

# Lean Leadership Paradoxes: A Systematic Literature Review

Hend Amer<sup>1</sup> and Corrinne Shaw<sup>2</sup>

## Abstract

Paradox is used in organizational studies to describe the tensions between two seemingly opposite entities that are in fact complementing each other. Leadership has been shown to deal with such dualities on a daily basis. The transformation process required for implementing Lean principles in manufacturing organisations, involves leadership paradoxes in their pursuit for successful Lean transformation that adds value for their organizations. This article documents a systematic literature review with the objective of investigating the extant literature on the subject that falls under the umbrella of “Lean Leadership Paradoxes”. The review is limited to peer reviewed using search terms such as lean, leadership, lean leadership, leadership paradoxes, and lean leadership paradoxes. The research has found that limited research was conducted on Lean Leadership and leadership Paradoxes while research on Lean leadership paradoxes is almost non-existing in academic journals. The value of this study lies in 1) highlighting the gaps in this body of knowledge and 2) identifying areas for possible future academic and practitioner research.

**Keywords:** Duality, leadership, lean, literature review, paradox.

## Introduction

### Reviewing the Literature

Systematic literature reviews are significant tools for researchers who aspire to make meaningful contributions to the body of knowledge. According to Webster and Watson (2002) the review of previous, pertinent literature is a fundamental part of any academic development. They claimed that an effective review generates the groundwork for emerging knowledge, enables theory building and reveals areas where study is needed. Tranfield, Denyer and Smart (2003) had accused the traditional narrative literature reviews of lacking the means for making sense of what the collections of studies are saying and that they can be biased by the researcher and often lack rigour. They claimed that systematic literature reviews, on the other hand, are transparent and reproducible. Hence, in order to embark on a new research project, one has first to acknowledge the existing literature in a manner that is systematic and analytical enough to highlight what has been researched, how it was researched and what areas are still in need of exploration.

### Lean Leadership Paradoxes

Since the release of the book *The Machine that Changed The World* by Womack, Jones and Roos (1990), great interest has been shown in implementing Toyota Production Systems or “Lean Production” and in using it to replace the conventional Mass Production Systems (Stone, 2012). Although Toyota has been open about its method and has cooperated with all the researchers, the implementation of Lean concepts has been very

---

<sup>1</sup> PhD Candidate, Department of Mechanical Engineering, University of Cape Town, Private Bag X3 Rondebosch 7701 South Africa, Tel: +27 789505978, Fax: +27 216503240, E-mail: AMRHEN001@myuct.ac.za

<sup>2</sup> Senior Lecturer, Department of Mechanical Engineering, University of Cape Town, Private Bag X3 Rondebosch 7701 South Africa, Tel: +27, Fax: +27 216503240, corrinne.shaw@uct.ac.za

illusive (Spear & Bowen, 1999). After almost 25 years, very few companies managed to implement Lean. While some companies have managed to partially implement Lean concepts, the majority has faced difficulties and sometimes failed to achieve the full benefit of Lean as concluded by Jadhav, Mantha, and Rane (2014), Mclean and Antony (2014), and Sim and Rogers (2009)

According to Bhasin and Burcher (2006), the successful implementation of Lean can only materialise when Lean is not treated as a strategy but as a philosophy that involves major changes in the organization, not only on the shop floor but it extends to the whole organization. According to L. S. Lüscher, Lewis, and Scher (2008) these changes are often commissioned by higher management in order to achieve process improvements but in order to complete the implementation successfully, managers and leaders are faced with paradoxical decisions on a daily basis.

Those paradoxical decisions includes the promotion of stability in order to realize changes in the culture; insisting on efficiency in order to promote creativity; or holding onto the old in order to embrace the new. These paradoxical decisions have been identified and discussed by several researchers such as Farjoun (2010), Johnston (2005), Lavine (2014), Lewis (2000), Lüscher and Lewis (2008).

## **Background**

### **Lean Definition**

Stone (2012) described the term Lean Production as referring to the manufacturing techniques developed over the past 100 years by Toyota Motor Company. Although many researchers refrain from giving a definition for Lean, it is defined by Scherrer-Rathje, Boyle, and Deflorin (2009, p. 79) as “a management philosophy focused on identifying and eliminating waste throughout a product entire value stream, extending not only within the organization but also along the company’s supply chain network”. Differently, Lander and Liker (2007, p. 3681) define Lean as a “philosophy comprised of set of general principles of organizing and managing an enterprise which can help any organization get on a path of positive learning and improvement”.

### **Lean Leadership**

Flinchbaugh, Carlino, and Curtis-hendiey (2008), Katz (2012) and Pamfilie et al. (2012) agreed that Lean leadership refers to a manager or a leader that is fully aware of Lean tools, the vision of the organization and knows how to communicate those to his subordinates. Supportive of this concept, Mann (2009) strongly claimed that implementing the Lean tools comprises only 20% of the effort in Lean transformation. The remaining 80% of the effort is expended on changing the leaders’ practice and behaviour and ultimately their mind-set. Similarly, Dombrowski, Mielke, and Engel (2012) claimed that the implementation of Lean is more than the redesigning of some production systems, and that actually the most essential change has to be made in people’s knowledge. Dombrowski and Mielke (2013, p. 570) defines Lean leadership as a “methodical system for sustainable implementation and continuous improvement of Lean production system”.

### **Organizational Paradoxes**

In contrast to the learnings of Aristotle, Descartes and Newton, that seek a single solution, paradox is when two seemingly opposites but independent solutions exist and they are inseparable (Johnson, 1998 and Lewis, 2000). The concept of opposite forces coexisting together and reinforcing each other is very evident in the Yin Yang symbol of the Taoist

culture. Yin is femininity, intuition, and dark which when it escalates to its maximum, it still retains part of its opposite, Yang, which represents masculinity, rationality and light. According to Taoism, the tension between those opposites is what is keeping the balance of this world.

In '1990s, organization studies showed interest in paradox as a theory. Lewis (2000) divided paradoxes in organizations into 3 types: 1) learning paradox, which addresses the paradox of holding to the old knowledge vs. building the new; 2) belonging paradox, that addresses the conflict between self vs. others; and 3) organizing paradox which is related to creativity vs. efficiency. On a different note, the management of paradox was defined as "managerial practices that realize the simultaneous accomplishment of multiple strategic objectives that are seemingly or actually incompatible" (Yoon & Chae, 2012, p. 3501).

### **Lean Leadership Paradoxes**

Lean implementations are times of change, stress and high uncertainties. Lüscher and Lewis (2008) argued that managing change has become the ultimate managerial responsibility. They also claimed that even though firms continuously engage in some form of change, yet major change projects rarely claim significant success. Lean concepts are paradoxical in nature. In his article Womack and Jones (1994) discussed the conflict between specialization and cross functionality which according to Johnson (1998) and Lewis (2000) is a paradox that needs to be managed. In another article by Scherrer-Rathje et al. (2009), the authors showed a case of management hesitation to being transparent about the company long term objectives as opposed to revealing information which is a paradox of control versus autonomy. In their paper Spear and Bowen (1999) discussed how from within efficiency Lean practitioner find creativity and paradoxically achieve continuous improvement. Manderscheid and Freeman (2012) asserted that the need for polarity management is essential for successful transitions. Francis, Bessant, and Hobday (2003) also stressed the need for paradox management during organizational transformation and continuous improvement efforts.

While the literature available on Lean in general is expansive, the literature on leadership roles in successful Lean, and particularly polarity and paradox management practiced by the Lean leaders is quite limited.

### **Research Purpose/Question**

Seuring and Gold (2012) claimed that the relentlessly increasing research which delivers large numbers of similar yet divergent and conflicting findings makes critical literature reviews a fundamental tool for exhuming the knowledge that lie concealed underneath. Lean has been researched in manufacturing, healthcare, services and the public sector fields. It has also been researched in several countries of the world, consequently creating a diversified research base. Similarly, organizational studies and management research has studied paradox extensively. Despite this wealth of research output available about the two areas separately, we are faced with dearth in literature addressing both areas combined.

The aim of this systematic review is to collect, organize, analyse and categorize the literature available to the researchers about "Lean leadership" and "leadership paradoxes" in order to build a knowledge base for "Lean leadership paradoxes". As explained by Webster and Watson (2002), a valuable literature review is the one that can demonstrate how the review extends past research to draw implications for practice and future theorizing. As a result the following questions guided this literature review:

- What are the available literatures in "Lean leadership", "leadership paradoxes" and "Lean leadership paradoxes"?

- Where are the gaps in the knowledge and areas for future research?

## **Methodology**

The methodology used in this paper is a systematic literature review as derived by Tranfield, Denyer and Smart (2003). This methodology is later refined by Easterby-Smith, Thorpe and Jackson (2012) into two processes:

- Defining your research interest, retrieving and judging the relevance of the material to your study.
- Analysing and reporting the finding to identify the gaps in the literature.

## **Planning the Review**

This section records the preparation and administrative work needed to be completed before conducting the systematic literature review. This plan explores in details how the subject will be researched.

### **Define the Key Search Terms**

The first step in this review was to define the search terms to be used. We have started with researching Lean, Lean production, Toyota Production Systems and Toyota Way. The second term was leadership and management which combined together helped us in searching Lean leadership in literature. The third group of terms was paradox, polarity or duality and it was searched combined with leadership, management and Lean in order to investigate leadership paradoxes, polarity management and lean paradoxes. The search target of “Lean leadership paradoxes” was also used.

### **Develop the Review Protocols**

This search was conducted electronically using several highly recognized search databases available to the researchers. The databases searched were Academic Search Premier and Business Source Premier through EBSCO Host, Emerald, Engineering Village, ProQuest, Science Direct, Scopus and Web of Knowledge. This search scanned all available documents without limiting the time period but it was limited to journal articles published in peer reviewed academic periodicals.

## **Conducting the Review**

This section discusses how the data retrieved, the eliminations and the final list of research to be reviewed.

### **Research Retrieved**

The search was conducted on three steps to ensure that the literature reviewed is limited to lean leadership paradoxes in manufacturing. First step was simply running the search terms on the selected database and retrieve the results. The second step, was disregarding duplication and the third step was eliminating articles related to services, health care, construction and public services. After those three steps, the research retrieved in total 54 articles.

### **Research Eliminations**

The articles collected was then revisited based on the title and abstract to ensure the relevance of the literature to the topic researched. The key determinant for inclusion was the research that brought insight into the role of leadership in successful Lean transformation, and polarity management. This revision resulted in narrowing the study list

to 46. Those 46 articles were then read thoroughly to compare and analyse the main ideas in every research and then categorize them based on common ideas.

## Findings

From the 46 articles retrieved, 21 discussed the successful Lean leadership, another 16 discussed the leadership and management paradoxes in general, and only 9 discussed the paradoxes encountered by management or leadership during Lean transformation. Due to the scarcity of literature available on Lean leadership paradoxes, the researchers decided to review literature on Lean leadership, leadership paradoxes, and Lean paradoxes separately as a mean of creating a full review that covers the existing research in order to understand what has been written under the umbrella of Lean leadership paradoxes.

### Lean Leadership in Literature

The first results of lean leadership search resulted in 21 peer reviewed articles. Those 21 articles are categorized and summarized in table 1.

Table 1. Lean leadership literature highlights

Categories	Major References Reviewed
Lean implementation success factors	Achanga et al. (2006), Habidin and Yusof (2013), Hilton and Sohal (2012), Laureani and Antony (2012), Martínez-Jurado and Moyano-Fuentes (2014), Psychogios and Tsironis (2012), and Timans, Antony, Ahaus, and van Solingen (2011)
Barriers to Lean implementations	Jadhav, Mantha, and Rane (2014), Mclean and Antony (2014), and Sim and Rogers (2009)
Importance and role of leadership in Lean	Emiliani (2008), Francis, Bessant, and Hobday (2003), Katz (2012), Mann (2009), Pamfilie, (Draghici), and Draghici (2012), Poksinska, Swartling, and Drotz (2013), and Scherrer-Rathje et al. (2009)
Definition of Lean leadership	Dombrowski et al. (2012), Dombrowski and Mielke (2013), Dombrowski and Mielke (2014), M. L. Emiliani and Stec (2004), Flinchbaugh, Carlino, and Curtis-hendiey (2008),

The first category refers to the critical success factors for Lean implementations. Achanga et al. (2006), Habidin and Yusof (2013) and Hilton and Sohal (2012) claimed that Lean success factors are leadership, communication, organizational culture, organizational support, strategy, training, competency of Lean experts, project management, performance evaluations, information systems, and finance. Correspondingly, Laureani and Antony (2012) argued that the most important factors are: management commitment, cultural change, linking Lean to business strategy and leadership styles. An article by Martínez-Jurado and Moyano-Fuentes (2014) states that Lean success is due to deep-rooted culture of total quality, the Lean leader role and institutional support. Psychogios and Tsironis (2012) stated that leadership and strategic orientation, quality-driven organizational culture, continuous training, teamwork, customer satisfaction, and technical systems are the main success factors for Lean transformation. Similarly Timans et al. (2011) confirmed that the highest ranking critical success factors are linking to customer, vision, communication, management involvement and participation and it revealed three new critical success

factors: personal Lean Six Sigma experience of top management, development of the project leader's soft skills and supply chain focus.

The second category is the literature investigating the barriers to Lean implementation. The first paper by Jadhav et al. (2014) is a literature review which claim that appropriate application of Lean tools and techniques will not ensure successful Lean transformation without top management involvement and leadership, worker's attitude, resources and the appropriate organizational culture. The second paper is also a literature review by Mclean and Antony (2014) which claims that 8 core themes contributed to the failure of continuous improvement initiatives: motives & expectations, organisational culture & environment, the management leadership, implementation approach, training, project management, employees involvement levels, and feedback and results. Lastly Sim and Rogers (2009) in a case study added new barriers to lean transformation which are the aging and high seniority workforce and lack of committed leadership.

The next category discusses the details of the role of leadership in successful Lean implementations. Emiliani (2008) suggested that introduction of the concept and practice "standardized work" to the executive-level leadership duties improves Lean leadership capabilities and effectiveness. Likewise Katz (2012) debated that Lean leader should serve as a Lean coach or mentor to key staff members. Mann (2009) argued that sustaining Lean success requires a change in mind-set and behaviour among leadership, and then gradually throughout the organization. Pamfilie et al. (2012) suggested that Lean leaders' knowledge of the tools otherwise their team members will not exert the required efforts for lean success. Interestingly, Poksinska et al. (2013) monitored a radical change in the manager's role during Lean implementation from managing processes to developing and coaching people. The last paper in this category by Scherrer-Rathje et al. (2009) concluded that Lean success lessons are: 1- Visible top management commitment, 2- Encourage autonomy, 3- Openly disclose mid- to long- term Lean goals, 4- Mechanisms for long-term sustainability 5- Communicate Lean wins, 6- Continual evaluation of Lean efforts

The last category develops the concept of Lean leadership and debates in details the components of Lean leadership and their role. The first paper addressing Lean leadership is by Emiliani and Stec (2004) and it was later used by Flinchbaugh et al. (2008) in another article. But it is Dombrowski et al. (2012), and Dombrowski and Mielke (2013) that argued that Lean leadership have to develop others and that building the qualification of employees is a fundamental task in Lean leadership. In another paper Dombrowski and Mielke (2014) constructs 15 practice oriented requirements and frames them as rules for Lean leadership to support their daily efforts toward a true continuous improvement.

### **Leadership Paradoxes in Literature**

The database search on leadership paradoxes resulted in 16 peer reviewed articles. The highlights of these literatures are summarized in table 2.

The first category refers to the evolution of paradox theory in organization' studies and the framework for its application. The first paper by Lewis (2000) defines paradox as contradicting yet interrelated elements or elements that seem logical in isolation but absurd and irrational when appearing simultaneously. The second paper by Manderscheid and Freeman (2012) surveyed the literature relevant to leader transition and related polarities, paradoxes, and dilemmas which exist in organizations. The researchers found literature about leaders in transition and about polarity management but nothing on the combined subject Lastly, Lavine (2014) addressed the relationship between leadership and paradox and explored the utility of the competing values framework to develop leadership skills from a paradox perspective. The research also identifies that the capacities of awareness,

exploration, and interpretation as possible resources for paradoxical conceptualizations of leadership.

Table 2. Leadership and management paradoxes in literature

Categories	Major References Reviewed
Paradox theory	Lavine (2014), M. W. Lewis (2000), and Manderscheid and Freeman (2012)
Organizational and leadership paradoxes	Biloslavo, Bagnoli, and Figelj (2013), Coetsee (1999), Cunha and Cunha (2010), Dent and Goldberg (1999), Farjoun (2010), Francis et al. (2003), Hunter, Thoroughgood, Myer, and Ligon (2011), and Judge and Blocker (2008)
Paradox or polarity management	Bloodgood and Chae (2010), Glunk and Follini (2011), Griffin and Gustafson (2007), Johnson (1998), and Yoon and Chae (2012)

The second category discusses the different paradoxes in management. Cunha and Cunha (2010) and Farjoun (2010) both addressed the paradox of stability and change, while Coetsee (1999) and Dent and Goldberg (1999) discussed the managers' dilemma between resistance to change and commitment. An article by Judge and Blocker (2008) investigates the paradox of exploitation and exploring of market opportunities. On the other hand, Francis et al. (2003) discussed organizations during radical change which is the paradox of change vs. stability and of old versus new. Biloslavo et al. (2013) argued that organizations which are able to transcend the duality paradox enhance their effectiveness or/and efficiency. In this article, the authors identified and examined 21 dualities at the normative and strategic level of organisational policy. Similarly, Hunter et al. (2011) identified 14 tensions or paradoxes, associated with leading innovative endeavours.

The last category is paradox or polarity management and how it can facilitate the leader's job. The literature by Johnson (1998) explains the difference between problem solving and polarity management. He suggested an approach to analyse the paradox and then manage the tensions to maximize gain. Bloodgood and Chae (2010) used the polarity management in organizational learning. Glunk and Follini (2011) showed in their paper how polarity coaching can foster meaningful change among executives through understanding and acceptance of interdependent opposites. On the other hand Griffin and Gustafson (2007) shared the learnings from a case study of a company embracing paradoxes and training its leaders on polarity management. Lastly, Yoon and Chae (2012) in their paper attempted to address paradox management in two organizational mechanism: decision-making structure and human resource practices.

### Lean Leadership Paradoxes

Searching for peer reviewed academic literature about the paradoxes encountered by leaders during Lean implementation and how they are managed proved to be a very challenging task. The search only yielded 9 articles. The limited research results do not allow categorization but could be studied on a timeline to show how the research evolved. This chronological evolution is shown in table 3.

Table 3. Lean leadership paradoxes in literature

Year	References reviewed	
	Authors	Main ideas
1995	Thompson and Render	A balanced analysis of the emergence of Lean system in UK and the paradoxes it raises
1998	Obloj and Thomas	The paradoxes of transforming former state-owned companies into Lean
1999	Adler, Goldoftas, and Levine	A case study of model changeovers in Toyota: flexibility vs. efficiency
2001	Repenning and Sterman	The paradox of creating and sustaining improvements in Lean
2005	Videla	Structural constraints to implementing Lean in third world countries.
2006	L. Lüscher, Lewis, and Ingram	The social construction of organizational change paradoxes
2008	L. S. Lüscher et al.	Using paradox and polarity management for sense making during Lean implementation
2011	Heston and Phifer	The multiple quality models paradox: how much 'best practice' is enough?
2014	M. Lewis, Andriopoulos, and Smith	Using paradoxical leadership to enable agility

The first article retrieved that discusses paradoxes in Lean implementation is by Thompson and Render (1995) which discusses the case of implementing Lean in Nissan UK and the different paradoxes pertained to it. The second was a research conducted by Obloj and Thomas (1998) that discussed the paradoxes encountered during the transformation from state owned-company into a privatized market competitor. The next articles is another case study by Adler, et al. (1999) who discussed the paradox of flexibility vs. efficiency during model changeovers in Toyota Production systems. Repenning and Sterman (2001) then discussed the improvement paradox of creating and sustaining improvements in organizations. Four years later Videla (2005) presented a paradox in garment industry in Mexico that by implementing Lean instead of becoming a flexible producer, a successful export manufacturer devolved into a sub-contractor, and eventually closed its doors. In the next paper L. Lüscher, et al. (2006) discussed the theoretical framework of paradox in Lean implementations and the most important finding in this paper is that understanding paradox does not solve problems, but rather opens new possibilities and sparks circles of even greater complexity. Lüscher et al., (2008) then published an action research conducted to implement paradox management for sense making during Lean implementation. The next paper by Heston and Phifer (2011) discusses the fact that organizations are struggling with several process improvement efforts at the same time. The paper seeks to find a suitable balance between process maturity and excessive complexity. The last paper is a very recent one by Lewis et al. (2014) which claims that strategic agility evokes contradictions, such as stability vs.



flexibility, commitment vs. change, and established routines vs. novel approaches. The paper suggests that such competing demands pose challenges that require paradoxical leadership and practices that seek creative, both/and solutions that can enable fast paced adaptable decision making.

## Conclusion

This systematic literature review was conducted to better understand what research has been done in the area of “Lean leadership paradoxes”. As pinpointed by Webster and Watson (2002) emphasizing the discrepancy between “what we know and what we need to know” alerts other researchers to prospects for key contributions. This study provides a starting point for investigating a relatively new area of research that evolved from adding the paradoxical lens to the successful lean leadership practices.

The review found that although research in Lean, leadership and paradox separately has been extensive, however, combining the three areas together is fairly new. There have been some research in Lean leadership and also research into leadership paradoxes but far from being complete or thoroughly investigated. The review also found that very few research has been conducted on leadership paradoxes and polarity management practice in Lean or continuous improvement efforts.

This paper value is in pointing a new research area that could be of interest for scholars specialized in production engineering, management theories, or organization studies as a comprehensive field and researchers interested in Lean, polarity/paradox/duality management, leadership as particular areas. The research area is almost uncharted and could be explored from different perspectives.

## References

- Achanga, P., Shehab, E. E., Roy, R., & Nelder, G. (2006). Critical success factors for lean implementation within SMEs. *Journal of Manufacturing Technology Management*, 17(4), 460–471.
- Adler, P. S., Goldoftas, B., & Levine, D. I. (1999). Flexibility Versus Efficiency? A Case Study of Model Changeovers in the Toyota Production System. *Organization Science*, 10(1), 43–68.
- Biloslavo, R., Bagnoli, C., & Figelj, R. R. (2013). Managing dualities for efficiency and effectiveness of organisations. *Industrial Management & Data Systems*, 113(3), 423–442.
- Bloodgood, J. M., & Chae, B. (Kevin). (2010). Organizational paradoxes: dynamic shifting and integrative management. *Management Decision*, 48(1), 85–104.
- Coetsee, L. (1999). From resistance to commitment. *Public Administration Quarterly*, 23(2), 204–222.
- Cunha, J. da, & Cunha, M. e. (2010). Organizational improvisation: change or stability? *Management Research: The Journal of the Iberoamerican Academy of Management*, 8(2), 81–100.
- Dent, E., & Goldberg, S. (1999). Challenging “resistance to change.” *The Journal of Applied Behavioral Science*, 35(1), 25–41.
- Dombrowski, U., & Mielke, T. (2013). Lean Leadership – Fundamental Principles and their Application. *Procedia CIRP*, 7, 569–574.
- Dombrowski, U., & Mielke, T. (2014). Lean Leadership – 15 Rules for a Sustainable Lean Implementation. *Procedia CIRP*, 17, 565–570.
- Dombrowski, U., Mielke, T., & Engel, C. (2012). Knowledge Management in Lean Production Systems. *Procedia CIRP*, 3, 436–441.

- Easterby-Smith, Mark; Thrope, Richard; Jackson, P. (2012). *Management Research* (4th ed.). London: Sage Publications, Inc.
- Emiliani, M. L. (2008). Standardized work for executive leadership. *Leadership & Organization Development Journal*, 29(1), 24–46.
- Emiliani, M. L., & Stec, D. J. (2004). Using value-stream maps to improve leadership. *Leadership & Organization Development Journal*, 25(8), 622–645.
- Farjoun, M. (2010). Beyond Dualism: Stability and Change As a Duality. *Academy of Management Review*, 35(2), 202–225.
- Flinchbaugh, B. J., Carlino, A., & Curtis-hendiey, M. L. (2008). Essentials of lean leadersliip. *Tooling & Production*, 74(2), 16–18.
- Francis, D., Bessant, J., & Hobday, M. (2003). Managing radical organisational transformation. *Management Decision*, 41(1), 18–31.
- Glunk, U., & Follini, B. (2011). Polarities in executive coaching. *Journal of Management Development*, 30(2), 222–230.
- Griffin, T., & Gustafson, J. (2007). Balancing the Leadership Paradox. *T AND D*, (May).
- Habidin, N. F., & Yusof, S. M. (2013). Critical success factors of Lean Six Sigma for the Malaysian automotive industry. *International Journal of Lean Six Sigma*, 4(1), 60–82.
- Heston, K., & Phifer, W. (2011). The multiple quality models paradox: how much “best practice” is just enough? *Journal of Software Maintenance and Evolution: Research and Practice*, (July 2009), 517–531.
- Hilton, R. J., & Sohal, A. (2012). A conceptual model for the successful deployment of Lean Six Sigma. *International Journal of Quality & Reliability Management*, 29(1), 54–70.
- Hunter, S. T., Thoroughgood, C. N., Myer, A. T., & Ligon, G. S. (2011). Paradoxes of leading innovative endeavors: Summary, solutions, and future directions. *Psychology of Aesthetics, Creativity, and the Arts*, 5(1), 54–66.
- Jadhav, J. R., Mantha, S. S., & Rane, S. B. (2014). Exploring barriers in lean implementation. *International Journal of Lean Six Sigma*, 5(2), 122–148.
- Johnson, B. (1998). Polarity Management, a summary Introduction. *Polarity Management Associates*, (June 1998).
- Johnston, S. (2005). Duality and Paradox: Trust and Duplicity in Japanese Business Practice. *Organization Studies*, 27(2), 183–205.
- Judge, W. Q., & Blocker, C. P. (2008). Organizational capacity for change and strategic ambidexterity: Flying the plane while rewiring it. *European Journal of Marketing*, 42(9/10), 915–926.
- Katz, J. (2012). The Lean CEO Effect. *Industry Week*, 261(10), 38–43.
- Lander, E., & Liker, J. K. (2007). The Toyota Production System and art: making highly customized and creative products the Toyota way. *International Journal of Production Research*, 45(16), 3681–3698.
- Laureani, A., & Antony, J. (2012). Critical success factors for the effective implementation of Lean Sigma: Results from an empirical study and agenda for future research. *International Journal of Lean Six Sigma*, 3(4), 274–283.
- Lavine, M. (2014). Paradoxical Leadership and the Competing Values Framework. *The Journal of Applied Behavioral Science*, 50(2), 189–205.
- Lewis, M. (2000). Exploring Paradox: Towards A More Comprehensive Guide. *Academy of Management Review*, 25(4), 760–776.
- Lewis, M., Andriopoulos, C., & Smith, W. K. (2014). Paradoxical Leadership to Enable Strategic Agility. *California Management Review*, 56(3), 58–77.
- Lüscher, L., Lewis, M., & Ingram, A. (2006). The social construction of organizational change paradoxes. *Journal of Organizational Change Management*, 19(4), 491–502.

- Lüscher, L. S., Lewis, M. W., & Scher, L. S. L. (2008). Organizational Change and Managerial Sensemaking: Working Through Paradox. *Academy of Management Journal*, 51(2), 221–240.
- Manderscheid, S. V., & Freeman, P. D. (2012). Managing polarity, paradox, and dilemma during leader transition. *European Journal of Training and Development*, 36(9), 856–872.
- Mann, D. (2009). The missing link: Lean leadership. *Frontiers of Health Services Management*, 26(1), 15–26.
- Martínez-Jurado, P. J., & Moyano-Fuentes, J. (2014). Key determinants of lean production adoption: evidence from the aerospace sector. *Production Planning & Control*, 25(4), 332–345.
- McLean, R., & Antony, J. (2014). Why continuous improvement initiatives fail in manufacturing environments? A systematic review of the evidence. *International Journal of Productivity and Performance Management*, 63(3), 1–14.
- Obloj, K., & Thomas, H. (1998). Transforming former State-owned Companies into Market Competitors in Poland: The ABB Experience. *European Management Journal*, 16(4), 390–399.
- Pamfilie, R., (Draghici), A. J. P., & Draghici, M. (2012). The Importance of Leadership in Driving a Strategic Lean Six Sigma Management. *Procedia - Social and Behavioral Sciences*, 58, 187–196.
- Poksinska, B., Swartling, D., & Drotz, E. (2013). The daily work of Lean leaders – lessons from manufacturing and healthcare. *Total Quality Management & Business Excellence*, 24(7-8), 886–898.
- Psychogios, A. G., & Tsironis, L. K. (2012). Towards an integrated framework for Lean Six Sigma application: Lessons from the airline industry. *Total Quality Management & Business Excellence*, 23(3-4), 397–415.
- Repenning, N., & Sterman, J. (2001). Creating and sustaining process improvement. *California Management Review*, 43(4), 64–88.
- Scherrer-Rathje, M., Boyle, T. a., & Deflorin, P. (2009). Lean, take two! Reflections from the second attempt at lean implementation. *Business Horizons*, 52(1), 79–88.
- Seuring, S., & Gold, S. (2012). Conducting content-analysis based literature reviews in supply chain management. *Supply Chain Management: An International Journal*, 17(5), 544–555.
- Sim, K. L., & Rogers, J. W. (2009). Implementing lean production systems: barriers to change. *Management Research News*, 32(1), 37–49.
- Spear, S., & Bowen, H. K. (1999). Decoding the DNA of Toyota Production. *Harvard Business Review*, 77(5), 96–108.
- Stone, K. B. (2012). Four decades of lean: a systematic literature review. *International Journal of Lean Six Sigma*, 3(2), 112–132.
- Thompson, J., & Render, R. (1995). Nissan UK: A worker's paradox? *Business Horizons*, 38(1), 48–58.
- Timans, W., Antony, J., Ahaus, K., & van Solingen, R. (2011). Implementation of Lean Six Sigma in small- and medium-sized manufacturing enterprises in the Netherlands. *Journal of the Operational Research Society*, 63(3), 339–353.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a Methodology for Developing Evidence-Informed Management Knowledge by Means of Systematic Review. *British Journal of Management*, 14(3), 207–222.
- Videla, N. P. (2005). Following Suit: an Examination of Structural Constraints to Industrial Upgrading in the Third World. *Competition & Change*, 9(4), 307–327.

- Webster, J., & Watson, R. (2002). Analyzing the past to prepare for the future: Writing a literature review. *Management Information Systems Quarterly*, 26(2).
- Womack, J., & Jones, D. (1994). From lean production to lean enterprise. *Harvard Business Review*, 72(2), 93–104.
- Yoon, S. J., & Chae, Y. J. (2012). Management of paradox: a comparative study of managerial practices in Korean and Japanese firms. *The International Journal of Human Resource Management*, 23(17), 3501–3521.