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Stakeholder analysis for Lean Six Sigma project management

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Abstract

Purpose – This paper aims to illustrate the usefulness of stakeholder analysis for managing Lean Six Sigma (LSS) projects effectively.

Design/methodology/approach – This research is based on an LSS case study that was initiated in a New Zealand public sector organisation.

Findings – A ten-step stakeholder analysis framework was applied to a public sector organisation in New Zealand. This analysis identified the stakeholders and their stakes, analysed the efficiency of their stakeholder management processes and evaluated the effectiveness of transactions between the stakeholders and the LSS project management. It also captured the changing salience of stakeholders during an LSS project.

Practical implications – The stakeholder analysis framework illustrated in this paper provides a practical toolset for managers involved in LSS projects.

Originality/value – Although some LSS experts have conducted a preliminary stakeholder analysis, the LSS literature lacks concrete examples of a thorough stakeholder analysis. This study tries to address this research gap by illustrating a stakeholder analysis framework for a New Zealand-based LSS project.

Keywords Lean Six Sigma, Public sector, Stakeholder analysis

Paper type Research paper

1. Introduction

The concept, framework, philosophy and processes of the stakeholder approach have become an integral part of organisations and management (Freeman, 2010). During the past three decades, stakeholder theory has been growing steadily on the solid foundations laid by experts like Freeman (1984) and Clarkson (1995). Applications of stakeholder concept have also become wide-ranging and diverse like watershed management (Leach *et al.*, 2002), healthcare (Campbell *et al.*, 2004), logistics (Narayana *et al.*, 2014) and R&D management (Elias, 2015).

Stakeholders are also critical to the success of Lean Six Sigma (LSS) projects (Psychogios *et al.*, 2012). The LSS literature has acknowledged the importance of reaching an agreement with the stakeholders for the effective management of LSS projects (Laureani *et al.*, 2010). Researchers have also reported that successful LSS projects were found to increase stakeholder satisfaction (Panat *et al.*, 2014).

In real-world situations, managers responsible for LSS projects are confronted with the task of balancing the competing demands of a number of stakeholders who may hold very different worldviews. When these projects are in the public domain, the stakeholders of the project believe that they have a right to be involved in the decision process, because they can be affected by the ultimate policy choice (Gregory and



Keeney, 1994). This demanding situation faced by the managers of LSS projects could ease if they could use appropriate frameworks to identify and analyse the stakeholders affected by their projects. In this context, some researchers have reported about conducting a preliminary stakeholder analysis; however, the LSS literature has not yet provided a methodical tool for analysing stakeholders of LSS projects.

This article aims at addressing this gap by illustrating a framework for analysing stakeholders of LSS projects. Specifically, it aims at developing an appropriate stakeholder analysis framework for LSS projects using the tools available in the stakeholder management and other related literature. This article also illustrates the application of this ten-step stakeholder analysis framework using an LSS project in a public sector organisation in New Zealand.

2. Stakeholder analysis in Lean Six Sigma literature

2.1 Overview of stakeholder management

The development of the stakeholder concept in the management literature can be classified into different stages. The origin of the term “stakeholder” in management literature can be traced back to 1963, when the word appeared in an international memorandum at the Stanford Research Institute (cited in Freeman, 1984). Stakeholders were defined as those groups without whose support the organisation would cease to exist.

After its origin, the concept diversified into four different fields, namely, corporate planning (Taylor, 1971), systems theory (Ackoff, 1974), corporate social responsibility (Sethi, 1971) and organisation theory (Rhenman, 1968). The next landmark in the development of stakeholder literature was the book by Freeman (1984), *Strategic Management: A Stakeholder Approach*. After this book, the stakeholder literature developed around three different aspects, namely, descriptive/empirical aspect, instrumental aspect and normative aspect. Donaldson and Preston (1995) brought these three aspects together in their stakeholder theory of corporation.

Later, the stakeholder literature started spreading its wings to interesting areas like dynamics of stakeholders (Mitchell *et al.*, 1997) and stakeholder theories (Jones and Wicks, 1999). Several empirical studies (Elias, 2012) were also conducted to validate the theoretical claims relating to the stakeholder concepts. Today, the stakeholder literature is still evolving with theoretical developments (Missonier and Loufrani-Fedida, 2014) and empirical studies (Elias, 2015).

2.2 Stakeholder analysis and Lean Six Sigma

A review of LSS literature revealed that there are at least three streams of literature within it that use the concept of stakeholders. First, there is an acknowledgement that stakeholders are critical to the success of LSS projects. For example, Glasgow *et al.* (2010) found that about 62 per cent of initiatives related to Lean and Six Sigma failed due to lack of stakeholder acceptance. Psychogios *et al.* (2012) also found that stakeholder acceptance is critical to the success of LSS projects. In another study, Laureani *et al.* (2013) identified that a key success factor for the implementation of LSS is regular communication with stakeholders. In line with this, Nicoletti (2013) emphasised the need for key stakeholders to be consulted often to prevent them from becoming disillusioned with LSS projects. The importance of stakeholders is also acknowledged by Snee (2010),

who mentions that LSS works because the very idea of LSS is to improve processes in a way to improve the outputs that are of critical interest to stakeholders.

Second, LSS experts have acknowledged the need for conducting a thorough stakeholder analysis. But they have not provided much detail on how this analysis was conducted. [Laureani et al. \(2010\)](#) emphasised the importance of conducting a proper stakeholder analysis at the outset of an LSS project. [Chakravorty \(2009\)](#) presented a Six Sigma implementation model with the first step of performing a stakeholder-driven strategic analysis. Researchers like [Andersson et al. \(2014\)](#) and [Kemper et al. \(2009\)](#) have mentioned about conducting a stakeholder analysis during the define stage of the define, measure, analyse, improve and control (DMAIC) methodology, while other researchers have just mentioned about stakeholder analysis in different LSS applications, like clinical pathway for hip fractures ([Niemeijer et al., 2013](#)) and the army acquisition process ([Smith et al., 2008](#)).

Third, a few researchers have reported about conducting a preliminary stakeholder analysis and have provided some details on how it was done. For example, [Barnes and Walker \(2010\)](#) conducted a preliminary stakeholder analysis while using LSS to improve corporate communications. In the define stage of DMAIC, they defined stakeholders and what the stakeholders care about most. This step included a basic identification of stakeholders and a determination of the needs and expectations of these stakeholders. These expectations were further used to assess the “Voice of the Customer” to determine desired outcomes that, in the view of stakeholders, are critical to quality. [Clary and Tuten \(2012\)](#) conducted an initial stakeholder analysis that involved identifying potential stakeholders and determining their current level of support for change and potential resistance to change. Based on this initial analysis, they classified each stakeholder into one of the four categories, namely, supportive stakeholder, marginal stakeholder, non-supportive stakeholder and mixed-blessing stakeholder.

To summarise this review, the literature on LSS acknowledges that stakeholders are critical to the success of LSS projects and there is a need for conducting a thorough stakeholder analysis. However, concrete examples of thorough stakeholder analysis are scant in the LSS literature. Therefore, this study aims to illustrate the usefulness of stakeholder analysis, using a methodological framework for managing LSS projects effectively.

3. The case of Inland Revenue Department, New Zealand

The Inland Revenue Department (IRD) of New Zealand is a public sector organisation responsible for the collection of most of the revenue that the New Zealand Government needs to fund its programmes. The IRD also administers a number of social support programmes. It employs over 5,500 staff in 17 cities and towns across New Zealand ([Inland Revenue Department, 2015](#)).

The IRD regularly reviews their input costs to improve internal processes and reduce costs. One way they achieve savings is through an ongoing LSS continuous improvement programme, which aims at improving efficiency in core processes. The IRD’s LSS focuses include work on customer contacts and income equalisation processes ([Inland Revenue Department, 2011](#)).

As an example, the IRD was involved in an LSS project to minimise the number of paper statements and notices. The number of statements the IRD sends to its customer had almost doubled since 1995 as a result of increased customer numbers, tax types and

transaction volumes. In the financial year 2007-2008, the IRD sent 15.2 million statements and notices to customers. The IRD realised that the customers found the volume and purpose of statements and notices confusing and overwhelming, and a number of statements and notices did not add value to the customer experience. The cost to send these 15.2 million statements and notices was calculated as \$5.6m per annum. They also found that the approximate cost of 192,000 calls from customers, prompted by receiving a statement of account or notice of assessment from the IRD, came to \$1.6m per annum. So, the problem was defined to identify and reduce the volume of statements and notices that does not add value to the customer by at least 2.6 million envelopes and deliver savings of \$1.325m in 12 months from implementation.

The IRD used an LSS approach to address this problem. Using the LSS approach, eight specific steps were implemented. First, they stopped issuing statements (i) where customers have self-assessed, (ii) with nil balance, (iii) resulting from credit transfers and (iv) statements with less than \$5 credit. They also stopped issuing notices (v) for “Goods and Services Tax (GST)” customers who had nil balance, (vi) for manual refunds, (vii) to agents who filed electronically and (viii) changed the statement style to “bank style” statements. This successful project delivered a cost savings of \$1.4m per annum for the IRD.

While the project was successful from a financial perspective, it presented several challenges to the IRD and affected many of its stakeholders. For example, the training of employees on LSS resulted in people being out of their substantive roles for almost six months. During this training, some employees found statistical tools and concepts related to Six Sigma quite challenging and complex. Obtaining the necessary data was also challenging, which led to the need for a large amount of manual data collection, all of which took time from everyone involved. When employees returned to their substantive roles after completing their LSS projects, they were left with no real opportunity to leverage on their learning. Accountability was also a challenge, as a continuous improvement team was seen to be solely accountable for LSS. Such challenges faced by the managers in public sector organisations like the IRD could ease if they could use appropriate stakeholder analysis frameworks to identify the stakeholders and analyse their stakes while implementing an LSS project.

4. Stakeholder analysis

The stakeholder analysis framework proposed in this article is based on the existing literature discussed in the previous sections. Specifically, this work is an attempt to adapt the tools available in stakeholder management literature for LSS project management. In this section, the framework is illustrated using the case of the IRD of New Zealand.

The stakeholder analysis framework for this LSS project consists of ten steps. It is presented in [Table I](#).

4.1 Conduct a rational-level stakeholder analysis

4.1.1 *Develop a stakeholder map for the LSS project.* For an LSS project, the rational level of stakeholder analysis can start with the development of a stakeholder map. A stakeholder map of the IRD’s LSS project is shown in [Figure 1](#).

4.1.2 *Prepare a chart of specific stakeholders for the LSS project.* The second step in rational-level analysis consists of preparing a specific stakeholder chart. This chart identifies the specific stakeholders for the stakeholder groups identified in the stakeholder map. For the LSS project at the IRD, the specific stakeholder is shown in [Table II](#).

4.1.3 *Identify the stakes of stakeholders of the LSS project.* As the third step in rational-level stakeholder analysis, the stakes of the specific stakeholder groups of the LSS project are identified and analysed. Table III shows the stakes of some selected stakeholders of the LSS project at the IRD.

4.1.4 *Prepare a power versus stake grid for the LSS project.* In the fourth step of rational-level analysis, a two-dimensional grid is prepared. The first dimension categorises the stakeholders by stake, while the second dimension by power. Freeman (2010) categorises stakes as equity stake, economic stake and influencer stake, and power into formal or voting power, economic power and political power. For the LSS project at the IRD, this power versus stake grid for some selected stakeholders is presented in Table IV. For example, the IRD continuous improvement team was evaluated to have equity stake and formal power.

4.2 *Conduct a process-level stakeholder analysis for the LSS project*

During a process-level stakeholder analysis, it is necessary to understand the processes used by the LSS project management to implicitly or explicitly manage its relationships with its stakeholders. The process-level analysis can also involve an analysis of the

Phase	Steps
Rational level	1. Develop a stakeholder map for the LSS project 2. Prepare a chart of specific stakeholders for the LSS project 3. Identify the stakes of stakeholders of the LSS project 4. Prepare a power vs stake grid for the LSS project
Project charter	5. Develop a project charter for the LSS project
Process level	6. Conduct a process-level stakeholder analysis for the LSS project
Transactional level	7. Conduct a transactional-level stakeholder analysis for the LSS project
Management capability	8. Determine the stakeholder management capability for the LSS project
Stakeholder acceptance	9. Analyse the acceptance of stakeholders to the LSS project
Dynamic level	10. Analyse the salience of stakeholders

Table I.
Stakeholder analysis framework

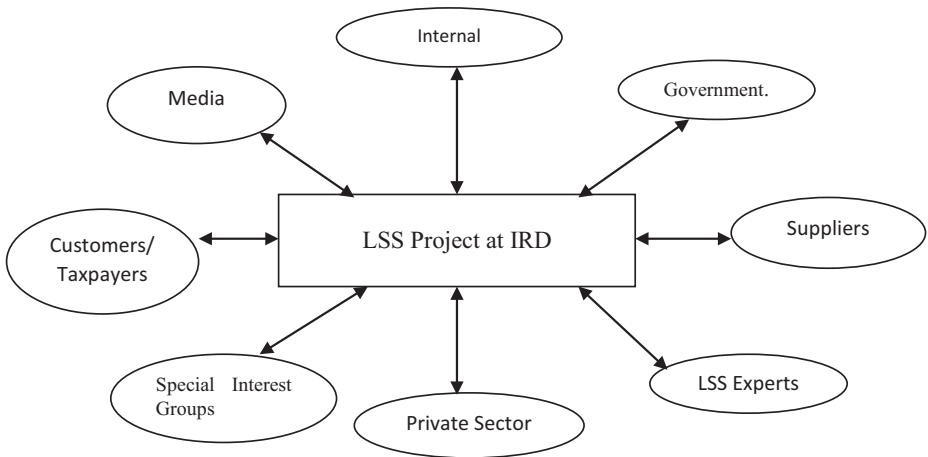


Figure 1.
A stakeholder map of the LSS project at the IRD

Specific stakeholders

<p><i>Internal</i></p> <p>Top management of IRD IRD continuous improvement team IRD project teams Middle managers of IRD IT systems department</p> <p><i>Customers</i></p> <p>Taxpaying individuals and families Taxpaying business and employers Taxpaying not-for-profit organisations Tax agents</p> <p><i>Media</i></p> <p>TVNZ TV 3 Dominion Post The New Zealand Herald Stuff.co.nz</p> <p><i>Special Interest Groups</i></p> <p>Department of Conservation Ministry for the Environment Lean Six Sigma conference organisers</p>	<p><i>Suppliers</i></p> <p>NZ Post Courier companies Paper suppliers Xerox printers</p> <p><i>LSS Experts</i></p> <p>New Zealand universities Master black belts and other belts Consulting firms</p> <p><i>Government</i></p> <p>NZ Parliament Ministry of Social Development Ministry of Business, Innovation and Employment Department of Corrections New Zealand Defence Force Regional and city councils</p> <p><i>Private Sector</i></p> <p>Banks such as BNZ and ANZ Consulting firms including PWC and Deloitte Private healthcare organisations</p>
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Table II.
Specific stakeholders of the LSS project at IRD

Stakes

<p><i>Top management of IRD</i></p> <p>Implementation of organisational strategy through continuous improvement initiatives</p> <p><i>NZ Post</i></p> <p>Reduction in work load and revenue due to less mail from IRD</p> <p><i>Ministry for Social Development</i></p> <p>Opportunity to learn and gain cost savings from implementing similar initiatives</p>	<p><i>Taxpaying individuals and families</i></p> <p>Expectation of streamlined, efficient services from IRD</p> <p><i>NZ universities</i></p> <p>Research and teaching of Lean Six Sigma topics</p> <p><i>The Dominion Post</i></p> <p>Communicate success stories and criticise failures</p>
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Table III.
Stakes of selected stakeholders of the LSS project at IRD

Power Stake	Formal or Voting	Economic	Political
Equity	IRD continuous improvement team		
Economic	Master black belts	Taxpaying individuals and families	
Influencers	NZ Parliament	NZ Post	Dominion Post newspaper

Table IV.
Power vs stake grid for selected stakeholders of the LSS project at IRD

efficiency of these processes and how these processes fit with the rational stakeholder map of the project.

An analysis of the LSS project at the IRD found that there are established processes used by the IRD to deal and consult with its stakeholders. As a public sector entity, the IRD uses appropriate public consultation mechanisms to communicate with its stakeholders. For example, regular meetings are held with the minister and feedback from the public is sought electronically through a comment and feedback form. Generally speaking, it was found that most of these processes were efficient. It was also found that the IRD had communication mechanisms with almost all of the stakeholders listed in the stakeholder map.

4.3 Develop a project charter for the LSS project

After completing a rational-level stakeholder analysis, it is possible to incorporate the stakeholder needs into a project charter. Table V presents a project charter for the LSS project at the IRD.

4.4 Conduct a transactional-level stakeholder analysis for the LSS project

Transactional-level stakeholder analysis involves understanding the set of transactions or bargains between the LSS project management and its stakeholders and deducing

Project charter

Project title Reducing Paper Statements and Notices

Problem statement

The number of statements Inland Revenue sends to its customer has almost doubled since 1995, as a result of increased customer numbers, tax types and transaction volumes. During the last financial year, Inland Revenue sent 15.2 million statements and notices to customers. Customers find the volume and purpose of statements and notices consuming and overwhelming; a number of statements and notices do not add value to the customer experience.

Business impact

It costs approximately NZ\$5.6m per annum to print and send 15.2 million statements and notices. Cost of 192,000 calls from customers prompted by receiving a Statement of Account or Notice of Assessment from Inland Revenue is \$1.6m per annum.

Goal statement

Identify and reduce the volume of statements and notices that do not add value to the customer by at least 2.6 million envelopes and deliver savings of \$1.325m in 12 months from implementation.

Project start date: 1 April 2010

Key stakeholders

Taxpaying individuals and families
Top management of IRD

IRD continuous improvement team
NZ Parliament

Other departments like Corrections

Stakeholder needs

Expectation of efficient and effective services from IRD
Implementation of strategic priorities through continuous improvement initiatives

Completing a successful Lean Six Sigma project
To make laws and hold the Government to account for its policies, actions and spending
Benchmarking opportunities to learn and gain cost savings from implementing similar initiatives

Table V.
Project charter for the LSS project at IRD

whether these negotiations fit with the stakeholder map and the organisational processes for stakeholders. Successful transactions with stakeholders are built on understanding the legitimacy of the stakeholder and having processes to routinely surface their concerns. Overall, it assesses the effectiveness of the project.

For the LSS project at the IRD, it was found that the IRD had to make trade-offs and prioritisations when managing their stakeholders. This research found that the IRD was struggling to manage conflicting stakes of multiple stakeholders. There was some consideration of ensuring that the “project sponsor” approves of the changes before the project progresses through the phases, and the IRD realises that if the project is not aligned with key stakeholders, then the IRD must change the direction of the project to align with the stakeholders’ interests. However, this can be difficult, because there are a variety of different stakes to consider. For example, when making the decision to reduce the paper statements, some trade-offs had to be made. While many stakeholders benefitted, such as through cost savings for top management at the IRD and streamlined service for customers, the New Zealand (NZ) Post lost a significant amount of workload and revenue. When making this choice, the project team considered which stakeholders were key to the success of this project, and which conflicting interests had to be forfeited. They managed to evaluate which stakes would be sacrificed while still successfully completing the project. This research found that some aspects of this negotiation were handled effectively, specifically that of internal interactions, while the handling of external stakeholders was found to be less effective, e.g. media stakeholders and the NZ Post. Overall, the transactions between the IRD’s continuous improvement team and their stakeholders, on balance, were found to be low in terms of effectiveness.

4.5 Determine the stakeholder management capability for the LSS project

Stakeholder management capability can be based on the rational-, process- and transactional-level analysis of an LSS project. It can be defined as its understanding or conceptual map of its stakeholders, the processes for dealing with these stakeholders and the transactions which it uses to carry out the achievement of project purpose with its stakeholders (Freeman, 2010). To determine the stakeholder management capability, we have to first judge whether the project management understands its stakeholder map. Then, we have to rate the R&D project for the efficiency of its organisational process and effectiveness of its transactions for dealing with its stakeholders.

For the LSS project at the IRD, it was found that the LSS continuous improvement team understands their stakeholder map. It was also found that the processes used by the IRD to deal with its stakeholders were efficient. But according to the analysis conducted in this research, the transactional effectiveness between the continuous improvement team and stakeholders was relatively low. Based on this analysis, the stakeholder management capability of this LSS project is illustrated in Figure 2.

4.6 Analyse the acceptance of stakeholders to the LSS project

The next phase in this stakeholder analysis framework involves the analysis of acceptance by the different stakeholders affected by the LSS project. One way of analysing stakeholder acceptance is by developing an acceptance table for stakeholder acceptability of individual stakeholders towards the LSS project. Such an acceptance table can be developed by listing the key stakeholders in the first column and by

assessing whether they are supportive, neutral or opposed. A stakeholder acceptance table for the LSS project at the IRD is shown in Table VI.

4.7 Analyse the dynamics of stakeholders for the LSS project

The salience of stakeholders in an LSS project can change with respect to time. The last phase in this stakeholder analysis framework involves an analysis of this stakeholder dynamics. The stakeholder typology model developed by Mitchell *et al.* (1997) was used for this purpose. According to this model, the salience of stakeholders can change when their power, legitimacy and urgency change. It is recommended that LSS project managers continuously update this typology model to capture this dynamics of stakeholders. Table VII presents the stakeholder dynamics for the LSS project at the IRD.

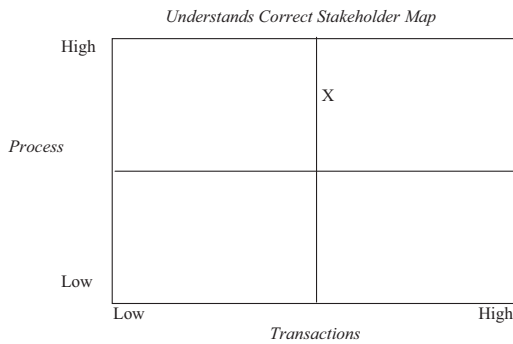


Figure 2. Stakeholder management capability index for the LSS project at the IRD

Stakeholder	Supportive	Neutral	Opposed	Action points
IRD continuous improvement team	++			
Taxpaying individuals and families	+			
Master black belts	+			
Top management of IRD	++			
Ministry for the Environment	+			
Consulting firms like PWC and Deloitte	+			
NZ Parliament		O		
<i>Dominion Post</i> newspaper		O		
NZ universities		O		
NZ Post			--	Improve stakeholder engagement processes
Middle managers of IRD			-	Improve consultation processes
IT Systems Department for IRD			-	Improve internal systems
Xerox printers			-	Conduct stakeholder meetings

Table VI. Stakeholder acceptance table for the LSS project at IRD

Stakeholder salience			
<i>Dormant (Power only)</i>	<i>Discretionary (Legitimacy only)</i>	<i>Demanding (Urgency only)</i>	<i>Dominant (Power and legitimacy)</i>
	NZ universities Taxpaying individuals and families Consulting firms like PWC and Deloitte		NZ Parliament
<i>Dangerous (Power and urgency)</i>	<i>Dependent (Legitimacy and urgency)</i>	<i>Definitive (Power, legitimacy and urgency)</i>	<i>Non-stakeholder (No power, legitimacy or urgency)</i>
	Master black belts NZ Post <i>Dominion Post</i> newspaper	Top management of IRD IRD continuous improvement team	

Table VII. Stakeholder salience for selected stakeholders of the LSS project at the IRD

5. Benefits for LSS project managers

The LSS project managers at the IRD were consulted to understand the benefits of stakeholder analysis, as outlined in the previous sections. In general, they found this framework to be useful while engaging in LSS projects. In particular, they highlighted the following benefits:

- It provides a new tool for managing LSS projects and differs from techniques frequently used in LSS or other continuous improvement projects.
- It aids in initiating a cultural change in an organisation like the IRD by providing an inclusive approach to LSS project management that can later help in developing the capabilities of individual business units.
- Such approaches help in making LSS projects more customer-centric.
- As a toolset, this framework provides a systematic approach for identifying and classifying a large number of stakeholders who can affect the IRD in the short term and/or long term.

6. Conclusions

Stakeholders are critical to the success of LSS projects (Glasgow *et al.*, 2010). While stakeholder attributes like top management commitment and customer satisfaction can facilitate LSS projects, lack of stakeholder attributes like lack of top management commitment and lack of LSS awareness among stakeholders can become inhibitors to the success of LSS projects (Psychogios *et al.*, 2012; Albliwi *et al.*, 2014). To better understand such management situations during the implementation of LSS projects, a systematic stakeholder analysis can become very useful. This article provides a stakeholder analysis framework for LSS project management.

The ten-step stakeholder analysis illustrated in this article can be used as a practical toolset by managers involved in LSS projects. It helps in systematically identifying the stakeholders, critically analysing the efficiency of their processes and in evaluating the effectiveness of their transactions with stakeholders. In addition, this framework helps in

understanding the acceptance of different stakeholders towards the LSS projects and in analysing the changing salience of stakeholders during the LSS project.

In conclusion, a systematic stakeholder analysis as illustrated in this study can serve as a preliminary step in developing further research on stakeholders in LSS projects. This study could encourage empirical research that can strengthen the links between stakeholder literature and LSS project management literature, including further research on conflicting stakes of multiple stakeholders that could lead to the development of a shared mental model of stakeholders. Finally, further research in this area can help build theory relating to stakeholder management in LSS projects.

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