THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Examining Green Production and Development of Firm Specific Capabilities in Kenya's Manufacturing Sector

Tanui Emmanuel
Lecturer, School of Business and Economics, University of Eldoret, Eldoret, Kenya
Evans K. Kiprotich
Lecturer, School of Business and Economics, University of Eldoret, Eldoret, Kenya

Abstract:
Green production has become an important strategy to achieve firm-specific capabilities which are the niche for manufacturing enterprises. It is the application of environmental social responsibility to reduce the negative impact of manufacturing firms with their main objective being economic benefits. This paper aims to review current literature and contributes a set of empirical evidence concerning the emerging topic of green production and development of firm-specific capabilities which affect the performance of manufacturing firms in Kenya. Pragmatism philosophical paradigm and explanatory survey research design were utilized. Target population of 139 registered manufacturing firms was considered, out of which a sample of 102 Chief Executive Officers obtained using Cochran's sample size formula representing the firms selected by simple random sampling technique. Questionnaires were then administered to these CEOs. Data collected was analyzed using multiple regression analysis. The findings indicated significant positive relationship between green products and development of firm-specific capabilities, between green processes and development of firm-specific capabilities, between green use and development of firm-specific capabilities and between the green end of life management and development of firm-specific capabilities. Similarly, the overall test of significance with F-test confirmed the high significant effect of green production on the development of firm-specific capabilities. It was concluded by the findings the extension use of system dynamics and resource-based view theories. Subsequently, it extended the literature on the match between Green productions on development of firm-specific capabilities. The findings clarified the alignment of green production on the development of firm-specific capabilities for practitioners to allocate limited resources based on their strategic choices.

Keywords: *Green production, development, specific firm capabilities, System dynamics theory and resource-based view theory.*

1. Introduction

Green production is the principles of environmental protection and energy conservation during production activities to reduce industrial waste, save resources and to minimize pollution while accomplishing desired firm-specific integrated capabilities which lead to business performance motives (Williamson *et al*., 2006). Integrated capabilities according to Bruhl *et al*. (2010) exemplify capacity of a firm to coordinate different processes and enable a dynamic fit with the changing general business environment (Zajac *et al*., 2000). Therefore, Firm's-specific capabilities are stakeholder integration capability, higher-order learning capability and continuous innovation capability (Sharma*et al*., 1998) which are tangible and intangible resources (Zahra & Das, 1993) which enable a firm to integrate new developments effectively.

Firm-specific capabilities lie in improved corporate reputation, goodwill and increased sales that translate into favorable economic dealings. In turn, these capabilities within organizations are seen to influence competitive strategies and organizational outcomes (Ginsberg *et al*., 1994). The specific capabilities can be explained by the resource-based view of the firm which has gained prominence as a competitive theory of the firm (Barney & Zajac, 1994). This theory argues that a firm's competitive strategies and performance depend significantly on firm-specific organizational resources and capabilities. Developing this theoretical argument, Hart (1995) predicted that innovative environmental strategies can lead to the development of firm-specific capabilities which can be sources of competitive advantage. He argued that corporate response to calls for environmental protection was an important emerging competitive domain for businesses.

Perhaps organizational capabilities are the coordinating mechanisms that enable the most efficient and competitive use of the firm's assets whether tangible or intangible according to Day (1994). The competitive advantage of these capabilities stems from their elusive nature based on social complexity and deep embeddedness in organizations (Hart, 1995). They are often invisible (Itami, 1987), based on tacit learning (Hart, 1995) that is causally ambiguous (Reed & DeFillippi, 1990) and thus difficult to identify and imitate by competitors (Teece, 1987). These capabilities usually lack an identifiable owner in an organization and are not traded in factor markets (Barney, 1991). They are path dependent upon a combination of unique organizational actions and learning undertaken over a period of time (Barney, 1991). They span several different functions and levels within an organization and are capable of multiple uses (Amit & Schoemaker, 1993).

Stakeholder integration capability is the ability of the firm to establish trust-based collaborative relationships with a wide variety of stakeholders, especially those with economic and noneconomic goals. These stakeholders may include local communities, environmental groups, regulators, nongovernmental organizations. Hart (1995) suggested that stakeholder integration capability arises as a result of product stewardship which requires the integration of perspectives of key external stakeholders such as environmental groups, community leaders, the media, and regulators into product design and development. Moreover, sustainable organizational advantage may be built with tacit assets that derive from developing relationships with key stakeholders (Hillman & Keim, 2001). When studying the relationship between stakeholder management and firm's success (Berman *et al*., 1999) emphasized that fostering positive connections with key stakeholder's customers and employees can enhance firm's profitability.

Stakeholder integration capability is firm-specific because it is based on fundamental changes in business philosophies and values accompanied by changes in organization design over a period of a decade or more. This capability is internally socially complex since it resides in every employee by corporate culture. At the same time, this capability is externally socially complex (Coff, 1997) based on collaborative trust relationships between internal and external stakeholders. It is clear for organizations to be successful according to McCowan *et al*. (1999) there is need for organizations to constantly enhance employee capabilities through a variety of special programs. Subsequently, Bontis and Serenko (2007) asserted that effective, appropriate and successful training experience serves as an indication that an organization is voluntarily willing to invest in its human resources that builds employee capabilities and increases their degree of job satisfaction.

In addition, Carmeli and Tischler (2004) discovered that intangible organizational elements like managerial capabilities, human capital, internal auditing, labor relations, organizational culture, and perceived organizational reputation each influenced organizational financial performance positively. Furthermore, Ferguson and Reio (2010) suggested that human resource management has the positive influence on firm performance, mainly through human resource strategies.

Higher order learning capability is an organizational mandate to improve understanding of environmental issues and thus sparks shared learning processes. Organizational learning is the development of insights, knowledge, associations between past actions, the effectiveness of those actions and future actions (Fiol & Lyles, 1985). Learning within organizations is indicated by successful organizational coping with rapid environmental change (Hedberg, 1981) and behavioral outcomes based on shared ideology and understanding of the changes taking place (Fiol & Lyles, 1985).

Changes in the business environment that motivate the exploration of alternative organizational routines, technologies, environments, and objectives, may lead to higher-order or higher-level (Fiol & Lyles, 1985) and double loop (Argyris & Scho¨n, 1978) learning. Higher-order learning involves the development of different interpretations of new and existing information, as a result of developing new understandings of surrounding events (Fiol, 1994). This type of learning characterizes organizational change under conditions of ambiguity and uncertain information (Lant & Mezias, 1992).

Organization may adopt strategies that deal with these ambiguities and lack of information will create a context for issue interpretation and decision-making according to Ginsberg and Venkataraman (1995) and may lead to higher order organizational learning (Fiol & Lyles, 1985). Thus, environmental strategies can lead to different paths of learning and knowledge creation on the business/natural environment interface for each firm. Facilitation of experimentation searches for alternative routines (March, 1988) by managers can lead to the recognition of new goals and the means to achieve these goals. These learning processes, in turn, result in major reorientations that involve changed norms, values, world views or frames of reference (Shrivastava & Mitroff, 1982).

Continuous innovation capability is developed by changes in technologies, processes, specifications, inputs and products that can stimulate the building up of internal capabilities and knowledge-based invisible assets (Itami, 1987). While, environmental change provides an opportunity for a firm to be the first mover, the likelihood of a firm benefiting in a sustained manner from the first mover status will depend on the development of these capabilities. As the window for technological innovations gets shorter, even internal innovations in systems and management practices are rarely defensible against competitive actions. Admittedly, a capability of continuously generating a stream of innovations enables an organization to stay a step ahead of competitors who do not possess this capability.

Furthermore, Hart (1995) called this the capability of continuous improvement resulting from organizational efforts to reduce, minimize and eliminate waste. Also, Rolstadas (1998) highlighted another point of view, indicating that innovation is a key element in sustaining and improving organizational performance. DiLiello and Houghton (2008) emphasized the importance of encouraging creativity by means of being original, expressive and imaginative where creativity is the potential or the capacity to be creative. Creativity encourages innovative culture which is favorable to innovation in the organizations (Chandler *et al*., 2000).

The traditional way of looking at green production was indeed to focus on pollution prevention and pollution control technologies. Green production involves the use of environmentally friendly production technologies (Chiang & Tseng, 2005), procurement policies (Corbett & Klassen, 2006), transport (Lee, 2008), packaging (Azzone & Noci, 1998), improve resource use (Seliger & Zettl, 2008). This reflects the concept of eco-design (Rahimifard & Clegg, 2007). This means green products to be made from less and greener materials, greener process, greener use and green product end of life management. The outcome of companies being green to enhance their reputation and increase their market share constitutes the business case for green production. Green production is based on the idea of 'end-of-pipe' technology to ensure proper disposal of waste and to reduce the release of pollutants after they have been generated by recycling, treatment and recovery (Dills *et al*., 2007).

System dynamics (SD) theory supports green production and is a powerful tool for explaining complex systems that are composed of interacting subsystems working together to influence overall system behavior via dynamic cause-effect relationships. It explains a system with multiple subsystems such as green production that interact with each other and transit dynamically and changes the relational transitions between the system states and empirical functions in explaining sustainability (Forrester, 1961). Moreover, SD has been widely used to evaluate policies/strategies for improving system performance via simulation experiments (Wang, 1994) related to green sustainability. Some researchers employed SD to analyze the dynamic interaction among the factors that drive systems' behavior (Song et al., 2004).

Green products are products produced with credential concerns of reducing the pollution effects of the materials incorporated in the product or the packaging by avoiding the use of toxic materials, minimizing use of non-renewable materials and using renewable ones according to their rate of replenishment. This includes the adoption of techniques such as design for the environment (Hart, 1997; Stead & Stead, 2000), life-cycle assessment (Lee, 2008; Srivastava, 2007). Chang and Fong (2010) argued that green product quality have positive effects on green customer satisfaction and green customer loyalty differently.

Evidently, by their nature, green customers are very diverse regarding interests, motives, priorities, degrees of concern (Stead & Stead, 2000). Nevertheless, companies that decide to publicize their green activities have to master customers' lack of faith in green claims (Reinhardt, 1999). Currently, it is widely recognized that firms need to act in a socially responsible way to contribute to the social well-being and competitiveness which results into financial success of the firm (Moneva & Ortas, 2010). Empirical evidence reported by Corbett and Klassen (2006) suggested that the increase of resource productivity can offset the cost of environmental improvements, thus driving down the total cost of production.

Green processes are operations which involve the use of machines that reduce air emissions, minimizing solid and liquid wastes, saving water and energy, protecting health and safety of production workers, customers and the local community (Ball *et al*., 2009). It is also known as clean technologies with the aim to eliminate pollution and waste during general manufacturing (Mukherjee, 2010). Also, it makes efficient use of energy and materials like process and equipment modification, facilities retrofitting, material substitution and modularization (Rusinko, 2007; Seliger & Zettl, 2008). Although, bigger investments are required, increased benefits can be achieved in the long term (Preuss *et al*., 2001).

Moreover, Kleindorfer *et al*. (2005) emphasized corporate image and profitability to be the outcome of proper environmental management systems, practices, operational performance, regulatory compliance, and liability. Furthermore, these are operating procedures which limit or reduce the negative impact of production processes on the natural environment like inventory management, production scheduling and employee training (Kleindorfer *et al*., 2005; Tibert, 2008). Therefore, from an operations perspective, green production must be dealt with on a continuous improvement basis by taking into account technology developments, business environment, regulations, customer demands and society expectations (Gupta, 1995).

Green use is concerned with minimizing emissions, waste and energy consumption associated with the product in use (Seliger *et al*., 2008). In addition, product stewardship incorporates strategies for enhancing the productivity of the product usage phases (Baines *et al*., 2007; Mont, 2000). Moreover, it involves techniques for extending the life span of the product through preventive maintenance and realization of multiple use phases (Seliger *et al*., 2008). This is usually achieved by changing the design of the product and implementing innovative technologies. Meanwhile, environmental perspective is extended beyond manufacturing and operations and includes minimization of environmental pollution associated with product's lifecycle that is from design, to manufacture, use, right through recycling (Rusinko, 2007; Seliger et al., 2008).

Green product end of life management is where companies are expected to take care of products throughout their entire life, including proper recycling and disposal (Corbett & Klassen, 2006). By extension, it involves green supply chain management (Srivastava, 2007; Beamon *et al*., 2008). In addition, reverse supply chains include used product acquisition. Reverse logistics involves moving an end of life products to reprocess facilities, inspection and disposition which determine the next course of action whether to repair, remanufacture, use as spare parts and recycle (Kleindorfer *et al*., 2005).

Therefore, green product end of life management involves delivery of products that can be easily reused and recycled at the end of their useful lives (Rahimifard & Clegg, 2007). Subsequently, most appliance producers concern with green product end of life management have modified their products to reduce the disassembly time (Porter & van der Linde, 1995). This has created critical trade-off between green improvement and production economy of the products (Zhou *et al*. 2012). It ranges from reactive monitoring of the general environment management programs to more proactive practices implemented through 8Rs which include; reduce, re-use, rework, refurbish, reclaim, recycle, remanufacture and reverse logistics (Srivastava, 2007).

2. Methodology

Explanatory survey research design was adopted in the study to advance the relationship among variables. This approach sought to collect data in an attempt to establish the influence of green production on the development of firm-specific capabilities. According to Saunders *et al*. (2011) studies that establish causal relationships between variables use explanatory design. The design was deemed appropriate for the study as it allowed to be carried out in natural settings where a researcher could employ random probability samples. Furthermore, surveys are helpful to learn about trends or characteristics of individual attitudes, opinions, beliefs, practices, successes or effectiveness of a program or to identify needs (Creswell, 2008).

Target population of 139 registered manufacturing firms was considered, out of which a sample of 102 Chief Executive Officers were obtained using Cochran's (1977) sample size formula representing the firms selected by simple random sampling technique. Traditionally, CEOs of the firms are taken to be the unit of analysis or source of information (Siegel, 2009). Questionnaires were then administered to these CEOs. Data collected was analyzed using multiple regression analysis.

3. Results

Hypotheses were tested using multiple linear regression analysis after correlation analysis has been performed to check the relationship between independent and dependent variables.

3.1. Correlation Analysis of Green Production and Development Firm Specific Capabilities

Correlation analysis was carried out to test the theoretical proposition regarding the relationship between green production and development of firm-specific capabilities. There was significant positive correlation between green products and development of firm-specific capabilities (r = 0.911, P < 0.01). The correlation of green processes and development of firm-specific capabilities was positively significant (r = 0.916, P < 0.01). The correlation of green use and development of firm-specific capabilities was positively significant (r = 0.888, P < 0.01). While the correlation of green product end of life management and development of firm-specific capabilities was positively significant (r = 0.890, P < 0.01). This shows that there is a degree of association between green production and development of firm-specific capabilities as shown in Table 1.

		FSC	GP	GPROC	GU	GPELM
FSC	Pearson Correlation	1	.911**	.916**	.888**	.890**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	102	102	102	102	102
GP	Pearson Correlation	.911**	1	.878**	.835**	.791**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	102	102	102	102	102
GPROC	Pearson Correlation	.916**	.878**	1	.862**	.809**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	102	102	102	102	102
GU	Pearson Correlation	.888**	.835**	.862**	1	.860**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	102	102	102	102	102
GPELM	Pearson Correlation	.890**	.791**	.809**	.860**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	102	102	102	102	102
**. Correlation is significant at the 0.01 level (2-tailed). Notes: *Significant at p < 0.01, FSC= Firm specific capabilities, GP= Green product, GPROC = Green process, GU= Green use, GPELM= Green product end of life management.						

Table 1: Correlation of Green Production and Development of Firm-Specific Capabilities

3.2. Model Summary of Green Production and Development of Firm-Specific Capabilities

Regression model summary results between green production and development of firm-specific capabilities indicates that the four dimensions of independent variable explained 92.9% (R2 = 0.929) of the variance on firm-specific capabilities, and they were statistically significant and positively related to firm specific capabilities. The Durbin-Watson statistic for this regression was 2.178 and falls within the acceptable range which indicated that the residuals were not correlated as presented in Table 2.

Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Change Statistics**					**Durbin-Watson**
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.964[a]	.929	.926	.05028	.929	318.248	4	97	.000	2.178
a. Predictors: (Constant), Green products, Green process, Green use, Green product end of life management										
b. Dependent Variable: Firm specific capabilities										

Table 2: Model Summary of Green Production and Firm-Specific Capabilities

3.3. ANOVA Model of Green Production and Development of Firm-Specific Capabilities

ANOVA model results as indicated in model 1 shows good model fit as illustrated by the overall test of significance with F-test value of 318.248 with p-value 0.000 < 0.05 (level of significance) was statistically highly significant (Table 3). Thus, the model was fit to predict firm-specific capabilities using green products, green process, green use and green product end of life management.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.218	4	.804	318.248	.000[b]
	Residual	.245	97	.003		
	Total	3.463	101			
a. Dependent Variable: Firm specific capabilities						
b. Predictors: (Constant), Green products, Green process, Green use, Green product end of life management.						

Table 3: ANOVA Model of Green Production and Firm-Specific Capabilities

3.4. Effect of Green Production and Development of Firm-Specific Capabilities

The multiple regression results of standardized beta coefficients indicated that green products (β = 0.323, t = 5.369, P < 0.05), green process (β = 0.304, t = 4.639, P < 0.05) green use (β = 0..238, t = 2.784, P < 0.05) and green product end of life management (β = 0.316, t = 5.700, P < 0.05) were positive and statistically highly significant predictors of firm-specific capabilities. The variables had tolerance values of above 0.2 and VIF of less than 10 hence multicollinearity was not a problem as displayed in Table 4.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	.939	.094		9.965	.000					
	GP	.298	.056	.323	5.369	.000	.911	.479	.145	.201	4.968
	GPROC	.297	.064	.304	4.639	.000	.916	.426	.125	.170	5.873
	GU	.246	.089	.238	2.784	.008	.951	.383	.076	.102	9.843
	GPELM	.302	.053	.316	5.700	.000	.890	.501	.154	.238	4.207
a. Dependent Variable: Firm specific capabilities											

Table 4: Coefficient Analysis for Green Production and Firm-Specific Capabilities
*Notes: *Significant at p < 0.05, FSC= Firm specific capabilities, GP= Green product, GPROC = Green process, GU= Green use, GPELM= Green product end of life management.*

4. Discussion

Results indicated by ANOVA model 1 shows good model fit as illustrated by an overall test of significance with F-test value of 318.248 with p-value 0.000 < 0.05 (level of significance) was statistically highly significant. In other words, green products, green process, green use, green product end of life management were statistically highly significant predictors of firm-specific capabilities. The findings concurred with Kim *et al*. (2008) that it translates into the triple goal of maintaining viable social franchises like wealth of employees, customers, and communities, as well as viable environmental franchises which are the respect of the carrying capacity of ecosystems, as well as viable economic franchises by obtainment of competitive returns on the capital assets and other inputs used to produce outputs.

From the model summary results, the four independent variables explained only 92.9% ($R^2 = 0.929$) of the variance on firm-specific capabilities, and they were statistically significant and positively related to the development of firm-specific capabilities. This indicated that the four independent variables predicted the development of firm-specific capabilities. The findings were consistent with Saha and Darnton (2005) previous findings that manufacturers of green products are committed to a wide and long-term assessment of their products and the impact of their activities which influence issues such as people's quality of life and well-being, protection and security, economic growth, social and economic justice.

5. Conclusion

Empirical findings of this study confirmed the significant relationship between green production and development of firm-specific capabilities. Moreover, the study confirms the extension use of resource-based view and system dynamics theories. Results of this study provided valuable information and guidelines that would be useful to Kenyan manufacturing firms' policy makers and implementers, in addressing issues and designing appropriate measures or interventions on green production to positively impact the development of firm-specific capabilities.

6. Recommendations

Future studies might explore what other types of green production strategies that could lead to the development of unique specific firm capabilities, in respond to external influences, as a result of changing environmental philosophies.

7. References

i. Amit, R. and P. J. H. Schoemaker (1993). 'Strategic assets and organizational rent', Strategic Management Journal, 14(1): 33–46.
ii. Argyris, C. and D. A. Scho¨n (1978). Organizational Learning. Addison-Wesley, Reading, MA.

iii. Azzone, G., and G. Noci. (1998). Identifying effective PMSs for the deployment of green manufacturing strategies. International Journal of Operations & Production Management 18(4): 308-335.
iv. Baines, et al. (2007). State-of-the-art in product-service systems. Proc. IMechE, Part B: J. Engineering Manufacture, 21(10): 1543-1552.
v. Ball, P. D., Evans, S., Levers, A., & Ellison, D. (2009). Zero carbon manufacturing facility—towards integrating MEW process flows. Proc. IMechE Part B: Journal of Engineering Manufacture, 223(9): 1085–1096.
vi. Barney, J. (1991). Firm Resources and Sustained Competitive Advantage. Journal of Management, 17(1): 99-120.
vii. Barney, J. B. and E. J. Zajac (1994). 'Competitive organizational behavior: Toward an organizationally based theory of competitive advantage', Strategic Management Journal, Winter 1994, 15, 5–9.
viii. Beamon, B. M. (2008). Sustainability and the Future of Supply Chain Management. Operations and Supply Chain Management, 1(1): 4-18.
ix. Berman SL, Wicks AC, Kotha S, Jones T.M. (1999). Does stakeholder orientation matter? The relationship between stakeholder management models and a firm financial performance. Acad. Manage. J., 42(5): 488-506.
x. Bontis N, Serenko A (2007). The moderating role of human capital management practices on employee capabilities. J. Knowl. Manag., 11(3): 31-51.
xi. Bruhl, R., Horch, N., & Osann, M. (2010). Improving Integration Capabilities with Management Control. European Journal of Innovation Management, 13(4): 385-408.
xii. Carmeli A, Tischler A (2004). The relationships between intangible organizational elements and organizational performance. Strat. Manage. J., 25, 1257-78.
xiii. Chandler, G.N., Keller C, Lyon, D.W. (2000). Unravelling the determinants and consequences of an innovation-supportive organizational culture. Entrep. Theory Pract., 25(1): 59–77.
xiv. Chang NJ, Fong CM (2010). Green product quality, green corporate image, green customer satisfaction, and green customer loyalty. Afr. J. Bus. Management, 4(13): 2836-2844.
xv. Chiang, J., & Tseng, M. (2005). The impact of environmental characteristics on manufacturing strategy under cleaner production principles guidance. The Journal of American Academy of Business, 7(1): 163-168.
xvi. Coff, R. W. (1997). 'Human assets and management dilemmas: Coping with hazards on the road to the resource-based theory,' Academy of Management Review, 23(2): 374–402.
xvii. Corbett, C. J., & Klassen, R. D. (2006). Extending the horizons: Environmental excellence as key to improving operations. Manufacturing & Service Operations Management, 8(1): 5- 22.
xviii. Creswell, J. W., & V. L. Plano Clark. (2008). Designing and Conducting Mixed Methods Research. Thousand Oaks, CA: Sage Publications.
xix. Day, G. S. (1994). The capabilities of market driven organizations. Journal of Marketing, 58, 37–52.
xx. DiLiello TC, Houghton J.D. (2008). Creative potential and practiced creativity: identifying untapped creativity in organisations. Creat. Innov. Manag., 17(1): 37-46.
xxi. Dills, J. & Stone, H. (2007). Environmentally conscious technologies. Surface Mount Technology, 21(6): 14-19.
xxii. Dobers, P., & Wolff, R. (2000). Competing with "soft" issues - from managing the environment to sustainable business strategies. Business Strategy and the Environment, 9(3): 143-150.
xxiii. Ferguson KL, Reio Jr TG (2010). Human resource management systems and firm performance. J. Manag. Dev. 29(5): 471-494.
xxiv. Fiol, C. M. (1994). Consensus, diversity, and learning in organizations. Organization Science, 5(3): 403–420.
xxv. Fiol, C. M. and M. A. Lyles (1985). Organizational learning. Academy of Management Review, 10(4):803–816.
xxvi. Forrester, Jay W. (1961). Industrial Dynamics, Portland, OR: Productivity Press. 464.
xxvii. Ginsberg, A. (1994). Minding the competition: From mapping to mastery. Strategic Management Journal, Winter Special Issue, 15, 153–174.
xxviii. Ginsberg, A. and N. Venkataraman (1995). Institutional initiatives for technological change: From issue interpretation to strategic choice. Organization Studies, 16, 425–448.
xxix. Gupta, M. C. (1995). Environmental management and its impact on the operations function. International Journal of Operations & Production Management, 15(8): 34-51.
xxx. Hart, S. L. (1995). A natural-resource-based view of the firm. Academy of Management Review, 20(4): 986-1014.
xxxi. Hart, S. L. (1997). Beyond greening: Strategies for a sustainable world. Harvard Business Review, 75(1): 66-76.
xxxii. Hedberg, B. (1981). How organizations learn and unlearn. .In P. C. Nystorm and W. H. Starbuck (eds.), Handbook of Organizational Design, Vol. 2. Oxford University Press, New York, 8–27.
xxxiii. Hillman AJ, Keim G.D. (2001). Shareholder value, stakeholder management, and social issues: What's the bottom line? Strateg. Manage. J., 22(2): 125.
xxxiv. Itami, H. (1987). Mobilizing Invisible Assets. Harvard University Press, Cambridge, MA.
xxxv. Kim, H., Kernbaum, S., Seliger, G., & Zettl, M. (2008). Approaches to sustainable manufacturing. International Journal of Sustainable Manufacturing, 1(1/2): 58-77.
xxxvi. Kleindorfer, P. R., Singhal, K., & van Wassenhove, L. N. (2005). Sustainable operations management. Production and Operations Management, 14(4): 482-492.

xxxvii. Lant, T. K. and S. J. Mezias (1992). An organizational learning model of convergence and reorientation. Organization Science, 3(1): 47–71.
xxxviii. Lee SKJ, Yu K (2004). Corporate culture and organizational performance. J. Manage. Psychol., 19(4): 340-359.
xxxix. Lee, C. W. (2008). Environmental regulation with green technology innovation using supply chain integration. Proceedings of the Northeast Decision Sciences Institute, Brooklyn, NY, USA, 28-30 March, 580-585.
xl. March, J. G. (1988). 'Variable risk preferences and adaptive aspirations', Journal of Economic Behavior and Organization, 9, 5–24.
xli. McCowan RA, Bowen U, Huselid MA, Becker BE (1999). Strategic human resource management at Herman Miller. Hum. Resour. Manage. R., 38(4): 303-8.
xlii. Mohanty, R. P., & Deshmukh, S. G. (1998). Managing green productivity: Some strategic directions. Production Planning & Control, 9(7): 624-633.
xliii. Moneva JM, Ortas E (2010). Corporate environmental and financial performance: a multivariate approach. Ind. Manage. Data Syst., 110(2): 193-210.
xliv. Mont, O. (2000). Product-service systems. Swedish Environmental Protection Agency, Stockholm.
xlv. Mukherjee, K. (2010). Measuring energy efficiency in the context of an emerging economy: The case of Indian manufacturing. European Journal of Operational Research, 201(3): 933-941.
xlvi. Porter, M. E., & van der Linde, C. (1995). Green and competitive. Harvard Business review, 73(5): 120-134.
xlvii. Preuss, L. (2001). In dirty chains? Purchasing and greener manufacturing. Journal of Business Ethics, 34(3-4): 345-359.
xlviii. Rahimifard, S., & Clegg, A. J. (2007). Aspects of sustainable design and manufacture. International Journal of Production Research, 45(18-19): 4013-4019.
xlix. Reed, R. and R. J. DeFillippi (1990). 'Causal ambiguity, barriers to imitation and sustainable competitive advantage', Academy of Management Review, 15, 88–102.
l. Reinhardt, F. L. (1999). Bringing the environment down to earth. Harvard Business Review, 77(4): 149-157.
li. Rolstadas A (1998). Enterprise performance measurement. Int. J. Oper. Prod. Man., 18(9/10): 989-99.
lii. Rusinko, C. A. (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.
liii. Saha, M., & Darnton, G. (2005). Green companies or green companies: Are companies really green, or are they pretending to be? Business and Society Review, 110(2): 117-157.
liv. Saunders, M., Lewis, P., & Thornhill, A. (2011). Research Methods for Business Students. India: Dorlington Kindersley India Pvt.Ltd.
lv. Seliger, G., Kim, H., Kernbaum, S., & Zettl, M. (2008). Approaches to sustainable manufacturing. International Journal of Sustainable Manufacturing, 1(1/2): 58-77.
lvi. Sharma. S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. Strategic Management Journal. 19, 729-753.
lvii. Shrivastava, P. and I. I. Mitroff (1982). Frames of reference managers use: A study in applied sociology of knowledge. In R. Lamb (ed.), Advances in Strategic Management. JAI Press, Greenwich, CT, 161–182.
lviii. Siegel, D. S. (2009). Green management matters only if it yields more green: An economic/strategic perspective. Academy of Management Perspectives, 23(3): 5–17.
lix. Song, S., Y. Wei and Y. Fan. (2004). Study on System Dynamics Approach for Sustainable Development in China: A Review. China Population, Resources and Environment 14(2): 42-48.
lx. Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. International Journal of Management Reviews, 9(1): 53-80.
lxi. Stead, J. G., & Stead, E. (2000). Eco-enterprise strategy: Standing for sustainability. Journal of Business Ethics, 24(4): 313-329.
lxii. Teece, D. (1987). Profiting from technological innovation: Implications for integration, collaboration, licensing, and public policy. In D. Teece (ed.). The Competitive Challenge. Ballinger, Cambridge, MA, 185–220.
lxiii. Tibert, L. (2008). Establishing the value of environmental policy. Industrial Management, 50(2): 17-19.
lxiv. Wang, Q. P. (1994). System Dynamics. (in Chinese). Qinghua University Press, 1994.
lxv. Williamson, D., Lynch-Wood, G., & Ramsay, J. (2006). Drivers of environmental behaviour in manufacturing SMEs and the implications for CSR. Journal of Business Ethics, 67(3):317-330.
lxvi. Zahra, S. A., & Das, S. R. (1993). Building Competitive Advantage on Manufacturing Resources. Long Range Planning, 26(2): 90-10.
lxvii. Zajac, E. J.. Kraatz. M. S., & Bresser, R. K. F. (2000). Modeling the dynamics of strategic fit: A normative approach to strategic change. Strategic Management Journal. 21, 429-453.
lxviii. Zhou, M., Y. C. Pan, Z. Chen, W. Yang and B. Li. (2012). Selection and Evaluation of Green Production Strategies: Analytic and Simulation Models. Journal of Cleaner Production, 26: 9-17.