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## Explore and evaluate organisational culture aspects that affecting lean implementation within manufacturing SMEs: the case of Saudi Arabia

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**Abstract:** There is a scarcity of research about cultural aspects and organisational culture related to lean implementation (LI) (Pakdil and Leonard, 2015). In order to addressing the need for organisational culture (OC) to better facilitate lean and propel its success among small and medium enterprises (SMEs) in Saudi Arabia as a case, requires a methodology which supports the research and analysis of OC. Grounded theory, action research and an inductive approach has been selected. Due to the nature of the topic requiring the exploration of culture, it is beneficial to utilise qualitative research which is provided by grounded theory that has been adopted. Thus, adhering to the grounded theory process utilising an issue focused approach (Sackmann, 1991). Semi-structured interviews, observations and focus-groups were chosen to conduct this exploratory study. 37 aspects have been identified from semi-structured interviews. All these aspects have been aggregated through focus groups to seven main themes.

**Keywords:** lean implementation; LI; organisational culture; OC; enablers; inhibitors; small and medium enterprises; SMEs; continues improvement; CI; King of Saudi Arabia; KSA; Saudi Arabia.

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## 1 Introduction

The aim of lean production is that company resources should all be channelled in ways that ultimately create value for the end user (Schouteten and Benders, 2004). In essence it works towards the goal of maintaining value while doing less work and at the heart is achieving greater efficiency (Schouteten and Benders, 2004). The definition of lean provided by Corbett (2007) emphasises on lean as an integral part of the entire organisation, essentially pointing to lean as being considered more of a philosophy than just a tool or process. This is further supported by Womack and Jones (2003) who suggest that lean is becoming understood as more than just production, but an all-encompassing business ideology which incorporates all aspects of value streams as opposed to individual production processes. According to Bhamu and Sangwan (2014) lean provides a methodology by which organisations can significantly improve their responsiveness to customers while decreasing and managing costs and waste in supply and operational procedures. When Womack et al. released their book in 1992 *'The Machine That Changed the World'*, the main message was when the concept of lean became popularised among mainstream business and expanded further into manufacturing beyond the automobile sector (Corbett, 2007). In its inception, lean was predominantly a tool focused on manufacturing processes (Wang and Huzzard, 2011). The evolution of lean has since transcended further into operational and strategic levels of organisations (Hines et al., 2004). Initial themes advocated by Womack et al. (1992) is organisational learning. 20 years on since Womack et al.'s book release the success rate of lean is still rather low (Pay, 2008; Yamamoto and Bellgran, 2010; Bhasin, 2012). Chay et al. (2015) suggests it is complicated to implement lean by merely focusing on the hard aspect (tools) without also including the soft aspects. Chase (1999) emphasises the need to view lean as a long-term strategy. Lin and Hui (1999) and Lewis (2000) are more sceptical of lean while Oliver and Hunter (1998) found no correlation between high and low users of lean and organisational performance.

## 2 Lean as a holistic view

In relation to lean and a holistic view school of thought, Bhasin and Burcher (2006) lean should be seen as a journey. This notion compliments the original view of Kaizen, the Japanese philosophy advocating small improvements made incrementally over time. It is also suggested that standardisation is another key in realising the benefits of continuous improvement thus achieving long-term improvement (Wittenberg, 1994). This is further

reinforced by Liker (1997) who emphasises the importance of having a long-term orientation in relation to lean.

### **3 Lean as an additional tool**

However, arguments against this holistic view suggest that in pursuit of 'Kaizen' and eradicating waste also caused Japan to land in a situation of 'gridlock' in which factories were needing just-in-time (JIT) inventories and there was a not enough suitable workers nor capital for investment (Cusumano, 1994). According to Cooney (2002), external factors particularly affecting JIT can be problematic as production should be levelled across the entire supply chain. In addition to this, he highlights the importance to still consider political and social forces, economic conditions and industry factors when implementing lean (Cooney, 2002). However, Lewis (2000) suggests that each company should have their own individual lean development path. He suggests that lean does not need to be viewed as an all-in or nothing approach, but he advocates that companies should carefully consider aspects such as the market in which they operate in, technological factors and supply chain (Lewis, 2000). James-Moore and Gibbons (1997) suggests that companies with very differentiated and low volume and very little repetition will more likely need to modify lean methods or consider a completely different approach. Lean's ability for cost reduction and improved flexibility is the key to providing a company with a competitive advantage despite debates surrounding lean as a holistic view or addition to current methods (Im and Lee, 1989; Lathin and Mitchell, 2001; Narasimhan et al., 2012). As continuous improvement and lean were originated in Japan in terms of waste, the Japanese refer to Muda, Mura and Muri. Mud is considered a process which does not add any value. The mud wastes were originally identified by Aiichi Ohno from Toyota. Muda waste tends to include the following categories; transport, inventory motion, waiting, overproduction, over-processing defects, talent and resources. Many lean initiatives often do not go past the stage of identifying Muda. Mura refers to unevenness which relates to production smoothing in lean operations. Muri refers to overburdening and putting extra stress on operations and workers. Lean aims to eradicate all different types of waste and inefficiency from the organisation (Hines et al., 2004).

### **4 Saudi Arabia: national culture, organisational culture, and lean**

The Middle East are realising the importance of lean in order to advance operations and practices in the oil and gas industries as value adding and creating high standards in operations, (Salem et al., 2016). As most of the non-oil and gas industries are highly dependent on the oil and gas industry in the region; production advancements should naturally trickle down into the other manufacturing industries also. It is this relationship in which lean thinking enablers can create opportunities for higher operational standards. Although the business environment in Saudi Arabia and the Gulf countries is somewhat more difficult in terms of implementing lean principles compared with industries in other countries (Al-Najem et al., 2012). This is because in King of Saudi Arabia (KSA) and the Middle East countries, most industries are either directly or indirectly linked to the oil

and gas industry. The business environment involves a finely woven network of symbiotic relationships and synergies among the industries which can in turn inhibit lean thinking and lean implementation (LI) (Chiarini, 2012). This is primarily because independent decisions cannot be made without approvals higher up. Furthermore, very little literature on LI has been done within the oil and gas sector and especially in the Gulf countries. Salem et al. (2016) aimed to assess aspects pertaining to LI in the oil and gas industry. In his research he discovered that in the case of Qatar, which consists primarily of oil and gas companies, research showed that the majority of companies were not aware of lean (Chiarini, 2012). However, it was identified that a greater awareness of lean existed among the non-oil and gas sector (Salem et al., 2016). It was further highlighted that the awareness of lean correlated more highly among International Organization for Standardization (ISO) certified companies as a number of these certifications overlap with lean manufacturing principles (Salem et al., 2016). However, the issue identified is that an understanding of lean among the manufacturing organisations in the Gulf countries is significantly embedded in other management systems such as ISO standards, (ibid). That a failure to understand lean as an isolated philosophy creates barriers. OC has been heavily researched which also highlights its importance in organisational performance (Al-Swidi and Mahmood, 2011). Further to this, it has been identified that different regions of the world such as the Middle East, Eastern Europe, Western Europe and Asian regions all possess uniqueness in terms of OC and national culture. Thus in order to achieve successful lean systems, each region needs to approach it in a feasible way aligning itself with its own national and corporate cultural mechanisms (Al-Najem et al., 2013).

Not only has literature highlighted a lack of knowledge and difficulties in implementing lean in the Middle Eastern and Gulf countries, but also an increasing concern of LI in small and medium enterprises (SMEs) (Al-Najem, 2014). A reason for the difficulties in implementing lean is a lack of understanding of Toyota's corporate culture and how it facilitated the success of lean within the organisation (Achanga et al., 2006). According to Xu et al. (2013), SMEs are a vital part of a nation's economic prosperity and in some Middle Eastern countries SMEs get little attention or support in comparison to the larger oil and gas companies. According to Al-Najem et al. (2013), authors suggest that research on implementing lean in SMEs in Kuwait is non-existent. According to Calabrò and Mussolino (2013), SMEs face different challenges in business and in internationalisation due to the nature of numerous informalities which permeate numerous areas of the business such as board members relationships which are heavily based on trust, informal governance mechanisms, and non-economic goals driven by the family in family owned businesses. This informal nature has been attributed to impact on SMEs export intensity (Calabrò and Mussolino, 2013). Calabrò and Mussolino (2013) studied LI in SMEs in manufacturing in general suggest, a greater emphasis on in house elements which are less financial in investment are key to the success of LI in SMEs. In addition to this, Rose et al. (2010) suggest that SMEs should implement lean gradually starting with aspects which are the easiest to implement and the most cost effective. While the research by Rose et al. (2010) is particularly useful to this study, its focus is on lean best practices for SMEs and OC aspects are not addressed. According to MENA (2004), Arabic countries have their own specific attributes and most companies are SMEs with an OC that strongly reflects their nature as a 'family' business. MENA (2004) highlights the need for universalising business principles and responsibilities of boards of directors and governance if Arabic SMEs are to be able to internationalise. According to

Ahmed et al. (1999), Arab organisations can benefit significantly by implementing quality initiatives to address their weakness and make them more competitive on an international scale. However, there is a real gap in research pertaining the influence of OC in implementing lean among SMEs in Arabic countries and Saudi Arabia.

## **5 Methodology**

Qualitative research is confirmed to be useful for uncovering such insider views (Corbin and Strauss, 1990). The research will be based on qualitative and grounded theory inside action research with and an inductive approach. Action research tends to be used for prompting conscious change within a somewhat controlled environment (Collis and Hussey, 2013). In this approach, the participants and the researcher collaborate on a problem to find a solution (Coghlan and Brannick, 2014). This is an inquiry mode generally utilised to help solve organisational issues by dealing with those experiencing the problems (Ibrahim, 2013). Some main weaknesses associated with action research is the assumption that the behaviour of a person is only able to be changed by testing them and moreover, it tends to require set timelines and is usually expensive to conduct over the full research period (Fisher, 2007). Grounded theory is a research methodology which aims to create a theory from data which has been systematically researched and analysed (Strauss, 1987). This methodology was founded originally by Glaser and Strauss (1967). According to Golden-Biddle and Locke (2007), grounded theory has been the most vastly utilised qualitative methodology in social science research. Its popularity can be attributed to; firstly, its suitability for developing new theory or new insights from old theory. Secondly, it generates theory which stems from what the research participants consider important. Finally, it is able to expose micro-management processes in complex situations and environments (Locke, 2001). Goulding (1998) suggests grounded theory is particularly useful for making new discoveries thus its usefulness for theory generation. Furthermore, Locke (2001) and Goulding (2005) also consider grounded theory as useful where there is a clear lack of integrated theory in an area of literature. The main feature of this approach is to develop categories which highlight the data and develop the categories to create a framework (Silverman, 2006). Due to the nature of the topic requiring the exploration of culture it is beneficial to utilise qualitative research. An inductive approach enables the researcher to become fully engaged within the research environment thus improving the understanding of the culture being studied, facilitating a more insider's view of the culture (Walker and Myrick, 2006). Furthermore, it is important to note that most methodologies require extensive literature reviews to inform the research and identify the research question as most research methodology is conducted with a deductive approach (Dick, 2006). In contrast, grounded theory being inductive ends with a theory as opposed to beginning with a hypothesis and instead is used as a method for reviewing literature (Trochim and Donnelly, 2001). Hence, why research questions and hypotheses are made redundant in grounded theory so, literature is generally used as a comparator (Dick, 2006).

From the interviews, all the results will constantly be compared to the information found in the literature review. During the coding, the process becomes more structures in order to validate relationships within the data and finally during themes, the agenda becomes more deliberate in order integrate the findings within the categories to achieve

data saturation (Strauss and Corbin, 2008). Data saturation refers to the stage when the data collected in the research is now redundant (Bogdan and Biklen, 2007). This is necessary to ensure enough data has been collected to reflect the perspectives of the research participants (Kolb, 2012).

Data analysis in qualitative research deals with words, and the meanings implied by them (Miles and Huberman, 1994). The analysis of the information gathered is done by discovering categories and their interrelationships, simultaneous and concurrent data and alongside constant comparison methods. The program utilised for this is NVIVO software for coding. The tool generally employed to study culture consist of; semi structured or in-depth interviews, observation and focus groups. Focus groups are another tool for revealing cultural assumptions and according to Schein (1985) "because the group provides the stimulus to bring out what is ordinarily hidden." The main premise of the focus group for this research is that the participants will name the categories and provide the data for under each category thus it will fully reflect the ideas and perceptions of what is important to the employees. Interviews are open ended questions gaining in-depth responses about people's experiences, perceptions, opinions and feelings and knowledge (Taylor, 2005). In depth interviews/unstructured interviews are often utilised to help expose culturally-based values (Patton, 2014). The key here is, the researcher should not introduce cultural values, but instead using open ended questions and the insider's language, they evoke responses revealing the aspects of everyday life in that cultural setting (Creswell, 2013). It is important for the researcher to be conscious of their own biases and influences in the information gathering process (Patton, 2014). It is important however, for the assisting analysts to also have an understanding of the research setting from an insider's perspective (Sackmann, 1991). For this research semi structures interviews, will also be utilised. The advantage with semi structures interviews is that it ensures certain topics are covered making it more comparable and reliable qualitative information (Patton, 2014).

To obtain a better understanding of the nature of (OCs) within SMEs in manufacturing industry this study will focus on three main criteria; firstly, to expose the implied components of culture from an insider's perspective. Secondly, to be mindful of structural aspects of the culture for example sub cultures (Babbie, 2015). Thirdly, to facilitate comparisons to be made among individuals and research settings (Birkinshaw et al., 2011). The use of this criteria has enabled an issue focused interview style which is founded upon the phenomenological orientation leading to successive comparison (Birkinshaw et al., 2011). In addition; these focus groups and observations are utilised to provide triangulation of results. Issue focussed investigation allows for the fulfilment of the above criteria. Due to the nature of culture being omnipresent, this makes it difficult for people to often reflect and describe when asked a question about it directly (Dey, 1999). Therefore, in order to draw this out it often requires a response to stimulus requiring respondents to interpret something, which is naturally done according to their own cultural basis as opposed to that of the researcher (Sackmann, 1991). Furthermore, and issue focus investigation is particularly suitable because, by presenting them with a stimulus with a specific context, the respondents then tend to access the same library of knowledge already existing in their minds (Sackmann, 1991). This helps to uncover the framework about a specific issue. This then enables comparisons of the interpretations to uncover individual opinions from cultural beliefs which are common among the group, (Willis et al., 2007). Issue focussed investigation needs to be conducted cleverly to ensure the participants do not realise the issue is under investigation (Sackmann, 1991).

The phenomenological orientation has its focus on the insider's perspective and their beliefs and concepts, ideas of the (OC) and life within it. It places emphasis on the insider's view of what is considered important and relevant within that setting (Goulding, 2005). The researcher will put aside their own assumption so these do not interfere or influence the respondent's answers. The emphasis is to allow the respondents to gradually unravel their own experiences. In order for the researcher to avoid making judgments based on their own beliefs, these should firstly be made clear (Annells, 1996). The interview procedure in phenomenological orientation is close in style to an in depth or intense interview. This usually consists of a longer introduction and a period of becoming better acquainted. This also gives the researcher the chance to gently introduce the subject of the discussion (Srubar, 1998). The aspects which are brought up by the respondent are the points which are then delved into with more detail. In doing so, the researcher is better able to explore together with the respondent and identify the cognitive frameworks which come up (Bryant, 2009). This process of an established dialogue also enables the researcher to check they have understood the respondent's point of view correctly. This can be done by the researcher mentally answering the question in their head before the respondent has a chance to check their own accuracy (Goulding, 2005). This type of research requires not only flexibility but a rapport to have been well established between the researcher and the respondent because for in depth issues to come to light the interviewee needs to feel comfortable, safe and that a mutual trust exists (Goulding, 2005).

There are some advantages to employing both an issue focused investigation and a phenomenological orientation. The latter is much unstructured and broad however, the issue focus investigation works to narrow the scope giving more structure to the process. Furthermore, the researcher takes their cue from the respondents as to the most important aspects to be further explored (Sackmann, 1991). The respondents were asking to mention the aspects of lean they considered most important in their organisation (for example). They were also asked to explain why these were the most important. This enables the researcher to cross compare the responses of the individuals increasing reliability. In the phenomenological phase, the researcher ensures all aspects of the factors brought up by the respondents are investigated (Bryant, 2009). Therefore, this particular approach by Sackmann (1991) has been selected for this research. In this case the questions been asked are issues focussed in accordance with Sackman's (1991) approach: tell me about an example you have seen implementation of lean work well?, tell me about situation of LI has not work well?. Therefore, a combination of issues and phenomenological approach proposed by Sackmann (2006) is being utilised due to its suitability to analysing (OC). In addition to this the grounded theory method of Strauss and Corbin (1994) will be adopted. This is an inquiry mode generally utilised to help solve organisational issues by dealing with those experiencing the problems (Ibrahim, 2013). The data sample for the participating companies in this main study has been provided. The target organisations which the researcher conduct were steel, electric, oil, paper, packaging and construction industries, which are in Saudi Arabia. The main study was conducted between November 2016 and February 2017. The sampling has been selected based on the experiences of the employees of the organisations mentioned.

## 6 Result

### 6.1 Semi-structured interview

The researcher conducted twenty-nine semi-structured interviews with all companies, where they currently face barriers to implement lean (Karim et al., 2011). The sampling has been selected based on their experiences. The participants ranged in terms of their position in the organisations. Therefore, the sampling method refers more to events and incidents as opposed to participants (Corbin and Strauss, 1990). Having conducted the main study using semi-structured interviews, codes were developed, these can be seen in the Table 1.

**Table 1** Organisational culture aspects which influences LI

<i>Aspects of organisational culture</i>							
1	Job description	2	Health and safety awareness	3	Quality of inspections	4	Professional training in lean
5	Many decision makers	6	Role of the family	7	Knowledge share	8	Poor planning
9	Short-term focus	10	Motivation and reward system	11	Promotional opportunities	12	Recruitment process
13	Workshop tools and guidance	14	Delay of processing staff requests	15	Resistance to change	16	Ineffective multi-tasking
17	Feedback system	18	Improper prioritisation of tasks	19	Performance indicators	20	Contingency planning
21	Teamwork and leadership attitudes	22	Job security	23	Aggression on the shop floor	24	Productivity monitoring
25	Cooperation and mutual trust between management employees	26	Bureaucratic management style	27	Innovation management	28	Loyalty of the staff
29	Research and development (R&D)	30	Emphasis over individual contribution	31	System of decision-making	32	Socialisation of the staff
33	Emotional intelligence of managers	34	Workload pressure	35	Ambiguity of policies	36	Obligatory work
37	Identification of resources						

### 6.2 Focus group

The researcher conducted two focus groups after concluding 29 semi-structured interviews. The sampling for both focus groups have been selected based on the candidates' experience. Both focus groups had the same participants. The participants



engaged in a process to review the results from the semi-structured interview, with the objective of making suggestions to grouped the aspects to high level theme. The participants involved in the focus group discussions included two CEOs, production engineers, mechanical engineers, chief engineers and two workers. The dates and times were pre-arranged based on the availability of the candidates and interviews were conducted in a private office within a hotel. The purpose for this focus group One is to help refine and further develop the findings of OC aspects from semi-structured interviews. This allowed participants to express their opinions more easily by discussing real examples, thus allowing for a thorough, detailed and intensive data set. The observations were noted by the researcher scrupulously. To conclude, participants reviewed the results of the output from the stage one data collection (interview). Thus, bringing about 39 codes and providing definition for each code. Having conducted the prime study of semi-structured interviews, the following aspects were developed, these can be seen in the Table 2. The purpose for the focus group Two is to aggregate the cultural aspects developed into higher level themes. The researcher presented the output results from the first focus group to allow the participants to familiarise themselves with the subject matter. Refreshments and ample breaks were provided during focus group. The participants starting to group the codes in seven themes, and provided definition for each category. Table 3 provides an overview of themes. Seven themes have been identified by the participants, each theme contain aspects. Each theme has suggested definition by participants shown in Table 3.

**Table 2** Aspects of OC influencing LI

No.	<i>Aspects of organisational culture</i>	<i>Participants' representation of aspects</i>
1	Job description	The detail of job activities not clearly established among working staff. These unclear procedural activities directly lead to confusion regarding the correct steps which need to be taken.
2	Health and safety awareness	Discusses the methods the health and safety procedures of the organisation. A lack of awareness of health and safety policies within the workplace has led to poor working conditions and increased the risk of health hazards.
3	Quality inspection	The quality of inspections has not been standardised and hence procedural errors occurred leading to sporadic delays in implementing lean.
4	Professional training in lean	Employees were unaware of the lean philosophy, what it aims to achieve and ultimately how this will be achieved. There is a need to facilitate a professional lean Training in terms of workshops/seminars for all staff to realise the advantages and efficiencies of lean.
5	Many decision makers	In the presence of a high number of stakeholders, there is a need to follow protocols. A high number of tenured employees in middle and senior management roles made decisions based on their experience, rather than following a company- wide decision-making policy. This resulted in confusion among several teams and potential errors within the organisation.

**Table 2** Aspects of OC influencing LI (continued)

<i>No.</i>	<i>Aspects of organisational culture</i>	<i>Participants' representation of aspects</i>
6	Role of family	The role of family seemed to influence the work process. When family members were not involved in the work process, staff could make organised decisions.
7	Knowledge share	Decision making by senior management has remained unquestionable and neither has there been a culture of dialogue between management and employees. This resulted in knowledge gap and division among working staff.
8	Poor planning	The organisation regularly wasted too much time in dealing with implementation problems which could have been foreseen and eliminated with the use of proper planning and past experiences.
9	Short-term focus	Senior management focused their efforts on the short-term accomplishments (weeks/months) as opposed to long-term strategic goals. This has a direct implication for sustainable ROI (Return on Investment).
10	Motivation and reward system	The organisation does not have rewards-based recognition system to encourage the employees over performance. The presence of such a rewarding culture in the organisation would motivate the employees which directly would enhance their productivity.
11	Promotional opportunities	Employees are not given the opportunity to be promoted to middle/senior management positions despite their achievements, high performances or even long tenured years of service.
12	Recruitment process	The employees within the organisation were often unskilled and unexperienced in the work they were recruited for. This required additional training before they could be placed for production.
13	workshop tools and guidance	The organisation does not provide its employees with organisational tools such as handbooks which can assist in their day to day work procedures and task fulfilments.
14	Delay of staff's requests	Due to the high number of management tiers, it takes a long time before requests can be accepted/rejected.
15	Resistance of change	A behaviour taken by individuals or groups when they observe that a change is happen and perceived as a threatening to them.
16	Ineffective multi-tasking	Employees within the organisation are given multiple roles and tasks, which causes confusion and does not allow them to finish their tasks effectively.
17	Feedback system	Feedback or evaluation systems are non-existent. If these were available, it would enable management to understand problems raised by employees. Employees are unable to understand the impact of decisions made by senior management.
18	Improper prioritisation of tasks	The sequence of tasks which needs to be completed is unclear and disorderly. Due to this and other organisational changes employees were unable to achieve the targets set.
19	Performance indicators	There is no system of recording employee performance, therefore the organisation is unable to understand and comprehend employee productivity.

**Table 2** Aspects of OC influencing LI (continued)

No.	Aspects of organisational culture	Participants' representation of aspects
20	Contingency planning	The organisation does not have a contingency plan which could guide them in case of an emergency and thus resume operations.
21	Teamwork and leadership attitude	The different functions within the organisation have their own individual plans, without communicating their plan with other departments, rather than working as an effective team.
22	Job security	There is no guarantee of job security despite an employee's best efforts.
23	Aggression to the shop floor	Due to the hierarchical nature of the organisation, senior management are aggressive in directing their lower ranking employees.
24	Productivity monitoring	Productivity was not measured other than recorded daily tasks and ability to meet deadlines. The key reason for poor productivity was related to lack of motivation by the employees.
25	Cooperation and mutual trust between management employees	Lack of reputability such as not taking ownership of tasks and not executing within allocated time prevailed. This lead to working inefficiencies. Employees do not feel safe to share their inner believes or feeling with senior management as they fear they will receive negative feedback. Senior management are unreceptive to ideas/improvements which have been put forward by junior employees.
26	Bureaucratic management style	Management style followed a rigid structure in dealing with employees by not accounting the personal factors relative to individual employees. Rather, a rigid structure was applied to all working staff regardless of individual circumstances.
27	Innovation management	The top management has not held any initiatives to develop innovation nor thought to implement any in the road map. This may lead to critical issues for future sustenance.
28	Loyalty of the staff	Most of the employees displayed no sign of loyalty to the organisations. They were primarily driven by the work and pay system which was mechanical.
29	Research and development (R&D)	There has been neither support nor interest from the top management in investing into R&D activities that lead to a sustainable future of the organisation. The organisation carried a unidimensional strategy.
30	Emphasis over individual contribution	Focus on individual contribution was seen to be lacking and a result key factors such as capabilities, lean and development, and productivity were ignored. Supporting the employee to increase the capability of knowledge.
31	System of decision-making	Design a management system to produce orders and decisions to identify, solve problems and make decisions.
32	Socialisation of the staff	Many employees lacked social knowledge and inter-personal skills which are required to foster a healthy professional environment. Most of the employees were only concerned with work and pay.

**Table 2** Aspects of OC influencing LI (continued)

<i>No.</i>	<i>Aspects of organisational culture</i>	<i>Participants' representation of aspects</i>
33	Emotional intelligence of managers	How to monitor other people's emotion, thinking and behaviour. It is the ability to recognise and deal with other people emotion effectively, it is basically putting the self in the shoes of others. Understanding of the context and having awareness of others. Lack of emotional support from managers was prevalent. In order to understand emotions, thought processes and behaviour of staff, it is important for managers to have the ability to recognise and deal with other people effectively.
34	Workload pressure	Daily routine of same kind of work along with orders to finish within deadlines from supervisors has resulted in creating additional pressure for the employees. This lead to pileup of stress at work. This could be eased with the help of recreational activities.
35	Ambiguity of policies	Reliable information about the performance, governance, value and risks of all information related to the employee.
36	Obligatory work	The environment that prevailed in the organisations was that of an enforceable culture rather than a proactive culture. Instead of constructive criticism and supportive directions, employees were often commanded and reminded of their duties.
37	Identification of resources	Diagnose and analyse resources required and provide the right information related to work.

**Table 3** Themes developed

<i>Higher level theme</i>	<i>Aspects code</i>	<i>Aspects grouped together into higher level</i>	<i>Participants statements used to describe the higher-level theme</i>
Communication and interaction in the organisation	5	Many decision makers	Convoy your message to other personal or a group. Thus, the employees know exactly what is important, who is supposed to do what and when. Communication among the staff climate formal and informal information flows in time for inquiry and reflection use of humour and many other languages.
	7	Knowledge share	
	14	Delay of staff's requests	
	16	Ineffective	
Organisation's strategy and vision	34	Workload pressure	An essential factor which influences different control system configuration and operational environment change. Identify tactics and roadmap to achieve the mission of the organisation. Generate an objective to align the managerial practices process with their strategies priorities to improve their performance, system of decision making and to apply in the organisation.
	8	Poor planning	
	9	Short-term focus	
	18	Improper Prioritisation of tasks	
	35	Ambiguity of policies	
	31	System of decision-making	
	6	Role of family	

**Table 3** Themes developed (continued)

<i>Higher level theme</i>	<i>Aspects code</i>	<i>Aspects grouped together into higher level</i>	<i>Participants statements used to describe the higher-level theme</i>
Organisation's infrastructure of the workshop	2	Health and safety awareness	This theme refers to the structure of the organisation around the employee. Easily for employees to move with security around within the confinements of their workplace. Poor Infrastructure planning was evident from the layout of the workshop. Ineffective planning resulted in redundant activities and procedures indicating a re-design of workshop layout to complement lean.
	13	Workshop tools and guidance	This theme refers to the structure of the organisation around the employee. Easily for employees to move with security around within the confinements of their workplace. Poor infrastructure planning was evident from the layout of the workshop. Ineffective planning resulted in redundant activities and procedures indicating a re-design of workshop layout to complement lean.
Quality risk management	3	Quality inspection	A group of business process, technology capabilities and operation environment to create a collaborative program to identifying mitigating product, quantifying, operational risks that can be impact quality.
	19	Performance indicators	
	20	Contingency planning	
	29	Research and development (R&D)	
Human resource	1	Job description	This they refer to the employees' issues. It is a set of role related to the employee, describing their duty. Determine the needs of the employee and recruit best employees. Dealing with performance and trouble issues. Pushing the employees to the best in their job.
	10	Motivation and reward system	
	11	Promotional opportunities	
	12	Recruitment process	
	22	Job security	
Change management and behaviour patterns	17	Feedback system	Approach to transitioning group, team and organisation using tactics to re-direct the use of organisation system process, resources, organisation environment, the reaction of the employees or any other method in the operation that reshape effectively the organisation.
	21	Teamwork and leadership attitude	
	23	Aggression to the shop floor	
	36	Obligatory work	
	26	Bureaucratic management	
	15	Resistance to change	

**Table 3** Themes developed (continued)

<i>Higher level theme</i>	<i>Aspects code</i>	<i>Aspects grouped together into higher level</i>	<i>Participants statements used to describe the higher-level theme</i>
Sustain continuous improvement	25	Cooperation and mutual trust between employees	Keep going or to keep up to improve the employee and process performance to be continually monitored. Focusing to increase the capabilities, efficiency and the effectiveness to achieve its objectives. Identify the opportunity for streaming work. Many employees in the top management were aware of the prevailing gap in the organisation at various functions of engagements such as operations, human relations, and productions.
	28	Loyalty of the staff	
	33	Emotional intelligence of managers	
	30	Emphasis on the Individual contribution	
	27	Innovation management	
	37	Identification of resources	
	32	Socialisation of the staff	
	4	Professional training in lean	
	24	Productivity monitoring	

## 7 Validation

All these aspects have been reviewed and discussed by participants through Focus Group One. In addition, in this paper the inter-rater reliability took place in the early stage of the analysis process. The procedure requires having two or more judges independently to determine the significance, degree and sample stability of their agreement (Rashid, 2010). Gwet (2002) suggests that evaluation of the agreement between two or more ratters is commonly used in social, medical and behavioural sciences, the result of using inter-rater reliability presented in Table 4. Moreover, Guba and Lincoln, (1994) propose a further method for evaluating qualitative research which is based upon four criteria see Table 5 and has been applied top this paper.

**Table 4** Inter-rate reliability result

<i>No.</i>	<i>Interview</i>	<i>Ratter 1</i>	<i>Ratter 2</i>	<i>Kappa</i>	<i>%</i>
1	Interview no. 7	33	31	0.72	94%
2	Interview no. 8	30	29	0.78	97%
3	Interview no. 17	46	45	0.79	98%
4	Interview no. 18	49	49	1.00	100%
5	Interview no. 25	39	38	0.79	97%
6	Interview no. 30	43	42	0.79	98%

**Table 4** Inter-rate reliability result (continued)

<i>No.</i>	<i>Interview</i>	<i>Ratter 1</i>	<i>Ratter 2</i>	<i>Kappa</i>	<i>%</i>
7	Interview no. 2	24	23	0.34	96%
8	Interview no. 4	50	48	0.65	96%
9	Interview no. 13	27	25	0.63	93%
10	Interview no. 5	39	38	0.79	97%
11	Interview no. 27	39	38	0.79	97%
12	Interview no. 11	30	28	0.64	93%
Average				0.73	96%

**Table 5** Criteria for ensuring rigour in qualitative research

<i>Rigour critical</i>	<i>Criteria for rigour</i>	<i>Research strategy</i>	<i>Techniques to insure rigour</i>
Credibility	Truth value	Field notes/memo	Purposeful/theoretical sampling
		Tape recorder	Negative/deviant case
		Thematic log	Constant comparison
		Auditing transcript	Member checking Triangulation Audit trial
Transferability	Applicability	Data display	Purposeful/theoretical sampling
		Simultaneous literature review	Thick description
Dependability	Consistency	Field notes/memo	Negative/deviant case
		Tape recorder	Member checking
		Thematic log	Triangulation
		Auditing transcript	Audit trial
		Researcher's story Reflexivity	
Confirmability	Neutrality	Filed notes/ memo	Audit trial

## 8 Discussion

During the semi-structured interview collection process, the result has been analysed by using simultaneous and concurrent data alongside constant comparison methods. Table 6 presents the aspects of OC compared with the literature review.

A great deal of previous research into LI has focused on communication and interaction within the firms. Communication and interaction within the firms is widely recognised as important element for LI (Achanga et al., 2005, 2006, 2012; Al-Najem et al., 2013). Communication of the objective, the direction and an outline of the proposal is a very important step at the beginning of the implementation. The company needs to

establish a clear communication process between all employees during every stage of the implementation. Definition of the necessary actions, their communication to the employees and the identification of individual responsibilities comprise the guide for a successful LI (Al-Shammri, 2007). A successful LI is influenced by how the company will effectively communicate with those affected by the new way of doing the business (Worley and Doolen, 2006; Angelis et al., 2011; Crofton and Dale, 1996; Hu et al., 2015; Mann, 2009; Womack and Jones, 2003; Womack et al., 1992; Rand et al., 1997). For companies to succeed in their LI process, managers need to convey the benefits of lean, as well as, how the implementation will take place to all the members of the company (Mathaisel, 2005). Good communication plan is vital to involve everyone in the implementation process to get them committed and to identify how the implementation of lean will affect their work. Realisation of a organisation's strategy and vision process concerns both managerial and organisational issues, such as participation, communication, project management and point of entry (Löfving et al., 2014). Hence, the suggested characteristic, realisation, includes three of the former groups as defined by Platts (1994). Traditionally, organisation's strategy and vision were formulated by top management (e.g., Platts et al., 1996; Skinner, 1969). Thus, it is well known that the key mechanism for overcoming resistance to change is to include employees and allow them to participate in the formulation (Coch and French, 1948; Riis et al., 2006; Slack, 2015). As participation and resourcing cannot be neglected in a review, this is called adequate resource identification, i.e., who is responsible and who participates in the formulation (Platts et al., 1996). Platts (1994) points out the importance of both individual and group participation for achieving enthusiasm, understanding and commitment. For group participation there should be a decision-making forum and workshop-style meetings to agree on objectives, identify problems and develop improvements (Platts, 1994). An agreed timescale is another criterion (Platts et al., 1996; Baines et al., 2005). The time scale sets the limits when the project should end and defines the plan on what to do. However, there should also be clearly defined objectives and expectations of the resulting strategy and of the process (Platts et al., 1996). Boyer (1996), considered four types of investment in the manufacturing infrastructure that will enhance the infrastructure within workshop floor: quality leadership on the part of management; the use of small groups or teams for problem solving; training; and worker empowerment. Mathur et al. (2012), considered cultural change and quality improvement supported by infrastructure as CSFs for TQM in Indian SMEs manufacturing sector. In addition, The infrastructure within SMEs workshop provide with safety and health guide and allows effective communication channels across all aspects of the organisation (Bhamra et al., 2011; Baidoun, 2004). To avoid the 'dark side of quality' (Vincent, 1997), all the risks should be identified, analysed, treated and monitored (Verbano and Turra, 2010; Crema and Verbano, 2015). In addition, Achieving excellent quality with minimum utilisation of resources and cost with applying feedback system is ultimate purpose and achieved (Jadhav et al., 2015). The US manufacturing industry has made significant progress in increasing productivity, product quality while lowering product lead times, Increased variety of products, Increased flexibility of manufacturing operations, encourage employees to develop a sense of responsibility for quality and helps to reduce workplace health and safety risks (Camuffo et al., 2017; Salem and Zimmer, 2005; Womack et al., 1992). In addition employee empowerment in manufacturing found its most profound application in the idea that any employee could 'stop the line' if he or she noticed a quality problem (Salem and Zimmer, 2005).



**Table 6** Aspects of OC

<i>No.</i>	<i>Aspects of organisational culture</i>	<i>References</i>
1	Job description	Jadhav et al. (2015)
2	Health and safety awareness	Munene (1995) and Dixon (1999)
3	Quality of inspection	Crofton and Dale (1996)
4	Professional training in lean	Allen and Meyer (1997), Achanga et al. (2006) and Panizzolo et al. (2012)
5	Many decision makers	Angelis and Fernandes (2007), Mann (2009) and Hu et al. (2015)
6	Role of the family	Al-Najem (2014)
7	Knowledge share	Rand et al. (1997), Shah (2003), Womack and Jones (2003), Shah and Ward (2007) and Angelis et al. (2011)
8	Poor planning	Crofton and Dale (1996), Rand et al. (1997) and Womack and Jones (2003)
9	Short-term focus	Bhasin and Burcher (2006), Bhasin (2012) and Laureani and Antony (2016)
10	Motivation and reward system	Angelis et al. (2011) and Alsyouf et al. (2011)
11	Promotional opportunities	Angelis et al. (2011)
12	Recruitment process	Allen and Meyer (1997) and Womack et al. (1992)
13	Workshop tools and guidance	Shah (2003) and Shah and Ward (2007)
14	Delay in processing staff requests	Angelis et al. (2011)
15	Resistance of change	Bhamu and Sangwan (2014) and Jadhav et al. (2014)
16	Ineffective multi-tasking	Bessant and Caffyn (1997)
17	Feedback system	Angelis et al. (2011), Rand et al. (1997), Shah (2003), Womack and Jones (2003), Shah and Ward (2007) and Angelis et al. (2011)
18	Improper prioritisation of tasks	Swank (2003)
19	Performance indicators	Shah (2003), Shah and Ward (2007) and Yan-Jiang et al. (2006)
20	Contingency planning	Crofton and Dale (1996)
21	Teamwork and leadership attitude	Womack et al. (1992) and Laureani and Antony (2016)
22	Job security	Marodin and Saurin (2013)
23	Aggression on the shop floor	Hu et al. (2015), Angelis et al. (2011), Mann (2009) and Al-Najem et al. (2012)
24	Productivity monitoring	Bessant and Caffyn (1997) and Swank (2003)
25	Cooperation and mutual trust between management employees	Jadhav et al. (2014)
26	Bureaucratic management	Al-Najem et al. (2012) and Laureani and Antony (2016)
27	Innovation management.	Jadhav et al. (2015)

**Table 6** Aspects of OC (continued)

<i>No.</i>	<i>Aspects of organisational culture</i>	<i>References</i>
28	Loyalty of the staff	Al-Najem (2014) and Dahlgaard and Mi Dahlgaard-Park (2006)
29	Research and development (R&D)	(Not found)
30	Emphasis on the individual contribution	(Not found)
31	System of decision-making	Angelis et al. (2011)
32	Socialisation of the staff	(Not found)
33	Emotional intelligence of managers	Dahlgaard and Mi Dahlgaard-Park (2006)
34	Workload pressure	Jadhav et al. (2014)
35	Ambiguity of policies	Hu et al. (2015)
36	Obligatory work	(Not found)
37	Identification of resources	Jadhav et al. (2014), Marodin and Saurin (2013) and Laureani and Antony (2016)

Employee empowerment and involvement in lean implantation as the key success factor as the focus is on ‘teamwork’. In addition, given a strategic role in the process based on changes required for increased commitment and empowering of the employees and cross training, human resource management practices have been considered effective instruments to improve employees’ abilities, motivation, opportunities, and ultimately to ameliorate operational and social performance (Arnaud and Wasieleski, 2014; Camuffo et al., 2017; Kochan et al., 1997; MacDuffie and Helper, 1997).

## 9 Conclusions

In conclusion, the paper aims to identify enablers and inhibitors of LI in SMEs in the KSA. It proposes aspects of social transformation process and how the aspects are affected by OC. The paper opted for an exploratory study using semi-structure interviews, focus groups and observation approaches of grounded theory and action research. 29 in-depth interviews with employees ranging in terms of their position in the organisations, having mainly an experience of the LI background. The data was complemented by context analysis, including simultaneous and concurrent data collection and constant comparison methods. The paper provides empirical insights about how change is brought about during implementing lean. However, there were four aspects which have not been evidenced in prior research and were not identified in the literature review. These include; research and development (R&D), emphasis on individual contributions, socialisation of staff and obligatory work. 37 aspects have been identified from semi-structured interviews. All these aspects have been aggregated through focus groups to seven main themes. This paper fulfils an identified need to study how the OC affects LI. It contributes to the current state of LI in manufacturing companies by uncovering the correlation between enablers and inhibitors of OC in Saudi Arabia.

This study is a part of a developing framework to facilitate LI within SMEs and manufacturing companies by leveraging aspects of OC.

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