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Lean manufacturing, leadership and employees: the case of UAE SME manufacturing companies

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ABSTRACT

Successful lean implementation to SMEs poses great challenges. Although lean principles, tools and strategies for implementation are widely known and well documented, companies still struggle. In the present paper, the challenges for the SMEs in their lean journey are discussed, focusing on leadership styles and their impact on how employees perform during the lean transition. The aim of the paper is to determine the extent to which the main principles of lean manufacturing are understood and adopted in manufacturing companies in a developing country such as the United Arabic Emirates (UAE) through a structured questionnaire. The degree of implementing lean manufacturing is assessed and discussed against literature review findings. Furthermore, the impact of various leadership styles during the lean transition is investigated. A second survey is used for capturing the current state with regards the employee performance and the role of leadership in manufacturing SMEs in the UAE.

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1. Introduction

Lean manufacturing has become almost a standard since it was first introduced as Toyota Production System after WWII. The term 'lean manufacturing' was proposed by Krafcik (1988), quite some time after the first introduction of the Toyota Production System. The overarching aim of lean is to achieve the same performance (and further improve it) while using less input such as less time, less space, less human effort, less machinery, less material and less cost (Womack et al., 1990). A number of attempts have been reported in providing a comprehensive definition of lean manufacturing, with one of the most complete, from the authors' point of view, being: '*Lean manufacturing is an integrated socio-technical system, whose main objective is to eliminate waste by concurrently reducing or minimizing supplier, customer, and internal variability*' (Shah & Ward, 2007). The socio-technical system allows the classification of the critical success factors into four categories, namely *work organisation, external environment, human* and *technical* (Kleiner, 2006).

Although there is a tendency of oversimplification suggesting that lean management and manufacturing are only a set of tools that can help boost productivity, reality is quite different as many publications on the topic have proved until now. Lean impacts the whole of the organization, and in many instances is considered as a new management

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philosophy. The culture of the organization and the acceptance of change can have a great impact on the successful lean implementation. The frameworks available are characterized by high complexity and, in many cases, vagueness. It is thus obvious, that several factors need to be considered, even before the beginning of any lean implementation project, as stakeholders within and outside the organization can have conflicting interests.

Numerous publications in the last 25 years have confirmed that lean affects all aspects of an organization. Introduction of lean into any organization is quite complex and difficult relying on a number of critical success factors. These factors have been studied by a number of researchers. Indicatively, Salonitis and Tsinopoulos (2016) reviewed the literature and identified several ones, such as 'Organisational culture and ownership', 'Developing organisational readiness', 'Management commitment and capability', 'Providing adequate resources to support change', 'External support from consultants in the first instance', 'Effective communication and engagement', 'Strategic approach to improvements', 'Teamwork and joined-up whole systems thinking' and 'Timing to set realistic timescales for change and to make effective use of commitments and enthusiasm for change'. In practice companies set out enthusiastically to implement lean, only to find out that this is not an easy journey with a guaranteed successful end. Unsuccessful implementation can have a great impact on organization's resources, but even more importantly, affect employees and their confidence in lean philosophy (Marvel & Standridge, 2009).

Within the United Arab Emirates (UAE), manufacturing sector contributed 14% to the overall GDP in 2015 (Rahman, 2015). An ambitious aim has been set to reach 20% by 2021 and ultimately 25% by 2025. The manufacturing sector in UAE is composed mostly of SMEs; Tsetsonis (2014) reports that 94% of the manufacturing sector companies are SMEs. It is thus obvious that the challenges identified for SMEs are the challenges that the whole manufacturing sector is facing in UAE.

In the present paper, the maturity of the UAE manufacturing sector with regards to lean manufacturing is investigated mainly by collecting and reporting the perception of the employees within companies who attempt to implement lean. As the literature review has shown that both senior leadership and employee performance are critical in the successful implementation, a survey within the manufacturing sector in UAE has been developed for both. The key similarities and differences with the literature review findings are discussed.

2. Research methodology

The research is structured into three phases. The first phase presents the thorough literature review undertaken on the subjects of lean manufacturing and how leadership and the way it is exerted on employees (through leadership style, motivation, etc.) can have an impact on the successful lean implementation.

The second phase attempts to assess the understanding and diffusion of lean principles, tools and techniques in the UAE manufacturing sector. This will highlight the importance of leadership on lean implementation in the UAE context. For this reason, a survey was undertaken with the use of structured questionnaires through a large number of UAE SMEs in the manufacturing sector.

The third phase focuses more on the aspect of leadership and the impact it can have on the successful implementation of lean manufacturing. A shorter scale survey was undertaken for assessing the impact of different leadership styles on the performance of the employees and how this can impact the lean manufacturing introduction and adoption.

3. Literature review

3.1. Lean manufacturing

Lean manufacturing is based on five principles, as defined by Jones and Womack (1996), namely 'value', 'value stream', 'flow', 'pull' and 'perfection'. Lean transformation attempts to integrate these values into the organization's practices and eventually in its culture. A number of tools and practices have been introduced as part of the lean transformation journey (e.g. Visual factory (5 S), standardization through standard operating procedures (SOPs), A3, Quick changeovers through the implementation of 'single minute exchange of dies' (SMED) ideas, Just-in-time (JIT), Continuous improvement (Kaizen), Production pull cards (Kanban), mentoring and coaching (KATA) etc.). Jones and Womack (1996) graphically presented the lean journey as a house and positioned the various tools in the different elements of the 'house'. In such way, the sequence of adoption of such tools for the successful implementation of lean is highlighted. Starting from the 'foundations' of the lean 'house', the organization must start with stabilizing the performance of the production system, through the use of tools such as 5 S, SOPs, etc. Having a strong foundation will allow the 'building' of the rest of the house.

The successful implementation of lean, as indicated in the introduction, relies on several factors. Salonitis and Tsinopoulos (2016) identified the critical success factors, and usually these include 'top management', 'training and education', 'thinking development', 'employees', 'working culture', 'communication', 'resources', 'business planning', 'customer focus' and 'government intervention'. Alefari et al. (2017), after conducting a thorough literature review, highlighted that the organization's top management and leadership are always identified as both a key success factor and a barrier depending on how lean transformation is handled.

Alefari et al. (2017) discussed the importance of the senior management commitment for implementing lean. This could be demonstrated in the form of developing a clear vision ensuring sufficient financial resources and providing strategic leadership. Although the transformation into lean is often desirable to be driven from the shop-floor, it is important that senior management lead the journey in its first stages. In order to assess the importance of the senior management Alefari et al. (2017) conducted a survey in the U.K. among 48 manufacturing companies. In order of importance, workforce-related barriers and top management-related ones were identified as the most critical ones. Stratifying the results and focusing only on SMEs, it was revealed that the first in importance barriers were considered to be related to top management.

3.2. Lean manufacturing implementation in developing countries

Lean manufacturing, as already mentioned, has a long history now. A number of companies, both within and outside the manufacturing sector, have implemented lean (although as mentioned with varied degrees of success). This has been supported by the extensive literature published over the years. However, this has been considerably more successful in developed countries, and the adoption of lean in organisations in developing countries is not as widely spread (Zargun & Al-Ashaab, 2014). Marodin and Saurin (2013), systematically reviewed the relevant literature published between 1996 and 2012, revealing that only 14% of the studies have been conducted in developing countries whereas 86% have been carried out in the developed countries. However, this is changing gradually and in a more recent study, Almanei et al. (2017) presented a thorough literature review of lean implementation in SMEs in 18 countries that have been published between 2007 and 2017. Out of these 18 countries, there are lean implementation examples from 8 developing countries.

There are reports of applying lean practices in many manufacturing companies in developing countries, indicatively for studies from the middle east countries:

- Al-Najem et al. (2013) focused on the critical success factors for lean implementation in Kuwaiti manufacturing sector.
- Bhutta et al. (2013) reviewed the extent of lean diffusion in Pakistani manufacturing companies.
- Karim et al. (2011) focused on the barriers that Saudi manufacturing companies are facing when trying to implement lean.
- Duradi et al. (2012) studied the barriers to the implementation of lean in Iranian manufacturing companies.
- Al Tahat and Alkhalil (2012) investigated the extent of implementation of six lean practices (equipment configurations, total preventive maintenance, visual control, new equipment/technologies, processes re-engineering and shared vision of perfection) within 350 Jordanian manufacturing companies.
- Khlat et al. (2014) investigated the extent of lean tools implementation in Lebanese pharmaceutical industry.

The literature review highlighted that there has been no investigation in the UAE context with regards the lean manufacturing adoption, the importance of the leadership and the impact on the employees' performance.

UAE is one of the middle east countries, and part of the Gulf Cooperation Council (GCC) countries. One of the most distinctive similarities among these countries is the strong position that religion (Islam) has in all aspects of life. Islam is assumed to shape the mentality and behaviour of the people, along with their Arab traditions (Bjerke & Al-Meer, 1993). Islam promotes a set of moral values and social behaviours based on the religion text of the Quran (Kabasakal & Bodur, 2002). Vietor and Sheldahl-Thomason (2018) describe the practice of Islam through the five obligations that greatly influence the culture. These five obligations are:

(1) Reciting that there is no God but God and Muhammad in the Messengers of God (Shahada).
(2) Praying five times a day (Salat).

(3) Giving 2.5% of one's total net worth to the poor, which is called (Zakat).
(4) Fasting during the month of Ramadan in the lunar calendar (Sawm).
(5) Taking a pilgrimage to Mecca during one's lifetime (Hajj).

The Islamic culture, shared among these countries, is expected to have an impact on the way manufacturing companies operate in the middle east, as well as the way leadership is exerted. The results thus obtained for UAE manufacturing companies can be generalized (to an extend) and reflect the manufacturing within the whole region of Gulf.

3.3. Leadership and lean manufacturing

The role of the leader in implementing lean was investigated thoroughly by Mann (2009) (Mann, 2010). He structured the role of leadership as a process and proposed a set of dimensions for lean leadership. A number of attributes were identified for a leader to be able to guide the organization through the lean journey. Dombrowski and Mielke (2013) positioned leadership as non-adding value, but nevertheless a necessary process for setting the scene for the employees to add value to the product in the most efficient and effective way. They made the link between leadership and the employees, and how managers should engage employees and allow them to improve within the organization for the benefit of the organization. According to these researchers, the lean leadership system can be described through five principles, i.e. 'improvement culture', 'self-development', 'qualification', 'Gemba' and 'Hoshin Kanri – policy deployment'. Dombrowski and Mielke (2014) also presented 15 rules for the leadership that can be considered as practice-oriented requirements. van Dun et al. (2017) based on a thorough literature review identified seven key values ('continuous improvement', 'teamwork', 'customer focus', 'respect for people', 'information sharing', 'management by facts' and 'management commitment') that should characterise lean management. Furthermore, they identified 19 typical behaviours that lean managers exhibit, with the most cited ones being 'engaging employees', 'celebrating and recognizing success', 'coaching teams', 'sharing information' and 'visiting the shop floor'. Alefari et al. (2017) based on the literature review and the survey that they conducted highlighted several expectations from management for the successful implementation of lean, such as the commitment to the lean transformation, the adoption of a suitable leadership style, the engagement of employees and their development and last but not least the setting of a clear lean strategy.

3.4. Leadership and employees

As highlighted in the previous sections, leadership and employees' performance are closely related and can be a driving force but a barrier as well for the successful implementation of lean manufacturing. In the following paragraphs, a literature review on the importance of management for lean implementation is presented. Management is responsible, among others, for the performance management of the employees, including their assessment and improvement. Leadership importance and leadership style impact on improving the employees' performance will be discussed as well.

One of the major roles of management is to align the organization's objectives with the employees' agreed key performance indicators (KPIs). This can be achieved through employee performance management. Relevant KPIs include measures, skills, competency requirements, development plans and the delivery of results. The focus thus of this process is the improvement, learning and development of the employees as for them to be able to contribute effectively in the overall business strategy.

Initially, the management of employee performance was only linked to deciding the salary level that each employee should be paid. However, such an approach does not account for employees who are not motivated only with financial rewards. Waheed (2011) defined employee performance as the employee productivity and output because of employee development and related that with the organizational effectiveness. A number of theories have been developed that attempt to explain the behavior of human beings in their work environment. The most well-known ones include 'Theory X and Y', 'Theory Z' (McGregor, 1960) and 'Hierarchy of needs' (Maslow, 1943; 1954).

3.4.1. Improving employee performance

There is a plethora of factors that can affect the employee performance. A number of publications have been presented highlighting the impact of one or more of the factors, usually based on empirical studies. In a recent literature review study, Atatsi et al. (2019) presented a comprehensive structured literature review of the topic, focusing however on the context of Africa. Their analysis was mostly on the traits of the individuals within an organization (such as Altruism, Conscientiousness, Sportsmanship, Curtesy and civic virtue) and how through individual learning and team learning the employee performance can be improved. Diamantidis and Chatzoglou (2019) in a similar study, they have identified 13 factors and investigated the interrelationships among these. They have grouped the factors into three groups; 'firm-/environment-related factors', 'job-related factors' and 'employee-related factors'.

Boxall and Purcell (2000) considered the performance of employees as a function of their abilities, the motivation and opportunities in the organization.

The employee performance can be improved by improving the employee well-being (Cooper & Robertson, 2001) and the employee engagement (Anitha, 2014). Anitha (2014) has associated employee engagement to a number of factors, such as leadership style, engaging teamwork, work environment, prospects of career development, the reward system, organisational policies and workplace well-being. Employee engagement improvement can be achieved through: better communication of the organization's goals and how these are affecting the individual's goals, encouraging open communication and sharing of information between managers and employees, reinforcing the culture of the company, team development, encouraging innovation, delegation of authority and decision power, support and development to name few.

Almost all studies converge in the importance of the leadership and the impact motivation has on the employee performance. Both have been extensively studied (mostly by social scientists), and a number of theories attempting to describe them have been developed. In the following two sections, these will be briefly described.

3.4.2. Leadership and employee performance

Leadership has a major influence on the performance of organizations, managers and employees as it has been reported in numerous publications (Wang et al., 2005) (Vigoda-Gadot, 2007). The various leadership styles can have an impact on the performance of individuals. A number of studies focus on the impact of different models on the employee performance, such as democratic or autocratic, socially oriented or target oriented, transformational or transactional, etc. In the following sections, the concept of lean leadership is described in more detail. Also, in previous sections, the leadership theories and models have been briefly presented.

The impact of the style of leadership adopted by the management on the performance has been researched a lot. Bass (1985) revealed that there is a high correlation between the leader's transformational style and the organizational performance level. Geyer and Steyrer (1998), Lowe et al. (1996), MacKenzie et al. (2001) and Parry and Proctor-Thomson (2002) revealed a negative correlation between the transactional leadership style and organizational performance.

A number of studies carried out in the Arab world suggest that leadership in the Arab cultures fosters consultative and participative tendencies (Alnuaimi, 2013). Boussif (2010) claims that the influence of Islamic and tribal values and beliefs on leadership needs to be considered, as both Islamic and tribal laws underpin consultation in all aspects of life.

A number of leadership theories have been developed over the years. These theories attempt to explain how a leader can shape outcomes under various circumstances. However, they are insufficient for explaining subordinate behaviours so various seminal theories of motivation have been defined. Leadership theories can be classified into eight groups that basically describe the different types of leaders (Table 1). These groups are different in several aspects such as characteristics that distinguish leaders from subordinates, situational or environmental factors, skill levels, etc., but, on the other hand, they are overlapping in many cases. However, for the needs of the present study, the focus is on how the style of leadership affects the employee performance. In Table 1, the findings from the literature review are presented.

3.4.3. Motivation and employee performance

Motivation is critical within any organization. Hitka and Sirotiakova (2009) identified a long list of factors that can have on the way motivation works internally in an organization. They included: 'the scope and type of employment', 'the job performance', 'working process', 'education and personal growth', 'good working team', 'the company's reputation', 'the opportunity to utilize one's own abilities', 'physical strain of a job', 'authority', 'recognition', 'atmosphere at working places', 'further financial remuneration', 'job stability', 'communication at work', 'knowledge concerning results of work', 'working hours', 'working environment', 'prestige', 'attitudes of supervisors', 'individual decision-making', 'self-realization', 'fringe benefits', 'fair assessment of employees', 'stress', 'psychological stress', 'company's vision', 'regional development', 'company's attitude to the environment' and the level of the 'basic pay'.

Motivation is closely related to the employees' performance. It can be both positive (rewards) and negative (punishment) for either acknowledging work done or punishing the work not achieved. Several challenges though exist with using any type of motivation.

Table 1. Leadership theories (in order of appearance in the literature) and employee performance.

Leadership theory	Leadership style	Employee perception by leadership
Great man theory (Fliedner, 2015)	Leadership capacity is a talent. Leader as a hero. Authoritarian style	Followers, either convinced or forced by the leader. Respect or fear. Employees cannot learn and become leaders as well
Participative theory (Likert, 1967)	Participative management and delegation	Leadership engages employees, but the decision authority is with upper management
Behavioral theory (Merton, 1957)	Great leaders are made, not born.	Employees can learn, alter their behavior
Contingency theory (Fiedler, 1964)	Leadership is directly affected by the environment	The contingency theory emphasizes the importance of both the leader's personality and the situation in which that leader operates
Trait theory (Zaccaro et al., 2018)	Focuses on personality traits and behavioral characteristics within leaders	Allows the managers to know their strengths and weaknesses and thus get an understanding of how they can develop their leadership qualities.
Situational theory (Hersey & Blanchard, 1969)	Link leadership style to situations that the leaders face	Leadership style changes according to the employees' performance
Transactional theory	Managing rather than leading.	Leaders obtaining the efforts of subordinates in exchange for rewards. Classification of employees in 'in-favor' and 'out-of-favor' ones
Transformational theory (Bass, 1990), (Hargis et al., 2011)	Motivational, inspirational	Focuses on the relationships formed between the leaders and the subordinates

To name a few, rewards might become the goal itself for the employees, and expect this for performing their work, justice in awarding positive and negative motivation is also an issue. A number of theories have been developed attempting to explain how motivation works for employees (Table 2).

3.4.4. Continuous improvement of employee performance

Continuous improvement can be defined as the ongoing effort to improve products, services or processes. Woods (1997) discussed the benefits of using continuous improvement for the employees as well, highlighting that continuous improvement can provide a healthy workplace. Cole (2001) argued that continuous improvement can:

Table 2. Motivation theories.

Motivation theory	Underlying hypothesis/basis	Employee perception
Maslow's hierarchy of needs (Maslow, 1943 & Maslow, 1954)	All human beings possess intrinsic needs that need to be met hierarchically.	Work needs to be able to allow the employee to reach the highest level of self-actualization
Two-factor theory (Herzberg et al., 1959)	Developed in the 50 s by Herzberg	Proposes both satisfying and dissatisfying job factors. These factors seem to work independently
Theories X and Y (McGregor, 1960)	Negative (X) and positive (Y) views of employees.	Theory X: negative view of employees (leadership assumes that employees are lazy and need supervision). Theory Y: positive view of employees (employees are ambitious, self-motivated).
Expectancy theory (Oliver, 1974)	People decide on their behavior based on the expected outcome and how likely this is.	Employees behavior is driven by rewards.
Control theory (Glasser, 1984)	Behavior is never caused by a response to an outside stimulus, it is determined by the person's desire to maximize basic needs.	The motivation strategy adapted depends on the leader's style.
Goal-setting theory (Locke & Latham, 1990)	People are pursuing success, and therefore are motivated by challenging goals.	Leadership sets challenging but realistic goals for challenging and motivating employees.

- Mobilize employees that results in increased commitment.
- Incremental improvements can lead to a magnification of results and make large changes possible.
- Allows for learning that is based in practice and is more likely to be accepted when it is implemented by the same people who proposed the changes.
- Allows changes to be implemented that are based on tacit knowledge by the employees.

The benefits that continuous improvement can bring to an organization include:

- low capital investment (Michela et al., 1996);
- ideas and suggestions coming from the employees who are closer to the actual work done (Michela et al., 1996) (Goh, 2000) (Taylor & Hirst, 2001);
- increased employee commitment (Temponi, 2005);
- improved performance/quality (Goh, 2000) (Chassin, 1997);
- reduction of waste (Gallagher et al., 1997);
- improved customer satisfaction (Gallagher et al., 1997), (Taylor & Hirst, 2001)

Continuous improvement has been considered a core element in a number of different manufacturing philosophies, including lean and six-sigma. However, in both these philosophies, continuous improvement (or kaizen) refers primarily to the improvement of processes, products and methods; and does not directly refer to the continuous improvement of the employees' performance. Nevertheless, for achieving high levels of kaizen, the employee performance needs to be improved as well.

In many instances, the continuous improvement is viewed as a formal process with specific steps, such as the six-sigma approach of P-D-C-A. Through the implementation of such approach, specific processes/procedures are improved. This improvement though indirectly can improve the performance of the employees. The continuous improvement of the employees can be thus improved from such a process.

In a number of studies, the factors that are critical in the successful implementation of continuous improvement initiatives have been discussed. Fryer et al. (2007) listed these critical factors. In terms of barriers and challenges when implementing continuous improvement initiatives, Bessant et al. (1994) and Gallagher et al. (1997) identified the culture of the organization as critical. Dewhurst et al. (1999) found the main barrier to be the lack of definition of the customer, the rigidity of the organization and the lack of incentive to improve customer satisfaction for the case of monopolies.

As it is obvious from the literature review, leadership style, motivation of employees and continuous improvement focusing on the employee performance can have a huge impact on how successful the lean implementation will be. However, these have not been investigated in the context of the UAE and will be addressed in the following sections.

4. Survey within UAE manufacturing sector

As highlighted in the introduction, the UAE manufacturing sector is mostly composed of SMEs. The implementation of lean in SMEs has a number of challenges as highlighted by Almanei et al. (2017). As part of phase 2 that was described in the research methodology

section, a questionnaire was developed in order to assess the maturity of lean implementation in the UAE manufacturing sector. The questionnaire thus was focused in collecting the current practices with regards lean implementation, focusing in identifying (i) the success factors affecting organizational performance, and (ii) the enablers that facilitate the introduction and implementation of lean management (LM).

The questionnaire was structured in three parts. Part I and part II are focused on capturing demographic information about the respondents and their company, respectively. The third part focused on the understanding of lean, the attitude toward lean implementation and the problems and barriers. A mix of multiple choice and Likert scale questions was used depending on the content of the question. The respondents had to rank various statements in the range from 1 to 5. The result was interpreted according to three classes of average score; 1–2.33, 2.34–3.67 and 3.68–5.00 as negative, neutral and positive perception for each item, respectively.

In total 150 questionnaires were emailed to operations managers and manufacturing engineers of SME companies within the UAE. representing different sectors (including fashion, aerospace, defence, consumer goods, etc.). The response ratio to the questionnaires was 58% (87 completed questionnaires were received). The demographics of the survey are presented in Figure 1. The demographics of the respondents reflect well the composition of the manufacturing companies in the UAE (Tsetsonis, 2014).

5. Discussion of results

5.1. Lean implementation maturity

The lean implementation maturity of the participating companies was assessed by asking the number of years that each company has been in their lean journey and the way this was implemented in the company (whether an external consultant was used, or by employing a lean expert, or through training of the existing staff). Figure 2 presents the results with regards to the questions asked. An interesting point here is to mention that the size of the company is very important on whether a company is implementing lean or not. Fifty-five per cent of the micro-companies (less than 20 employees) participated in the survey have not yet attempted to implement lean, and most of the rest have just started experimenting with lean philosophy. Compared to small- and medium-sized companies, this is a significant difference.

5.2. Lean understanding

The lean understanding status was also assessed by asking questions on what respondents understand lean is about, what the focus of implementing lean is, the knowledge and use of lean tools and finally the diffusion of these techniques. For the assessment of the general understanding of lean, the respondents had to associate lean manufacturing with key objectives/ideas, such as waste reduction, continuous improvement, set of tools, management philosophy, etc. They could select up to three different ideas as the ones who they associate most with lean. Figure 3 presents the results of this association.

The first ranked association was ‘a set of tools for production improvement’. Characterizing lean manufacturing as a ‘set of tools’ can be considered as an indication

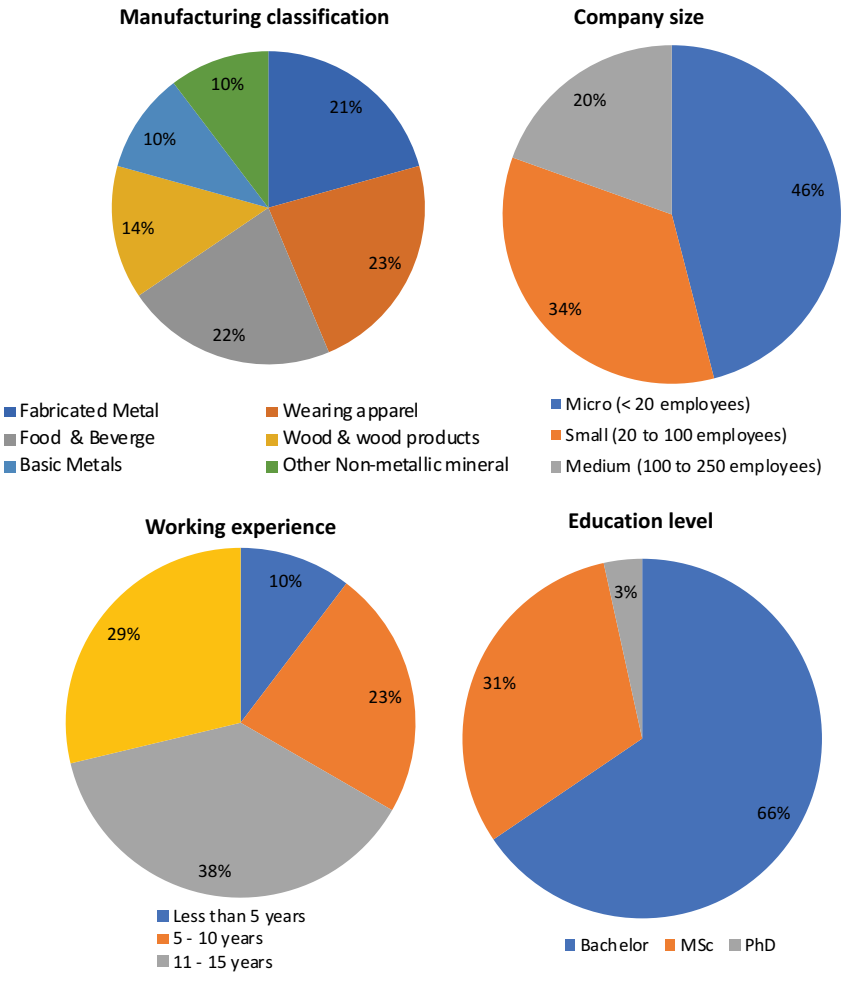

Figure 1. Survey demographics.

of early understanding of lean manufacturing. Furthermore, the third most frequently selected association is 'workforce reduction'. Such perception is negative and not in line to lean manufacturing core principles. It can definitely be a barrier to lean manufacturing implementation. 'Waste reduction' scores second and 'Kaizen' fourth. Both are lean principles. One of the most relevant associations is 'management philosophy' that however scored second to the last one. This is another indication that lean understanding is not yet mature at UAE manufacturing SMEs.

The level of understanding was found to vary with the company size and the time the company is implementing lean. Larger companies with more than 3 years focus more on the management philosophy and kaizen aspects of the lean manufacturing. Companies with less than 3 years focus on the waste reduction and the set of tools for production improvement. Only responses from micro and medium companies with less than 1 year indicate that lean might be associated with an attempt to reduce the workforce.

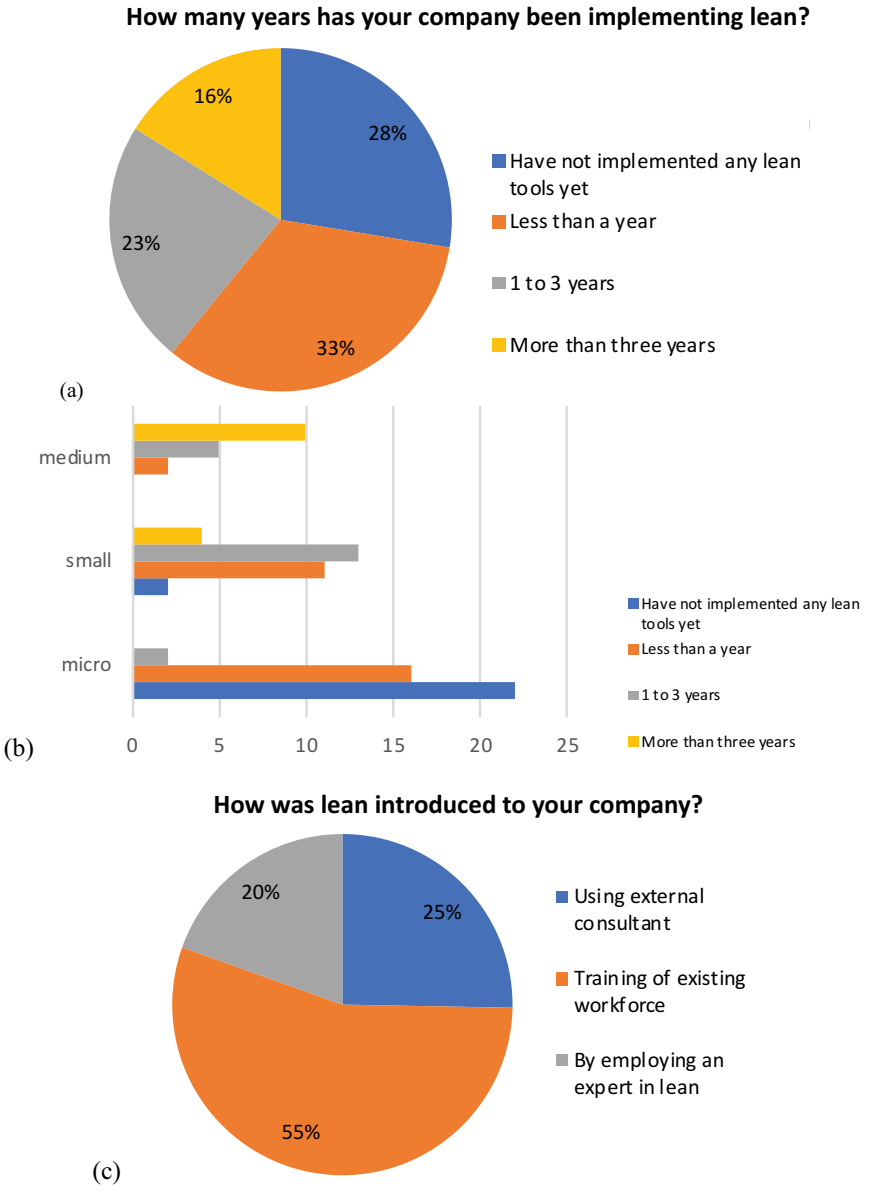

Figure 2. Lean implementation maturity: (a) years of experience in lean, (b) stratification as per the type of company and (c) ways of introducing lean.

5.3. Lean techniques understanding

As indicated in Figure 3, there is a wide perception that lean is a 'set of tools for production improvement'. This is a valid perception, if we consider the number of different tools available that are considered under the lean umbrella. The most widely used were included in the questionnaire, and the respondents were asked to state their familiarity by selecting between five options, namely: 'Not clear what it is', 'I have heard of that before', 'I understand the basics', 'I could apply this with some help' and

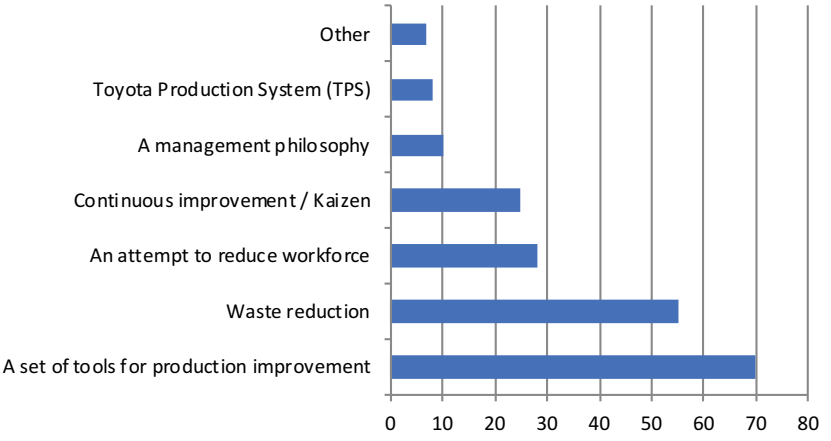

Figure 3. Lean understanding.

'I am considered to be an expert'. For quantifying the responses of these questions, these five options were assigned a mark from 1 to 5 representing the perception levels. The result would be interpreted according to three classes of average score; 1–2.33, 2.34–3.67 and 3.68–5.00 as negative, neutral and positive perception for each item. As shown in Figure 4, 5S was ranked first. This a logical result, as 5 S is usually one of the first lean tools implemented when a company is embarking to its lean journey. This is also in agreement with similar surveys from other countries, such as UK (Achanga et al., 2006), Italy (Staudacher & Tantardini, 2007), Saudi Arabia (Albliwi et al., 2014) and Greece (Salonitis & Tsinopoulos, 2016) to name few examples.

The classification proposed by Panizzolo (1998) was used, where lean practices are grouped into five categories, namely: process and equipment, manufacturing planning and control, human resources, supplier relationships, and customer

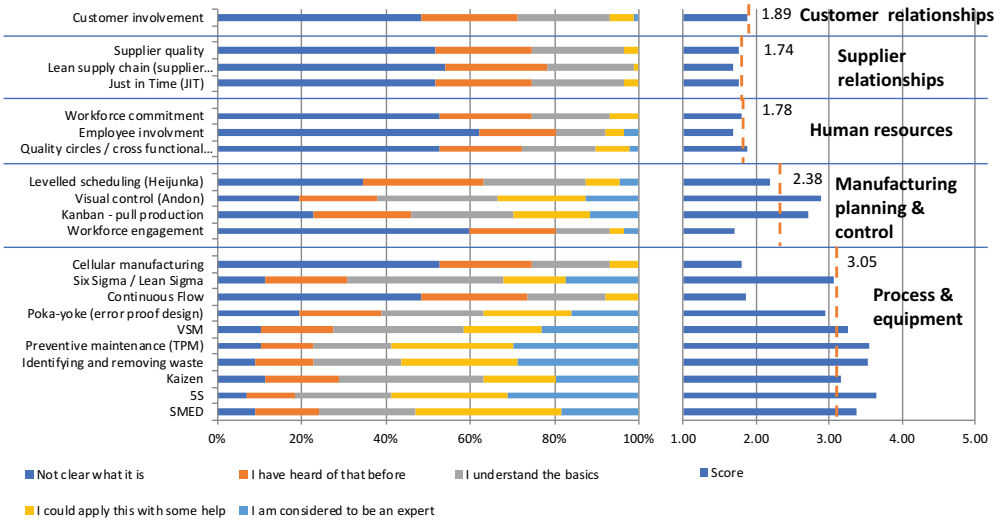

Figure 4. Lean techniques understanding: responses profile (left) and average per category (right).

relationship. Figure 4 presents the response profile and the average score for each category. The 'process and equipment' category ranks first for understanding. The findings are in agreement with results presented by Panizzolo (1998), where in countries where there is not a strong manufacturing history; organizations seem to have difficulty in adopting lean ideas with regards external relationships such as with suppliers and customers.

5.4. Lean drivers and barriers

In order to assess the challenges for implementing lean manufacturing, the lean drivers and barriers had to be assessed. Previous studies have focused on analyzing these through comprehensive literature review and surveys (Almanei et al., 2017). Through an extensive literature review, the common root causes that lead to lean initiative failure were identified and related to lack of supply chain integration, lack of leadership commitment, lack of employee involvement, poor understanding of lean tools and techniques and finally objecting business systems.

The lean drivers were listed in the questionnaire, and the survey participants were asked to select up to three. The key driver was revealed to be the increase of market share (Figure 5). This is again in agreement with previous studies. As per the understanding of techniques and tools, the potential benefits from the engagement with employees, customers and suppliers are not valued.

With regard to the barriers, a number of statements were listed, and the participants had to indicate whether they agree or disagree on a Likert scale. The average value for each barrier is presented in Figure 6. Respondents consider equally important the lack of commitment from both the top (higher management) and the bottom (employees). This is in agreement with previous studies in the UK (for example, both Achanga et al. (2006) and Alefari et al. (2017) indicated leadership as the key factor for SMEs to successfully implement lean), Greece (Salonitis & Tsinopoulos, 2016) and Italy (Staudacher & Tantardini, 2007).

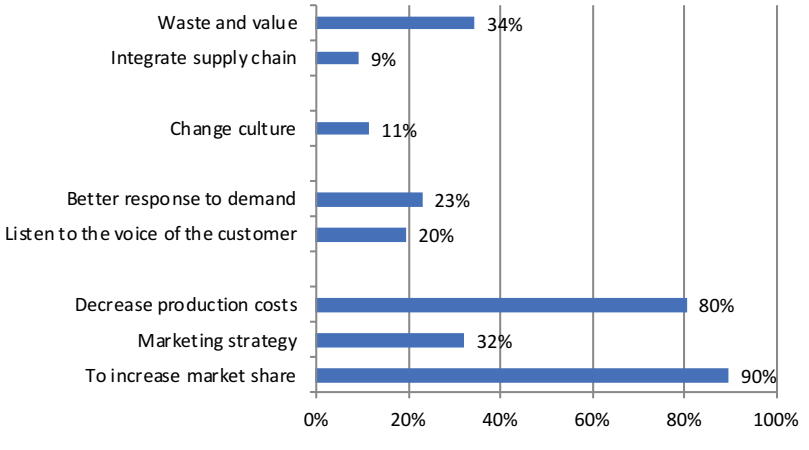

Figure 5. Ranking of lean drivers in the UAE.

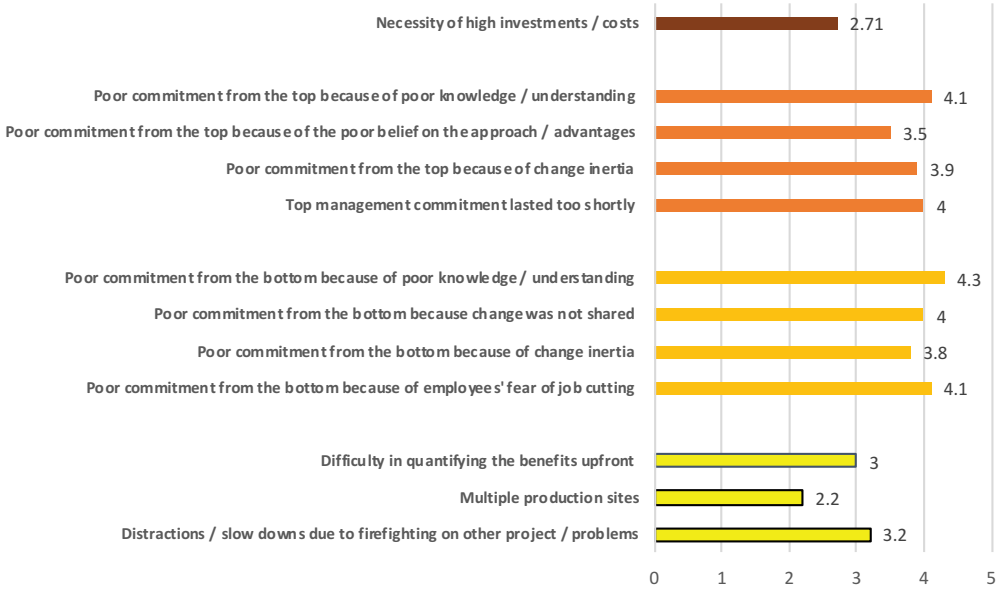

Figure 6. Lean barriers at UAE manufacturing SMEs.

5.5. Leadership

In order to assess the current practices in the UAE based manufacturing companies with regards leadership, a second questionnaire (phase 3 in research methodology) was developed with questions discussing the leadership style adopted by senior management in SMEs. Due to the plethora of the different leadership models, Hersey and Blanchard (1969) situational leadership theory was selected. The situational leadership theory is based on the assumption that there is no best style of leadership, and its situation required a different style in order to get the optimum results. The situational leadership theory characterizes the leadership style in terms of the amount of task behaviour and relationship behaviour that the leaders provide to their followers (or in the context of the present work, the employees). The four styles that can be used independently are the telling (or directing), the coaching, the supporting and the delegating one.

Telling (or directing) is based on the concept that managers give precise instructions and orders about what to do to their employees. In such a situation, the leader will make all the decisions without consulting subordinates. They will inform their team of their decision they have made and expect their team to carry out their instructions. Usually, such a style does not give the chance for the team to feedback. In other theories, such a style is characterized as autocratic leadership.

Coaching leadership style still relies on managers directing employees on what to do, but at the same time, they engage more with them and explain and teach them how to do their tasks. This allows the employees to feedback to their managers and they, on the other hand, are more receptive. The requirement for the managers to teach the employee results in increased time requirements from the managers. In other theories, this style is closely related to the democratic style of leadership.

The supporting leader will participate in idea creation and decision-making, but most of the decisions will be taken by the team as a whole. Supporting relies on the independence of the employees. Managers are available for the employees to ask for support when and if needed. Most of the time, the help required is related to resources and organisation rather than task direction. This type of leader appears to be 'quiet' because they lead by example and appears to be an equal team member of the team, rather than its ruler.

Delegating completely gives the task responsibilities to the employees, and managers only review the results. They provide minimal direction and guidance. It is a hands-off style of leadership similar to laissez-faire leadership where the group makes almost all of the decisions. This type of leader is usually concerned more with communicating their vision of the future than directing the day-to-day. It relies on employees being highly qualified, which frequently means extra expenses in salaries.

The questionnaire was circulated among the employees of 35 SME manufacturing companies in the UAE, asking the respondents to select between the four leadership styles and their perception on whether the style had a positive or a negative impact to their performance. The respondents could select more than one leadership style and indicate the percentage of managers that uses this style. Furthermore, for the companies that at least five employees responded, interviews were conducted with medium and senior managers in order to capture the management perception as well.

As shown in Figure 7, the most prominent leadership style used in the SMEs as perceived by the employees is the 'telling' one. In almost 90% of the companies, that was the case. This does not come as a surprise; enterprises in the Arabic world are, in most of the cases, family owned adopting very traditional means of management and leadership as highlighted in a recent report by Korn Ferry Institute (2011). The most widely exerted leadership style is top-down, patriarchal and authoritarian (Alnasseri et al., 2013). In most of the cases 'autocracy is the norm' (Korn Ferry Institute, 2011), characterised by micro-management and lack of delegation. Empowerment for mid-level managers is not practised, especially because mid-level managers tend to be younger in age with senior managers who, due to the region's culture, are respected without any questioning or challenging. This can also be attributed to the Islamic culture, as it is expected that people should not be critical of decisions made by senior managers due to their authority (Kabasakal & Bodur, 2002).

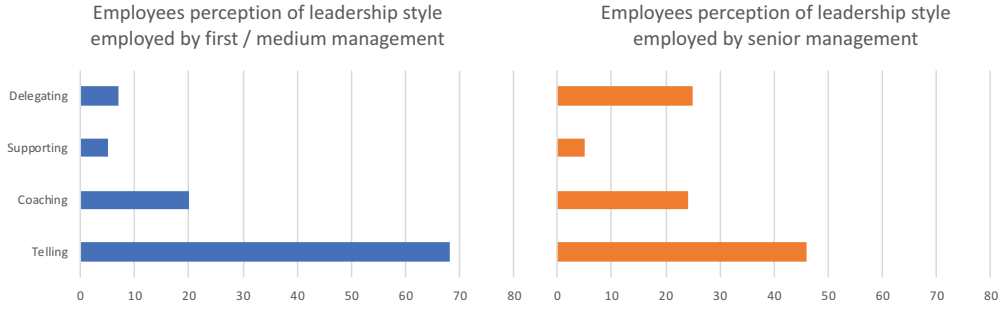

Figure 7. Employees perception of the type of leadership employed by management.

In the case of international companies in the gulf, that are usually characterised by multi-cultural teams, the leadership and management style usually is a mix of democratic and authoritarian (Alnasseri et al., 2013), as to be able to cope with people with different background.

Furthermore, the employees were asked to indicate if there is a difference between the leadership/management style between their direct line managers and the senior management. It can be seen (Figure 7) that when asked for the senior management, employees had a slightly different perception and indicated that 'delegating' style is exerted as well. This can be attributed to the 'distance' that they have and feel that they have from senior management (Barkema et al., 2015). Management structure is very rigid and hierarchical and as such managers prefer to keep a hierarchy with no justification, and delegate tasks to subordinates (Hofstede, 2015). This distance distorts perception and idealizes the senior managers and leaders styles and behaviours. This also justifies the belief that employees following a high-power distance value are more respectful towards authority and management decisions (Barkema et al., 2015).

The respondents were also asked to rank the factors that have an impact on their performance. 'Leadership and management style' ranks second to 'financial incentives' (Figure 8). This is in contrast to other studies in developed countries where the 'recognition' ranks first, for example, in Greece (Salonitis & Tsinopoulos, 2016) and Italy (Staudacher & Tantardini, 2007). This finding can be potentially attributed to the demographics of the employees in manufacturing companies in the UAE. The vast majority of the manufacturing sector enterprises employ expatriates from other less-developed, non-
Muslim and non-Arabic countries who are less rewarded (Abi-Raad, 2019). The main reason for these expatriates to work in the UAE is financial and in most of the cases, they work to support their families abroad. It thus makes sense for highlighting 'financial incentives' as the key factor for their performance.

Finally, for one of the companies in Figure 9, it can be seen that employees' perception does not coincide with that of the managers. Managers believe that their leadership style

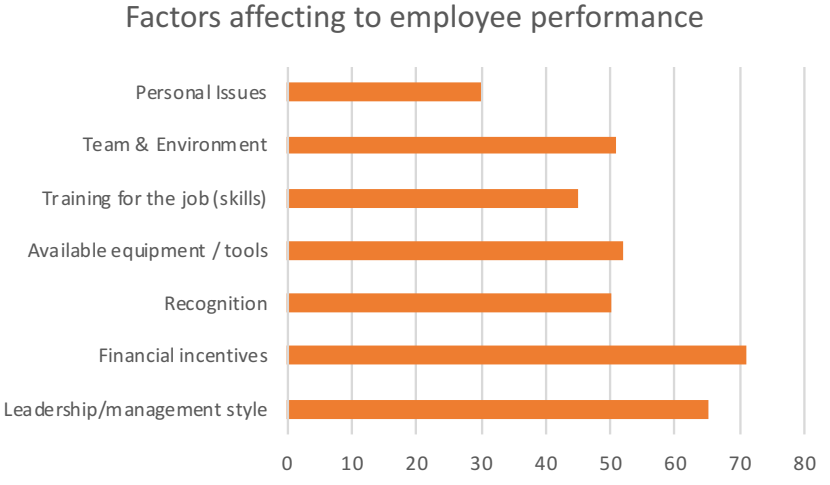

Figure 8. Factors affecting employee performance.

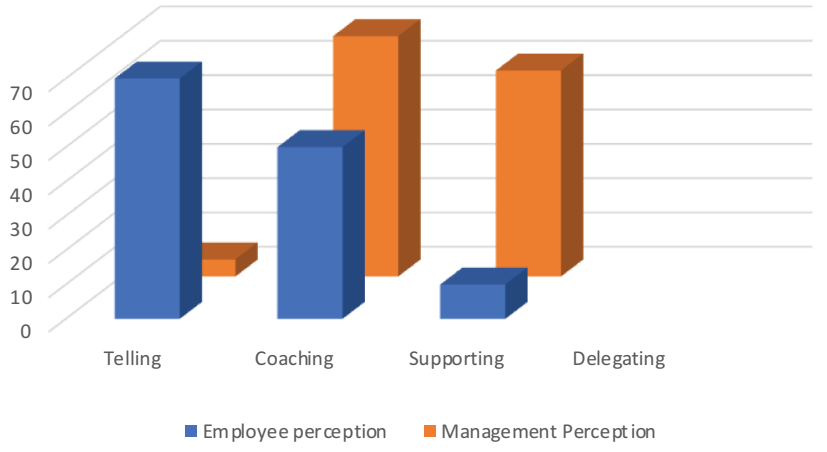

Figure 9. Difference of perception of leadership style employed by management in company A.

is more of the coaching and supporting style, when workers have a different opinion and receive their style more as telling. This is in agreement with what has been already mentioned in the previous paragraphs, and how the Islamic culture affects the behaviours and perceptions of the individuals. The so-called 'power distance' that describes the unequal distribution of power in various institutions and organizations and how this is accepted by individuals (Mone et al., 2016) can be also considered as a reason behind this difference of opinions.

6. Conclusions

The paper's aim was to assess the understanding and diffusion of lean manufacturing principles in manufacturing companies in the UAE and the importance of leadership style. In order to achieve this, a thorough literature review was undertaken as to set the benchmark to compare with the findings from the UAE. The literature review was presented focusing on reviewing the various types of leadership styles employed.

Based on the literature review findings, a questionnaire was developed and circulated in UAE manufacturing companies. The analysis of the questionnaires revealed the level of understanding, the key barriers and drivers behind lean implementation success. Since the composition of the demographics of the respondents reflects that of the whole population of the manufacturing sector in the UAE, it is safe to assume that the findings reflect UAE manufacturing as a whole. Furthermore, UAE manufacturing presents great similarities with the respective sector in the Arabic countries of the Gulf region, allowing thus a safe generalization.

A second questionnaire was also developed for capturing the current state with regard to leadership styles and the effect in employee performance in manufacturing SMEs in UAE. The results indicate differences to similar studies in the developed countries.

The results of the present study will be used for developing a framework based on system dynamics for modelling the employee performance and assess different scenarios for improving it.

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Lean manufacturing, leadership and employees: the case of UAE SME manufacturing companies

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