International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 06, 2020
ISSN: 1475-7192

Effect of Lean Green Practices on sustainability performance with mediating role of Entrepreneurship Orientation: A Resource Based View

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***ABSTRACT**--Sustainability performance concept has gained amplified importance in the last decades. On the other hand, with the change in market dynamics and increasing concerns for social responsibility and environment, the improvement methodologies related to the environment, operations, and society such as manufacturing practices lean and green are rising these days. However, there are minimal efforts at integrating the concepts of Lean, Green concerning sustainability performance in SMEs. As the concepts of Lean Green and their integration is necessary to balance the requirement for operational efficiency, environmental commitment and social fairness. Therefore, this study suggests a conceptual framework for the implementation of Lean, Green practices impact on the sustainability performance within business operations of Small and Medium Enterprises with mediating role of entrepreneurship orientation under the theory of Resource Based View. The proposed framework shows new pathways and paradigms for SMEs to understand the importance of Lean Green practices effect with the role of entrepreneurship orientation in their day to day performance as well as to achieve the balance between economic, social and environmental priorities.*

***Keywords**-- lean; green; SME; sustainability performance; entrepreneurship orientation.*

I. INTRODUCTION

In 1987, on development and environment, the world commission defined sustainability as the development which meets present generation needs without compromising future generation's ability to meet the needs of their own (WCED, 1987). From sustainability first day introduction, it has been inclined towards misperceptions. It has been measured and evaluated within the scope of either environmental or economic sustainability alone, though it based upon three pillars economic, environmental, and social (Quarshie et al., 2016). Therefore, in the scope of this study, sustainability is used to understand all the three pillars. A new framework named "triple bottom line (TBL)" presented by John Elkington, which involves the sustainability concept of all three pillars (J. Elkington, 1994; Slaper et al., 2011). TBL is also known as 3Ps or three P's, which stands for profit, people, and planet (Slaper & Hall, 2011; Torres Jr et al., 2009). TBL serves as a better tool for measuring sustainability or sustainability performance. In a short period of time, this concept has become very popular across government, non-profit, and corporate organizations due to universal sustainability perspective. It tries to make sure that desired services and

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Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

products can be delivered through the organization with efficient and effective resource consumption while avoiding possible damage to people, environment and living things (Tasdemir et al., 2018). Sustainability consists of three dimensions, namely ecological balance, economic prospect, and social dimension (Gimenez et al., 2012). It is the harmonious interaction and balanced development of three of these dimensions, which ensures continuous development of business and society.

In the highly competitive current business environment, from different stakeholders' worldwide manufacturers are facing pressures to hold sustainability management systems(Wu et al., 2015). As Zhu et al. (2013) specified, stakeholders, for instance, consumers, competitors, and government agencies, all of them have different expectations from companies which cannot be fully met by improving firms' focusing alone on the single bottom line. As a result, to achieve and live sustainability and to concurrently raise performance in their environmental, economic and social dimensions, it is essential for firms to find ways. Triple bottom line is the best way to measure the sustainability performance of the firm (Gimenez et al., 2012). Studies on sustainability in the past have focused on industrialized western nations, with limited intentions towards emerging economies (Chen et al., 2010; Wu et al., 2015). Therefore, with other business strategies and management systems, sustainability or TBL needs to be combined to ensure environmental, social, and economic sustainability excellence. Those popular management systems which can increase the performance of TBL involves lean and green systems (Lioui et al., 2012; Wu et al., 2015; Yang et al., 2011). In the field of general manufacturing, lean production system widely accepted and considerable financial benefits in the firm have been witnessed through lean management system implementation (Martínez-Jurado et al., 2014; Shah et al., 2003).Similarly, on firm performance, the green management system has proven to have positive effects in various aspects (Martínez-Jurado & Moyano-Fuentes, 2014). Until now, these management systems have only been studied in isolation.

With the change in market dynamics and increasing concerns for social responsibility and environment, the improvement methodologies related to the environment, operations, and society manufacturing practices for instance lean and green are rising these days (Garza-Reyes, 2015b). Therefore, In order to become ultimately successful and to improve global competitive advantage, companies must implement both, existing and new systems of production and quality such as lean Manufacturing, green manufacturing (Garza-Reyes, 2015a; Kovach et al., 2005). These production systems can be adopted together for enabling companies to produce customised quality products on demand in order to facilitate customer requirements (Garza-Reyes, 2015a; Kovach et al., 2005). Therefore, to respond according to the requirements of customers which are related to goods and services and to comply with environmental regulations from the government. It is compulsory for the organizations to rethink about the management of their operations and processes. Lean management has roots from the Tichni Ohno's work in Toyota Production System (TPS) (Ohno, 1988). Get popularized from the work of (J. P. Womack et al., 1990). The claimed outcomes after implementing lean management philosophy are delivery of the product in time, better quality, and reduced cost while utilizing fewer resources. In contrast, possible harmful toxic impacts on the environment by a firm and its processes, green management looks at them and try to reduce and remove them (Azzone et al., 1998; Rusinko, 2007). As both of the philosophies have a focus on reducing the waste and propose that they are not exclusive (Dües et al., 2013; Galeazzo et al., 2014). Understanding goals commonality can direct towards a better understanding of important management application and tools of process improvement. The interdependence of the two philosophies suggests that those management strategies which take benefit from this

interaction and can help the firm to achieve simultaneous environmental and financial gains (Yang et al., 2011). The model which consists of integrating lean and green systems with the performance of a firm would help surround this discussion which is yet lacking (Hallam et al., 2016).

As SMEs carry limited resources, hence for the achievement of sustainability, SMEs need to take into account environmental, economic and social issues through adopting lean and green initiatives (Siegel et al., 2019). As both Lean and green enhance SMEs competitiveness in a sustainable way (De et al., 2018). Therefore, SMEs are struggling to integrate effectively lean with green management(Farias et al., 2019). However, guidelines are needed for SMEs including benefits, frameworks to encourage them for the implementation of lean green and to improve sustainability performance(Siegel et al., 2019). Likewise, In today's changing environment of business, entrepreneurship gets more importance due to its positive effect related to sustainable competitive advantage and organizational performance (Al-Dhaafri et al., 2016). Entrepreneur function is to revolutionize production process pattern through adopting innovative practices or through producing new commodity by untried technological possibility or through opening up materials supply new source, products new outlets or through new organizing industry (Zehir et al., 2015).

Conceptually, EO should lead to superior performance (Gupta et al., 2016). With strong EO organizations will perform better as compared to those who do not implement EO (Sahoo et al., 2017). For the achievement of success, entrepreneurial activities, vision and capabilities, will not be enough alone unless quality management philosophy is there in the organisation (Al-Dhaafri et al., 2016). Lumpkin et al. (1996) from the last two decades, recognises the conceptual basis for research in EO and in defining Entrepreneurship Orientation they became the inventors of this. The five dimensions of EO can be stated as innovativeness, risk-taking, proactivity, autonomy, and competitive aggression. However, the most common among those are the first three.

II. LITERATURE REVIEW

The Concept of Sustainability

The word sustainability meaning can be constructed in many ways, but the conventional interpretation, which is used mostly is related to the development of humans on earth. (Brundtland, 1987) originally defined the sustainable development concept on UN General Assembly behalf. Sustainable development need came into being as a response related to increasing concerns regarding economic growth connection with environmental damage (Factbook, 2008). The commission defines sustainable development as a development which meets present needs without compromising future generations ability to encounter their own needs (Brundtland, 1987).

Sustainability Performance

Sustainability incorporates performance based upon environmental, social with economic dimension(Fauzi et al., 2010). In evaluation and measurement of sustainability, performance can be understood through additional aspects that the company's responsibility is not regarding the generation of economic welfare only, but the environment and people are equally important (Fauzi et al., 2010; Wu et al., 2015). Sustainability performance accommodates along with shareholders and various stakeholder's group's interests in the society (Colbert et al., 2007; Henriques et al., 2013). However, researchers used different methodologies for the evaluation of

sustainability performance (Gross, 2015). Therefore, Sustainability performance measures integrate three dimensions including social, environmental and economic (Cornelius et al., 2008; Furnish et al., 2013; Hubbard, 2009; Norman et al., 2004; Slaper & Hall, 2011). Through Several researchers Parallel idea has been reinforced (Jonker et al., 2004; Van Marrewijk et al., 2003) indicates firm objective is synergies creation among environmental, social and economic aspects, which improves sustainability performance subsequently (Rasi et al., 2014). Organizations sustainability approach has moved from control of pollution to eco-efficiency and then socio efficiency. Therefore, these underlying concepts focused towards win-win solutions, as economic benefits straighten up with environmental performance, for instance, reducing consumption of resources and minimization of waste, and with social performance, i.e. negative social minimization and positive one's maximization (Young et al., 2006). In consequence, sustainability performance in managerial practices could be interpreted as a significant shift from not only being business oriented, and social oriented but also planet oriented (Fauzi et al., 2010; Wu et al., 2015).

Triple Bottom Line

Sustainability concept can be summarized in the Triple Bottom Line or three pillars model. This concept of Triple Bottom Line was developed by (Elkington, 1994) addresses the significance of incorporating economic and social dimensions to sustainable development for the achievement of environmental progress. Rather than maximizing shareholder profit for corporations, this concept calls to serve stakeholders interest. According to (Jennifer Ho et al. (2007), stakeholders must be concerned about social-environmental issues in addition to financial performance. The TBL concept is considered as sustainability three pillars. Due to economic efficiency, nonexistence environment friendly and socially viable manufacturing states to be bearable but cannot be considered sustainable.

Lean Manufacturing

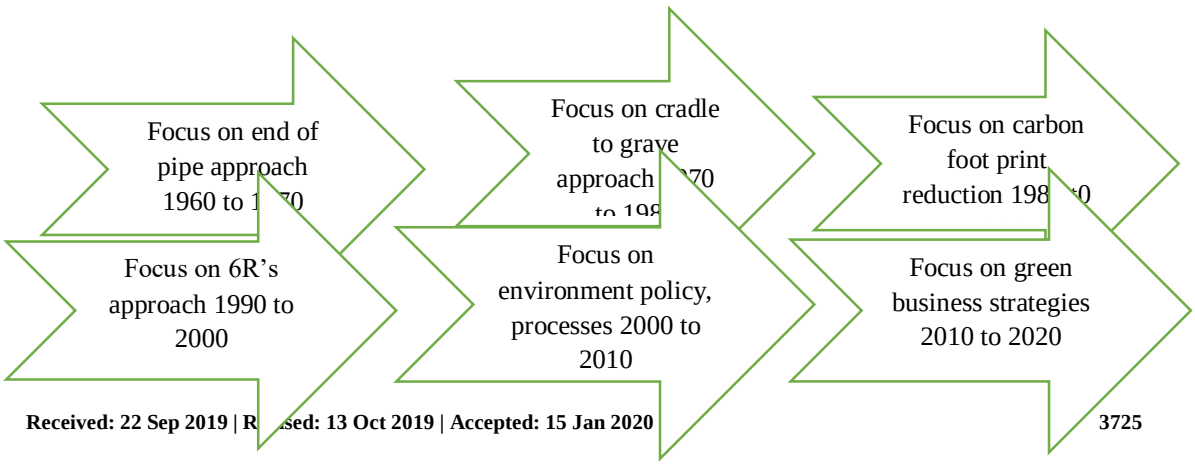
The word lean is related to lean production or lean manufacturing as it consumes less of everything, associated with mass production. In a factory it uses half human effort, half manufacturing space, in tools half investment, half engineering hours to develop a new product in half time. According to the research done by Bayou et al. (2008) lean manufacturing is a strategy with less input and goals of organization achievement while producing better output, where input is related to the usage of physical resources, and their cost and output are related to sold products quality and quantity and equivalent customer service. According to Narasimhan et al. (2006) lean manufacturing literature established that resources efficient use through waste minimization is the essential lean part as lean manufacturing aim is a reduction of non-value added activities and reduction of waste. In essence, the lean manufacturing core idea is to minimize waste while maximizing customer value. Lean production implementation goal is productivity increase, reduction cost, shorten lead times and quality enhancement. Above mentioned factors indicate lean production system performance. First lean manufacturing techniques were acknowledged as the reason for Japanese success. The idea was built on the fact that the first development of lean management model was by Japanese Toyota motor company to reduce cost after the second world war. Thus, the lean introduction has meaningfully changed the market as well as the strategy in its first occurrence in the car industry development, which was established by the Toyota Production System (Stentoft Arlbjørn et al., 2013;

Wahab et al., 2013). TPS success shows and demonstrates that lean techniques are significant and influential. From different countries industries, for example, electric and electronics, machine tool industry, wood, ceramic, auto and machinery, automotive and so on, the devastating scenario has directed them for lean implementation in their manufacturing. Therefore, most companies have implemented lean and assessed lean practices in their way. The reason lies in internal issues, such as, lack of lean understanding, knowledge, skills, and culture. Other factors which include size and age also contribute to lean tool and techniques adoption in one's company.

Green Manufacturing

Green Manufacturing is defined as "a manufacturing practice which does not harm the environment during any of its journey phases". It includes green product design, usage of raw material which is environmentally friendly, packaging in an environmentally friendly way, distribution, after product end life reuse. It slows natural resources depletion and lowers trash (Foster, 2001). It stresses on reducing parts, material rationalising, components reuse. It covers several manufacturing issues involving 3Rs, regulatory compliance, waste management, conservation, environmental protection, pollution control and other joined requirements (Jawahir et al., 2006).Deficiency of natural resources and energy, waste generation and toxic materials release necessitated manufacturing paradigm development which have lower environmental effect. This led to green manufacturing evolution. A well designed green manufacturing system through efficient raw material usage, reduces operational cost, labour and energy, add value to product. To improve the efficiency of an organisation via GM Practices, there are abundant opportunities along with protection of the environment that influence financial gains (Roy et al., 2016). Balancing economic and environmental performance has become noteworthy for organisations facing competitive, regulatory and community pressures (Bai et al., 2015). Many campaigns have started in different countries for the promotion of GM and are stressing on recycled material usage with energy consumption reduction (Woo et al., 2016).Hazardous gases emissions and consumption of high energy reflects firm poor environmental performance. Managers of a firm must adopt practices like ISO 14001(Govindan et al., 2015), which will lead towards satisfaction of customers, reduces waste generation and resource utilization. Practicing 3R offer reduction of cost, through development of products and process manufacturing with less consumption of material, allow material utilization in original form which subsequently provide better resource efficiency(Thanki et al., 2016). Origination of GM concepts is from Germany, its activities nature, scope and focus keep changing with respect to time. It is not restricted to manufacturing only. It has been evolving continuously and demanding comprehensive treatments.

Major Changes in GM over the Years



Lean Green Integration in SMEs Context

In recent years lean green concepts gained high popularity(Cherrafi et al., 2019). Green and lean are two different approaches which have been developed differently; they are compatible and synergetic strategies due to joint focus on reduction of waste and efficient resources usage(Garza-Reyes, 2015b).Consequently, from two approaches, tools and principles have been integrated under unified improvement approach called as 'lean green' for the achievement of both sustainability and operational excellence(Dües et al., 2013). Lean green is an integrated approach which purpose is to achieve improvements not only operational or financial but also environmental(Leong et al., 2019). For organizations lean green can be a new opportunity for the improvement of sustainability performance. According to (Cherrafi et al., 2017) organizations which implemented lean green practices simultaneously, achieved better results, as compared to those which only focused on one of the initiative. There is a lack of complete and structured framework for lean and green in SMEs context. There is a need to describe the key elements which are required for SMEs to achieve sustainable profitability through savings of cost, at the same time being environmentally and socially conscious. Businesses found both paradigms integration and implementation challenging. There is a lack of awareness regarding the need for improvement methods like lean green, lack of management support and responsibility as well as lack of integration strategy and employee involvement(Cherrafi et al., 2016; Kurdve et al., 2014).

III. LEAN GREEN PRACTICES

Mindset and Attitude

Fundamental to lean green successes are mindset and attitude. Within the organization, there must be a long term commitment to lean green practice. Change in people's thinking and doing things differently can help organizations to achieve different results. Many failed attempts for implementation of lean green practice start with fundamental concept of misunderstanding. Therefore, the key is to learn the cognitive dimension, tools, and concepts. For successful implementation of the Lean Green practice, previous studies have identified mindset and attitude as the key aspects which include lean green thinking, openness towards learning, and confidence in success in implementing lean green practice(Zhan et al., 2018).

Leadership and Management

Leadership strong strategic commitment denotes continual investment in employees and willingness towards the commitment of resources for the promotion of lean green culture leading towards continuous improvement (Al-Najem et al., 2012). Nothing diminishes shop floor employee's commitment faster as compared to leadership and management which do not follow their commitments towards Lean Green practice. Without a profound understanding of lean green philosophy, leaders will be unable to implement lean green practice and to create a Lean Green culture. Also, managers need to ensure that there are right people at the right places who are required for the success of the Lean Green practice(Zhan et al., 2018).

Employee Involvement

Only through the efforts of employees in the organization, the achievement of successful Lean implementation can be done as stated by (Zhu et al., 2005). Moreover, according to the studies, improvement of pollution control can be made through employee involvement. For instance, Dow chemical through encouraging employee involvement has been able for waste reduction and pollution (Denton, 1999) Organization's environmental performance and business performance can be improved through employees in three ways. Firstly, as a long-term approach, as it requires permanent employee commitment. Therefore, to change thinking way and doing things, discipline and continuous learning, employee commitment is required. If people decline towards change and their work method, then lean green success chance is very little. According to J. Womack et al. (2003), different skill sets are required as compared to non-Lean Green forms of organizations. It is essential that employees must have a deeper understanding of the concept for underpinning lean green practice, which is not only related to its tools and technique and the core of the Lean Green practice is human capital development. Therefore, for overall Lean Green transformation processes, the employee development process should be linked. In addition to that, if employees are fundamental to lean green success, then they should be involved deeply in all aspects of lean green practice, including planning and execution(Zhan et al., 2018).

Integrated Approach

The key towards successful implementation of Lean Green practice is the integration of two approaches, as stated by (Vachon et al., 2006). The Lean Green integrated approach is a helpful emerging tool to enhance the business performance of the organization by creating customer value, eliminating waste, and ensuring continuous improvement through sustainable integration practice. It can also improve the environmental performance of the organization by reducing environmental degradation and pollution (Alshuwaikhat et al., 2008). This research builds integrated approach requirement and refers to structures and systems alignment, which includes behaviors as well as infrastructure to support lean green practice. Lean Green practice integration with technology and other programs and systems brings alignment ability with personal issues within the operating system(Zhan et al., 2018).

Tools and Techniques

In developing countries, tools and techniques have a fundamental role in different types of industries (Hines et al., 2004; Srivastava, 2007). Implementing lean green tools and techniques is a proven method to beat the competition and improve business performance. Lean and Green manufacturing paradigms carry equal influence on firm overall performance. To achieve the desired outcome for performance of firm, Quality and customer satisfaction are strong drivers which must receive preference. It serves as a road map for mangers to improve firm performance without compromising ecological based efficiency and to move firm successfully towards sustainability(Thanki et al., 2016).Tools and techniques of lean green considered to be those principles and concepts which aim to identify removal of waste with optimize resource utilization. Every organization uses different variety of tools according to their needs and size of company. Most common lean tool is 5S tool (sort, set, shine, standardize, sustain) and now sixth edition related to safety, followed by Total productive maintenance, Value stream mapping, Total Quality Management, Visual work place and supplier network. Whereas frequently applied green tool was green value stream mapping(Chiarini, 2014; Piercy et al., 2015). Eco design, ISO 14001,

life cycle assessment applied by few of the companies. Most of the companies rely entirely on lean tools for the achievement of lean as well as environmental objective(Siegel et al., 2019). According to the study results done by (Thanki et al., 2016) TPM, 5S, Kaizan, are most influential lean practices. Whereas ISO 14001, DFE, 3R, are leading practices of green. Additionally, United States agency of environmental protection 2007 introduced a tool kit which offers environmental practitioners and lean operations manager's practical techniques to reduce business risk and cost, identification and elimination of waste, and environmental performance improvement. (Zhan et al., 2018). Likewise, for successful implementation of lean green top management commitment and support , their mind set and attitude, employee involvement considered to be important factors for lean green successful implementation(Siegel et al., 2019; Zhan et al., 2018).

Entrepreneurship Orientation

According to (Covin et al., 1991; Miller, 1983) Entrepreneurial orientation is an attribute which firm carry's and exist to the extent risk taking, proactiveness, innovativeness becomes firm strategic posture feature, these three dimension shows to which extent firm is entrepreneurial in its method, products, services, decision making styles and business practices. EO concept seems universal in applicability and validity terms across different firms and national contexts. Empirical studies from different firms types and countries examine EO effect on various outcomes and finds the concept valid and robust(Wales et al., 2013). As from previous findings related to EO cultural universality as a concept, it has been evident that relationship between EO and firm performance is universally positive(Rauch et al., 2009; Saeed et al., 2014). Regardless of national context and firm characteristics firm performance profits through EO. SMEs having Entrepreneurial strategic posture pursue new solutions, develop new services and products, to stay fast from their competitors(Kraus et al., 2012). Generally, this kind of strategic posture results superior performance through creating first mover advantage as well as temporary monopoly. Firms having entrepreneurial strategic posture, take risks, pursue new solutions due to orientation towards innovation. More likely, generate as well as exploit new business opportunities , therefore achieve superior performance(Covin et al., 2011). Through exploring the unknown, firms take risks, move beyond strategies and procedures, anticipate future demands, as well as position new services and products(Bouncken et al., 2016).Therefore, firm having strategic posture related to innovativeness, proactiveness stays ahead of competitors, enjoy high profit margins, when customers appreciate and value innovative solutions. For organizational achievement, EO is supposed to be a crucial component. Strategic directions given to workers will let them motivate for the achievement of organizational performance. There is a need to give complete attention by organizations to Entrepreneurship orientation which will help to portray them differently in the market from their rivals(Hashim et al., 2018).EO strengthens performance of the organization as well as stimulate entrepreneurs to become more competitive, well prepared and better equipped to transform Malaysia, in knowledge based economy with high income developed nation.

Entrepreneurial Orientation Dimensions

Entrepreneurship orientation is defined as a firm's involvement to enter a new market (S. M. Lee et al., 2000; Lumpkin & Dess, 1996). Avlonitis et al. (2007) suggested that EO establishes organisational phenomenon which reproduces managerial capability through which a firm gets on board aggressive and proactive decisions by

changing the competitive scene towards their advantage. Five dimensions have been developed by (Lumpkin & Dess, 1996) which characterise the firm's EO: risk-taking, innovativeness, proactiveness, autonomy, and competitive aggressiveness. Risk-taking represents inclination towards the binding of resources to undergo those projects and activities which resulted in outcomes uncertainty (Lumpkin & Dess, 1996). Innovativeness shows capacity to get engage and support innovative ideas, experimentation, novelty and processes based on creativity, which results in newness. Proactiveness shows firm actions in anticipating and developing emerging opportunities through introduction growth and progress towards a product(Lumpkin & Dess, 1996). Autonomy related to individual and teams independent action in ensuring concept and ideas are being supported until completion (Lumpkin & Dess, 1996). It gives a chance for employees to perform effectively through creativity self-directed and independence. Competitive aggressiveness is the firm's intensity to improve the position and to overcome competitors in the market (Lumpkin & Dess, 1996).

According to past studies(Liñán et al., 2016; Miller, 1983; Shirokova et al., 2016), entrepreneurial orientation main traits are risk taking, innovativeness and proactiveness.

EO as a Mediator

Several researchers examined the EO-performance relationship mostly in developed countries. There has been little understanding related to causal mechanism of why or how EO affects other variables(Ali et al., 2017). Therefore, future research should disclose whether EO mediates the relationship between specific strategies, resource allocations and environmental attributes which lead towards competitive advantage. This kind of research should lead towards relationships detailed picture, firm environment and performance of the firm (Rosenbusch et al., 2013). Therefore, this study proposes a role of entrepreneurship orientation as a mediator between lean, green practices and sustainability performance of the firm.

Lean Green as RBV Resources

The firm resource-based view has been discussion subject in the strategic management field among researchers. RBV suggests that the success of the organization depends upon the capabilities and resources which have certain characteristics (Galbreath, 2005). Firm capabilities and resources can be distinct as including all capabilities, assets, organizational processes, firm's knowledge and attributes controlled by a firm which allows the firm to grow and implement those strategies which can improve their effectiveness and efficiency (J. B. Barney, 1995). This is available factors bundle possessed and controlled by the firm and can be used for building up and implementing their strategies (Amit et al., 1993). Sustainable competitive advantage can be generated through firm capabilities and resources when following characteristics they have non-substitutability, rarity, value, inimitability (J. Barney, 1991). Later (J. B. Barney, 1995) focused that sustained competitive advantage needs unique capabilities and resources which firm could bring towards its environment and competition. Business managers and owners must discover these capabilities and resources by looking inside the firm for those resources which are rare, valuable, and imperfectly imitable and then obtain these resources. According to Galbreath (2005), only those firms and resources which retain these attributes can generate and sustain competitive advantage leading towards superior performance. J. Barney (1991) stated that resources of the firms are categorized in accordance with physical, human and capital resources of the organization. Physical capital involves plant and equipment, physical

technology, access towards raw material and geographic location. Human capital involves intelligence, experience, training, relationships, attributes and abilities of workers and managers. Organizational capital involves reporting structures, informal and formal planning and the firm's whole organizing process. Financial resources new category has been added by (J. B. Barney, 1995) which includes equity, debt and retained earnings.(Busenitz et al., 2003) recommended entrepreneurial resources include entrepreneurial knowledge, insight, alertness and resources coordination ability. (Dollinger, 2003) expanded this application theory, including technological resources (physical transformations, processes, systems) and reputational resources (company perception, stakeholder) as competitive advantage resources. RBV emphasizes upon effective and efficient resources deployment, heterogeneous inimitable resources, at the disposal of company to obtain competitive advantage (J. Barney, 1991; Hackman et al., 1995; Khanchanapong et al., 2014). Resources right combination is compulsory to accomplish sustainable competitive advantage (Ulrich et al., 1995). Individually, green lean practices can be measured as imitable resources, homogenous attained by industrial competitors, and it may limit organization ability to achieve a competitive advantage when applied in separation (Enz, 2008). It has been stated that sustainable competitive advantage can never be obtained through one resource. Bundling resources in an innovative way, the organization should think about which may get difficult for competitors to imitate. In green lean practices context, integrated green lean practice synergistic effect can generate heterogeneity, greater value and innovation through production, design, and delivery process performance can be improved (Colicchia et al., 2017; Garza-Reyes, 2015b; Yang et al., 2011). Different organization resources, for instance, green lean when applied simultaneously enhances the resources complexity which competitors will try to imitate, synergistic application of them would drive innovation and will deliver increased performance as compared to each of them if implemented in separation (Cherrafi et al., 2017; Cua et al., 2001; Garza-Reyes, 2015b; Ketokivi et al., 2004; Khanchanapong et al., 2014)Further supported the argument advising organizations to create basic manufacturing practices different configurations to improve capabilities specific aspects to motivate and achieve competitive advantage. Model of operations four stages to drive competitive advantage, the fourth stage can only be achieved by an organization where the operational function is supportive externally and influence strategy development and organizational goals. Here different manufacturing strategies joined up, and integrated approaches including green lean practices to innovate creative products and processes can help organization which competitors would find difficult to imitate (Baines et al., 2012; Figge et al., 2012; Sarkis, 2001).

Entrepreneurship Orientation as RBV Capability

RBV's most basic assumption is related to a firm's internal intangible resources, which are important to understand the organisation's competitive success. Therefore very less is known about these resources which are related to each other and how they relate to each other (Wilderom et al., 2000). In this study, EO SME can be considered as the firm's intangible internal resources or capabilities. There is a more significant contribution of capabilities towards firm success than either tangible or intangible assets do (Galbreath, 2005). Competitive advantage capability based theory proponents advocate that sustainable competitive advantage of the firm can be achieved through distinctive capabilities possessed by the firm (Grant, 1999; Hayes et al., 1996) firms resources most important elements are these capabilities as these are strong barriers to substitution and imitation and higher level causal ambiguity (Foon, 2011). Similarly, firm capabilities are essential for an ability to get together cost

efficiency with continuous improvement related to productivity to become more competitive. Competitive advantage capability based theory suggest firm sustainable competitive advantage can be gained through distinctive capabilities maintained by the firm(Grant, 1999; Hayes et al., 1996; Prahalad, 1990). These distinct characteristics permit firms for good usage of their resources and to achieve rents(Mahoney et al., 1992). (Todorovic et al., 2007) called that EO can be that valuable rent under RBV. In their views, the individual, an entrepreneur, is often recognised within the firm itself. The vision of an entrepreneur becomes a firm's vision statement. EO high level is something which firm cannot buy simply from the market (C. Lee et al., 2001). A great amount of time is required for the development of an entrepreneurial culture which is required for the firm to invest and then EO can be sustainable competitive advantage source which leads towards superior performance. EO consists of proactiveness, risk-taking, innovativeness, which is considered as an internal capability of the organisation (C. Lee et al., 2001). Moreover, it has been acknowledged as a sustainable competitive advantage key source (Miles et al., 1994).

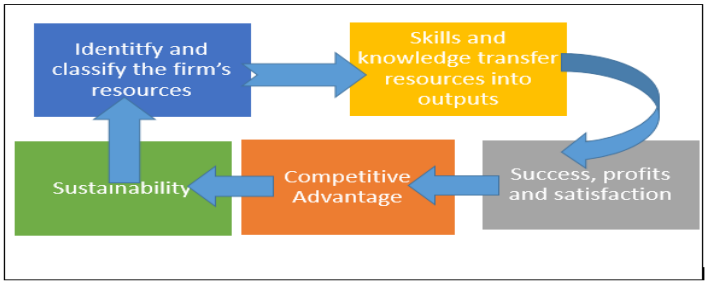


Figure 1.1: Proposed Framework

This study proposes the following framework:

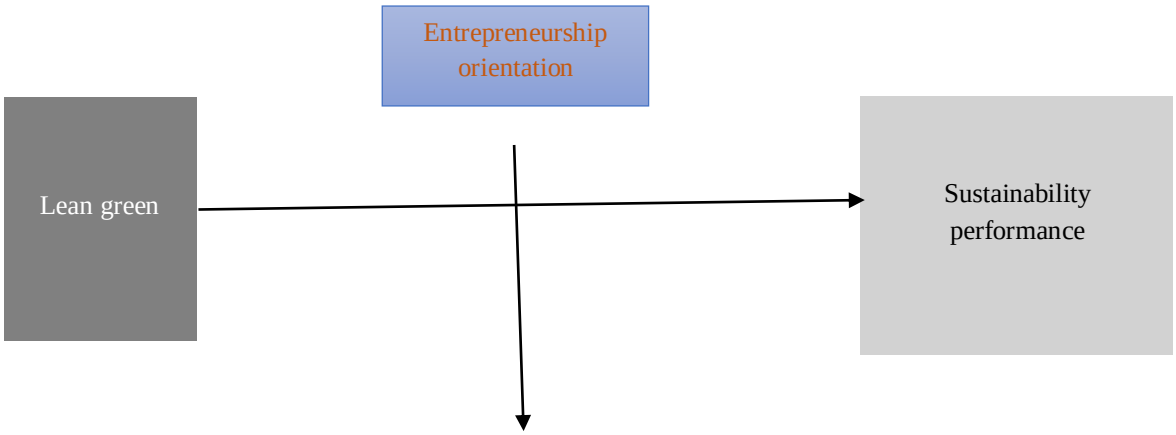


Figure 1.2: Entrepreneurship orientation

IV. CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

The above figure proposes the framework which incorporates Lean Green practices effect on sustainability performance with mediating role of entrepreneurship orientation. This study directs towards the improved quality of products, improved production processes, reduction of cost production, market share expansion of organization through satisfying customers who gaze for Green products and manufacturing with mediating role of entrepreneurship orientation. In future, researchers and industry experts may implement and extend this study for results generalizability.

Conflict of Interest

The author(s) declare that they have no conflict of interest.'

Source of Funding

'The author(s) received no specific funding for this work.'

REFERENCES

1. Al-Dhaafri, H. S., Al-Swidi, A. K., & Yusoff, R. Z. B. (2016). The mediating role of total quality management between the entrepreneurial orientation and the organizational performance. *The TQM Journal, 28*(1), 89-111.
2. Al-Najem, M., Dhakal, H., & Bennett, N. (2012). The role of culture and leadership in lean transformation: a review and assessment model. *International Journal of Lean Thinking, 3*(1), 119-138.
3. Ali, G. A., Hilman, H., & Gorondutse, A. H. (2017). The effect of entrepreneurial orientation, market orientation, total quality management and organizational culture on the SMEs performance: A theoretical framework. *Journal of Business and Retail Management Research, 12*(1).
4. Alshuwaikhat, H. M., & Abubakar, I. (2008). An integrated approach to achieving campus sustainability: assessment of the current campus environmental management practices. *Journal of Cleaner Production, 16*(16), 1777-1785.
5. Amit, R., & Schoemaker, P. J. (1993). Strategic assets and organizational rent. *Strategic management journal, 14*(1), 33-46.
6. Avlonitis, G. J., & Salavou, H. E. (2007). Entrepreneurial orientation of SMEs, product innovativeness, and performance. *Journal of Business Research, 60*(5), 566-575.
7. Azzone, G., & Noci, G. (1998). Identifying effective PMSs for the deployment of "green" manufacturing strategies. *International Journal of Operations & Production Management, 18*(4), 308-335.
8. Bai, C., Sarkis, J., & Dou, Y. (2015). Corporate sustainability development in China: review and analysis. *Industrial Management & Data Systems, 115*(1), 5-40.
9. Baines, T., Brown, S., Benedettini, O., & Ball, P. (2012). Examining green production and its role within the competitive strategy of manufacturers. *Journal of Industrial Engineering and Management, 5*(1), 53.
10. Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management, 17*(1), 99-120.
11. Barney, J. B. (1995). Looking inside for competitive advantage. *The Academy of Management Executive, 9*(4), 49-61.

12. Bayou, M. E., & De Korvin, A. (2008). Measuring the leanness of manufacturing systems—a case study of Ford Motor Company and General Motors. *Journal of Engineering and Technology Management, 25*(4), 287-304.
13. Bouncken, R. B., Plüschke, B. D., Pesch, R., & Kraus, S. (2016). Entrepreneurial orientation in vertical alliances: joint product innovation and learning from allies. *Review of Managerial Science, 10*(2), 381-409.
14. Brundtland, G. H. (1987). Sustainable development. *Towards Sustainable Development. The Panos Institute, London. Pages viii-x*.
15. Busenitz, L. W., West III, G. P., Shepherd, D., Nelson, T., Chandler, G. N., & Zacharakis, A. (2003). Entrepreneurship research in emergence: Past trends and future directions. *Journal of management, 29*(3), 285-308.
16. Chen, T. B., & Chai, L. T. (2010). Attitude towards the environment and green products: Consumers' perspective. *Management science and engineering, 4*(2), 27-39.
17. Cherrafi, A., Elfezazi, S., Chiarini, A., Mokhlis, A., & Benhida, K. (2016). The integration of lean manufacturing, Six Sigma and sustainability: A literature review and future research directions for developing a specific model. *Journal of Cleaner Production, 139*, 828-846.
18. Cherrafi, A., Elfezazi, S., Govindan, K., Garza-Reyes, J. A., Benhida, K., & Mokhlis, A. (2017). A framework for the integration of Green and Lean Six Sigma for superior sustainability performance. *International Journal of Production Research, 55*(15), 4481-4515.
19. Cherrafi, A., Elfezazi, S., Hurley, B., Garza-Reyes, J. A., Kumar, V., Anosike, A., et al. (2019). Green and Lean: a Gemba–Kaizen model for sustainability enhancement. *Production Planning & Control, 30*(5-6), 385-399.
20. Chiarini, A. (2014). Sustainable manufacturing-greening processes using specific Lean Production tools: an empirical observation from European motorcycle component manufacturers. *Journal of Cleaner Production, 85*, 226-233.
21. Colbert, B. A., & Kurucz, E. C. (2007). Three conceptions of triple bottom line business sustainability and the role for HRM. *People and Strategy, 30*(1), 21.
22. Colicchia, C., Creazza, A., & Dallari, F. (2017). Lean and green supply chain management through intermodal transport: insights from the fast moving consumer goods industry. *Production Planning & Control, 28*(4), 321-334.
23. Cornelius, N., Todres, M., Janjuha-Jivraj, S., Woods, A., & Wallace, J. (2008). Corporate social responsibility and the social enterprise. *Journal of business ethics, 81*(2), 355-370.
24. Covin, J. G., & Lumpkin, G. T. (2011). Entrepreneurial orientation theory and research: Reflections on a needed construct. *Entrepreneurship theory and practice, 35*(5), 855-872.
25. Covin, J. G., & Slevin, D. P. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship theory and practice, 16*(1), 7-26.
26. Cua, K. O., McKone, K. E., & Schroeder, R. G. (2001). Relationships between implementation of TQM, JIT, and TPM and manufacturing performance. *Journal of operations management, 19*(6), 675-694.
27. De, D., Chowdhury, S., Dey, P. K., & Ghosh, S. K. (2018). Impact of Lean and Sustainability oriented innovation on Sustainability performance of Small and Medium Sized Enterprises: A Data Envelopment Analysis-based Framework. *International Journal of Production Economics*.

28. Denton, D. K. (1999). Employee involvement, pollution control and pieces to the puzzle. *Environmental Management and Health, 10*(2), 105-111.
29. Dollinger, M. (2003). *Entrepreneurship: Strategies and Resources*, (Vol. 3rd edn,). New Jersey: PrenticeHall, .
30. Dües, C. M., Tan, K. H., & Lim, M. (2013). Green as the new Lean: how to use Lean practices as a catalyst to greening your supply chain. *Journal of Cleaner Production, 40*, 93-100.
31. Elkington. (1994). *Enter the triple bottom line*.
32. Elkington, J. (1994). Towards the sustainable corporation: Win-win-win business strategies for sustainable development. *California management review, 36*(2), 90-100.
33. Enz, C. A. (2008). Creating a competitive advantage by building resource capability: The case of Outback Steakhouse Korea. *Cornell Hospitality Quarterly, 49*(1), 73-78.
34. Factbook, O. (2008). OECD Factbook 2008: Economic, Environmental and Social Statistics: OeCD.
35. Farias, L. M. S., Santos, L. C., Gohr, C. F., de Oliveira, L. C., & da Silva Amorim, M. H. (2019). Criteria and practices for lean and green performance assessment: Systematic review and conceptual framework. *Journal of Cleaner Production*.
36. Fauzi, H., Svensson, G., & Rahman, A. A. (2010). "Triple bottom line" as "Sustainable corporate performance": A proposition for the future. *Sustainability, 2*(5), 1345-1360.
37. Figge, F., & Hahn, T. (2012). Is green and profitable sustainable? Assessing the trade-off between economic and environmental aspects. *International Journal of Production Economics, 140*(1), 92-102.
38. Foon, L. S. (2011). Capabilities differentials as strategic assets of firms: a pragmatic review. *SEGi Review, 4*(1), 143-164.
39. Foster, S. T. (2001). *Managing quality: an integrative approach* (Vol. 223): Prentice Hall Upper Saddle River.
40. Furnish, A., Kay, A., & Xia, S. (2013). Evaluation of Triple Bottom Line Impacts of Resourceful Communities' Creating New Economies Fund.
41. Galbreath, J. (2005). Which resources matter the most to firm success? An exploratory study of resource-based theory. *Technovation, 25*(9), 979-987.
42. Galeazzo, A., Furlan, A., & Vinelli, A. (2014). Lean and green in action: interdependencies and performance of pollution prevention projects. *Journal of Cleaner Production, 85*, 191-200.
43. Garza-Reyes, J. A. (2015a). Green lean and the need for Six Sigma. *International Journal of Lean Six Sigma, 6*(3), 226-248.
44. Garza-Reyes, J. A. (2015b). Lean and green–a systematic review of the state of the art literature. *Journal of Cleaner Production, 102*, 18-29.
45. Gimenez, C., Sierra, V., & Rodon, J. (2012). Sustainable operations: Their impact on the triple bottom line. *International Journal of Production Economics, 140*(1), 149-159.
46. Govindan, K., Azevedo, S., Carvalho, H., & Cruz-Machado, V. (2015). Lean, green and resilient practices influence on supply chain performance: interpretive structural modeling approach. *International Journal of Environmental Science and Technology, 12*(1), 15-34.
47. Grant, R. M. (1999). The resource-based theory of competitive advantage: implications for strategy formulation *Knowledge and strategy* (pp. 3-23): Elsevier.

48. Gross, R. (2015). Measuring organizational performance: A new approach to triple bottom line reporting and stakeholder engagement. *British Journal of Business and Management Research, 2*(1), 69-80.
49. Gupta, V. K., & Batra, S. (2016). Entrepreneurial orientation and firm performance in Indian SMEs: Universal and contingency perspectives. *International Small Business Journal, 34*(5), 660-682.
50. Hackman, J. R., & Wageman, R. (1995). Total quality management: Empirical, conceptual, and practical issues. *Administrative science quarterly*, 309-342.
51. Hallam, C., & Contreras, C. (2016). Integrating lean and green management. *Management Decision, 54*(9), 2157-2187.
52. Hashim, A., Omar, C. M. Z. C., Hamzah, M. S. G., & Umar, A. (2018). Leadership Behaviour, Entrepreneurial Orientation and Organisational Performance in Malaysian Small and Medium Enterprises. *International Business Research, 11*(9), 37-50.
53. Hayes, R., Pisano, G., & Upton, D. (1996). *Strategic operations: Competing through capabilities*: Free Press.
54. Henriques, A., & Richardson, J. (2013). *The triple bottom line: Does it all add up*: Routledge.
55. Hines, P., Holweg, M., & Rich, N. (2004). Learning to evolve: a review of contemporary lean thinking. *International Journal of Operations & Production Management, 24*(10), 994-1011.
56. Hubbard, G. (2009). Measuring organizational performance: beyond the triple bottom line. *Business Strategy and the Environment, 18*(3), 177-191.
57. Jawahir, I., Dillon, O., Rouch, K., Joshi, K. J., Venkatachalam, A., & Jaafar, I. H. (2006). *Total life-cycle considerations in product design for sustainability: A framework for comprehensive evaluation.* Paper presented at the Proceedings of the 10th International Research/Expert Conference, Barcelona, Spain.
58. Jennifer Ho, L. C., & Taylor, M. E. (2007). An empirical analysis of triple bottom-line reporting and its determinants: evidence from the United States and Japan. *Journal of International Financial Management & Accounting, 18*(2), 123-150.
59. Jonker, J., & Karapetrovic, S. (2004). Systems thinking for the integration of management systems. *Business process management journal, 10*(6), 608-615.
60. Ketokivi, M. A., & Schroeder, R. G. (2004). Perceptual measures of performance: fact or fiction? *Journal of operations management, 22*(3), 247-264.
61. Khanchanapong, T., Prajogo, D., Sohal, A. S., Cooper, B. K., Yeung, A. C., & Cheng, T. (2014). The unique and complementary effects of manufacturing technologies and lean practices on manufacturing operational performance. *International Journal of Production Economics, 153*, 191-203.
62. Kovach, J., Stringfellow, P., Turner, J., & Cho, B. R. (2005). The house of competitiveness: the marriage of agile manufacturing, design for Six Sigma, and lean manufacturing with quality considerations. *Journal of Industrial Technology, 21*(3), 1-10.
63. Kraus, S., Rigtering, J. C., Hughes, M., & Hosman, V. (2012). Entrepreneurial orientation and the business performance of SMEs: a quantitative study from the Netherlands. *Review of Managerial Science, 6*(2), 161-182.
64. Kurdve, M., Zackrisson, M., Wiktorsson, M., & Harlin, U. (2014). Lean and green integration into production system models–experiences from Swedish industry. *Journal of Cleaner Production, 85*, 180-190.

65. Lee, C., Lee, K., & Pennings, J. M. (2001). Internal capabilities, external networks, and performance: a study on technology-based ventures. *Strategic management journal, 22*(6-7), 615-640.
66. Lee, S. M., & Peterson, S. J. (2000). Culture, entrepreneurial orientation, and global competitiveness. *Journal of world business, 35*(4), 401-416.
67. Leong, W. D., Teng, S. Y., How, B. S., Ngan, S. L., Lam, H. L., Tan, C. P., et al. (2019). Adaptive Analytical Approach to Lean and Green Operations. *Journal of Cleaner Production*.
68. Liñán, F., Moriano, J. A., & Jaén, I. (2016). Individualism and entrepreneurship: Does the pattern depend on the social context? *International Small Business Journal, 34*(6), 760-776.
69. Lioui, A., & Sharma, Z. (2012). Environmental corporate social responsibility and financial performance: Disentangling direct and indirect effects. *Ecological Economics, 78*, 100-111.
70. Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of management Review, 21*(1), 135-172.
71. Mahoney, J. T., & Pandian, J. R. (1992). The resource-based view within the conversation of strategic management. *Strategic management journal, 13*(5), 363-380.
72. Martínez-Jurado, P. J., & Moyano-Fuentes, J. (2014). Lean management, supply chain management and sustainability: a literature review. *Journal of Cleaner Production, 85*, 134-150.
73. Miles, R. E., & Snow, C. C. (1994). *Organizational strategy, structure and process*: New York, Mc Graw–Hill.
74. Miller, D. (1983). The correlates of entrepreneurship in three types of firms. *Management science, 29*(7), 770-791.
75. Narasimhan, R., Swink, M., & Kim, S. W. (2006). Disentangling leanness and agility: an empirical investigation. *Journal of operations management, 24*(5), 440-457.
76. Norman, W., & MacDonald, C. (2004). Getting to the bottom of "triple bottom line". *Business Ethics Quarterly, 14*(2), 243-262.
77. Ohno, T. (1988). *Toyota production system: beyond large-scale production*: crc Press.
78. Piercy, N., & Rich, N. (2015). The relationship between lean operations and sustainable operations. *International Journal of Operations & Production Management, 35*(2), 282-315.
79. Prahalad, C. (1990). Gary Hamel The Core Competencies of the Corporation. *Harvard Business Review*.
80. Quarshie, A. M., Salmi, A., & Leuschner, R. (2016). Sustainability and corporate social responsibility in supply chains: The state of research in supply chain management and business ethics journals. *Journal of Purchasing and Supply Management, 22*(2), 82-97.
81. Rasi, R. Z. R. M., Abdekhodaee, A., & Nagarajah, R. (2014). Stakeholders' involvements in the implementation of proactive environmental practices: Linking environmental practices and environmental performances in SMEs. *Management of Environmental Quality: An International Journal, 25*(2), 132-149.
82. Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship theory and practice, 33*(3), 761-787.
83. Rosenbusch, N., Rauch, A., & Bausch, A. (2013). The mediating role of entrepreneurial orientation in the task environment–performance relationship: A meta-analysis. *Journal of management, 39*(3), 633-659.

84. Roy, M., & Khastagir, D. (2016). Exploring role of green management in enhancing organizational efficiency in petro-chemical industry in India. *Journal of Cleaner Production, 121*, 109-115.
85. Rusinko, C. (2007). Green manufacturing: an evaluation of environmentally sustainable manufacturing practices and their impact on competitive outcomes. *IEEE Transactions on Engineering Management, 54*(3), 445-454.
86. Saeed, S., Yousafzai, S. Y., & Engelen, A. (2014). On cultural and macroeconomic contingencies of the entrepreneurial orientation–performance relationship. *Entrepreneurship theory and practice, 38*(2), 255-290.
87. Sahoo, S., & Yadav, S. (2017). Entrepreneurial orientation of SMEs, total quality management and firm performance. *Journal of Manufacturing Technology Management, 28*(7), 892-912.
88. Sarkis, J. (2001). Manufacturing's role in corporate environmental sustainability-Concerns for the new millennium. *International Journal of Operations & Production Management, 21*(5/6), 666-686.
89. Shah, R., & Ward, P. T. (2003). Lean manufacturing: context, practice bundles, and performance. *Journal of operations management, 21*(2), 129-149.
90. Shirokova, G., Bogatyreva, K., Beliaeva, T., & Puffer, S. (2016). Entrepreneurial orientation and firm performance in different environmental settings: contingency and configurational approaches. *Journal of Small Business and Enterprise Development, 23*(3), 703-727.
91. Siegel, R., Antony, J., Garza-Reyes, J. A., Cherrafi, A., & Lameijer, B. (2019). Integrated green lean approach and sustainability for SMEs: From literature review to a conceptual framework. *Journal of Cleaner Production*, 118205.
92. Slaper, T. F., & Hall, T. J. (2011). The triple bottom line: What is it and how does it work. *Indiana business review, 86*(1), 4-8.
93. Srivastava, S. K. (2007). Green supply-chain management: a state-of-the-art literature review. *International journal of management reviews, 9*(1), 53-80.
94. Stentoft Arlbjørn, J., & Vagn Freytag, P. (2013). Evidence of lean: a review of international peer-reviewed journal articles. *European Business Review, 25*(2), 174-205.
95. Tasdemir, C., & Gazo, R. (2018). A Systematic Literature Review for Better Understanding of Lean Driven Sustainability. *Sustainability, 10*(7), 2544.
96. Thanki, S., Govindan, K., & Thakkar, J. (2016). An investigation on lean-green implementation practices in Indian SMEs using analytical hierarchy process (AHP) approach. *Journal of Cleaner Production, 135*, 284-298.
97. Todorovic, Z. W., & Schlosser, F. K. (2007). An entrepreneur and a leader!: A framework conceptualizing the influence of leadership style on a firm's entrepreneurial orientation—performance relationship. *Journal of Small Business & Entrepreneurship, 20*(3), 289-307.
98. Torres Jr, A. S., & Gati, A. M. (2009). *Environmental value stream mapping (EVSM) as sustainability management tool.* Paper presented at the PICMET'09-2009 Portland International Conference on Management of Engineering & Technology.
99. Ulrich, D., Brockbank, W., Yeung, A. K., & Lake, D. G. (1995). Human resource competencies: An empirical assessment. *Human resource management, 34*(4), 473-495.

100. Vachon, S., & Klassen, R. D. (2006). Extending green practices across the supply chain: the impact of upstream and downstream integration. *International Journal of Operations & Production Management, 26*(7), 795-821.
101. Van Marrewijk, M., & Werre, M. (2003). Multiple levels of corporate sustainability. *Journal of business ethics, 44*(2-3), 107-119.
102. Wahab, A. N. A., Mukhtar, M., & Sulaiman, R. (2013). A conceptual model of lean manufacturing dimensions. *Procedia Technology, 11*, 1292-1298.
103. Wales, W. J., Gupta, V. K., & Mousa, F.-T. (2013). Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal, 31*(4), 357-383.
104. WCED, S. W. S. (1987). World commission on environment and development. *Our common future*.
105. Wilderom, C. P., & Berg, P. T. (2000). *Firm culture and leadership as firm performance predictors: a resource-based perspective*: Tilburg University New York, NY.
106. Womack, J., & Jones, D. (2003). Lean thinking: Revised and updated: Simon & Schuster London.
107. Womack, J. P., Jones, D. T., & Roos, D. (1990). *Machine that changed the world*: Simon and Schuster.
108. Woo, C., Kim, M. G., Chung, Y., & Rho, J. J. (2016). Suppliers' communication capability and external green integration for green and financial performance in Korean construction industry. *Journal of Cleaner Production, 112*, 483-493.
109. Wu, L., Subramanian, N., Abdulrahman, M., Liu, C., Lai, K.-h., & Pawar, K. (2015). The impact of integrated practices of lean, green, and social management systems on firm sustainability performance—evidence from Chinese fashion auto-parts suppliers. *Sustainability, 7*(4), 3838-3858.
110. Yang, M. G. M., Hong, P., & Modi, S. B. (2011). Impact of lean manufacturing and environmental management on business performance: An empirical study of manufacturing firms. *International Journal of Production Economics, 129*(2), 251-261.
111. Young, W., & Tilley, F. (2006). Can businesses move beyond efficiency? The shift toward effectiveness and equity in the corporate sustainability debate. *Business Strategy and the Environment, 15*(6), 402-415.
112. Zehir, C., Can, E., & Karaboga, T. (2015). Linking entrepreneurial orientation to firm performance: the role of differentiation strategy and innovation performance. *Procedia-Social and Behavioral Sciences, 210*, 358-367.
113. Zhan, Y., Tan, K. H., Ji, G., Chung, L., & Chiu, A. S. (2018). Green and lean sustainable development path in China: Guanxi, practices and performance. *Resources, Conservation and Recycling, 128*, 240-249.
114. Zhu, Q., Sarkis, J., & Geng, Y. (2005). Green supply chain management in China: pressures, practices and performance. *International Journal of Operations & Production Management, 25*(5), 449-468.
115. Zhu, Q., Sarkis, J., & Lai, K.-h. (2013). Institutional-based antecedents and performance outcomes of internal and external green supply chain management practices. *Journal of Purchasing and Supply Management, 19*(2), 106-117.