Contemporary Management Research
Pages 1-25, Vol. 21, No. 1, 2025
doi: 10.7903/cmr.23456

The Impact of Transformational Leadership on Lean Soft Practices Implementation: Evidence from Jordanian Service Organizations

Lubna A. Baqleh
Yarmouk University, Irbid, Jordan
Email: lubna@yu.edu.jo

Shaker A. Aladwan
Yarmouk University, Irbid, Jordan
Email: shaker@yu.edu.jo

Tamara A. AL-Yakoub
Yarmouk University, Irbid, Jordan
Email: tamara@yu.edu.jo

ABSTRACT

This paper aims to investigate the effect of transformational leadership on the implementation of soft lean practices in Jordanian public service organizations. The study adopts a quantitative research approach. A questionnaire was designed and electronically distributed to participants from seven Jordanian public service organizations in the capital, Amman, yielding 399 valid responses for analysis. The data were analyzed using SEM with smartPLS. The results revealed a significant effect of transformational leadership on lean practices, specifically in areas such as employee involvement and training, problem-solving, customer involvement, and continuous improvement. The study has several implications, including the enhancement of transformational leadership styles and methods for improving soft lean management practices within the public sector. Notably, given the considerable number of variables that could impact an organization's lean journey, the findings underscore the significant role that transformational leadership plays in implementing lean soft practices.

Keywords: Lean government; Transformational leadership, Soft lean practices, Service organizations, Public sector, Jordan.

INTRODUCTION

The services sector significantly contributes to the economy in most developing countries (Malmbrandt & Åhlström, 2013), including the Middle East and North Africa (MENA) region. In numerous developing countries, public service organizations are significant employers and sources of public budgets (Piercy & Rich, 2009). Therefore, we must focus more on the service situation and develop new mechanisms to enhance public services through lean practices and leadership support. The *lean* concept is based on values and principles achieved by techniques and tools. They support organizational development through long-term thinking, holistic view, customer focus, waste reduction, participation, continuous improvement, and committed leadership (Mårtensson et al., 2019).

A recognized approach in the study of lean practices implementation differentiates between hard and soft (Gaiardelli et al., 2018) practices. Bortolotti et al. (2015) and Gaiardelli et al. (2018) argue that complex practices refer to the technical and analytical tools that improve production processes, such as statistical process control and Kanban. In contrast, soft practices refer to the principles, managerial concepts, people, and relations, such as continuous improvement, top management leadership, and customer and supplier involvement. Few studies have focused on soft lean practices in service organizations, such as employee participation, empowerment, and problem-solving (Lizarelli et al., 2023; Tortorella et al., 2021;).

Empirical evidence shows that leadership is critical to the success of lean implementation (e.g., Achanga et al., 2006; Albliwi et al., 2014). For example, Achanga et al. (2006) found that leadership is one of the most pertinent issues necessary for the successful implementation of lean manufacturing. Womack and Jones (2010) view *lean* as a new way of thinking that leads to a new work environment in which everyone is involved in continuous improvement. Today, it is a given that the success of lean implementation is determined by sociocultural aspects, the key amongst which is leadership style (Mann, 2009).

However, little empirical research has considered the linkages between leadership types, such as transformational leadership and lean implementation (Lam et al., 2015; Laohavichien et al., 2011). Leaders are challenged by lean management to alter new working methods since, within a lean organization, changes happen within all types of processes in various organizational areas. As such, a leader is an agent of change who is expected to implement *lean* throughout the company (Oon et al., 2021). Herkness (2005), for example, argues that the transformational leadership model is helpful when trying to affect change. According to Northouse (2021), transformational leadership represents leaders who cooperatively engage with their followers to increase their motivation and morality.

Few previous studies have revealed a positive relationship between transformational leadership and lean implementation success (Burawat, 2019; Kim & Hochstatter, 2016; Nogueira et al.; 2018, Rafferty & Griffin, 2004). In the current research, a contribution is attempted to extend the literature related to soft lean practices and transformational leadership in the context of the Jordanian service sector. This field has rarely been tackled. This research aims to answer the following questions:

1. What is the level of transformational leadership existence in Jordanian service organizations?
2. What is Jordanian service organizations' soft lean practice implementation level?
3. How does transformational leadership impact the implementation of soft lean practices in Jordanian service organizations?

This research will answer the last question by examining the impact of transformational leadership dimensions on each type of soft-leaning practice. The following section will present the theoretical framework and review of related literature on transformational leadership and soft-leaning practices. Following this, there is a presentation of the model of the research and the hypotheses; after that, a section is dedicated to a discussion of the data, the variables, and the research method for validation of the research model. A section describing the statistical results follows. Finally, The current paper concludes with a discussion of the findings, the practical implications of the research, and potential areas for future research.

THEORETICAL FRAMEWORK

Transformational Leadership

In the past twenty-five years, transformational leadership has emerged as a highly critical model for academicians of organizational leadership (Northouse, 2021). The transformational leadership style involves the leader identifying the necessary change, creating a vision, and inspiring committed organizational members to execute the change (Seltzer and Bass, 1990; Van Assen, 2018). Transformational leadership is defined by Northouse (2021) as leaders who engage with their followers in a cooperative effort in order to increase motivation levels and enhance a sense of morality. Leaders exhibit this leadership style when they broaden and elevate worker interests, fostering a collective mission that incentivizes workers to prioritize the group's well-being over personal gain. This can be achieved in several ways; for example, leaders can lead with charisma and a personal mission and vision, leading to instilling pride in followers and trust and respect gained as a result; leaders can meet their employees' emotional needs, with particular attention to individual differences; employees can be intellectually stimulated by leaders, with the followers shown new ways of considering difficulties as problems to be solved, with emphasis given to finding rational solutions.

Rafferty and Griffin (2004) identified five critical dimensions of transformational leadership. The first is *vision*, which defined as an expression related to an idealized image of the future. The second dimension is *inspirational communication*, which involves delivering encouraging and positive messages about the organization to build confidence and motivation. The third, *intellectual stimulation*, focuses on raising employee awareness of, interest in, and innovative thinking of problems. The fourth dimension, *supportive leadership*, highlights the leader's expression of concern for followers and their individualized needs. Finally, *personal recognition*, or the provision of rewards, includes praise, and acknowledgment of efforts exerted towards achieving specified goals. Together, these dimensions reflect the essence of transformational leadership, which aims to inspire, motivate, and support followers to reach their full potential while advancing organizational objectives.

Soft Lean Practices

As a philosophy, lean focuses on continuous improvement to remove waste and improve the sustainable competitive advantage (Heizer & Render, 2014; Womack & Jones, 2010). As a concept, *lean* is seen as multi-dimensional, involving productivity with less waste, continual improvement flow, empowered and well-trained workers that positively impact operational performance, and sound quality systems (Taj & Morosan, 2011). In their book *Lean Thinking*, Womack and Jones (2010) argue that *lean* thinking is not just a technique but also a fresh way of thinking, resulting in new work environments in which everyone is involved in continuous improvement. Furthermore, lean is a socio-technical type of system that may be analyzed and understood as being broader than just waste reduction (Shah & Ward, 2007) but rather in terms of its kinds of practices, with a greater emphasis on human aspects.

Liker (2004) illustrated the concept of *Lean* through fourteen principles organized into four different dimensions in a pyramid shape, or “4P” model, which was influenced by an Toyota’s internal training document known as the “Toyota Way”. Within the pyramid, from the bottom upwards, the 4Ps are *philosophy* (seen as long-term thinking); *process* (seen as the elimination of waste); *people and partners* (seen in regards to respect for them, the challenging of them, and encouragement of their growth); and, finally, problem-solving (seen about concerning to continuous learning and improvement) (Liker, 2004). According to the literature (e.g., Shah & Ward, 2007), lean practices are classified into soft and hard. Soft lean practices relate to managerial concepts, principles, people, and their relationships, including the involvement of employees and relationships with customers. On the other hand, problematic practices are represented by technical tools introduced to an organization so that production systems can be improved, such as continuous flow and statistical process control.

The current research, applied to the service sector, focuses on soft lean practices, which are well-documented in the existing literature. Specifically, the study emphasizes customer involvement (Shah & Ward, 2007), continuous improvement (Bortolotti et al., 2015), employee involvement (Herkness, 2005), and problem-solving within small groups (Bortolotti et al., 2015).

Lean Management in Service Organizations

Most previous research on lean management and its associated practices has primarily focused on the private sector, particularly the manufacturing sector, and has concentrated in Western countries. A literature review by Yadav and Desai (2016) revealed that the manufacturing and engineering sectors account for the highest percentage of research on Lean Six Sigma (42%), followed by the service sector (32%). Additionally, scholars have explored the implementation of lean management in the public sector, driven by the novelty of adopting lean practices within public services and organizations.

The tendency to adopt lean management in the service sector aims to improve efficiency and deliver quality services to customers (Asnan et al., 2015), as part of the emergence of New Public Management (NPM), with associated implications for the reform of the public sector and the provision of its services (Hallström & Thedvall, 2015). Scholars such as Andersson et al.(2020), have observed that the focus on lean management started two decades ago to enhance efficiency and elevate the quality of the public sector.

Several authors (e.g., Womack & Jones, 2010) noted that lean principles have been applied in a pure service environment; however, examples from the private services sector remain limited. *Lean service* was developed to improve office processes and administration functions within manufacturing organizations (Radnor & Johnston, 2013). For instance, Piercy and Rich (2009) argued that there has been a limitation in applying lean approaches and methods within the ‘physical’ aspect of service contexts in a recent literature review by Parkhi (2019) on the lean concept in healthcare implementation. It was found that most studies in this field are primarily evaluative and descriptive, with few adopting a holistic approach. Leadership failure has been identified as a significant barrier to implementing lean thinking in public services. Vaishnavi and Suresh (2020) concluded that managers should focus more on readiness factors, such as customer-oriented goal management, to effectively implement Lean Six Sigma for continuous improvement. Similarly, a recent study by Simonyte et al. (2021) on higher education institutions (HEIs) demonstrated that lean practices facilitated positive changes, including faster problem-solving, improved service quality, and

increased customer and employee satisfaction. The study also emphasized that strong leadership is essential for the successful implementation of *lean*.

Recent observations show that many service organizations worldwide are adopting lean management concepts and applications from the private sector for use in general and public service organizations (Piercy & Rich, 2009).

There were numerous challenges faced by *lean* implementation in the service sector, such as a lack of understanding of implementing lean management tools, including the challenges embedded within bureaucratic systems. However, implementing lean management may be enhanced through a better understanding of the potential resistance by employees and the selection of appropriate actions for dealing with resistance, with the leadership role in addressing resistance to change being crucial (Asnan et al., 2015). Furthermore, support and commitment from the organization's top management, along with the involvement of employees, help in overcoming potential challenges (Damrath, 2012), as the commitment of top management positively impacts the engagement and 'voice behavior' of lean team members, hence lean practice implementation (Abdul Latif & Vang, 2021).

Development of Hypotheses

To generate the hypotheses, the previous literature was reviewed to provide explanations of relationships between the transformational leadership style and lean practices, such as employee training and involvement, customer involvement, problem-solving, and continuous improvement. Most relevant studies noted links between variables, including private firms, customer satisfaction, loyalty, and leadership in general. Few studies attempted to demonstrate such links between variables in a general public sector context and service organizations.

Transformational leadership and the involvement of customers

Lean production begins with a focus on external customers, including end users and society, by understanding their needs and incorporating their input and feedback into lean management practices. *Lean* aims to create value with fewer resources and minimal waste while promoting continuous experimentation to achieve perfect value with zero waste. Lean thinking and practice occur simultaneously (Heizer & Render, 2014). Individual consideration and inspirational motivation are transformational leadership dimensions that positively impact customer satisfaction (Budur & Poturak, 2021). Similarly, Cavazotte et al. (2020) found that transformational leadership indirectly impacted customer satisfaction by team performance and satisfaction. Consequently, the following hypothesis is put forth:

H1: *Transformational leadership has a significant impact on customer involvement.*

Transformational leadership and employee involvement and training

Employee involvement is a key component of human (soft) lean practices (Shah & Ward, 2007), reflecting increased responsibilities and capabilities, formal authority. It emphasizes the participation of broadly skilled employees in problem-solving, continuous improvement, and participative decision-making (Vidal, 2007). Employee involvement can be enhanced by encouraging the active participation of employees in lean projects and by assigning them specific tasks (Yadav et al., 2020).

Transformational leadership focuses on the individual weaknesses and strengths within human resources to improve their capabilities and commitment to achieve organizational goals (Loh et al., 2019). Transformational leaders use management techniques, such as trust building and involvement, with the expectation that they correlate with a working environment with high employee involvement levels (Bodenhausen & Curtis, 2016). Personal attributes emphasized by transformational leadership are empowerment, communication, motivation, persuasion, and teaching (Stone et al., 2004), which are all related to employee involvement. Bodenhausen and Curtis (2016) reported a significant positive effect of transformational leadership on employee involvement. The predictors of transformational leadership and employee training also had statistical significance. Thus, the following hypothesis is put forth:

H2: *Transformational leadership has a significant impact on employee involvement and training.*

Transformational leadership and continuous improvement

Womack and Jones (2010) described the last principle for applying lean philosophy as seeking perfection, which means that, within a lean system, everything can be observed by anyone and, thus, it is easier for better ways of creating value to be discovered. Continuous improvement (CI) is a systematic effort to seek out and apply new work techniques or process improvements actively and repeatedly (Anand et al., 2009). Continuous improvement includes the adoption of Kaizen, which refers to change for betterment and eliminates non-value-added activities that directly enhance lean implementation (Yadav et al., 2020).

Continuous improvement is related to different organizational developments involving adopting the lean concept, total quality management, employee involvement, and customer service (Singh & Singh, 2015). Andrés-López et al. (2015) argue that Kaizen techniques applied to service processes should concentrate not on internal activities but on a customer-focused perspective by involving the customer in the

Kaizen system view, utilizing customer relationships and prioritizing customer satisfaction. Khattak et al. (2020) found that the relationship between continuous improvement efforts and transformational leadership is mediated by trust. Toma and Naruo (2017), for example, reported that successful leaders encourage their employees to engage in the process and collaborate with other stakeholders to enhance organizational procedures and processes. As a result, the following hypothesis is put forth:

H3: *Transformational leadership has a significant impact on continuous improvement.*

Transformational leadership and problem-solving

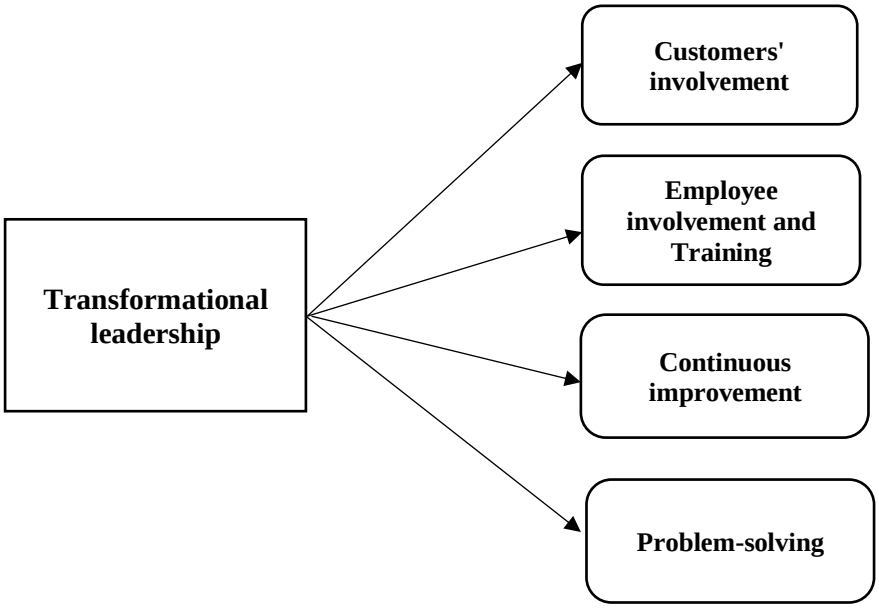
When employees are intellectually stimulated by their transformational leaders, these leaders succeed in encouraging them to question assumptions and old methods of doing things. They also encourage employees to identify novel ways of solving problems, which could lead to the development of fresh and original ideas (Mumford et al., 2002). Furthermore, leaders' inspirational motivation drives employees to channel their energies toward tackling key work challenges. Inspirational motivation helps employees reframe challenges as opportunities, increases their willingness to try new working methods, and leads to an adaptive approach to problem-solving (Hirst et al., 2009). Carmeli et al. (2014) showed that the development of employees' creative problem-solving capacity was facilitated by transformational leadership. Similarly, Li et al. (2015) supported the idea that transformational leadership can positively affect employees' participation in problem-solving. Consequently, the following hypothesis is put forth:

H4: *Transformational leadership has a significant impact on problem-solving.*

RESEARCH METHODOLOGY

Based on the hypotheses generated in light of the literature review, an illustration of the proposed model is provided in Figure 1.

Figure 1. *The Proposed Research Model*



Measurement of the constructs

Multi-item scales were designed based on previous research to ensure the validity and reliability of the constructs. Lean practices and transformational leadership were measured using a five-point Likert scale ranging from 'rarely' to ''often.' For the measurement of transformational leadership, several scales were adopted (Bass & Avolio (1995), Den Hartog et al. (1997), Rafferty and Griffin (2004), and Singh and Krishnan (2016). Lean practices were assessed using scales for employee involvement and training, customer involvement, continuous improvement, and problem-solving (see Bortolotti et al., 2015; Kundu & Bairi, 2014; Nogueira et al., 2018, and Van Assen, 2018). The initial questionnaire was validated by eight academics from Jordanian universities. The final version of the questionnaire consisted of two distinct sections. The first section included six questions related to employment and demographic data, such as job title, work nature, institution type, educational qualifications, age, and gender. The second section contained fourteen items measuring the independent variable (transformational leadership) and lean practices across four dimensions: five items for customer involvement, five for employee involvement and training, five for continuous improvement, and five for problem-solving.

Population and sample

The study population comprised all employees working in seven public service organizations in Amman, the capital of Jordan. These organizations were the Jordan Customs Department, Income and Sales Tax Department, Jordan Food and Drug Administration, Ministry of Finance, Social Security Corporation, Civil Status and

Passports Department, and the Department of Land and Survey. According to official statistics provided by the HR departments at these institutions, the total number of employees, comprising the population, is 9971 employees, managers, department heads, and assistant directors. The sample was convenient and non-probability, and the response was voluntary.

The determination of the statistical size of the sample was done through the use of the statistical Table put forth by Sekaran and Bougie (2016); as such, it was seen that the sample size that would be representative of a population of 9000 had to include at least 370 respondents. So, given the population size of 9971, a sample size of 399 is needed to establish the statistical significance of the results, even with the exclusion of several completed questionnaires at the analysis stage because they contained some extreme values.

A total of 399 copies of the questionnaire were electronically distributed and collected between December 2021 and January 2022. Regarding respondent characteristics, 36.5% were female, and 63.5% were male. The majority of respondents (76%) were between 30 and 50 years old, and 71% held Master's or Bachelor's degrees. At the position or administrative level, 13.9% were assistant managers, 16.5% were managers, 24.4% were section heads, and 43.2% were employees. Regarding the nature of the respondents' jobs, 36.5% were technicians (e.g., engineers, programmers, accountants), and 63.5% were working in administrative roles.

DATA ANALYSIS AND FINDINGS

This study aims to identify the impact of transformational leadership on implementing lean practices in Jordanian public service organizations. Table 1 presents summary statistics for transformational leadership and each dimension of soft lean practices.

Table 1 *Summary Statistics*

Variable	Mean	SD	Skewness	Kurtosis	Degree of approval
Transformational leadership	3.594	0.977	-0.519	-0.487	N/A
Customer Involvement	3.956	0.718	-0.782	1.003	Agree
Employee Involvement and training	3.744	0.924	-0.472	-0.476	Agree
Continuous improvement	3.863	0.899	-0.613	-0.123	Agree
Problem-solving	3.727	0.942	-0.626	-0.068	Agree

It can be seen in Table 1 that the mean transformational leadership value reached 3.594. The soft lean practice dimension with the most agreement was customer

involvement, which reached 3.956, and continuous improvement reached 3.863. The involvement of employees and training reached 3.744, and problem-solving reached 3.727. On the other hand, Skewness was in a ± 1.96 range, with all values of kurtosis ranging from ± 3.0, meaning there was no normality problem with the dataset.

The Measurement Model

Discriminant validity

Fornell and Larcker (1981) suggested the 'Fornell-Larcker criterion' to test the discriminant validity (Table 2). The discriminant validity requirement was fulfilled since all indicator loadings upon the assigned latent variable were higher than the associated loading upon all other latent variables.

Table 2 *The Discriminant Validity*

Latent / Indicator	1	2	3	4	5
1. Transformational leadership	**0.848**				
2. Customer involvement	0.675	**0.761**			
3. Employee involvement and training	0.84	0.662	**0.855**		
4. Continuous improvement	0.84	0.728	0.844	**0.878**	
5. Problem-solving	0.823	0.663	0.851	0.869	**0.906**

As can be seen in Table 2, the loadings of each of the indicators upon their assigned latent variable have a value that is higher compared with the loadings of other variables; this means that the extent of the divergence of a measure from (is not in correlation with) other measures that have an underlying construct that is unrelated conceptually to it.

Cross-loading

If it is found that a variable has more than one significant loading, it is referred to as cross-loading. This presents difficulties in labeling all factors that share a variable, making it hard for those factors to be distinct from concepts represented separately; see Table 3 below.

Table 3 *Statistics for Cross-Loading*

Item	Transformational leadership (TL)	Customer involvement (CU)	Employee involvement and training (ET)	Continuous improvement (CM)	Problem-solving (PS)
TL1	0.776	0.521	0.641	0.666	0.626
TL2	0.800	0.545	0.637	0.685	0.645
TL3	0.810	0.539	0.659	0.682	0.662
TL4	0.848	0.543	0.687	0.693	0.667
TL5	0.857	0.622	0.704	0.703	0.693
TL6	0.866	0.645	0.763	0.736	0.760
TL7	0.890	0.574	0.746	0.735	0.721
TL8	0.885	0.574	0.739	0.710	0.707
TL9	0.838	0.517	0.674	0.653	0.659
TL10	0.871	0.560	0.732	0.712	0.700
TL11	0.846	0.554	0.735	0.707	0.696
TL12	0.831	0.582	0.716	0.716	0.720
TL13	0.837	0.600	0.710	0.761	0.716
TL14	0.903	0.614	0.799	0.790	0.770
CU1	0.450	0.695	0.435	0.479	0.442
CU2	0.502	0.799	0.509	0.547	0.494
CU3	0.469	0.796	0.476	0.567	0.498
CU4	0.600	0.844	0.566	0.665	0.581
CU5	0.521	0.655	0.511	0.485	0.489
ET1	0.680	0.573	0.810	0.723	0.679
ET2	0.787	0.629	0.886	0.774	0.767
ET3	0.702	0.562	0.859	0.770	0.720
ET4	0.674	0.526	0.847	0.737	0.699
ET5	0.739	0.534	0.873	0.778	0.767
CM1	0.714	0.668	0.783	0.884	0.733
CM2	0.628	0.592	0.718	0.834	0.688
CM3	0.769	0.660	0.803	0.910	0.774
CM4	0.788	0.605	0.802	0.873	0.790
CM5	0.770	0.670	0.772	0.889	0.819
PS1	0.736	0.573	0.748	0.774	0.900
PS2	0.748	0.589	0.755	0.768	0.901
PS3	0.754	0.594	0.789	0.807	0.909
PS4	0.744	0.649	0.791	0.801	0.914

Table 3 shows that each variable belongs to its construction and has a high correlation with it. This means that no problems are present concerning cross-loading

between the variables. Based on the work of Hair et al. (2011), for the assessment of loading at cut-offs, the criterion is >0.50, which means that all of the variables are loading to their constructs.

Convergent validity

Convergent validity refers to the extent to which multiple items measuring the same concepts agree. Based on the work of Hair et al. (2011), the criteria for assessment of convergent validity are i) Cronbach's alpha value cut-offs of >0.70; ii) composite reliability cut-offs of >0.70; and iii) average variance extracted (AVE) cut-offs of >0.50. The results related to convergent validity are shown in Table 4.

Table 4 *Statistics for Convergent Validity*

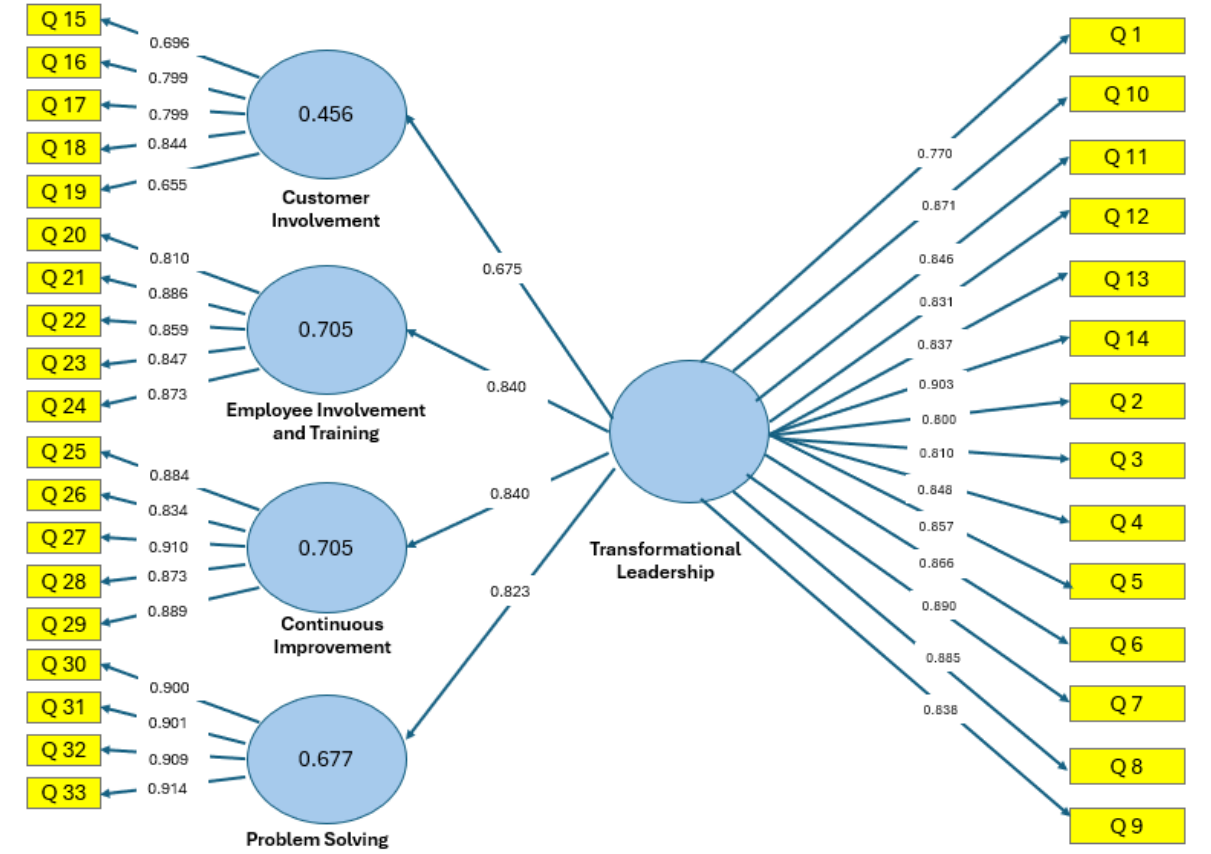
Variable	Number of items	Cronbach's alpha	Composite reliability	AVE
Transformational leadership	14	0.970	0.973	0.719
Customer Involvement	5	0.815	0.872	0.579
Employee involvement and training	5	0.908	0.932	0.731
Continuous improvement	5	0.926	0.944	0.771
Problem-solving	4	0.927	0.948	0.821

Table 4 shows that all of the values of Cronbach's alpha are greater than 0.7, all values of AVE are more significant than 0.5, and all values of composite reliability are more significant than 0.7; as such, all of the constructs are valid.

Structural model assessment

The structural model aims to test the effect of transformational leadership on soft lean practices as measured by employee involvement and training, customer involvement, problem-solving, and customer involvement, as shown in Figure 2 below.

Figure 2. *Structural Model Assessment*



The model shows that transformational leadership can explain 45.5% of customer and 70.5% of employee involvement and training. Meanwhile, transformational leadership can explain 70.5% of continuous improvement and 67.7% of problem-solving. Following the work of Falk and Miller (1992), if the R^2 has an explanatory power that is over 10%, it is considered acceptable. Stone–Geisser Q^2, the effect sizes for f^2 and R^2 are shown in Table 5.

Table 5 *The Stone–Geisser Q^2, effect size for f^2 and R^2*

Model	Q^2	f^2	R^2
Customer Involvement	0.255	0.836	0.455
Employee involvement and training	0.509	2.392	0.705
Continuous improvement	0.535	2.390	0.705
Problem-solving	0.55	2.093	0.677

According to the guidelines put forth by Cohen (1988), $f^2 \geq 0.35$, $f2 \geq 0.15$, and $f^2 \geq 0.02$ represent large, medium, and small sizes, respectively. As such, each of the study model relationships has large effect sizes. The effect size with the highest value is the relationship between employee involvement and training and transformational

leadership. The effect size is the lowest for the relationship between customer involvement and transformational leadership. That test was used so that doubt could be eliminated concerning the effect of transformational leadership on both employee involvement and training and continuous improvement, which have identical R^2 values; accordingly, employee involvement and training have an effect size that is higher than that of continuous improvement, meaning that transformational leadership has a significant power to affect employee involvement and training than does continuous improvement. Moreover, Stone–Geisser Q^2, as predictive relevance, measures whether or not a model possesses predictive relevance (good is > 0). Moreover, the predictive relevance for endogenous constructs is established by Q^2. If the values of Q^2 are over zero, values are reconstructed well, and the model has predictive relevance; within the current study, the values of Q2 are over zero, so the model of the study is considered predictive relevance.

Hypothesis Testing

The bootstrapping technique was used within the software SmartPLS 3.0; the hypothesis testing results are shown in Table 6 below.

Table 6 *Results of Path Analysis (Hypothesis Testing)*

Path		Path coefficient	T-statistics	P values	Decision
H1	Transformational leadership → Customer involvement	0.675	19.757	0.000	Accepted
H2	Transformational leadership → Employee involvement and training	0.840	43.234	0.000	Accepted
H3	Transformational leadership → Continuous improvement	0.840	45.542	0.000	Accepted
H4	Transformational leadership → Problem-solving	0.823	38.838	0.000	Accepted

As can be seen in Table 6, the path of transformational leadership to customer involvement has a value of β of 0.675 ($p < 0.01$), the path of transformational leadership to employee involvement and training has a value of β of 0.840 ($p < 0.01$), the path of transformational leadership to continuous improvement has a value of β of 0.840 ($p < 0.01$), and the path of transformational leadership to problem-solving has a value of β of 0.823 ($p < 0.01$). So, hypothesis H1, hypothesis H2, hypothesis H3, and hypothesis H4 are all supported.

DISCUSSION AND CONCLUTION

The current findings of the study align with previous studies that highlight the link between soft lean practices and transformational leadership. Multiple studies have demonstrated that employee involvement and training were vital aspects of lean management and leadership (e.g., Alnadi & McLaughlin, 2021; Bodenhausen & Curtis, 2016; Loh et al., 2019; Stone et al., 2004; Vidal, 2007). Several studies have demonstrated the connection between lean management and continuous employee improvement. Notable contributions include the works of Alnadi and McLaughlin (2021), Anand et al. (2009), Andrés-López et al. (2015), Huang et al. (2011), Khattak et al. (2020), Liker (2004), Womack and Jones (2010). Additionally, problem-solving is a key factor, with leadership shown to positively affect employees in that regard (see Carmeli et al., 2014; Hirst et al., 2009; Li et al., 2015; Mumford et al., 2002). Furthermore, numerous studies have shown that transformational leadership affects customer involvement indirectly at times. Example include the research conducted by Budur and Poturak (2021), Cavazotte et al. (2020) and Heizer and Render (2014).

More specifically, the current findings have shown that transformational leadership can explain 70.5% of employee involvement and training, 70.5% of continuous improvement, and 67.7% of problem-solving. These results may be attributable to some positions. The institutions investigated participated in the King Abdullah II Award for Excellence within the past decade. This award aims to assert the application of standards of excellence within the ministries and institutions of the public sector. This, in turn, positively affects the practices of the institutions, furthering the change agent work in those institutions (Aladwan et al., 2022).

Numerous public institutions, such as Jordanian Customs, have charters for service delivery to address the significant duties and rights of both clients and the department. The Jordanian Customs has been presented with many excellence awards to reflect the extent to which the department has cared for excellence in the services it provides and has an overarching wish to ensure customer satisfaction (Aladwan, 2019; Aladwan & Alshami, 2021). Many institutions in this study have not only participated in the King Abdullah II Award for Excellence but have won it over the past decade, indicating their exposure to processes of development and internal improvement.

For example, the Department for Civil Status and Passports has adopted many practices to improve internal processes by introducing improved working methods under international standards and best practices to foster the effectiveness and efficiency of services provided. From 2018 to 2020, when automated operations within the department reached 80%, these initiatives significantly enhanced internal work efficiency and positively impacted both external and internal stakeholders, including customers and employees.

Several other practices have been adopted by current organizational leadership to enhance the functions and practices of HR (e.g., a cornerstone of training) and foster employee commitment to implementing other types of lean practices and the efficiency and expertise required to meet workplace requirements. For instance, the Department of Income and Sales Tax and the Ministry of Finance have held numerous contracts for external and internal courses, whereby the proportion of trained employees reached 85% in 2022, even though resources were scarce. This positive effect may be attributed to applying the King Abdullah Award for Excellence standards, which have allowed HR departments to improve performance.

HR departments in the institutions surveyed could not work without written strategic objectives, effective leadership, specific policies, a future vision, and clear plans. Aladwan (2017) argued that many service organizations in Jordan have recently received good support from higher leadership in applying quality systems to improve processes and procedures to provide services with excellence continually. In addition, as the service excellence criterion is one by which judgment is made of institutional ability in delivering services to meet customer needs, there is an issue of imposing excellence theory among the employees – an issue that has been a focus of governmental policy in Jordan. The theory of excellence is the most significant strategic tool institutions adopt to reach high effectiveness and efficiency levels (Aladwan, 2019; Aladwan & Alshami, 2021).

Leadership, however, may explain 45.5% of customer involvement in the institutions investigated. This result can be attributed to several factors, with the primary one being a lack of techniques and tools to effectively engage clients or citizens of those organizations in evaluating and suggesting improvements to the services provided. Public services also have natures, characteristics, and limitations that are markedly different from those of the private sector, which depends on service and customer satisfaction.

In developing countries, low levels of customer involvement have been observed due to the substantial challenges faced by the public sector. Moreover, previous studies have noted that customer involvement is sometimes embedded within other aspects that link lean management and leadership. For example, Alnadi and McLaughlin (2021) emphasized the importance of understanding that customers are providing the desired services under the ‘creation of vision with aligned goals, and there was a ‘continuous improvement culture.’ The results show a need for numerous practical tools, measures, and customer engagement practices. Thus, strong leadership, such as transformational style, is significant and advocated within the literature since leaders have a bearing upon other groups of employees in attaining the visions and goals of their organizations; they

have a significant effect on the implementation of lean practices (Connor & Cormican, 2022).

Implications for Management

This study has several implications for management practice in service organizations within the public sector. Firstly, transformational leadership and its associated elements have positively affected the application of soft lean management practices so transformational leadership may be seen as a suitable style of leadership for the enhancement of the practices of lean management within government organizations in general and within service organizations in particular. Secondly, customer participation in designing the services significantly affects service quality and delivery; thus, the researchers recommend replicating this by encouraging citizens and customers to develop and design government services. It requires government organizations to initiate the methods and instruments for such involvement. Moreover, employees should actively participate in lean management initiatives through training programs and involvement in knowledge-sharing and problem-solving to enhance their motivation.

Limitations and Potential Future Research

The study does have some limitations. It has focused on lean management and associated practices within the sector of public service; however, in that regard, there is still a lack of literature, and most studies that are available are in contexts in the private sector; moreover, most of the available literature is based on experiences in western countries. Furthermore, in the current study, the participating institutions were selected purposefully because of their historical background in winning excellence awards and showing best managerial practice, which could affect the generalizability of the results to the Jordanian public sector.

It is recommended that future research focus on other leadership styles and their potential effect on practices of lean management within the public sector. Investigating more aspects and variables is also recommended, critical for implementing lean management practices in the public sector. A topic worthy of future study is the relationship between visionary or servant leadership and lean practices within the public sector.

Conclusion

In conclusion, this study investigated the effect of transformational leadership on soft lean practices in the Jordanian public service sector. The study revealed that all of the hypotheses were acceptable, which suggests that the transformational form of

leadership positively affects employee involvement and training, problem-solving, customer involvement, and continuous improvement within current Jordanian public service organizations.

Funding

The authors received no direct funding for this research.

Competing interest

The authors declare that there is no conflict of interest in this work.

REFERENCES

Achanga, P., Shehab, E., Roy, R., and Nelder, G. (2006). Critical success factors for lean implementation within SMEs. *Journal of Manufacturing Technology Management*. 17(4), 460-471. https://doi.org/10.1108/17410380610662889.

Abdul Latif, M., and Vang, J. (2021). Top management commitment and lean team members' prosocial voice behaviour. *International Journal of Lean Six Sigma*. 12 (6), 1289-1309. https://doi.org/10.1108/IJLSS-01-2020-0002

Aladwan, S. (2017). The impact of TQM and service employee satisfaction on government service quality: An empirical study in the Jordanian public sector. PhD Thesis, The University of Birmingham, UK.

Aladwan, S. (2019). Roles played by frontline employees in the delivery of governmental services: Qualitative evidence from the public sector of Jordan. *International Journal of Qualitative Research in Services*. 3(2), 141-157. https://doi.org/10.1504/IJQRS.2019.103766.

Aladwan, S., and Alshami, S. (2021). The impact of service excellence and service innovation on organisational reputation: Quantitative evidence from Jordanian public sector. *The TQM Journal*, 33(6), 1544-1560. https://doi.org/10.1108/TQM-05-2020-0117.

Aladwan, S., AL-Yakoub, T., and Adaileh, A. (2022). Challenges of knowledge management in the public sector: Evidence from the King Abdullah Award for Excellence in Jordan. *The TQM Journal, 34(6), 1896-1913.* https://doi.org/10.1108/TQM-09-2021-0253.

Alnadi, M., and McLaughlin, P. (2021). Critical success factors of Lean Six Sigma from leaders' perspective. *International Journal of Lean Six Sigma*. 12(5), 1073-1088. https://doi.org/10.1108/IJLSS-06-2020-0079.

Albliwi, S., Antony, J., Lim, S., and van der Wiele, T. (2014). Critical failure factors of Lean Six Sigma: A systematic literature review. *International Journal of Quality and Reliability Management*. *31*(9), 1012-1030.

https://doi.org/10.1108/IJQRM-09-2013-0147.

Andersson, G., Lynch, M., Johansen, F., Fineide, M. and Martin, D. (2020). Exploring perceptions of lean in the public sector. *Public Money and Management*, *43(*1), 64-72 https://doi.org/10.1080/09540962.2020.1847454.

Anand, G., Ward, P., Tatikonda, M., and Schilling, D. (2009). Dynamic capabilities through continuous improvement infrastructure. *Journal of Operations Management*, 27(6), 444–461. Https://doi.org/10.1016/j.jom.2009.02.002.

Andrés-López, E., González-Requena, I., and Sanz-Lobera, A. (2015). Lean service: Reassessment of lean manufacturing for service activities. *Procedia Engineering*, 132, 23–30. https://doi.org/10.1016/j.proeng.2015.12.463.

Asnan, R., Nordin, N., and Othman, S. (2015). Managing change on lean implementation in service sector. *Procedia-Social and Behavioral Sciences*, 211, 313-319. https://doi.org/10.1016/j.sbspro.2015.11.040.

Bass, B., and Avolio, B. (1995). *Multifactor leadership questionnaire for research*. Menlo Park, CA: Mind Garden.

Bodenhausen, C., and Curtis, C. (2016). Transformational leadership and employee involvement: Perspectives from millennial workforce entrants. *Journal of Quality Assurance in Hospitality and Tourism*, *17*(3), 371–387. https://doi.org/10.1080/1528008X.2015.1048920.

Bortolotti, T., Boscari, S., and Danese, P. (2015). Successful lean implementation: Organizational culture and soft lean practices. *International Journal of Production Economics*, *160*, 182-201. https://doi.org/10.1016/j.ijpe.2014.10.013.

Budur, T., and Poturak, M. (2021). Transformational leadership and its impact on customer satisfaction. Measuring mediating effects of organisational citizenship behaviours. *Middle East Journal of Management*, *8*(1), 67–91. https://doi.org/10.1504/MEJM.2021.10033657.

Burawat, P. (2019). The relationships among transformational leadership, sustainable leadership, lean manufacturing and sustainability performance in Thai SMEs manufacturing industry. *International Journal of Quality and Reliability Management, 36*(6), 1014–1036. https://doi.org/10.1108/IJQRM-09-2017-0178.

Carmeli, A., Sheaffer, Z., Binyamin, G., Reiter-Palmon, R., and Shimoni, T. (2014). Transformational leadership and creative problem-solving: The mediating role of psychological safety and reflexivity. *The Journal of Creative Behavior, 48*(2), 115–135. https://doi.org/10.1002/jocb.43.

Cavazotte, F., Moreno, V., and Lasmar, L. (2020). Enabling customer satisfaction in call center teams: The role of transformational leadership in the service-profit chain. *The Service Industries Journal, 40*(5/6), 380–393. https://doi.org/10.1080/02642069.2018.1481955.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. 2nd ed. Hillsdale, NJ: Erlbaum.

Connor, D., and Cormican, K. (2022). Leading from the middle: How team leaders implement lean success factors. *International Journal of Lean Six Sigma, 13*(2), 253-275. https://doi.org/10.1108/IJLSS-11-2020-0194.

Damrath, F. (2012). *Increasing competitiveness of service companies: Developing conceptual models for implementing lean management in service companies*. Unpublished Master's Thesis, Politecnico di Milano, Como.

Den Hartog, D., Van Muijen, J., and Koopman, P. (1997). Transactional versus transformational leadership: An analysis of the MLQ. *Journal of Occupational and Organizational Psychology*, *70*, 19-34. https://doi.org/10.1111/j.2044-8325.1997.tb00628.x.

Falk, R., and Miller, N. (1992). *A primer for soft modeling*. University of Akron Press, USA.

Fornell, C., and Larcker, D. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research, 18*(1), 39-50. https://doi.org/10.1177/002224378101800010.

Gaiardelli, P., Resta, B., and Dotti, S. (2018). Exploring the role of human factors in lean management. *International Journal of Lean Six Sigma*, *10*(1), 339-366. https://doi.org/10.1108/IJLSS-08-2017-0094.

Hair, J., Sarstedet, M., Ringle, C., and Mena, J. (2011). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of Academy Marketing Science*. *19*(2), 139-152. https://doi.org/10.1007/s11747-011-0261-6.

Hallström, K., and Thedvall, R., (2015). Managing administrative reform through language work. Implementing lean in Swedish public sector organisations. *Scandinavian Journal of Public Administration*, 19(2), 89-108.

Heizer, J., and Render, B. (2014). *Operations management flexible version*. Pearson Higher Ed.

Herkness, D. (2005). *A study of transformational and transactional leadership and its relationship to successful lean manufacturing deployments*. PhD Published Thesis, Pepperdine University, USA.

Hirst, G., Van Dick, R., and Van Knippenberg, D. (2009). A social identity perspective on leadership and employee creativity. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, *30*(7), 963–982. https://doi.org/10.1002/job.600.

Huang, X., Rode, J., and Schroeder, R. (2011). Organizational structure and

continuous improvement and learning: Moderating effects of cultural endorsement of participative leadership. *Journal of International Business Studies,* 42(9), 1103–1120. https://doi.org/10.1057/jibs.2011.33.

Khattak, M., Zolin, R., and Muhammad, N. (2020). Linking transformational leadership and continuous improvement: The mediating role of trust. *Management Research Review*, *43*(8), 931-950. https://doi.org/10.1108/MRR-06-2019-0268.

Kim, Y., and Hochstatter, K. (2016). Transformational Leadership and its impact on Lean Implementation. *Journal of Construction Engineering and Project Management, 6*(1), 20–25. https://doi.org/10.1108/JEIM-02-2013-0005.

Kundu, G., and Bairi, J. (2014). A scale for measuring the applicability of lean practices in IT support services. *Journal of Enterprise Information Management, 27*(5), 623-643. https://doi.org/10.1108/JEIM-02-2013-0005.

Lam, M., O'Donnell, M., and Robertson, D. (2015). Achieving employee commitment for continuous improvement initiatives. *International Journal of Operations and Production Management, 35*(2), 201-215. https://doi.org/10.1108/IJOPM-03-2013-0134.

Laohavichien, T., Fredendall, L. , and Cantrell, R. (2011). Leadership and quality management practices in Thailand. *International Journal of Operations and Production Management, 31*(10), 1048-1070.

Li, B., Nahm, A., Wyland, R., Ke, J., and Yan, W. (2015). Reassessing the role of Chinese workers in problem solving: A study of transformational leadership, trust and security in 'lean'manufacturing. *Asia Pacific Business Review, 21*(4), 464-481. https://doi.org/10.1108/01443571111172426.

Liker, J. (2004). *Toyota way: 14 management principles from the world's greatest manufacturer*. McGraw-Hill Education.

Lizarelli, F., Chakraborty, A., Antony, J., Jayaraman, R., Carneiro, M., and Furterer, S. (2023). Lean and its impact on sustainability performance in service companies: Results from a pilot study. *The TQM Journal, 35*(3), 698-718. https://doi.org/10.1108/TQM-03-2022-0094.

Loh, K., Mohd Yusof, S. and Lau, D. (2019). Blue Ocean leadership in lean sustainability. *International Journal of Lean Six Sigma*, *10*(1), 275-294. https://doi.org/10.1108/IJLSS-06-2016-0029

Malmbrandt,M. and Åhlström, P. (2013). An instrument for assessing lean service adoption. *International Journal of Operations and Production Management, 33*(9), 1131-1165. https://doi.org/10.1108/IJOPM-05-2011-0175.

Mann, D. (2009). The missing link: Lean leadership. *Frontiers of Health Services Management, 26*(1), 15-26. https://doi.org/10.1097/01974520-200907000-00003.

Mårtensson, A., Snyder, K., and Ingelsson, P. (2019). Interlinking lean and sustainability: How ready are leaders?. *The TQM Journal, 31*(2), 136-149. https://doi.org/10.1108/TQM-04-2018-0046.

Mumford, M., Scott, G., Gaddis, B., and Strange, J. (2002). Leading creative people: Orchestrating expertise and relationships. *The Leadership Quarterly, 13*(6), 705–750. https://doi.org/10.1016/S1048-9843(02)00158-3.

Nogueira, D., Sousa, P., and Moreira, M. (2018). The relationship between leadership style and the success of Lean management implementation. *Leadership and Organization Development Journal, 39*(6), 807–824. https://doi.org/10.1108/LODJ-05-2018-0192

Northouse, P. (2021). *Leadership: Theory and practice*. Sage publications.

Oon, F., Aziati, A., and Abu Seman, A. (2021). Business excellence, leadership and lean: A systematic literature review. *International Journal of Business and Society, 22*(1), 332–345. https://doi.org/10.33736/ijbs.3178.2021

Parkhi, S. (2019). Lean management practices in healthcare sector: A literature review. *Benchmarking: An International Journal, 26*(4), 1275–1289. https://doi.org/10.1108/BIJ-06-2018-0166.

Piercy, N., and Rich, N. (2009). Lean transformation in the pure service environment: The case of the call service centre. *International Journal of Operations and Production Management, 29*(1), 54 –76. https://doi.org/10.1108/01443570910925361.

Rafferty, A., and Griffin, M. (2004). Dimensions of transformational leadership: Conceptual and empirical extensions. *Leadership Quarterly, 15*(3), 329–354. https://doi.org/10.1016/j.leaqua.2004.02.009.

Radnor, Z., and Johnston, R. (2013). Lean in UK Government: Internal efficiency or customer service?. *Production Planning and Control, 24*(10/11), 903-915. https://doi.org/10.1080/09537287.2012.666899.

Sekaran, U. and Bougie, R. (2016). *Research methods for business: A skill–building approach*, 7th ed., John Wiley and Sons, London.

Seltzer, J., and Bass, B. (1990). Transformational leadership: Beyond initiation and consideration. *Journal of Management, 16*(4),693–703. https://doi.org/10.1177/0149206390016004.

Shah, R., and Ward, P. (2007). Defining and developing measures of lean production. *Journal of Operations Management, 25*(4), 785–805. https://doi.org/10.1016/j.jom.2007.01.019.

Singh, N., and Krishnan, V. (2016). Transformational leadership in India developing and validating a new scale using grounded theory approach. *International Journal of Cross-Cultural Management, 7*(2), 219-236.

https://doi.org/10.1177/1470595807079861

Singh, J., and Singh, H. (2015). Continuous improvement philosophy–Literature review and directions. *Benchmarking: An International Journal, 22*(1), 75-119. https://doi.org/10.1108/BIJ-06-2012-0038.

Simonyte, S., Adomaitiene, R., and Ruzele, D. (2021). Experience of lean application in higher education institutions. *International Journal of Lean Six Sigma,13*(2), 408-427. https://doi.org/10.1108/IJLSS-11-2020-0208.

Stone, A., Russell, R., and Patterson, K. (2004). Transformational versus servant leadership: A difference in leader focus. *Leadership and Organization Development Journal, 25*(4), 349-361. https://doi.org/10.1108/01437730410538671.

Taj, S., and Morosan, C. (2011). The impact of lean operations on the Chinese manufacturing performance. *Journal of Manufacturing Technology Management, 22*(2), 223-240. https://doi.org/10.1108/17410381111102234.

Toma, S., and Naruo, S. (2017). Total quality management and business excellence: The best practices at Toyota motor corporation. *Amfiteatru Economic, 19*(45), 566- 580.

Tortorella, G., Narayanamurthy, G., Godinho Filho, M., Staudacher, A., and Mac Cawley, A. (2021). Pandemic's effect on the relationship between lean implementation and service performance. *Journal of Service Theory and Practice, 31*(2), 203-224. https://doi.org/10.1108/JSTP-07-2020-0182.

Vaishnavi, V., and Suresh, M. (2020). Modelling of readiness factors for the implementation of Lean Six Sigma in healthcare organizations. *International Journal of Lean Six Sigma, 26*(4),1290–1313. https://doi.org/10.1108/IJLSS-12-2017-0146.

Van Assen, M. (2018). Exploring the impact of higher management's leadership styles on lean management. *Total Quality Management and Business Excellence*, 29 (11/12),1312–1341. https://doi.org/10.1080/14783363.2016.1254543.

Vidal, M. (2007). Lean production, worker empowerment, and job satisfaction: A qualitative analysis and critique. *Critical Sociology*, 33(1/2), 247–278. https://doi.org/10.1163/156916307X168656.

Womack, J., and Jones, D. (2010). *Lean thinking: Banish waste and create wealth in your corporation*, Taylor & Francis, New York, USA.

Yadav, G., and Desai, T. (2016). Lean Six Sigma: A categorized review of the literature. *International Journal of Lean Six Sigma*. 7(1), 2-24. https://doi.org/10.1108/IJLSS-05-2015-0015.

Yadav, G., Luthra, S., Huisingh, D., Mangla, S. K., Narkhede, B. E., and Liu, Y. (2020). Development of a lean manufacturing framework to enhance its adoption

within manufacturing companies in developing economie. *Journal of Cleaner Production,* (*245),* 118726. https://doi.org/10.1016/j.jclepro.2019.118726.

Dr. Lubna A. Baqleh holds a PhD in Business Administration. She is an assistant professor of operations and production management and business faculty in the business administration department of Yarmouk University, Jordan. Her research interests include lean and TQM management, supply chain management, and sustainability.

Dr. Shaker A. Aladwan holds a PhD in management from the University of Birmingham, UK. He is an assistant professor of public administration and business faculty in the public administration department of Yarmouk University, Jordan. His research interests are TQM and excellence, innovation, leadership, strategic management, and organizational reputation in the public sector.

Dr. Tamara A. Al-Yakoub (Corresponding author) is a PhD holder in Public Policy. She is an assistant professor of public administration and business faculty in the public administration department of Yarmouk University, Jordan. Her research interests are human resource management, corruption, governance, TQM, and Strategic Planning.