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Industry and Services: different Organizational Cultures, same Openness to Lean Implementation?

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Abstract. Since 1990, attempts to implement lean, especially by production companies, have grown in number and depth. With the publication of the book *Lean Thinking*, lean projects quickly spread to other activity sectors, but achieving success in such implementations is not something that can be easily accomplished. Research is in progress to identify why some organizations succeed while others do not; one of the findings points to organizational culture as a crucial factor. This means that before implementing lean in a company, its organizational culture should be analysed, understood and, eventually, modified, to create the necessary openness for the implementation to be successful. This paper aims to explore the relationship between the organizational culture of companies from industry and services and their openness regarding lean implementation. For this, it was developed and applied a two parts questionnaire: one part involves the four traits of the Denison organizational culture survey and the other part the six dimensions of the Cameron and Quinn model (Competing Values Framework). The questionnaire was applied to the top managers of four companies (one from industry, two from services and one with both areas). In terms of organizational culture, the findings revealed that in order to move towards successful lean implementation, some companies need to improve specific traits inherent to Denison's approach as well as ensure congruence between the dimensions of the Cameron and Quinn model.

Keywords: Lean Thinking, Organizational culture, Denison model, Cameron and Quinn model.

1 Introduction

Implementing lean is a aspiration shared by innumerable organizations, but it faces several difficulties [1,2]. Mainly, this is due to some misunderstandings and myths about “what is lean?” [3,4]. Additionally, many other factors could be inhibitors of lean implementation [5,6], namely the organisational culture [7]. It has been verified experimentally that a proper lean culture improves the pace of growth and keeps the organization competitive [5,8,9]. Numerous researchers agree that an organisational culture which does not support lean is a cause for the failure of effective lean implementation [11,12,13]. The purpose of this paper is to explore the relationship between organizational culture and openness to lean implementation and identify gaps in the companies’

organizational culture that should be mitigated so lean implementation can be successfully achieved.

This paper is structured as follows: after this introduction, section 2 contains the literature review on the models used and their relationship with lean. Section 3 describes the research methodology adopted. Section 4 presents the case studies and respondents characterization. The results are presented and discussed in Section 5. Finally, section 6 outlines the conclusions and future work.

2 Denison's Model and Competing Values Framework

Organizational culture is a set of complex, interconnected, and often ambiguous, factors. This literature review tackles the models chosen to diagnose organizational culture and, according to Alkhorraif and McLaughlin [10], a large number of organizational culture models can be found in literature [10]. Some recognized organizational culture models are those from Schein [13], Denison and Neale [14], Cameron and Quinn [15] which were reviewed in Amaro et al. [16]. The last two provided instruments to evaluate the organizational culture of the companies and are described next.

The Denison's model is based on four cultural traits and focuses on measuring the impact of organizational culture on the performance and effectiveness of organizations. The traits are Mission (a sense of direction and performance expectations), Involvement of employees, Consistency (of organizational procedures), and Adaptability (to customers and markets changes) [14]. Each of these traits is quantified through three component indexes, and each of these indexes is measured with five items questionnaire. On the Mission trait, the indexes Strategic Direction and Intent, Goals and Objectives and Vision are analysed. On the Involvement trait, the analysed indexes are Empowerment, Team Orientation and Capability Development. On the Consistency trait, are analysed the Core Values, Agreement and Coordination and Integration. Lastly, on the Adaptability trait, the indexes analysed are Creating Change, Customer Focus and Organizational Learning.

Cameron and Quinn [15] created the Organizational Culture Assessment Instrument (OCAI) to measure organizational culture. In this instrument, it is used a framework called Competing Values Framework (CVF). CVF uses two logical dimensions in a Cartesian graph: the first dimension (y-axis) distinguishes effectiveness criteria in flexibility and discretion in contradiction of stability and control; the second dimension distinguishes internal focus and integration against external focus and differentiation. The combination of these two dimensions forms four quadrants, which state core values upon which judgments are made in an organization [15]. The conflicting values ("competitors") in this model are characterized by the diagonal quadrants. These values advocate the model name, CVF. Each of these quadrants, in turn, defines the dominant profile of a particular type of Organizational Culture: Adhocracy, Market, Hierarchy and Clan Culture. This framework indicates the dominant profile, allowing understanding if it is the most adequate profile to allow long-term success and sustainability in lean development and implementation [17]. Responses on the six items: Organizational Characteristics, Organizational Leader, Management of Employees, Organizational

Glue, Strategic Emphasis and Criteria of Success, help to highlight aspects of organization's culture that identify its dominant culture type.

The models of Denison and Cameron and Quinn were chosen because they allow the connection to aspects that are recognised as important requirements for the implementation of lean (e.g. involvement and vision).

3 Research Methodology

This research was based on a multiple case study involving four companies from industry and services and in each case study, only five top managers of the organizations were interviewed. A questionnaire with two parts was used: 1) diagnose of the organizational culture using the Denison's model and 2) identification of the predominant type of culture, using the Cameron and Quinn's model. The Denison's model uses a survey based on a 60-item instrument to evaluate the four cultural traits (section 2) and management practices. The model of Cameron and Quinn was used to identify the actual predominant type of organizational culture of the organization. Due to the pandemic situation experienced during this research, the questionnaire was applied to 22 professionals from different business areas of the selected companies, through a one-hour videoconference.

4 Case Studies and Respondents Characterization

Table 1 characterizes the four case studies. Companies 1 and 3 are Portuguese companies that became multinational. The case study 4 is a public administration company of one of the most important cities of Portugal.

Table 1. Case study characterization.

Case study #	1	2	3	4
Business sector	Industry & Services	Industry	Services	Services
Activity sector	Energy	Automotive components	Retail, Industry, Telecommunications, Tourism	Public administration
Main markets	Portugal, Europe and America	Europe, America and others	Portugal, Spain	Portugal
Multinational	Yes	Yes	Yes	Yes
Employees' nr.	>1000	>1000	>10000	>1000
Business areas	1, 2, 3, 4, 5	1	2	2
Hierarchical levels #	1, 2, 3	1, 2, 3	1, 2	1, 2
Interviewees #	15	3	2	2

5 Results and Discussion

5.1. Traits and Indexes of Denison's Model

Fig. 1 presents the results of the two interviews (1.1.1.4 and 2.1.1.1) conducted (two top managers, two industrial companies). The worst index on case study 1 was the Team Orientation with 20% (red circle in Fig. 1). According to Denison [14], when the score of a trait/index is less than 50%, the company must pay attention, as this reveals a vulnerability. This indicates that people may be disengaged from their work, unconscious of their importance and link to the rest of the organization, reluctant to accept greater responsibility, or timid about working with people outside of their direct circle. Employees' involvement is recognized as a successful factor in lean implementations. This could indicate that if the company of case study 1 wants to implement lean it needs to increase this involvement [6]. In fact, that company has been implementing some lean tools but without its full potential. By the contrary, the company of case study 2 has a high level of evaluation in all traits/indexes, so it has conditions (openness) to implement lean, and, indeed, it has been implementing Lean with success, for the past few years.

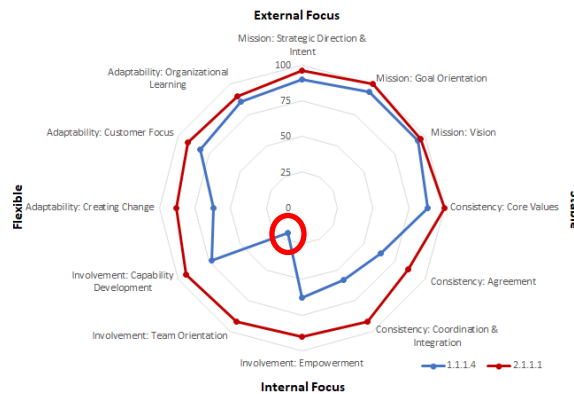


Fig. 1. Results of interviews to top managers in case studies 1 and 2 from industry area.

Fig. 2 presents the results of the three interviews (1.2.1.2; 3.2.1.1 and 4.2.1.1) in services companies (three top managers, three companies). On case study 1, the worst indexes were Vision (36%) and Creating Change (36%) (red circles in Fig. 2). Vision is one of the indexes of the Mission trait and when its value is low it means that the organization lacks a long-term planning. Long-term planning and vision are the base of the pyramid of Toyota 4P model [18], i.e., the lean roots. Therefore, results from the company of case study 1 indicate that a significant organizational culture change is necessary in order to achieve the desirable openness to implement lean.

According to the Denison's model, low levels of the Creating Change index (one of the indexes of the Adaptability trait) mean that the company is not able to deal properly with customer/market changes. This adaptability is an important characteristic of lean companies [19,20]. Thus, the results from the company of case study 1 indicate more difficulty to implement lean. In fact, the company has never tried to implement lean,

and the authors know that only a few insignificant and isolated implementation efforts have been made.

Results from case studies 3 and 4 revealed that the corresponding companies have the necessary conditions to implement lean. Indeed, they have implemented Lean with success, for the past few years.

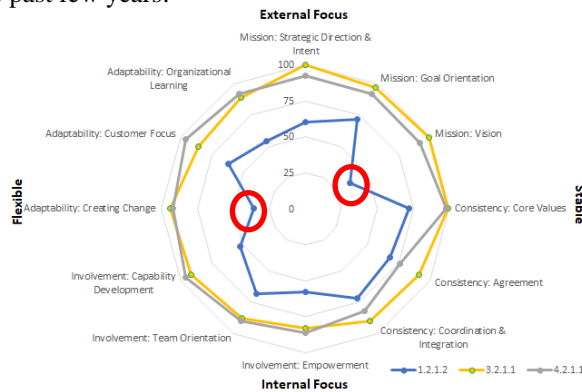


Fig. 2. Results of interviews to top managers in case studies 1, 3 and 4 from services area.

In the five interviews analysed (Fig. 1 and Fig. 2.) there are no different patterns in the results from the industry and services. Thus, it can be argued that the level of openness for implementing lean does not depend on the area of the company (industry / services).

5.2. Dimensions of Cameron and Quinn’s Model

Fig. 3 shows the profiles for OCAI individual items, in the perspective of top managers of the industrial companies. This allows to recognize the extent of each cultural dimension. Results show that in both cases the profiles for individual items are not congruent.

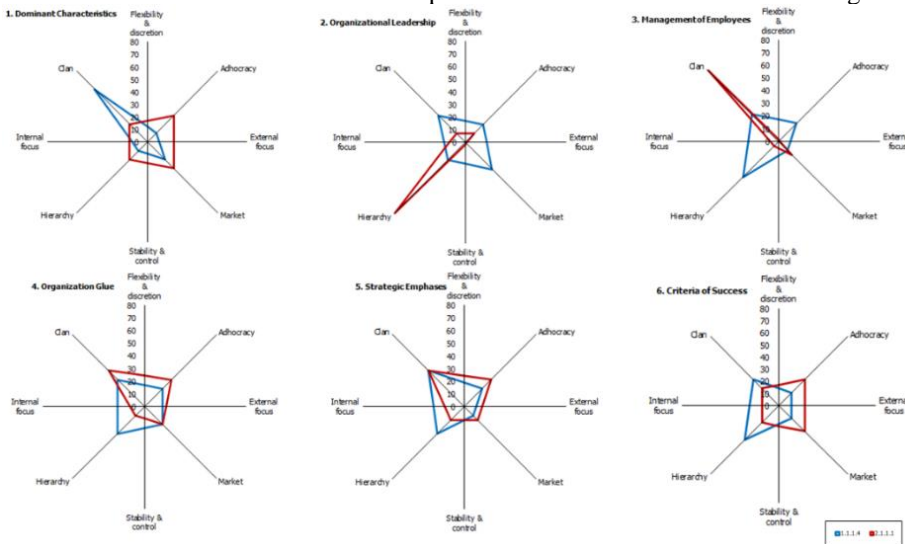


Fig. 3. Profiles for individual items related to industry top managers.

Fig. 4 shows the aggregated results of the individual items related to the cultural profile of the two industrial companies. The dominant culture in both cases is the Clan Culture, with a similar pattern. However, this similarity does not mean companies act in the same way. The Clan Culture is most effective in domains of performance related to morale, satisfaction, internal communication, and supportiveness, according to Cameron and Quinn [15]. Thus, this type of culture reveals openness to lean implementations. In case study 1, this is not verified, although is desired. This occurs in case study 2. Clan Culture is not consistent across various aspects of the organization. These differences have consequences on the way the companies act.

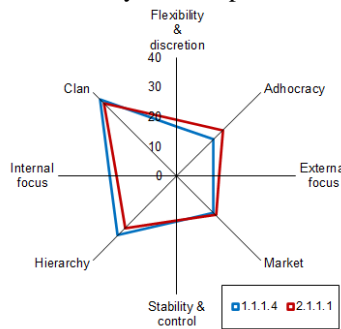


Fig. 4. Individual items combined profile of case studies 1 and 2 (industry).

Fig. 5 show the profiles for individual items on the OCAI, in the perspective of top managers of the services companies. The results of interviews from case studies 1 and 4 are not fully congruent, due to a few discrepancies. For case study 3, the results are not congruent, especially in criteria 3 and 6. The reason may be that this is a retail company strongly pulled by the market, facing strong competition.

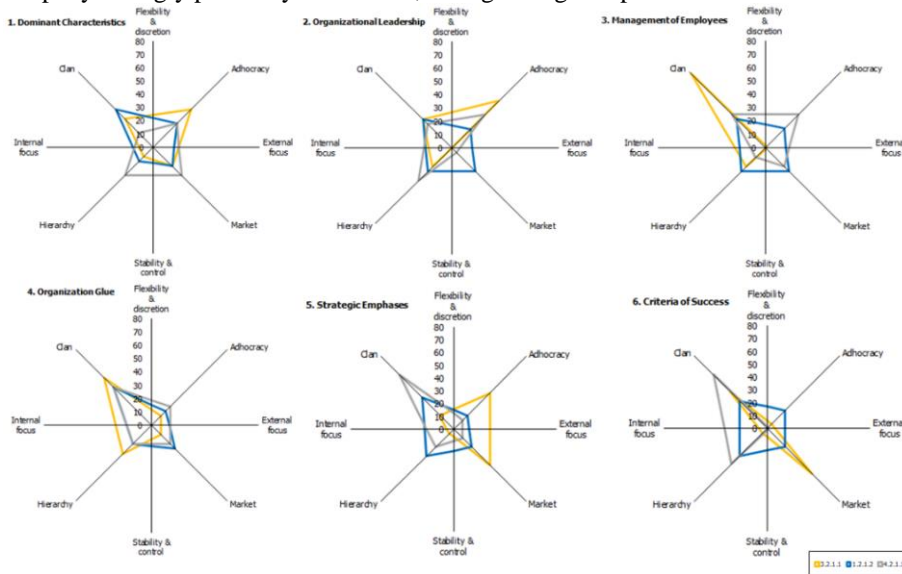


Fig. 5. Profiles for individual items related to service top managers.

Fig. 6 shows the aggregated results of the individual items related to cultural profile of the service sector from three companies. Once again, Clan Culture is dominant for all case studies; however, their cultures are incongruent (Fig. 6). Clan Culture is not consistent across various aspects of the organization. These differences have consequences on the way the companies act, for example, employees' management in the case study 3 is stimulated and they "act as a family" in the words of the top manager. This is totally aligned with Clan Culture.

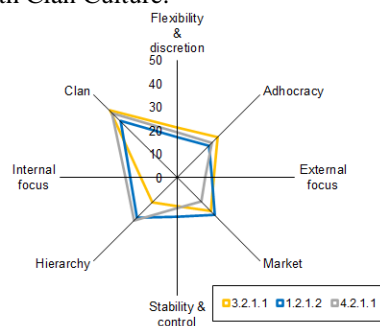


Fig. 6. Individual items combined profile of case studies 1, 3 and 4 (services)

In both areas (industry and services), the Clan Culture is predominant, but the profiles for the individual items are not congruent. This indicates that all companies of the case studies have an opportunity to align their profiles for the individual items.

As already seen in the first part of the questionnaire (Denison), industry and services do not have specific response patterns. That is, in terms of cultural profile, it can also be argued that the company's area (industry / services) does not influence the level of openness to lean implementation.

6 Conclusions

This paper used Denison's organizational culture model and Cameron and Quinn's CVF to design an instrument (questionnaire), which involves various elements (traits / indexes / dimensions), to evaluate the organizational culture of companies. Then, a relationship was established between these elements and the openness of the company to the implementation of the lean approach, which is a crucial factor to the implementation success. The instrument was applied in four companies and analyses the responses of five top managers (three from companies in the services area and two from the industry; one of the companies has both areas). The analysis of the results shows that there is in fact a relationship between the type of organizational culture of the company and its openness to lean implementation. More specifically, it allowed the identification of the traits / indexes (Denison's model) that must be improved, as well as the dimensions that must be congruent (Cameron and Quinn's model), so the aforementioned openness and successful implementation of lean can be achieved. In the industry area, in one of the two companies analysed (case study 1), serious gaps were identified in terms of the some traits / indexes (and it was found that it is in fact a company where attempts of isolated lean implementations have not been successful). In the area of services, this

same company presented even more gaps, in contrast to the other two (which already have some history of success in the implementation of lean). At the level of congruence between dimensions, only one company gets closer to the desired situation, which means that there is still a lot of room for improvement. A limitation of this work is the reduced number of companies analysed.

In terms of future work, it is planned the development of a set of specific recommendations that companies should follow in order to mitigate the gaps identified in their organizational culture. Another aspect for further work is the analysis of the perception that the different hierarchical levels of a company have in relation to the organizational culture of that company.

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