efficiency and productivity performances in a defined period, involving inter-functional teams. In this view, the precise definition of both agenda and working team emphasizes the engagement of people, feeling them part of the project, keeping in mind the path that should be followed for reaching the best performance. These short and intense projects not only bring together small teams from different departments in order to find ways to work more efficiently, but also foster the learning cycle. Sometimes teams from different countries work together on a similar problem to share best practices. This enables more cross-enrichment among employees and benchmarking among plants, bringing outstanding results.

Survey
In order to understand whether the success of FSD and its perception by experts is somehow dependent by the national culture of plants where it is implemented, a survey design was been selected as the most suitable method. The survey is addressed to all the 19 managers involved in FSD having a strong lean expertise, from October 2017 to February 2018. Experts are from Brazil, China, Egypt, Italy and Turkey. All experts are managers of several departments as quality, R&D, maintenance, engineering and industrial engineering. Surely, the sample is not representative of the whole company, but it reflects the overall opinion of experts involved in FSD. The response rate has been 100%. Following a brief descriptive analysis of the sample.

Table 1 - Roles of the respondents

Department	Role	Number
Industrial Engineering (IE)	IE & PMS Coordinator	3
	IE	5
	IE Manager	1
Production	Production Manager	4
R&D	R&D Manager	1
Maintenance	Maintenance Manager	3
Quality	Quality Manager	2
		19

The questionnaire designed is composed by 19 questions, grouped into two main clusters: (i) expert's profile; (ii) human-related and lean-related perception. Both human-related aspects and the set of lean practices were defined according to the literature and to the intrinsic characteristics of FSD.
A list is provided in the table below.

Table 2 - Human-related aspects and Lean practices

Human-related aspects	Lean practices
Involvement of people	5S
Teamwork	Problem-solving tools
Communication	Visual management
Mutual respect	Gemba walk
Leadership	TPM
Management Commitment	SOP
Rewarding	
Training, coaching and mentoring	

For the second cluster of questions (ii), respondents were asked to provide to provide us with their perception on how human-related aspects impact on the effectiveness of lean practices on a 7-points Likert scale.

Results are studied according to Hofstede's model of national culture, recognized as a good framework to verify whether differences in perception of each country-based plant can be imputable to national culture. In the analysis, the dimensions related to the five countries in which the company has plants (Brazil, China, Egypt, Italy and Turkey) have been used.

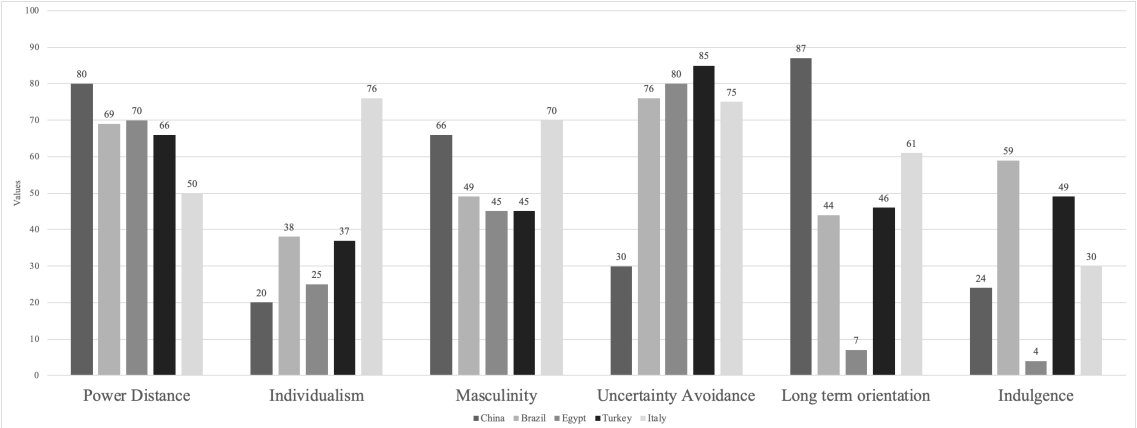

Figure 1 - Hoftsede's variables

Direct observation

In 2017, Prometeon started to support the management team of four Chinese plants (owned by Aeolus) spreading PMS. Aeolus is not sharing the same organizational culture as the one of Prometeon due to the recent integration between the two firms occurred in 2016. However, Aeolus was subjected to PMS.

With the aim to understand whether a company can act on internal lean practices to spread the organizational culture, data have been gathered through direct observation and interviews carried out during a specific PMS practice in one Chinese Aeolus's plant.

The PMS event under discussion is the already discussed FSD, as one of the most important lean initiatives developed within the company. Prometeon decided to export its FSD to Chinese Aeolus's plant as first initiative to spread its organizational culture based upon PMS. However, due to the low level of lean implementation, some changes in FSD have been put in practice for the Aeolus plant.

One issue was represented by the selection of which experts' team should practically export FSD. Egyptian team was selected as considered the Best in Class among Prometeon's plants all over the world. It was composed by experts coming from several departments: R&D, quality, production, IE and maintenance. Moreover, Industrial Engineering team of the headquarter attended the Egyptian one during the entire project in order to guarantee the alignment among different people and scopes. Thanks to their previous experience gained of both Egyptian and Headquarter teams, potential problems of Aeolus plant were hypothesized in advance in order to overcome difficulties related to different languages and different organizational culture. Language problem was totally addressed thanks to the presence of three translators, one for each identified functional working area.

FSD in Aeolus plant followed a *learning-by-doing* approach in order firstly to make Chinese team able to gain the maximum advantage in a limited time span and secondly to foster the Prometeon's culture transmission. The reason behind this choice relies on two models available in literature provided by Schein (1996) and Shook (2010). Both authors stress that in order to change organizational culture, it is fundamental to change "what we do". Starting from changing behaviors, culture will change as result. Therefore, Aeolus plant experience was based on leveraging on lean practices, more specifically on FSD, in order to shape Chinese organizational culture and the way Chinese plant was working.

We spent two consequent weeks in the Aeolus plant together with the Egyptian and Headquarter Prometeon's teams. In the first week, data collection and KPIs analysis has been performed for 2 days, followed by three days of workshop benchmarking with a series of Gemba walk sessions. Due to specific characteristic of Aeolus Chinese plant, this preparation phase lasted only 5 days compared to the 3 months of the typical FSD method. As already explained, this was due to foster the learning cycle. In the second week, an action plan was defined and then implemented during the first two days with the application of quick-wins improvement actions. It was followed by a session of 12 consecutively hours in the shop floor aimed at evaluating the improvement actions and developing a new action plan for the successive months. Even though FSD has been changed in terms of timing, the results were impressive. Quick-wins improvement actions allows the plant to succeed and gain around 8% of the capacity lost for the introduction of a new product in the production line.

Results

The case stresses the difference among experts already sharing Prometeon culture and Aeolus Chinese ones. More in detail, even though all Prometeon experts involved in the study are not sharing the same national culture, no significant differences in perceptions of both human-related aspects and lean practice exists. This is likely to be the result of a strong and already embraced organizational culture based on lean practices, which have enabled plants to overcome any existing difference due to national culture.

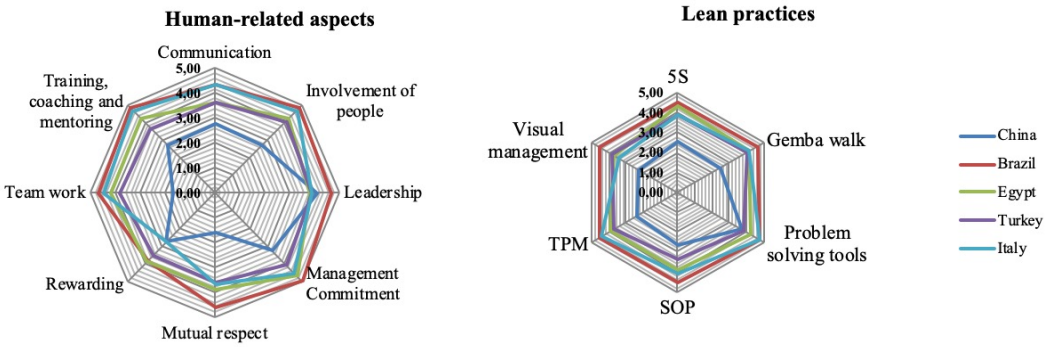

Figure 2 - Radar chart human-related aspects and lean practices

It is even interesting to notice the alignment on most of human-related aspects among the four plants of Prometeon: the first three positions of the ranking are covered by Management Commitment, Involvement of People and Training, Coaching and Mentoring. This is related to the organizational culture deeply rooted in these plants based on lean practices. Moreover, these results completely reflect the lean attitude founded on the proactive participation of people. Companies need to prioritize the sharing of knowledge and a training path which enable the personal growth (Fullerton and McWatters, 2001). The lean culture is indeed based on well trained employees to foster improvement and knowledge sharing (Alkhoraif, 2016). Teamwork enables the lean and continuous improvement attitude with the constant and recurring sharing of knowledge and information.

For what regards lean practices, all Prometeon experts agree on the high relevance of Problem solving tools and Gemba walks. For what regards Problem solving tools, the high ranking can be connected to the importance that each employee gives to the quick resolution of problems, that fosters the learning cycle. On the other hand, about Gemba Walk, all countries gave it strong relevance due to its effectiveness when implemented with inter-functional teams that, in a benchmarking context, can proceed in the best way thanks to their knowledge and capabilities. It is noteworthy to underline how in China it covers instead the fourth place. The alignment in experts' perceptions may be related the well-established organizational culture based on lean.

In the Aeolus Chinese plant, instead, experts are still in their changing process and characteristics related to national culture result to be predominant. Here, for example, the most important human-related aspects are Leadership and Management Commitment. On the other hand, for what regards lean practices, they are Problem solving tools and standardized procedures. It is interesting to stress the different ranking obtained by standard procedures: this tool has got the most significant variance between countries. In Prometeon plants, it holds a position of less importance, while in Aeolus Chinese plant it is perceived as a critical one. The reason why may rely on the need of applying standard procedures under which each operator is subjected. According to Hofstede, Chinese

national culture is indeed characterized by willingness to receive practical and direct feedbacks oriented towards the standardization of operations and methods.

Consistently with the findings of Netland (2016), the case study performed in Prometeon suggest that the success of lean practice is not depending on national culture. A strong presence of organizational culture based on lean allows indeed companies to limit the existing cultural differences among countries. Moreover, lean can be exploited to manage change and to spread organizational culture among different firms.

What it is possible to conclude looking at different Prometeon plants is that the strong presence of an organization culture based on lean practices since 2008 makes the company succeeding in limiting the existing cultural differences between the countries. The Aeolus plant instead presents different results, in terms of both human-related activities and lean practices, and they are mainly imputable to national culture. In fact, it is worthy to stress that Aeolus did not share at that time the same organizational culture with Prometeon. The goal of Prometeon of spreading its organizational culture to Aeolus plant was the reason why FSD has been implemented in the first place: according to the literature, the most effective way to change a company culture is to change its way to behave. With this in mind, strong lean activities have been deployed by Prometeon in order to set the new culture in Aeolus, based on lean practices, considering together tools and techniques while involving people in their growth. Prometeon main challenge relies in sustaining its organizational culture while its organizational structure is characterized by strong differences, both in terms of anthropological and work culture point of view. According to the data collected, no significant differences among countries have been discovered, either in terms of human-related aspects or in terms of lean practices. This results in the strong power of organizational culture based on lean practices, that hence is able to overcome any difference existing in plants due to national culture. In the Chinese plant, although different organizational culture, experts team succeeded in significantly involving the local one, which showed willingness and openness to learning new techniques. Adjusting initiatives to better integrate the knowledge and capabilities of each country, keeping in mind the critical function played by the national culture and leveraging on well-known and universal lean practices are keystone for companies that want to spread organizational culture among different countries.

Conclusion

Prometeon, with its PMS implementation, is an interesting case to highlight that national culture does not play a significant role in the success of lean practices. Within Prometeon's plants, according to data collected, no significant differences among countries have been discovered, either in terms of human-related or lean practice perception. This results in the strong power of lean practices: companies with organizational culture based upon lean are able to overcome differences related to national culture. Aeolus's plant, instead, which at that time did not share the same organizational culture of Prometeon, presents different perception compared to Prometeon's results, in terms of both human-related or lean practice. These differences are mainly imputable to national culture.

Therefore, case under discussion provides initial evidence on how a company should leverage on lean practice in order to limit the existing cultural differences among countries. Exploiting well-known and universal lean practices is the keystone for companies that are willing to spread their organizational culture among different countries. It is likely that more case studies will be collected in order to populate the database and to validate this initial evidence in the upcoming future.

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