Lean Healthcare across Cultures: State-Of-The-Art

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Abstract

Lean thinking "translation" from manufacturing to services settings is a topic of growing interest among academics and practitioners. Healthcare organizations have been one of the latest services settings adopting Lean principles, tools and techniques feeding a crescent stream of literature. However, despite of the important contribution of some review articles, the Lean embeddeness in different national Healthcare systems lack cultural appraisal and updating. Through a systematic literature review, this paper presents the state-of-the-art of Lean deployment in Healthcare settings recurring to cultural lenses, classifies the existent literature, enhances cultural (national and organizational) marks and disclosures Lean deployment patterns while answer the question: - Does national cultural resemblance to Japan means a deeper deployment of Lean practices by Healthcare organizations?

1. Introduction

Applying Lean in Healthcare services has been the most visible recent trend in services industry (Holm and Ahlström, 2010, Jones, 2006). In spite of Brandao de Souza' s (2009) contribution in updating the evolution of Lean principles application in Healthcare context, providing a taxonomy for classification of existent studies, a more critical perspective including contextual variables has to be considered (Dal Pont, 2010; Hines *et al.*, 2008). When analysing the phenomenon dissemination to Healthcare services, some questions arise: - is "Lean" in Healthcare just a buzzword or a sustainable enterprise process improvement system? What context variables, such national and organizational culture, contribute to the adoption and sustainability of a "production system" also called as a "way" of thinking?

Scarce but important review articles (Young and McCLean, 2008; Winch and Henderson, 2009; Brandao de Souza, 2009; Poksinska, 2010; Mazzocato *et al*., 2010, Sobek and Lang, 2010) present the deployment extension of Lean thinking in Healthcare. However, all these reviews seem to be surgical in scope presenting only success cases under a tool and technique view (also called the "hard" side) and narrow in extension, not trying to cover different national cultures context (the "soft" side). Cultural issues are less explored in studies regarding Lean deployment, even when is accepted that change is not a technical-rational process, but a behavioural process, thus, Lean implementation requires a "cultural redesign" (Atkinson, 2010).Whilst some western sceptical authors (Green, 1999) consider Lean deployment subjugated to the principles of contingency theory, in this paper, we explore Lean deployment under the only contingency, the cultural one.

Presented as an antidote to *muda* (waste) (Ohno, 1988), converting *muda* into value, "Lean thinking", a five principle improvement philosophy coined in Japan has been adopted all over the world having the first follower, the USA.

Two different countries, Japan and USA, with different positions in the cultural values dimensions assessment: Power Distance (PD), Uncertainty Avoidance (UA) and Individualism (IND) (resembling only in Masculinity) (Hofstede, 1985), contributed differently for the same management philosophy. But, "...before understanding how the Japanese do business, one must understanding the underlying culture" (Ford and Honeycutt, 1992). Despite some dramatic critics to the adaptation of Japanese model to new world economic context (McCormick, 2004), Japanese Way is still inspiring more economic sectors ever proving that there is a lot to learn (Strach and Everett, 2004). However, research has been strongly concentrated in Lean manufacturing and only recently the discussion on Lean production included the concept's relation to Six Sigma and Total Quality Management (TQM) (Liker, 2004). Hines *et al.* (2004) present the evolution of Lean concept highlighting the shifting of focus from quality in early 1990s to customer value with the appliance to services sector, from 2000s onwards (Hines *et al.*, 2008).

The purpose of this paper is to understand the state-of-the-art of Lean deployment in Healthcare settings recurring to cultural lenses, to classify the existent literature, to seek for cultural (national and organizational) marks and also to disclosure Lean deployment patterns while answering the question: - do national cultural resemblance to Japan means a deeper deployment of Lean practices by Healthcare organizations? Or in a narrow way:-----
Being aware of the different corpuses of literature produced by industrial and academic methods (scientific and grey), this literature review aims to bring together insights from operational management, Lean management, and cross-cultural management literature and provide new agenda for future research considering the cultural context.
This paper is structured as follows: in the second section, we present the methodology followed in this review, the third section explores national cultural dimensions and the cultural construction along the main different cultural levels (national, organizational and individual) highlighting the national culture influence on organizations' culture as the backdrop of this paper. The fourth section enhances the culture ground of Lean deployment serving as the linkage to subsequent section that presents all available literature on Lean deployment in Healthcare sector that will support this review's classification regarding the extension of Lean practices, showing the cultural differences of each cluster in one of the latest sectors pursuing Lean adoption. Conclusions and future research paths are, finally, presented.

2. Methodology

A systematic search in electronic databases (ABI/Inform, B-On, PubMed) was conducted with the purpose of gather information and examples from both scientific and grey literature (Farace, 1998) that could show a full picture of Lean Healthcare practices emphasizing the cultural (national and organizational) aspects. We have excluded articles concerning hybrid approaches (as "Lean Six Sigma") and included all articles that reported successful or not successful Lean deployments in Healthcare organizations, in peer-review and grey publications using key words: "Lean thinking"; "Lean Healthcare"; "Toyota Production System" and "Lean Services". Books were also excluded for presenting a broader case analysis extension when our goal was categorization of the main scope, which is more clearly in articles. A cross-reference search encompassing the eligible first selection was carried out. Data were collected in two Excel spreadsheet, one following a categorization according the publications taxonomy of Brandao de Souza (2009), and the other covering the main findings categories (outcomes, measures, risks, implementation barriers and enablers, and sustainability factors) of Lean applications in Healthcare.

3. From national to organizational, from values to practices

Culture, "the collective programming of the mind which distinguishes the members of one human group from another" (Hofstede, 1980, p.25), manifests itself in many ways as symbols, heroes, rituals (also labelled as "practices") and values (Hofstede, 1998b) and can be defined at four main levels: society, organizational, small group and professional (Hofstede, 2000). In Geert Hosftede IBM study, four variables/dimensions to classify national culture were defined: (i) Power Distance (PD) (the degree of equality, or inequality, between people in the country's society); (ii) Individualism (IND) (the degree the society reinforces individual or collective achievement and interpersonal relationships or the degree to which individuals are integrated into groups); (iii) Masculinity (MAS) (the degree the society reinforces, or does not reinforce, the traditional masculine work role model of male achievement, control, and power); and (iv) Uncertainty Avoidance (UA) (the level of tolerance for uncertainty and ambiguity within the society - i.e. unstructured situations) (Hofstede *et al.*, 2010).

Several country level studies were conducted following Hofstede's country scores, based mostly in these four dimensions, with some interesting findings (Kirkman *et al.,* 2006). To cite only some, Newman and Nollen' (1996) study posits that when managers adapt their practices to a country's values, the result is higher return on assets (ROA) and sales, comparing to those with less fit. The authors defend that management practices should be adapted to the local culture and the differences between cultures limit the transferability of management practices. The same idea is broadly developed by Hofstede (2004) identifying different hierarchies of business (perceived) goals between leaders from different country clusters suggesting that the leaders' goal mindset might influence performance. Also according to Hofstede (2009), executive's goals are not only economic, but personal, cultural and difficult to assess. These findings are aligned with previous work on organizational culture conclusion that employee's values were found to differ more on demographic variables (such as nationality, age, and education) than on organization membership and therefore, the core of an organization's culture appeared to lie more in shared daily practices, "the way we do things around here", learned in work place, than in shared values (Hofstede *et al*., 1990).

Schuler and Rogovsky (1998) (cited by Kirkman *et al.*, 2006) found that IND was positively related to the use of pay-for-performance with focus on individual performance, PD was negatively related to social benefits and employee stock ownership plans, UA was positively related with seniority and skill-based pay plans and negatively to the focus on individual performance, MAS was positively related to individual bonuses and negatively related to flexible benefits. In Ryan *et al.* (1999) study, cited in the same review, UA is related to the preference for organizational norms, rules and procedures, while PD show the preference for gaining the support of superiors before acting. The author cite also the Shane (1995) study, where COL is related with preference to seek cross-functional support for innovation, UA is associated with preferences for innovation roles and that the greater legitimacy of these roles suggests that uncertainty acceptance may be linked to more innovative societies. In another study, COL was positively associated with team-oriented leadership, contributing to collective efficacy, group performance and cooperative behaviour, and PD and UA were negatively associated with participative leadership (Kirkman *et al.,* 2006). All these findings corroborate Hofstede's (1980) idea that cultural values are related to the aggregate management practices and nations' beliefs. Hofstede (1998a) addresses the convergence or divergence of national cultures theme admitting, only in individualism dimension, a certain degree of convergence (countries that increase wealth move towards greater individualism) but never loosing main differences between countries' individualism. Leung *et al.* (2005) also address cultural convergence/divergence issue underlining that the shift in values is not from western society to others but in the change of cultural western values with the increasing concern with quality and teamwork, representing a partial result of the influence of Japanese management.

Hofstede and Minkov (2010) added a fifth cultural dimension: Long versus short term orientation (society's time perspective and an attitude of persevering, i.e. overcoming obstacles with time, if not with will and strength) and ranked 23 countries based in the "Chinese Values Survey" and 44 countries based in "World Values Survey". Japan occupies the 4 Th position in the first rank and the 3rd in the rank composed by the 44 countries showing a strong long-term orientation, opposed to countries as USA that occupies a place in the last third of the list. A second expansion of Hofstede's dimensional model came with Minkov's exploration of the "World Values Survey", adding three dimensions labelled: "Exclusionism versus Universalism" (strongly correlated with Collectivism versus Individualism), "Monumentalism versus Flexhumility" (strongly correlated with short-versus long-term orientation) and "Indulgence versus Restraint" (IVR), the entirely new sixth dimension (Hofstede *et al*., 2010, p.45).

While national cultures differ mostly at the level of values, organizational cultures differ at the level of practices: symbols, heroes and rituals (Hofstede, 1998b; Hosftede *et al*., 2010, p.347), which apparently contradicts some management literature presenting organizational culture as a matter of values (Peters and Waterman, 1982). Hofstede's (1998b) position is that within an organization, members' values depend primarily on broader levels of culture as gender, nationality, class, education and through the socialization process they learn the organizational practices. According to the author, the organizational structure is primarily influenced by PD (affecting concentration of authority) and UA (affecting activities' structuring), as IND and MAS affect primarily the functioning of people within the organizations.

Also, PD combined with UA affects employees' motivation. Hofstede at al. (2010, p.314) present a merger between UA and PD national assessment and the five types of Mintzberg's (1979) organizational structure matching the "typical" country with each stricter configuration as follows: (i) USA organization, with medium levels of both UA and PD, present a divisionalized configuration form, having standardization of outputs as coordinating mechanism and the middle line as key part of the organization; (ii) Great Britain organizations, with low PD and UA, are adhocracies coordinated by mutual adjustment and having the support staff as key part; (iii) German organizations, with low PD and high UA, are professional bureaucracies (as in healthcare organizations, according to Mintzberg (1979)) with standardization of skills as coordination mechanism, and the operating core as key part; (iv) Chinese organizations, with high PD and low UA, are simple structures with direct supervision as activity coordination and the strategic apex as key part; and, at last (v) French organizations, with high PD and UA, being full bureaucracies, coordinated by standardization of work processes and having the techno structure as the key part.

Based on Mitzbergs's models and being aware of the difficulty of finding organizational structure's patterns in such idiosyncratic sector as Healthcare, Blaise and Kegels (2004) compare European Healthcare organizations with African ones. Showing the importance of context (national and organizational) in quality management approaches, the authors posit that in professional configuration organizations, as Europeans face a shift of paradigm towards a "machine" type configuration, as Africans ones, that have the standardization of procedures as coordinating mechanism, a more favourable context for quality management movement. Other studies (Schneider and De Mayer, 1991) confirm the influence of national culture in the perception of the same strategic issue (environmental event that may have an important impact on organizational performance) leading to different responses. National culture plays an important role in corporate culture construction (Adler *et al.*, 1986; Doktor, 1990; Hofstede, 1994) and the inconsistence of national culture increases the difference of the organizational cultures (Oudenhoven, 2001) and hinders the transfer of managerial philosophies or production systems (Wong, 2010).

More recently, Hofstede's cultural dimensions have been grounded investigation on differences in doctors (general practitioners) communicative behaviour and patients enhancing the role of communication training in medical curricula from a cultural viewpoint (Meeuwesen *et al*., 2009).

Consequences at the Work Place of National Culture differences are summarized in Table 1.

In fact, one can easily choose another organization but not so easily another country. More, being the "shared perceptions of daily practices" the core of an organization's culture, the simple imitation of superiors' practices without perceiving it in the same way means that both sides don't share the same culture. So how can one change a culture that is not fully understood? According to Hosftede (1998, 2000) organization members' perception result in different manifestations in daily practices regarding six organizational cultural dimensions: (i) process versus results orientation; (ii) employee versus job orientation; (iii) parochial versus professional; (iv) open versus closed system; (v) loose versus tight control; and (vi) normative versus pragmatic; all (except the second and the fourth) reflecting the business or industry culture. Dimensions two and four are related to historical factors such as the founder(s)' philosophy and recent crisis. Correlating these dimensions with national ones, Hofstede (1998a) present several cross-organizational clusters relating the fourth, open versus closed system, with weak UA, dimension one (process versus results oriented) with PD (large PD are associate with process orientation and smaller with results orientation). The masculinity/femininity dimension, in this study, took the form of "Work Centrality" and was correlated with dimension three (parochial versus professional) being stronger in professional organization cultures, while in parochial cultures, people do not take their work problems home. The second, fifth and sixth were not related with national values, describing only work practices.

These relations are especially important in a change perspective, weather it occurs in a domestic or multinational organization. In this perspective, leadership plays the main role affected by cultural differences (Wendt *et al*., 2009). These authors' findings show that the effects of directive (by opposition to supportive) leader behaviour on tem cohesiveness were more negative in individualistic cultures and that supportive leadership is important, regardless of the cultural context. McLaurin (2006) addresses leadership as a critical success factor and distinguishes three national styles: American, European and Japanese culture leadership.

Hofstede (1998a) posits that the minds of top managers are less complex than their organizations and their decisions reflect their managerial group subculture, whether it fits in a production, bureaucratic or a professional kind. Cultural alignment has to cope with multiple subcultures.

One critic made to cultural studies is that they address "culture" as cause, not as consequence (Steel and Taras, 2010). In this paper we seek the culture grounds of new work practices adoption, as Lean, with the main purpose of mapping differences of achievements in Lean deployment that can be related to differences in national and organizational culture. This approach must be seen as the preparation for a second one, not addressed in this paper, of understanding the change of culture (organizational and national) by the adoption of "imported" work practices. This culture construction view is tuned with the "system view" that defends a dynamic top-down-bottom-up process across all levels of culture (Global, National, Organizational, Group, and Individual); opposed to the "entity view" that places culture as a static entity (Leung *et al.*, 2005).

Within the organizational level, culture change issue can be seen in two opposite ways, one that defends that change should start at the less visible and tacit part, at the assumptions, then values, until be visibly manifested in artefacts and practices, and the other way around, changing first the most visible part and through new practice and behaviour gradually change culture. This last view is defended by practitioners, in Lean literature, and also by academics like Schein (2009). Schein himself describes culture as, "The pattern of basic assumptions that a given group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration and that have worked well enough to be considered valid, and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems", thus, culture as a consequence.

4. Cultural ground of Lean deployment

"Lean thinking", a term coined by Americans, Womack and Jones (1996), studying the Toyota Production System. A system influenced by Sakichi Toyoda' son, Kiichiro and his successor Eiji, who travelled to the United States to study Henry Ford's system in operation, learned from Ford's mistakes and replaced, with his chief process engineer Ohno, maximum for minimum lot sizes and minimum set ups for "just-in-time" production (Liker, 2004). The "Toyota Way" was not an Ohno's invention or a production concept dated by 1948, but a result of a learning cycle of sixty years that combined experiences from other industries (e.g. textiles) as from other countries (Holweg, 2007). Japanese organizations have changed shopfloor relationships, partially based on the European and American Taylorist concept of "separation of conception and execution (Tamura, 2006). Although Japanese management has been topic of study for decades, it was firstly broadly study considering the embeddness of national culture in business (Drucker, 1971; Fox, 1977; Thanopoulos, 1996, among others) to evolve through a stage of practice learning resulting from Japanese companies' transplant to the West and all subsequent cultural comparisons (Schonberger, 1982a,__1982b; Linowes, 1993; Beechler and Yang, 1994; Damanpour, 1998; Spear and Bowen, 1999) to the understanding of the "Lean" journey as a production system, opponent to the Mass System (Lin and Hui, 1999; Emiliani, 2006) and lately as a philosophy enhancing transformations not only in processes and tools but in people and organizational culture (Bhasin and Burcher, 2006; Liker and Morgan, 2011; Badurdeen *et al.*, 2011; Angelis *et al*., 2011).

As stated, "before understanding how the Japanese do business, one must understanding the underlying culture" (Ford and Honeycutt, 1992). Thus, Lean practices need to be seen under the powerful umbrella of their cultural origin. The Japanese cultural success factors have been studied by several authors. Drucker (1971), Horvath and McMillan (1980) enhanced the adaptability as success factor. Drucker (1987) and Vogel (1978) stressed the dialogue between Entrepreneurs and Government. Others (Marengo, 1979; Ouchi, 1981; Weiss, 1984) underlined the group solidarity. And Ouchi and Johnson (1974) enhanced the paternalistic system and the population homogeneity as the cultural success factors. Analysing the differences between Japanese and American management, Fox (1977) concludes that American organizations failed in the understanding of the *Ringi* system and in applying Japanese management, mostly due to the individualism characteristic. Following Hofstede´s cultural dimensions study, the differences are substantial as showed in Figure 1.

According to Thanopoulos and Leonard (1996), cultural factors are the main constraint in adoption of Japanese management style.

Through a review of more than 100 publications on business in Japan, the authors defend that the main three characteristics of Japanese management thinking: harmony and group loyalty, consensus decision making, and life-time employment, cannot be used as recipes for success for being too idiosyncratic. Differences in values and behaviour patterns seam to explain the difficulties found by Japanese managers in America (Linowes, 1993). Studying the transfer of Japanese management overseas, in American service and manufacturing settings, Beechler and Yang (1994) stress the importance of human resource practices defending the large job concept over functional specialization and found that there was no single model of Japanese human resource management abroad. Despite of national, local and organizational characteristics constraints, it is consistent in the literature on Japanese Management the importance and respect for the human resources. Emiliani (2006), through a historical view of Lean Management adoption in USA since 1979, describes how the Japanese Lean principle "respect for people" was not understood by organizations only focused in "continuous improvement".

Therefore, Leanness would be achieved not through the elimination non-added value activities, but as described by Emiliani (1998), the elimination of "fat behaviours". Comparing Lean with Mass organization Systems in terms of Complexity, Formalization, Centralization and Problem Solving Attitude, Lin and Hui (1999) enhance structural and cultural coordination mechanisms effects on the effectiveness and efficiency of the two systems. However, the lessons learned from Japanese management style were mainly on the "hard" aspects, neglecting the "soft" ones. In fact, the excessive focus on "tools and techniques" leads to the reductionist identification of only one model instead of the existent several (McCormick, 2004). With the economic and political Japanese evolution and globalization growth, adaptations in some characteristics as lifetime employment introducing new practices as mid-career and women recruitment (Damanpour, 1998) prove that management styles are not static even when faithful to a distinctive national culture. Likewise, distinctive business practices can coexist in the same national culture carrying themselves, some more than others, strong national cultural elements that leads to the illusion of taking the whole from its parts. Thus, the "Toyota way" (Liker, 2004) is representative of the Japanese way, but not the other way around.

Takeuchi *et al.* (2008) present Toyota success though a set of contradictions: (i) moving slowly, but taking big steps; (ii) growing steadily but showing paranoid fear of bankruptcy; (iii) running efficient operations but using employees' time in apparently wasteful ways; (iv) being frugal but splurging on key areas; (v) simplifying internal communications while building complex social networks; and (vi) maintaining a strict hierarchy while encouraging employees to push back and criticise constructively. Toyota's DNA (Spear and Bowen, 1999) is marked by impossible goals, local customization and a great deal of experimentation as the main forces of expansion. At the same time its organizational culture is coined by integration forces such as values from the founders, retention of talents with a strong commitment to respect for people and an open communication. Toyota's executives are willing to listen and learn, constantly drive for improvements, comfortable with working in teams with ability to quickly act and solve a problem. And above all, these executives are *senseis*, coaching other employees without losing modesty.

Some authors (Radnor and Walley 2008; Hines and Lethbridge 2008; McQuade 2008; Scorsone 2008) point that different corporate cultures can inhibit Lean implementation. Lean is not just a technological system but also a management philosophy (Sanjay and Burcher, 2006) that serves the whole company, which requires consensus on corporate culture. Thus, the shared assumptions, beliefs and values that define each organizational culture (Schein, 1992) can make the difference between a company success or failure (Goffee and Jones, 2003). Taking the Toyota and General Motors' joint venture, NUMMI (New United Motor Manufacturing Inc.), as an example of corporate culture change, Shook (2010) defend the same model as Schein where the culture change starts not at the bottom of the pyramid but on the top. According to Shook (2010), "It´s easier to act your way to a new way of thinking than to think your way to a new way of acting", i.e. by changing behaviour and actions, the culture change as a result. The success of Japanese transplants lye on the culture of seeking for problems and finding solutions as they occur, without blaming anyone.

The long- versus short-term orientation and the way respect for people is seen in every country might lead to different consistencies in Lean deployment. Hines (2010), Hines *et al.* (2008) among others, posits that the pure and simple tool deployment to achieve quick-wins lead to a short term Lean results and often returns to "the comfort zone" whilst systematic Lean approaches of culture changes shows long-term results. These authors suggest that what make "Lean stick" are strategy and alignment, leadership and behaviour and engagement.

Dal Pont (2010), analysing Lean adoption techniques in services, defines "enablers" of Lean deployment variables as: (i) process or/and service divisibility, serenity, (ii) loyalty and leadership and (iii) information technology (IT) skills. Conversely, define as inhibitors: (i) knowledge, (ii) customer contact, (iii) corporate culture, (iv) complexity and (v) autonomy. Each of these variables' findings requires in-depth studying and testing, namely in Healthcare setting.

Can the "Toyota Way" adoption by several other countries, with different implicit models of organizations, be understood as an acculturation process? Can we see all Lean deployments as cultural transformation? From all previous cited articles some relations between cultural dimensions and Lean practices can be proposed.

According to Wong (2010), when looking at Lean ingredients as flow production, stress on quality, standardization and use of only reliable and thoroughly tested technology, they manifest the cultural characteristic of collectivism and strong uncertainty avoidance.

Likewise, continuous improvement and willingness to change expresses the cultural characteristic of masculinity, while empowerment and discipline shows the obvious power distance in the organization. The elimination of the uncertainty on site and solving problems in time through visual control, "pull" mechanisms, use only reliable and thoroughly tested technology, and level out the workload (*Heilinka*) shows that the cultural characteristic is highly uncertainty avoidance. The Japanese way of dealing with uncertainty is quite different from western cultures. Japanese manage uncertainty by matching it, understanding it, rather than trying to eliminate it or minimizing its importance. This is the basis, according to Schneider and De Meyer (1991), of dealing with crisis and History testifies Japanese way. The sense of urgency, crucial for effective change, is different in Latin cultures, for instance, comparing to Japan. The Lean strong uncertainty avoidance is also express by the "no problem is a problem" (Shook, 2009) attitude.

Also the characteristics contained in Lean production, such as determined will, shame, and thrift, go for future long-term vision with tradition and being obedient to achieve final goals, are basic value points and attitudes in supporting Lean production. Despite of some critics to Toyota's difficulties in staying Lean (Schonberger, 2010), the long term orientation and strongly embeddness of a unitary organizational culture nurtured by Lean daily behaviours appear to be the basis of Lean sustainability (Angelis *et al*., 2011; Badurdeen et al., 2011; Hines, 2010).

5. Mapping Lean deployment in Healthcare

Healthcare services waited sixty years for manufacturing lessons and rush in to implement these improvement principles and tools. These attempts have been scope of several review articles bringing a narrower or broader view to the comprehension of the phenomenon of Lean implementation in Healthcare settings. Young and McCLean' s (2008) review, stressing the difficulty of "value" definition in Healthcare, challenges future research proposals to consider three critical dimensions of value: clinical, operational and experiential in the assessment of Lean gains. Winch and Henderson (2009) question the theoretical basis from which the Lean deployment in Healthcare is derived stressing the need of evidence for long-term benefits related to patient outcomes, in a critical tone but not providing a systematic review. Brandao de Souza (2009)'s systematic and critical review updates the concept evolution regarding the Lean principles application to Healthcare and suggests a taxonomy for classifying the literature giving a first glance of geographic evidence and bringing the issue of sustainability of Lean findings linked to the need of deeper studies regarding cross-organizational (strategic and operational) Lean deployment.
The Poksinska (2010)'s review disclosures the Lean scope intervention main areas in Healthcare confined only to the first three (from the five) Lean Thinking principles, the most usual roadmap implementation, barriers and enablers in Healthcare setting and presents two main areas outcomes: in the performance of the health care system and in the development of human resources and work environment.

A realist review is presented by Mazzocato *et al.* (2010) of successful appliance of Lean thinking in Healthcare that influence patient care. Changes are presented through a logic in which common contextual aspects interact with Lean intervention different components and trigger four different change mechanisms: (i) understand processes to generate shared understanding;(ii) organise and design for effectiveness and efficiency; (iii) improve error detection to increase awareness and process reliability; and (iv) collaborate to systematically solve problems to enhance continual improvement. Although only success cases are studied, which can indicate a bias, the sustainability issue was absent in this review, lacking a long term view of changes.

The authors explain this constraint due to an immaturity of the field for conducting a realist review. Success and factors inhibitors are the main focus of Sobek and Lang (2010) review, presenting the range of manufacturing translated tools applied and the idiosyncrasies of Healthcare organizational culture that ask for a better adaptation to Healthcare language.

There are contextual variables of Lean adoptions in services (Dal Pont, 2010) and context specificities in Healthcare services. One of the specificities regards the sociotechnical aspects when implementing Lean thinking (Joosten *et al.*, 2009), apart from specific operational aspects from Healthcare organizations. While the former lack deep research, the latter have been subject of more thorough concern by academics and practitioners. Towill and Christopher (2005) framed the analysis of Healthcare pipelines in Lean and agile paradigms showing that the principles of supply chain design used in industrial and commercial contexts provide a suitable "architecture" within a Healthcare delivery context and present taxonomy to redesign Healthcare delivery systems based on multiple pipelines. Another taxonomy is presented by Burgess and Radnor (2010) proposing six different intensities of Lean adoption going from "tentative" to "systemic" in 152 Hospitals Trusts in UK linking to performance criteria, opening a case study path for deeper research addressing Lean cultural issues.

6. Results

From the electronic search resulted 115 records, 19 of which not eligible. To the 96 retrieved, 11 articles were added resulting from the reference lists. In total 83 eligible articles concerning Lean deployment in Healthcare in a specific country context and another 2 articles in cross-countries context were consider. After full text assessment we arrived to the following distribution.

Looking thorough the data of the results of Hofstede's study (accessed in www.geert-hofstede.com) we present the culture scores of the countries with classified literature on Lean in Healthcare, having as benchmark Japan's scores (Large PD, Collectivist, Masculine, Strong UA and Long-term oriented). Each Figure (from 2 to 6) is named after the also exposed possible relations between national cultural dimensions and some of the Lean practices.

These assumptions present a challenge for future research to find empirical confirmation for national culture relations with particular work practices as lean practices.

Nevertheless, an attempt of understanding the lean deployment stage, through the analysis of the classified articles in terms of outcomes scope and "hard" versus "soft" deployment (Badurdeen *et al.*, 2011), is presented in Figure 7. It is possible to identify four cultural clusters of countries in the light of the two Hofstede´s *et al.* (2010, p.303) cultural dimensions combined (Power Distance and uncertainty Avoidance), the only combination of dimensions that matched the lean stages countries' position:

(i) The cluster **GER+SPA**, with **Small PD + Strong UA**, are in the first stage of lean deployment in Healthcare settings, the "Managerial and Support", where Lean deployment cases are in the support areas (logistics, warehouse improvement, etc);
(ii) The clusters: **BRA+ FRA+ ITA** with **Large PD + Strong UA** and
(iii) **CAN+ SL/IND+ IRA** with **Large PD + Week UA, are in the second** stage of lean deployment in Healthcare settings, the "Manufacturing Like" where lean deployment evolved to the improvement of "production" processes, but without visibility of effects on patient flow;
(iv) The cluster **NET+SWE+DNM+AUL+GBR+USA**, with **Small PD + Week UA**, are mostly in the third stage of lean deployment in Healthcare settings, the "Patient Flow", where cases report real changes on the clinical path with benefits perception by the patient (apart from USA that presents in a previous stage, and GBR, in the last maturity stage, the "Organizational", where all previous stages marks can be seen, but lean deployment holistic achievements in the whole value chain lead to a "Lean organization"

7. Conclusion

In spite of the globalization, each national culture still owns its uniqueness of its particular core values. Taking one of the most recent sectors embracing the "Lean Journey", Healthcare, this study's challenge was to update findings regarding cultural (national and organizational) aspects of Lean deployment in an embryonic but growing stage of this sector.

In spite of the scarcity of cultural aspects in the Lean Healthcare literature, some patterns concerning the kind of publication and findings can be found. Clusters formed by countries with the same position in PD and UA dimensions can be identified in a particular stage of the Lean journey. However, two particular countries seem to defy that perfect match, USA and GBR. It could be due to the fact of most of the literature cases found happen to belong to those countries and, as result, the variability of kinds is therefore bigger, showing a majority of USA cases a "manufacturing-like" scope. Nevertheless, if we add case dates to this analysis, we can see a generalized shifting of scope that goes from "manufacturing-like", to "patient flow" and finally to "organizational" cases, placing USA in the same position as GBR. The cluster placed in the "Patient Flow" level of Lean deployment, might benefit of the low level of UA as it enhances higher opportunity for deeper improvements and innovation, on one hand, and by the small PD which benefits decision making, pace of deployment and empowerment, on the other. Also, by being individualist countries, creativity and universal understanding of same rules are correspondent cultural marks that are favourable to problem solving and standardization required in Lean deployment. However, the Lean deployment maturity level of this cluster cannot be directly related with MAS, as three countries are feminine (NET, DNM and SWE) and the other three masculine (AUL, USA and GBR).

Future refinement work would be necessary to go through deeper understanding of cultural issues behind success and failures in Lean deployment. Nevertheless, some dimensions as Long-versus short Term orientation are visible in most of the articles with the purpose of finding sustainability in lean deployment, confirming the previous theoretical considerations. Also, recent publications bring the organizational and national cultural issues related to barriers, enablers and sustainability factors of Lean. Finding what is due to national culture constraints might be useful in Lean deployment across countries, as finding what is due to organizational culture, without disregard the national background, can be useful for managing organizational culture change process.

Surprisingly, no publications were found on Lean deployment in Japanese healthcare organizations. Could it be due to a lack of Japanese case publishing tradition or the lean cultural embeddness is so naturally Japanese that only manufacturing emblematic cases were reported at the pace of their organizations' growth, leaving other sector's cases out of research? These questions remain also for future research.

Although Womack *et al.* (1990, p.9)' statement regarding the universal applicability of the fundamental ideas of Lean "anywhere by anyone"; cultural context can explain differences in maturity levels of Lean deployment in Healthcare settings. As the culture building process described by Schein (1992, 2009) and Shook (2010), Lean culture construction, in Healthcare settings, appears to have its starting point in the "hard" deployment, using tools and techniques in a less core activities and evolve to the core ones, to the patient path, until the daily practices take over the whole organization.

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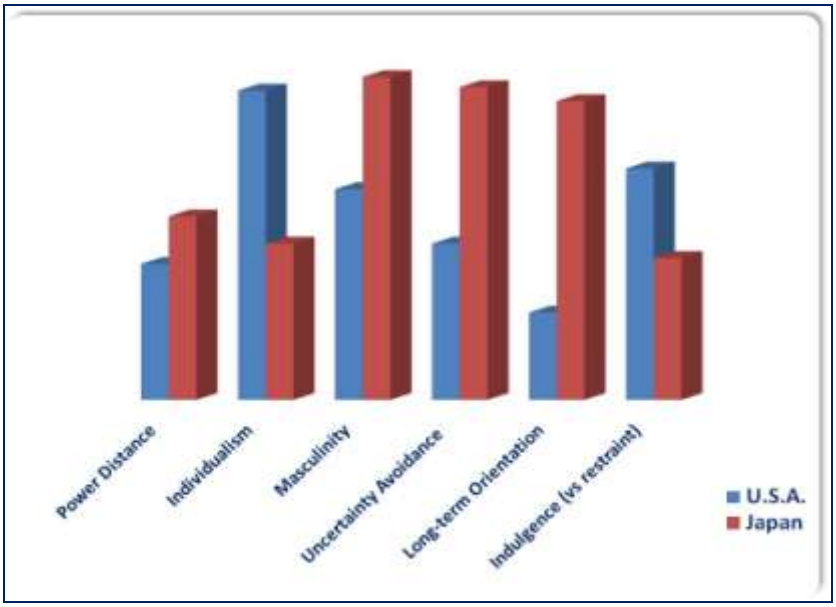
Table 1. National Culture consequences in Work Place

Small POWER DISTANCE	**Large POWER DISTANCE**
Hierarchy as inequality of roles, established for convenience	Hierarchy means existential inequality
Subordinates expect to be consulted	Subordinates expect to be told what to do
Ideal boss is resourceful democrat	Ideal boss is benevolent autocrat
Acceptance of responsibility	Discipline
COLLECTIVISM	**INDIVIDUALISM**
Value standards differ for in-and out-groups: particularism	Universal application of same value standards: universalism
Other people seen as members of their group	Other people seen as potential resources
Moral model of employer-employee relationship	Calculative model of employer-employee relationship
Employee commitment	Management mobility
FEMININITY	**MASCULINITY**
Assertiveness ridiculed	Assertiveness appreciated
Undersell yourself	Oversell yourself
Stress on life quality	Stress on careers
Intuition	Decisiveness
Personal service	Mass production
Custom-mad products	Efficiency
Weak UNCERTAINTY AVOIDANCE	**Strong UNCERTAINTY AVOIDANCE**
Dislike of (written or unwritten) rules	Emotional need for (written or unwritten) rules
Less formalization and standardization	More formalization and standardization
Tolerance of deviant persons and ideas	Intolerance of deviant persons and ideas
Basic innovations	Precision
SHORT-TERM ORIENTATION	**LONG-TERM ORIENTATION**
Fast adaptation	Developing new markets
Main work values include freedom, rights, achievement, and thinking for oneself.	Main work values include learning, honesty, adaptiveness, accountability, and self discipline
Personal loyalties vary with business needs	Investment in lifelong personal networks, *guanxi*
Focus on the "bottom line"	Focus on market position
Importance of this year's profits	Importance of profits ten years from now
Analytical thinking	Synthetic thinking

*Findings based on Chinese Value Survey (CVS) data.
Source: Hofstede, 1998b; Hofstede *et al.*, 2010.

Figure 1. Japan versus U.S.A. according to Hofstede's cultural dimensions



Based in www.geert-hofstede.com

Table 2. Lean Healthcare Literature Taxonomy Classification

	CASE STUDIES				THEORETICAL	
COUNTRY	Manufacturing-Like	Managerial and Support	Patient Flow	Organizational	Methodological	Speculative
USA	(3)(6)(9)(13)(17)(19)(22)(23)(24)(26)(27)(28) (33)	(5)(7)	(4)(15)(25)(29)(31)	(2)(11)(12)(12)(14)(21)(30) (32)	(1)(18)(20)	(8) (10)(16)
Canada (CAN)	(35)		(34)	(36)		
UK (GBR)	(42) (47) (57)(60)	(43)	(48) (45)(59)	(38) (39) (40) (41) (45)(46)(49)(51) (52)(53)(58) (61)	(37) (50) (55) (56)	(44)
Netherlands (NET)			(62)			
Sweden (SWE)	(67)		(63)(64) (65)(68)	(66)		
Germany (GER)		(69)				
France (FRA)	(70)					
Spain (SPA)		(71)				
Italy (ITA)	(72)					
Denmark (DNM)			(73) (74)			
Australia (AUL)			(75)(76) (77)(78)		(79)	
Sri Lanka (SL/IND)	(80)					
Iran (IRA)	(81)					
Brazil (BRA)	(82)					
Portugal (POR)					(83)	
USA/Australia/Canada				(84)		
Finland/Sweden/Australia			(85)			

Table 3. Main Findings Lean Healthcare Classification

	MAIN FINDINGS SCOPE					
COUNTRY	OUTCOMES	MEASURES	RISKS	BARRIERS	ENABLERS	SUSTAINABILIY
USA	(1)(3)(4)(5)(6)(9)(12)(12)(15)(19)(22)(24)(26)(27)(28)(30)	(10)(13)(20)(23)	(7)(17)(31)(32) (33)	(2)(11)(16)(21)	(8) (29)	(14) (25)
Canada	(34) (35) (36)					
UK	(37)(38)(42) (43)(44)(45) (47)(48)(57)(58)(60)(61)	(50) (54) (59)		(40) (46)(52)(53) (55)	(39) (56)	(41) (49) (51)
Netherlands	(62)					
Sweden	(63)(66) (67)(68)			(64)		(65)
Germany	(69)					
France	(70)					
Spain	(71)					
Italy	(72)					
Denmark				(73) (74)		
Australia	(75)(76)(77)				(78)	(79)
Sri Lanka	(80)					
Iran	(81)					
Brazil	(82)					
Portugal				(83)		
USA/Australia/Canada						(84)
Finland/Sweden/Australia	(85)					

Figure 2. Collectivism and flow concept

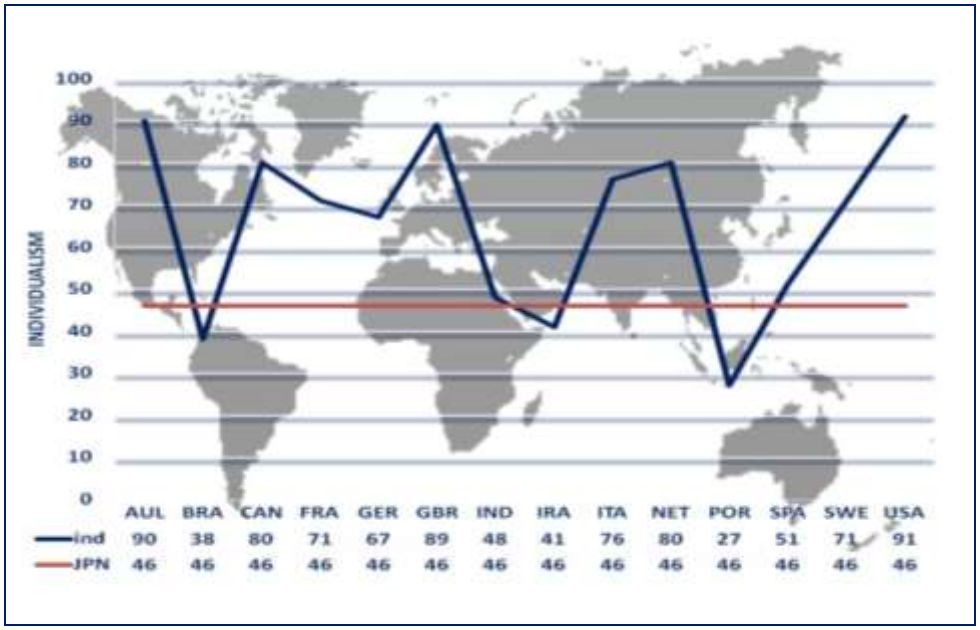


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Figure .3. Masculinity and continuous improvement and willingness to change

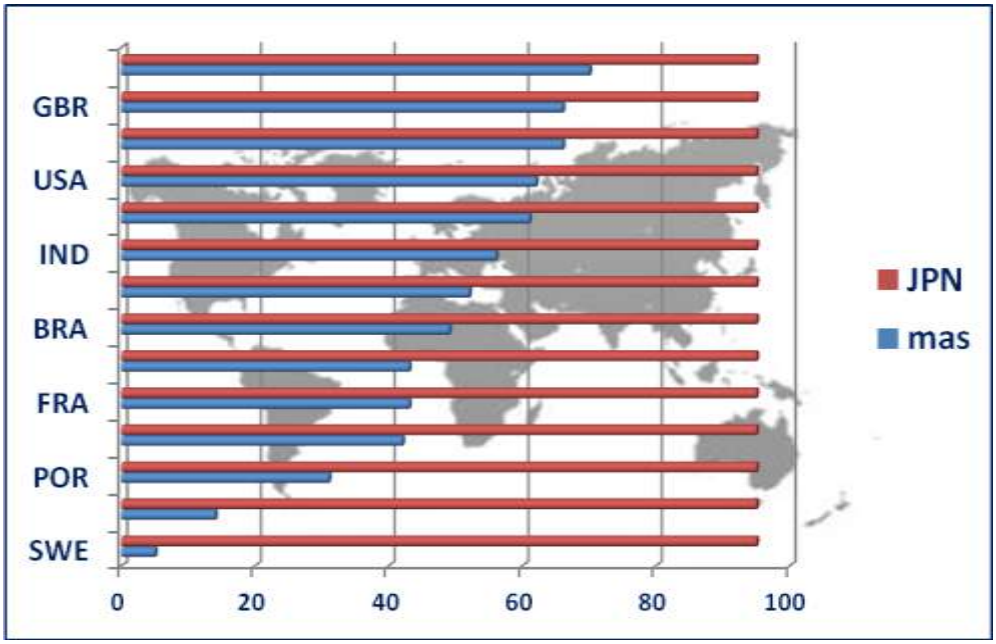

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Figure 4. Power distance and empowerment

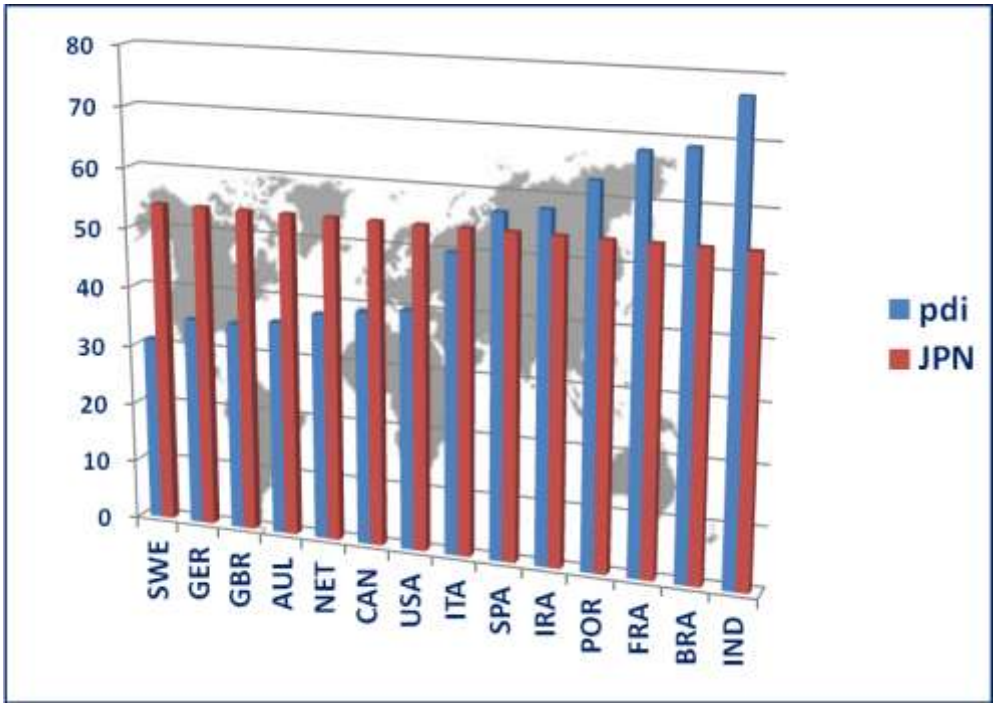

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Figure 5. Uncertainty Avoidance- Problem solving, visual control

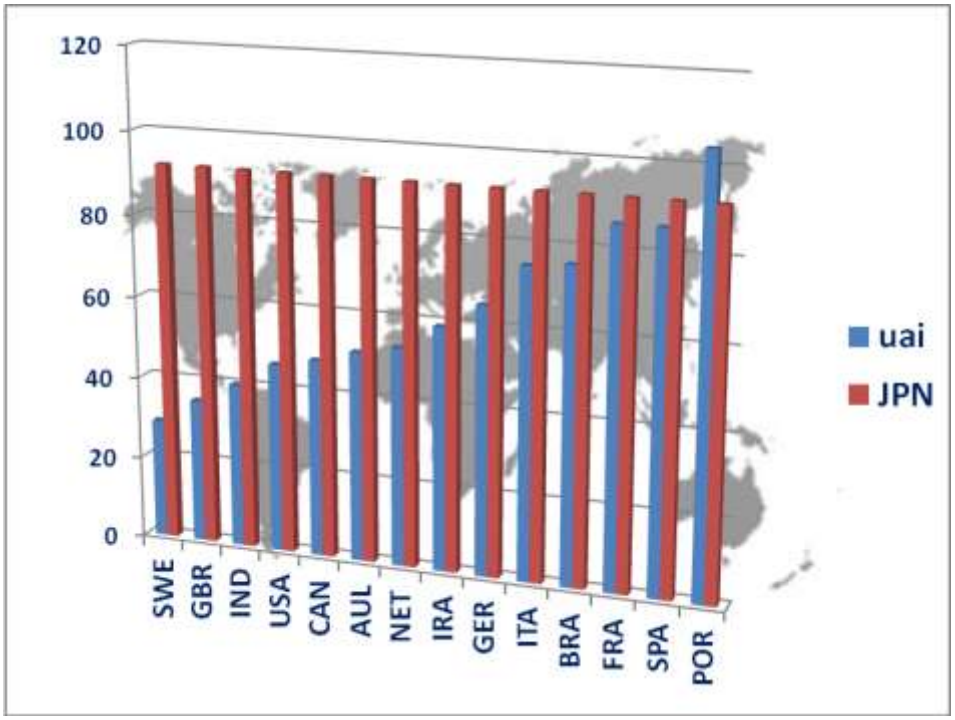

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Figure .6. Long-term orientation and sustainability

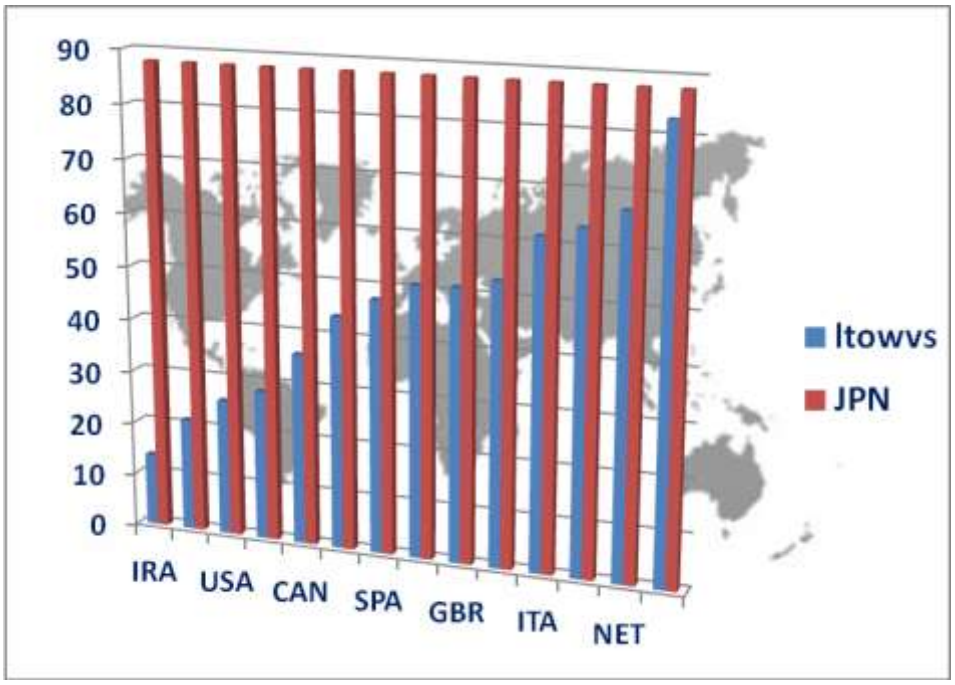

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Figure 7. Cultural clusters of Lean deployment in Healthcare