Understanding the context for Lean implementation in public healthcare organizations

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Summary : After a three-year study of the implementation of Lean in public healthcare organizations in the Canadian province of Quebec, poor understanding of context was identified as a contributing factor to unstained Lean implementation. This paper presents an integrated perspective of the unique context of public healthcare organizations by drawing on an integrative literature review of professional, public and healthcare services. The implications of this context towards Lean implementation are then discussed.

Keywords: Lean implementation, services, public, healthcare

Impact : This paper contributes to create a better understanding of the context of public healthcare organizations and how it pertains to Lean implementation. This work will help managers and policy-makers develop a clearer vision of Lean, and potentially help them in choosing the appropriate approaches needed for successful implementation. We believe this is critical to allow organizations to make the leap from using Lean tools and techniques into real cultural change.

Introduction

Over the last decades, healthcare systems have been criticized for their poor performance (Kaplan and Porter 2011). Yet, for all the efforts put forth, change has proven very difficult (Longenecker and Longenecker 2014). Lean, a holistic management system based on a culture of continuous improvement (Womack and Jones 2015), has been amongst the innovations put worth by policymakers and organizations to help face this challenge. It has been implemented in various healthcare settings, in many countries (Costa and Godinho Filho 2016). In recent published works, most authors conclude that Lean in healthcare has failed to produce conclusive gains at the organizational level, let alone the system level (de Souza 2009, Mazzocato *et al.* 2010, Costa and Godinho Filho 2016, Moraros *et al.* 2016). Those authors also agree in that what gains have been found were made locally, in teams, departments, units or services. Rarely has Lean been reported to target the organization as a whole (Costa and Godinho Filho 2016).

In Canada's province of Quebec, in 2011, three pilot organizations were chosen to begin a formal implementation of Lean. Over the course of three years, we studied and analyzed how they had implemented Lean, what level of maturity they had reached, and what impacts Lean had on organizational performance (Jobin and Lagacé 2014, Jobin and Lagacé 2015, Fournier *et al.* 2016). Our findings echoed that of researchers in the UK (Burgess and Radnor 2013), in that implementation tended to be isolated, with a focus on efficiency, and organizations being unable to

shift into cultural change. This led us to ask the following question: why do public healthcare organizations (PHO) have trouble implementing Lean is a sustainable way, with conclusive gains?

In response to this, an important finding of our three-year study, also echoed by researchers in the UK (Radnor and Osborne 2012, Burgess and Radnor 2013), showed that managers and practitioners have had a tendency to blindly apply Lean tools and techniques without understanding the unique context of PHOs. But what exactly is that context? And why does it pertain to Lean implementation? The objective of this paper is to provide a conceptual answer to these questions.

Scholars and practitioners have always categorized the various contexts in which organizations operate. The seminal work of Schmenner (1986) and his Service Process Matrix has highly contributed to our view of service provision. In this matrix, public services such as schools are classified as mass services, hospitals as service shops and doctors as professional services. However, when it comes to modern healthcare organizations, it is not possible to place them within one particular category of service providers. The context of PHOs lies at the intersection of those three categories. It is therefore important to develop an integrated perspective of that context.

To do so, we have reviewed the pertinent literature through an integrative approach (Torraco 2005). By doing such, we have been able to gain a deeper understanding of what makes professional, public and healthcare services unique. Then, by integrating those three distinct complexities, we discuss how they create a unique context for PHOs. We go on to discuss why this context cannot be neglected when implementing Lean.

This paper is structured as follows. First, we provide an overview of the origins of Lean and the impact it has had on companies adopting it. Second, we present the findings from our three-year study of Lean implementation in three PHOs from Quebec's healthcare system. Third, we review the pertinent literature on professional, public and healthcare services, to better understand the characteristics of each setting. Fourth, we integrate those three settings to gain a better understanding of the unique context of PHOs. Fifth, we discuss why this context is important when it comes to Lean implementation. Finally, we conclude by discussing the impact we believe this paper has for researchers, policy-makers, managers and practitioners, as well as future research avenues.

Lean: origins and impact

Origins

We know much about the origins of Lean, thanks to the work of authors such as Holweg (2007), Stone (2012) and Samuel et al. (2015). Coined in 1988 by MIT's John Krafcik, the name ''Lean'' has been the label for one of operations management's most important paradigms of the last 25 years. Lean has evolved over decades from a generic definition of the Toyota Production System (TPS) into a holistic value system (Samuel *et al.* 2015). The perspective of Lean as a combination of principles, tools and techniques (Womack and Jones 1996, Spear and Bowen 1999, Liker 2004) is no longer sufficient. Over time, focus has shifted from cost reduction to value appropriation

(Samuel *et al.* 2015). Lean now encompasses many so-called ''soft-practices'' such as committed management (Soriano-Meier and Forrester 2002), respect for people (Emiliani 2007, Emiliani 2007) and Kata (Rother 2010). Lean has implications for an organization's value chain and work organization (Moyano-Fuentes and Sacristán-Díaz 2012). Leadership, training, problem solving and customer involvement are also at the forefront of Lean. Today, it is viewed as a management system deeply rooted in social sciences.

Impact

The reasons for implementing Lean are usually predicated one the various performance improvements it has been showed to generate (Fullerton *et al.* 2003, Liker 2004, Womack and Jones 2015). However, the relationship between Lean implementation and improved performance has been much disputed, and scholars believe performance gains are much more related to how companies appropriate the value created by Lean initiatives as opposed to the implementation of Lean itself (Lin and Chun 1999, Lewis 2000). Internal factors such as leadership, management and culture influence how this appropriation takes place. The impact of Lean isn't limited to the bottom line, it extends away from the production floor and the company itself (Hines *et al.* 2004).

Still, while its impact on performance has been deemed inconclusive throughout the literature, many different sectors of the economy such as healthcare and public services have attempted to implement Lean at various levels (Samuel *et al.* 2015).

The Implementation of Lean in Quebec's Healthcare System

The Canadian healthcare system has been under scrutiny for many years. Researchers, practitioners and politicians have criticized it for its lack of efficiency and long wait times (Castonguay *et al.* 2008). Lean has been one of the approaches put forth by policy makers to help organizations face these challenges. Organizations such as Five Hills Health Region in Saskatchewan, St-Joseph's Health Center in Ontario and St-Boniface hospital in Manitoba were the first ones to experiment with Lean, with interesting results (Fine *et al.* 2009, Graban 2011). In the province of Québec, formal discussions about Lean started around 2008. Three years later, in 2011, the Ministry of Health and Social Services began a formal implementation of Lean across the provincial healthcare network by selecting three pilot organizations. Those organizations were tasked with deploying Lean through the realization of various improvement projects over the course of three years. The initial investment of 12 million dollars was followed by an additional 12 million dollars for a second phase of implementation in 2013, this time targeting 16 other organizations. By combining those two phases, almost a third of the roughly 275 000 employees of the healthcare system have been touched, directly or indirectly, by various Lean initiatives.

From 2013 to 2015, we were mandated by the Health Ministry to study how the three pilot organizations had implemented Lean over a three-year span (2011 to 2014). Our research was threefold. We first set out to develop a model of what Lean in a public healthcare organization was. This allowed us to create a measurement tool to empirically assess Lean maturity in PHOs (Jobin and Lagacé 2014). Secondly, using this tool, we evaluated the maturity level of the three pilot

organizations over the course of three years, at three different points in time (Jobin and Lagacé 2015). Thirdly, we attempted to quantitatively investigate the impact Lean had on performance within those three organizations over the same time span (Fournier *et al.* 2016). This research project provided the opportunity to analyse three years worth of Lean implementation in three large healthcare organizations across Quebec.

The overall impact of Lean on those organization's performance was inconclusive (Fournier *et al.* 2016). The performance gains that were identified were mostly local, in teams or departments where improvement initiatives had taken place. We were able to conclude on the reduction of costs, delays and errors where Lean projects had taken place, but were unable to verify if any of those gains had translated at the organizational level and beyond.

Beyond the impact of Lean on performance, this research project presented the opportunity to study how those organizations implemented Lean and how they progressed along their maturity curve (Jobin and Lagacé 2015). The main finding concerning this aspect was that even after three years of experimenting, the three organizations quickly plateaued in their progression. While differences existed amongst them with regards to how they appropriated Lean, none were able to trigger real cultural change. Lean was still mostly viewed as a set of principles and tools. Interviews with top and middle managers, doctors and other staff allowed us to identify many challenges faced by these organizations. First, they had great difficulty in sustaining gains obtained after improvement efforts. Also, those efforts were found to be mostly efficiency driven as opposed to targeting quality or accessibility of care. There was a lack of vision, alignment and coherence regarding Lean and its dissemination across the organizations, also exacerbated by the inability to implement cross-managerial practices. This led to middle managers being unengaged in the transformation efforts. Finally, the regulatory constraints such as the roles occupied by physicians were found to be important challenges faced by the healthcare system with regards to Lean implementation.

There is great similarity between those findings and those made in the UK. Indeed, Burgess and Radnor (2013) found that Lean implementation in the National Health Service (NHS) tended to be isolated as opposed to system-wide and mostly based on its visual elements. Lean implementation was typically driven towards internal efficiency, with short-term financial gains in mind (Radnor and Osborne 2012). In short, healthcare organizations in Québec are facing many challenges also faced by those in the UK.

Our three-year research project concluded on an important finding: policy makers, managers and practitioners faced, and are still facing, great difficulty in properly adapting Lean to the public healthcare context. This lead to the following question: what makes this context so unique and how does it relate to Lean implementation? The similarities between our findings in Quebec with those of researchers in the UK (Radnor and Osborne 2012, Burgess and Radnor 2013) lead us to believe that exploring this question has an interesting potential for further generalization to other public healthcare systems around the world.

To understand that unique context, we have used Schmenner's (1986) seminal service categorization as a starting point. In his work, he classifies public services such as schools,

professional services and healthcare services in three respective categories: mass services, professional services and service shops. Historically, Lean has been adapted to fit within each of those types of service organizations separately. But in PHOs, the characteristics of each category are integrated into one unique context. Those characteristics add unique factors to the internal and external environments of PHOs, creating a setting that is much more complex than any of those three types of organizations taken separately. To gain proper understanding of this context, we have performed an integrative literature review (Torraco 2005) which will we present in the following section. *(Please note that this review has been condensed to allow for respect of the format requirements of this publication.)*

Three categories of services

To gain a deeper understanding of what characterizes professional, public and healthcare services, we performed three separate literature reviews using the EBSCO and ABI/INFORM databases. Using a combination of keywords such as ''services'', ''management'', ''operations'' and ''organization'' along with keywords ''professional'', ''public'' and ''healthcare'', we obtained the following results. For professional services, 82 papers were initially identified and after review, 12 were retained. For public services, the initial search resulted in 42 publications. That number was reduced to 14 articles. Finally, for healthcare services, out of 91 works originally found, 30 were deemed useful for this publication. In this section, we will cover the results obtained from each of these reviews.

Professional Services

Professional service providers have one main characteristic distinguishing them from traditional manufacturers: the co-production phenomena (Dobrzykowski *et al.* 2016), meaning production and consumption of value are simultaneous. This means that both provider and client have roles to play. Indeed, in services, value is co-created through the client's involvement in the process (Chase 1978, Chase and Tansik 1983). If customer involvement is high, demand will be more unstable (Hines *et al.* 2002), thus impacting productivity and quality (Bitner *et al.* 1997).

Furthermore, co-production also concerns the provider. Professional services are based on knowledge work, where professionals with expert knowledge apply their competencies towards cases with a high level of complexity needing high customization (Goodale *et al.* 2008), automatically generating higher task uncertainty (Staats *et al.* 2011). This necessitates high workforce specialization (Nembhard *et al.* 2009) and training (Garman *et al.* 2006). Because of this, professional service providers are subject to important external pressures, such as knowledge monopolies (Harvey 1990). In the end, combining the customer's role with the professional's creates higher process variation (Boone and Ganeshan 2001). As stated by Lewis and Brown (2012), traditional operations management initiatives can take place in professional service firms, but in conjecture with their context.

Public Services

To begin with, Radnor and Bateman (2016) define a public service as ‘‘a service or set of services provided to citizens directly through a public sector body or through public financing of provisions by private or third sector organizations’’. Those organizations are governed and managed in a complex, fragmented and uncertain way (Haveri 2006).

Public governance creates a setting filled with complexities, nuances and challenges. It is defined by Bovaird and Löffler (2003) as ‘‘the ways in which stakeholders interact with each other in order to influence the outcomes of public policies’’. It has been influenced through many years of academic and political developments. Throughout the end of the 20th century, the New Public Management gained traction within many states around the world. This paradigm negated fundamental differences between private and public organizations, advocating for private-sector managerial techniques to achieve better efficiency and effectiveness for public services (Osborne 2006). Using this foundation, many governments have attempted reforms through transparent results-based management frameworks, making managers accountable for specific objectives while retaining a lot of flexibility regarding the means and methods chosen to reach them (Martin *et al.* 2004). Key elements of NPM include ‘’hands-on management’’, separating policy making from implementation, a disaggregation of services into basic units, entrepreneurial leadership, inputs and outputs control as well as performance management and audit. The aim of NPM was to counterbalance the shortcomings of traditional public administration such as the rigidity of rules and guidelines, bureaucracy and ‘’*the hegemony of the professional*’’ (Osborne 2006). NPM has been openly criticized and its limitations highlighted. Scholars have challenged the notion of ‘’*value to the users*’’ with a more extensive meaning of value in the public context (Bovaird 2005). Any notion of value should include social, environmental and political considerations. The policy-making and management processes are political, influenced by many rationalities and full of nuances and complexities (Osborne 2006). Hence governance is inherently pluralistic, with the implication of various social stakeholders.

Moreover, innovation also brings about challenges in the public sector. In private companies, innovations such as process improvements are driven by competitive advantage and usually viewed as ‘’a virtue in itself’’ (Hartley 2005). In public services, its goal is to increase public value. Additionally, it must be constantly validated and justified, because it is not linked to the organization’s survival (Hartley 2005). Hence, the intrinsic motivations for innovation may lack in public organizations.

Public services also face other particular considerations. First, the service provider is not mandated by the user but rather by policy makers. Users usually don’t pay directly for the service. Properly aligning service delivery with service design becomes difficult, creating imbalances between funding and fulfilling demand requirements. If the policy-making agency decides to put forth programs covering specific public services for the population, but a change in market conditions provokes new or changing needs amongst service users, the organization will find it difficult to allocate the proper financial resources needed to provide that service, since those can be tied to the program implemented by the governmental agency. Since public services in fact create monopolies for certain service offerings, it is difficult for users to move towards other providers who

could potentially fill that gap in the market. Second, labor relations are usually more complex in public services, due to high unionization resulting in greater worker protection (Scorsone 2008). Managers are constrained by laws, regulations and policies offering much less flexibility than the private sector does (Ferlie *et al.* 2003).

The inherent political nature of public management, along with its prudent nature regarding innovation can make change complicated. NPM has attempted to favor performance by capitalizing on private-sector managerial methods, but has had shortcomings because of a wider meaning of value and the traditional rigidity of public administration.

Healthcare Services

Healthcare organizations are deemed to offer distinctive characteristics (Dobrzykowski *et al.* 2014). Through our review of the literature, we have identified two themes covered in different ways, by various authors. In general, healthcare organizations are said to have notoriously high organizational complexity and environmental uncertainty. We cover both of these themes in this section.

Organizational Complexity

First, healthcare organizations are complex entities with fuzzy boundaries (Champagne *et al.* 2002). They must fill the roles of various types of organizations at the same time (Mintzberg 2002), whose missions evolve in the worlds of *cure, care, control* and *community* (Glouberman and Mintzberg 2001). Healthcare organizations are complex adaptive systems whose ‘’*complexity is reflected in the number, variety and fragmentation of producers involved in the delivery of healthcare: potential patients, patients, professionals, provider organization, buyer organizations, insurers or payers, and suppliers”* (Begun *et al.* 2003). This complexity is highlighted by the pluralistic nature of governance, defined by Denis *et al.* (2012) as ‘’*the combined influence of multiple leaders in specific organizational situations*”. Leadership is therefore distributed (Currie and Lockett 2011), with many stakeholders such as managers, professionals, clinical staff, administrators and unions having potentially different logics (Pomey *et al.* 2008). This perspective acknowledges the social, political and power relationships between stakeholders (Gosling *et al.* 2009). But at the same time, there is a leadership paradox. While it is distributed, a professional logic of hierarchy, often paternalistic and authoritarian, is also dominant (Bate 2000). A powerful core (doctors) has large autonomy in choosing how and when services are delivered, by what means, and how activities are self-regulated through collegiality (Sheaff *et al.* 2004). The scope of leadership intervention outside that group is often limited (Freidson 1994). That professional hierarchy causes care delivery to be professionally defined and does not favour distributed leadership. Power is usually concentrated with specialist doctors, making it hard for other actors such as nurses (Currie *et al.* 2010) and managers (Ferlie and Pettigrew 1996) to assert leadership and influence governance.

To overcome this issue, and favor quality and safety, clinical governance was introduced (Health 1997), aiming to bridge the gap between the clinical and managerial approaches (Buetow and Roland 1999). Its goal is to achieve quality by integrating care services across the organization (Pomey *et al.* 2008), through better coordination, cooperation and communication between

stakeholders (Vanu Som 2004). An emphasis is therefore put on improving processes and not simply adding resources (Garside 1998). The concept of clinical governance is based on the interdependence of clinical practices and organizational context. It aims to diminish the negative effects of the leadership paradox by insuring good clinical leadership in global governance (strategic) and proximity governance (operational) (Pomey *et al.* 2008).

Operationally, issues also arise in healthcare. First is the unique role played by the patient. Not only is he the client, he is also the material input and output of the value chain (Schneller and Smeltzer 2006). This creates a dynamic reality where variation increases throughout the value chain, as a patient's disease or ailment evolves through time. The dual role of the patient as supplier and customer makes understanding his needs critical and challenging. Work organization is also tremendously complex, due to large variations in demand and high customization, resulting in very complex and personalized interactions between clinicians themselves as well as with patients (Shah *et al.* 2008). The workforce in healthcare organizations is extremely specialized, and the number of specialties is continually increasing at a rate impossible to find in other industries (Nembhard *et al.* 2009). This varied expertise along with complex interactions generates role ambiguity amongst professionals. Physicians also have an impact at the operational level, by acting both as suppliers, by admitting patients, and providers (Schneller and Smeltzer 2006). They are also customers because they can practice in multiple hospitals and refer patients to other organizations (Dobrzykowski and Tarafdar 2015). In the end, decisions, as with those of other professionals, influence the length of stay of the patient, having a direct effect on the consumption of resources (Gnanlet and Gilland 2009).

Environmental Uncertainty

Healthcare providers must also face high environmental uncertainty, generated by high dynamism and munificence (Dess and Beard 1984). Referring to the high rate and volume of change in the environment, dynamism is induced, in part, by an increased pace of technological change (Zhang *et al.* 2012), greater variety offering (Mitchell *et al.* 2011), and volatile demand (Wiengarten *et al.* 2012). Actors such as the pharmaceutical and medical industries innovate at a tremendous speed, exacerbating dynamism. High munificence, or the level of critical resources needed to continue operations such as doctors, nurses and specialized equipment, also puts healthcare organizations under stress (Castrogiovanni 1991).

Environmental uncertainty is also increased by the large number of external stakeholders such as knowledge monopolies and regulatory or legal bodies who exert control over service providers. These can enter into conflict with management and also influence the methods and processes used by care providers (Harvey 1990). Research conducted by healthcare organizations is closely tied with private organizations, increasing uncertainty and outside pressures directed towards it. Lobbying too, cannot be neglected. Consequently, decisions made by healthcare providers can be political, increasing uncertainty.

In the end, environmental uncertainty is important because it greatly impacts decision-making. It limits information about, and the predictability of external events, which then has an effect on operational activities (Cannella *et al.* 2008).

Discussion

The objectives of this paper are to answer two questions resulting from our three-year study of Lean implementation in three organizations across Quebec's healthcare system. Our findings (Jobin and Lagacé 2014, Jobin and Lagacé 2015, Fournier et al. 2016), echoed by similar research in the UK (Burgess and Radnor 2013), revealed that managers and practitioners had great difficulty in adapting Lean to the unique context of PHOs. Our research also revealed the existence of many diverging views of this specific context. This lead us to our first question: what exactly is that context? Then, we asked ourselves why is this context important regarding the implementation of Lean? In this section, we attempt to provide answers to those questions.

The Context of PHOs

The unique context of PHOs sits at the juncture of three distinct, albeit not exclusive, organizational settings. They are a combination of professional, public and healthcare services. Each of these possesses its own set of characteristics that create specific issues and challenges. Services have one main characteristic in common: the co-production phenomena. That is, client and provider work together to create value (Dobrzykowski *et al.* 2016). In professional services, customer involvement is high, creating an unstable demand. In public services, the creation of value is not limited to the client-provider dynamic. Value has a wider meaning than that of ''value to the users'' anchored in the NPM paradigm, because it has social implications. In healthcare, not only is value coproduced, the client, or patient, is also the material input of the value chain. This creates even higher process variation, without even, yet, accounting for variation caused by workers themselves.

Then, the context of PHOs is enlarged by governance considerations. First, it is inherently political because of its public dimension. Priorities are dictated by the government's political agenda. Laws, regulations and complex labour relations create constraints for managers. Since professional services are based on knowledge work, external influences such as knowledge monopolies exacerbate this political aspect. Governance in PHOs is also highly pluralistic, because of the large number of actors and stakeholders present in healthcare services. But while leadership is said to be distributed, a powerful core of actors (doctors) has tremendous influence over other stakeholders. We call this the *leadership paradox*. To overcome this, PHOs have adopted clinical governance, to bridge the gap between the clinical and managerial approaches. Governance of PHOs is also impacted by constant and dynamic change, with high munificence caused by a highly diverse and specialized workforce. All of those aspects make innovation particularly difficult for PHOs, since it becomes restrained by the constant need for justification and validation in the eyes of all stakeholders.

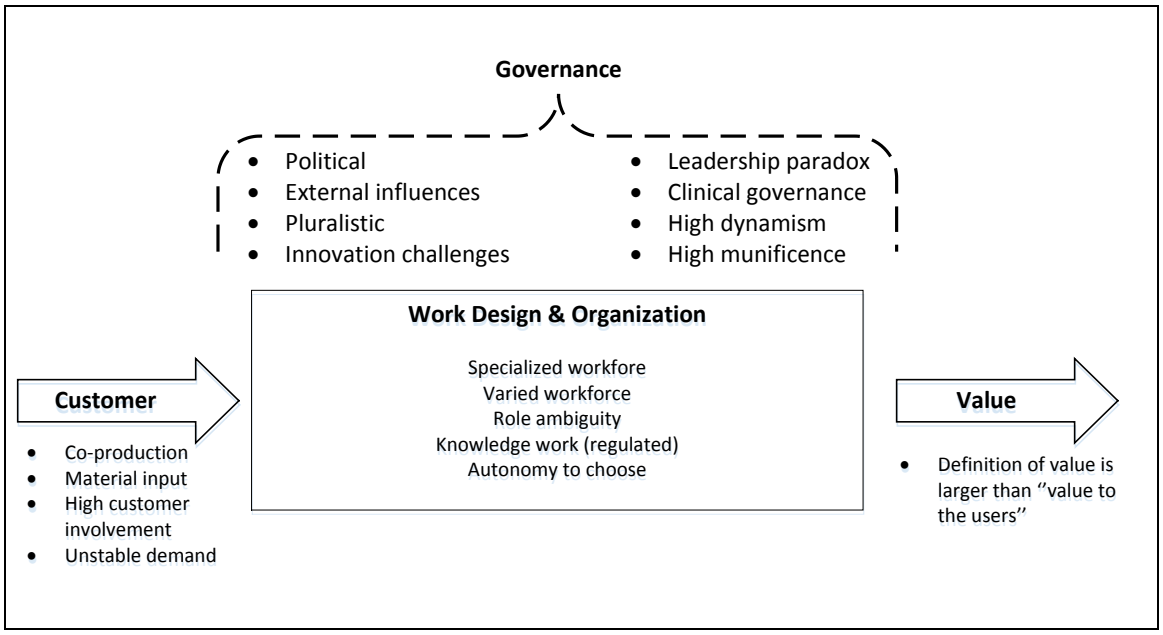

Figure 1. Process view of the PHO context

Following, the three dimensions of PHOs generate a unique combination of features impacting work design and organization. Because of the co-production phenomena, process variation is naturally higher. But, process variation is also induced by the workers themselves. Since the workforce is greatly varied and specialized, role ambiguity is created. Yet, the professional nature of the work accomplished by workers is notably regulated by laws and rules. Variation is also enhanced by knowledge work, which produces task uncertainty. Through their complex interactions, workers' decisions have a direct impact on the consumption of resources. Variation is also aggravated by healthcare professionals' large ''autonomy to choose''.

By adopting a process view, we have represented the unique context of PHOs in figure 1. This representation illustrates where the unique characteristics from the combined perspectives of professional, public and healthcare services take hold. These characteristics generate a context that has important implications for Lean implementation.

Issues for Lean adoption

In Quebec (Fournier *et al.* 2016), Saskatchewan (Moraros *et al.* 2016) and the UK (Burgess and Radnor 2013), Lean transformations in PHOs have had inconclusive success. The findings from our study of implementation in Quebec, similar to those of Burgess and Radnor (2013) in the UK, suggested that PHOs had great difficulties in sustaining Lean improvements in order to generate cultural change. Ovretveit (2011) stresses the importance of understanding the context of improvement because it will undoubtedly affect its success. In PHOs, this context creates many challenges for Lean implementation.

Governance

First, the political and pluralistic governance dynamic of PHOs influences their ability to develop a coherent vision of Lean. They must respond to the government's political priorities, which are not necessarily those of all stakeholders within the organization. With a power core of actors (doctors) having considerable power, developing this vision becomes even harder. This is even more important in cases such as Canada's, where doctors are independent workers. Poor vision leads to poor leadership, which we know to be one of the main drivers of unstained Lean implementation (Hines *et al.* 2008). This has a trickle down effect, leading to a lack of conviction and commitment from leaders. This being the most basic principle of Lean implementation (Soriano-Meier and Forrester 2002), it is a major issue.

In turn, leadership issues arise at all levels of the organization, resulting in a lack of support and communication. Managers will adopt a ''command and control'' type of leadership (Boyer and Sovilla 2003), because they will be under strong scrutiny for efficiency (Schuring 1996, Waring and Bishop 2010). This *Tyranny of Efficiency*, encouraged by results-based frameworks, prevents managers from providing workers with a ''license to experiment'', essential for empowering employees and in turn create a Lean culture (Jones *et al.* 2006, Robinson and Schroeder 2009). Managers are afraid to lose power and control (Landry 2011), and workers are scared of layoffs (Buesa 2009), creating resistance at many levels

When viewed as a management system, Lean is a radical innovation (Smeds 1994). This is especially true for PHOs, knowing that innovation in the public sector is notoriously slow and difficult. Change is very dichotomous in PHOs, because the public nature of these organizations restrains innovation, yet in healthcare, change at the technological and medical levels is incredibly fast (Zhang *et al.* 2012). This impacts the vision policy-makers and managers must develop when choosing to implement Lean. They must understand that radical managerial innovations must be lead in conjuncture with technological ones.

In addition, PHOs are still mostly structured functionally, organized in departments, units or services. This hinders deep Lean implementation, because for it to have a meaningful effect on performance, it must target value streams that cross the departmental boundaries (Jones et al. 1997).

Customer and Value

Too long anchored in the NPM paradigm of ''value to the users'', managers and practitioners must develop approaches to align Lean implementation with the larger definition of value, indigenous to PHOs (Moore 1995). Co-creation of value is no longer happening strictly between the provider and client themselves. The role of the client has to be reconsidered to include the user's wider social network (Bovaird 2005). As Bovaird (2005) states, this entails managers and professionals to develop a ''*mutual and interdependent relationship*'' with the user, meaning their beliefs and behaviours have to change. This is not innate for public organizations, who have long lived under the state's rigidity of imposing unique and uniform processes.

Work design & organization

Moreover, the characteristics mentioned in figure 1 contribute to explain why designing and organizing work in PHOs is so challenging. This, therefore, has direct implications when attempting Lean transformations. Because of the highly uncertain nature of work, many well-known tools and techniques of Lean are difficult to apply. The more visual elements of Lean and the elimination of so-called ‘’wastes’’, have limited potential in many situations (Radnor and Osborne 2012). Work is also difficult to standardize (Liker and Morgan 2006). To reach worthwhile improvement levels, Lean must be implemented to allow the redesigning of work. Tools and approaches should be developed and tested to favour better clinical governance, not to get around it.

Role ambiguity is a recurring issue for work organizations in healthcare. Yet, we know that Lean relies heavily on a proper delegation of responsibilities by managers (Lowe 1993), on teamwork (Thompson and Wallace 1996) and clearly identified roles (Delbridge *et al.* 2000). Lean emphasizes the importance of worker autonomy versus their autonomy to choose (De Treville *et al.* 2005). However, laws and regulations extend a large autonomy to choose to healthcare professionals, especially doctors. If this issue is not addressed either at the political level or the managerial level, Lean implementation is bound to be, at least, partially inhibited.

In the end, the reality of work in PHOs is often very demanding and stressful. Since Lean relies heavily of worker commitment (Cusumano 1994, Harrison and Storey 1996), attitude (Groebner and Mike Merz 1994) and motivation (De Treville *et al.* 2005), the workers themselves cannot be disassociated from the implementation if true cultural change is to be achieved. There is evidence of Lean positively influencing those aspects, by increasing individual and collective autonomy (Vidal 2007) as well as the quality of working life (Kuipers *et al.* 2004). However, poor managerial decisions during Lean implementation have also been shown to create more intense and stressful work (Klein 1989), monotonous and repetitive tasks (Schouteten and Benders 2004), decreased job stability (Suzuki 2004), and decreased autonomy (Parker 2003). Knowing this, managers and practitioners must be made aware that Lean calls for a change in hiring and training practices (LaScola et al. 2002), necessitating constant cooperation and collaboration between unions and management (Kochan et al. 1997).

Ultimately, the unique context of PHOs calls for policy-makers, managers and practitioners to be contingent in their Lean implementation approach. They must consider the distinct natures of the customer and how it creates value for society. They must also acknowledge the unique natures of governance and work design and organization in PHOs.

Conclusion

After studying three years of Lean implementation in PHOs in Quebec, our findings were eerily similar to those of researchers in the UK (Burgess and Radnor 2013). Lean implementation had difficulty taking hold and PHOs were plateauing in their journey to cultural change. It was found that managers and practitioners had great difficulty adapting Lean to their context. This lead us to investigate what was so particular about the context of PHOs and why it was important with regards to Lean implementation.

Through an integrative literature review (Torraco 2005), we analyzed the unique characteristics of professional, public and healthcare services. Then, using a process view, we created an integrated perspective of the context of PHOs, by combining the characteristics stemming from these three different categories of services. Subsequently, we discussed why the unique context of PHOs must be considered during Lean implementation, with regards to governance, the customer, work organization and design, and value creation.

We believe that a better understanding of the context of PHOs will allow researchers, policy-makers, managers and practitioners to re-center their vision of Lean and better guide them for successful implementation. We also think this can be an interesting contribution to help PHOs leave the state of transition they are in, where they are unable to make the leap from using Lean tools and principles, and into true cultural change (Nordin *et al.* 2010).

Further work needs to be done to understand how the singularities of PHOs impact the way Lean is implemented and how it effects organizations. This paper has limitations, mostly due to its conceptual nature. Hence, it should be enhanced by empirical research into the mechanisms that regulate the interactions between the various characteristics of PHOs and the implementation of Lean. Particularly, the role doctors play on a daily basis in creating a culture of continuous improvement appears of interest to us, knowing the central role they have in PHOs.

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