IMPACT OF SUSTAINABLE SUPPLY CHAIN MANAGEMENT ON ORGANIZATION PERFORMANCE: MEDIATING EFFECT OF LEADERSHIP

Surajit Bag,

HOD Purchase
Tega Industries South Africa Pty Ltd
Brakpan, South Africa

ABSTRACT

Supply chain management research is progressing with high velocity and is still evolving. Every study is adding a new flavor in the vast ocean of supply chain management science. Literature witnessed various phases of supply chain evolution starting from the era of industrial revolution. Presently supply chain research arrived at a stage where researchers globally are talking about sustainable supply chain management. Sustainability consists of three basic elements: economic, environmental and social. The three elements are integrated with traditional supply chain to form a sustainable supply chain. Literature review is done from reputed journals to identify the research gaps. The present study examines the impact of sustainable supply chain management practices on organization performance under mediating effect of Leadership The approach extends the domain of sustainable supply chain research and produce interdisciplinary theories that have greater explanatory power than the current practices.

Keywords: Sustainable supply chain management (SSCM); Organization performance; Leadership Theory; Manufacturing organization

Introduction:

SSCM is defined as "the strategic, transparent integration and achievement of an organization's environmental, social and economic goals in the systematic co-ordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its chains" (Carter & Rogers, 2008). The main objective of SSCM is to serve as a sustainable solution to the organizations and enhance business performance. Widespread industrial operations and excessive stress on supply chains is leading to un-stability in the organization. The consequences are very serious in nature. Supply chain practitioners have observed its effect and are finding ways to fix the problems. There are several research papers available on SSCM. This reflects the popularity of the subject matter. Although the subject has gained respect from various groups but there is a wide gap between theory and practice. Literature on SSCM has not covered various soft dimensions which are essential for successful SSCM practices.

Exhaustive literature review is conducted and systematic literature review technique is applied to develop building blocks of the present study.

Section one focus on introduction of the study followed by three important sections i.e. literature review, research methodology and data analysis. In the final section conclusions and recommendations are provided. The uniqueness of the presence study is that it has considered a highly polluting manufacturing sector and the results can aid in better decision making and enhance business performance.

Literature Review:

The main purpose of this section is to understand the mediating role of leadership in achieving supply chain sustainability within an organization can be the source of competitive advantage based upon review of past articles published in reputed journals and magazines.

2.1 Sustainable Supply Chain Management:

World Commission on Environment and Development (WECD, 1987) has defined sustainable development as meeting "the needs of the present without compromising the ability of future generations to meet their own needs". In other words it is important to understand the limits on environmental resources and the ability of the planet to absorb pollutants resulting from industrial activities. Thus the concept of sustainability emerged. Sustainable growth will occur through better management of the supply chain of organizations. Traditional approach was very much different where social, environmental and social aspects were considered separately but modern approach has considered all three elements together (Dubey and Bag, 2014). The paradigm shift of policies towards green economy is forcing organizations to adopt sustainable practices. There are a number of seminal papers in the area of SSCM (eg., Brandenburg et al., 2014; Mirhedayatian et al., 2014; Dubey and Bag., 2013; Suering, 2013; Zhu and Lai., 2013; Reefke and Trocchi., 2013; Liu et al 2012; Hoejmose et al., 2012; Ageron et al., 2012; Bose and Pal., 2012; Dekker et al., 2012; Chaabane et al., 2012; Gunasekaran and Spalanzani .,2012; Gimenez et al., 2012; Hassisni et al., 2012; Barari et al., 2012; Wu. and Pagell., 2011; Gupta and Desai., 2011; Azevedo et al., 2011; Pereira., 2009; Linton et al., 2007; Zhu and Sarkis., 2004; Croom et al., 2000).

SSCM has gained tremendous popularity and is reflected in the special issues of journals. SSCM is the need of the hour. Existing review papers in the area of SSCM has shown directions for future research (Eg., Carter, & Easton, 2011; Sarkis et al., 2011; Gold et al., 2010; Pagell & Wu 2009; Guide & Van Wassenhove 2009; Seuring & Müller, 2008a; Carter & Rogers 2008; Seuring et al., 2008; Linton et al., 2007; Burgess et al., 2006).

Earlier researchers applied different methodologies to explore the ocean of SSCM such as Survey/ Empirical, Case studies and Modeling approach.

Quantitative modeling is a popular approach in SSCM research (Kumar et al., 2013; Kotzab et al., 2006; Chen et al., 2005; Shepherd & Günter 2006), Mathematical programming (Tsai & Hung, 2009; Jayal et al., 2010), Delphi Study (Seuring & Müller 2008b), Simulation modeling (Van der Vorst et al., 2009) and Analytical models (Sundarakani et al., 2010; Chiang and Monahan 2005) are some of the commonly used methodologies.

SSCM drivers are regulatory pressures, community pressures, customer pressures, supplier pressures, ISO 14001 and EMS are supported by literature (Christopher. 2012; Carter & Easton. 2011; De Walker & Jones, N. 2012; Chaabane et al., 2012; Diabat & Govindan, K. 2011; Curkovic, & Sroufe. 2011; Mann et al., 2010; Nidumolu et al., 2009; Nawrocka et al., 2009; Darnall et al., 2008; Seuring & Müller. 2008; Brito at al., 2008; Lee. 2008; Walker et al.,2008; Seuring et al.,2008; Zhu & Sarkis. 2006; Zhu et al., 2005; Spekman et al.,1998).

SSCM focuses in reducing or eliminating the non value added activities from the chain and leads to develop competitive advantage of the organization. SSCM practices support in enhancing organizational performance (Markley & Davis. 2007; Hervani et al., 2005; Rao, & Holt. 2005; Zhu, & Sarkis. 2004; Green et al., 1998). Literature defined performance in terms of environmental performance (reduction of carbon emissions and green house gases, reduction of solid wastes and effluent, reduction of health hazards and proper utilization of natural resources) social and business performance (financial and non financial benefits). SSCM practices involve different inter and intra organizational practices such as green procurement, green operations/manufacturing and green transportation (Liu et al., 2012; Lee. 2011; Wagner, & Svensson. 2010; Svensson. 2007; Vachon. 2007; Vachon, & Klassen. 2006; Zhu & Sarkis. 2006; Li et al., 2006; Zhu et al., 2005; Zhu & Sarkis. 2004; Rao, 2002). It is found that supply chain collaboration lead is beneficial for organizations practicing SSCM (Vachon & Klassen. 2008; Attaran & Attaran. 2007) since there are several risks involved in managing SSCM (Teuscher et al., 2006).

It is very important to understand the theories applied in SSCM research so as to prepare the building blocks for the present study. Literature show the application of theories (Carter & Easton. 2011; Zhu et al., 2008; Seuring et al., 2008; Sarkis et al., 2011; Seuring & Müller. 2008b; Miles & Snow. 2007; Halldorsson et al., 2007; Matos & Hall. 2007; Svensson. 2007; Seuring, S. 2004; Zsidisin & Siferd. 2001; Van Hoek, 1999; New. 1997; Hall. 2000; Kumar, & Van Dissel. 1996).

Commonly used theories are *RBV* (Shi et al., 2012; Rungtusanatham et al., 2003; Barratt, & Oke. 2007; Olavarrieta & Ellinger. 1997), *Information systems innovation* (Melville. 2010), *Multiple attribute utility theory* (Kainuma & Tawara. 2006), *Stake holder theory* (De Brito et al., 2008), *Rough set theory* (Bai & Sarkis. 2010) and *Ecological modernization theory* (Seyfang. 2006; Berger et al. 2001).

In majority of organizations, the implementation of sustainability is a new area and many organizations are yet to initiate the process in managing their supply chain networks. Among manufacturers, so far focus was given to operational dimensions and neglecting the human dimensions. To extend the theory of sustainable supply chain practices here researcher has taken an attempt to consider the soft dimension (Leadership) of SSCM practices. The next section presents the review on Leadership behavior.

2.2 Leadership:

Research on Leadership started with the "trait approach" in the 1900s and till date a number of important papers are available such as (eg., Bolden & Gosling. 2006; Alimo-Metcalfe & Alban-Metcalfe. 2005; Hanges et al., 2004; Yukl & Heaton, 2002; Dirks & Ferrin. 2002; Nagel, 2000; Yukl. 1989; Peters & Austin. 1985; Bass, 1985; Kerr. & Jermier. 1978; Hersey. & Blanchard. 1969; Fiedler. 1967; Stogdill & Coons. 1957). Literature discloses links between different concepts such as ethics, culture and trust.

Yukl defines leadership as "the process of influencing others and agree about what needs to be done and how it can be done effectively, and the process of facilitating individual and collective efforts to accomplish the shared objectives" and propose a three dimension-leadership model: task-oriented leadership, relations-oriented leadership and change oriented leadership dimensions.

Task-Oriented Leadership (TOL): This type of behavior is primarily concerned with accomplishing the task, utilizing personnel and resources efficiently, and maintaining orderly reliable operations. Three specific types of task-oriented behaviors are (1) planning, (2) clarifying, and (3) monitoring.

Relations-Oriented Leadership (ROL): This type of behavior is primarily concerned with improving relationships and helping people, increasing cooperation and teamwork, increasing subordinate job satisfaction, and building identification with the organization. Three specific types of relations-oriented behaviors are (1) supporting, (2) developing, and (3) recognizing.

Change-Oriented Leadership (COL): This type of behavior is primarily concerned with improving strategic decisions; adapting to change in the environment; increasing flexibility and innovation; making major changes in processes, products, or services; and gaining commitment to the changes.

Specific types of change-oriented behaviors can be classified as (1) influencing organizational culture, (2), developing a vision, (3) implementing change, (4) increasing innovation and learning. It involves setting vision and mission statement, approving budget, providing resources for implementation of sustainable practices, motivating team members to continuously improve the process and also empowering team members.

Leaders can improve the performance of a team or organization by influencing the process that determines performance (Yukl, 2012).

Although there is evidence on Leadership influencing sustainable supply chain practices (Dubey et al., 2013; Yang

and Zhang, 2012; GP Australia report, 2009) but lacks detailed discussion/mechanism.

Table 2.2: Theories applied in Leadership research

Theory	Authors
Leader–member exchange	Nahrgang, Morgeson, & IIies, 2009; Graen & Scandura, 1987
Social learning theory	Bandura, 1977, 1986, 1997
Transformational leadership models	Bass, 1985, 1996; Bass & Avolio, 1990, 1993
Transformational and charismatic leadership theories	Gil et al., 2005; Bass, B. M. 1990; Conger and Kanungo, 1988
Complexity theory	Schneider, Somers, 2006; Nicolis & Prigogine, 1989; Marion and Uhl-Bien, 1989
Contextual theory	Osborn et al. 2002

2.3 Organizational Performance:

Organizational performance is one of the most important constructs in supply chain management research. By synthesizing the literature, the foundations are laid for the improved measurement of performance in present research. Keeping in mind the three elements of sustainability both financial and non financial parameters are considered.

2.4 Research Gaps:

However despite a growing body of research documents on sustainable supply chain management, our knowledge of organizational antecedents to SSCM still at an infant stage. In particular considering the importance of leadership in shaping SSCM practices, the lack of research on the interface between leadership and SSCM is worth mentioning.
The present study addresses the research gaps by investigating how leadership styles adopted by supply chain practitioners affect firm's SSCM practices and ultimate outcome of SSCM.

2.4 Research Objectives:

The present research focus on the following objectives

- To explore SSCM practices in manufacturing sector
- To identify the Leadership dimensions
- To understand the relation between SSCM practices and organization performance.
- To understand whether Leadership completely mediates through Sustainable supply chain practices and Organization performance

2.5 Research Questions:

Table 2.3: Research questions and research tools applied

Sl No	Research Questions	Research Tool
RQ1.	What are the dimensions of SSCM?	Thorough Literature Review
RQ2	What are the dimensions of Leadership?	Thorough Literature Review
RQ3	Can these dimensions be further categorized?	Exploratory Factor Analysis
RQ4	What is the relationship between SSCM practices and organization performance	Mediating Regression Analysis
RQ5	What is the mediating effect of leadership on relationship between SSCM practices and organization performance	Mediating Regression Analysis

Research Methodology:

This section discusses on theoretical model development, the constructs, designing questionnaire, pretesting of the questionnaire, population size, sampling design and data collection technique applied.

The purpose of research methodology is to present the research design that will be used to conduct the empirical research for this study. The research design connects the broader assumptions of a study to its detailed methods of data collection, analysis, and interpretation. Research designs enable researchers to achieve the goal of answering research questions as validly, objectively, accurately, and economically as possible.

3.1 Theoretical Framework:

Existing literature supports the availability of frameworks which is either direct linkage or moderating linkage. But every framework is having its own merits and demerits. In the present study researchers intend to conceptualize a framework to test the impact of sustainable supply chain practices on organization performance, mediating through leadership. This framework is unique contribution in the existing literature. However novelty of present framework relies on testing mediating effect of leadership on organization performance. The proposed framework is presented in Fig 3.1

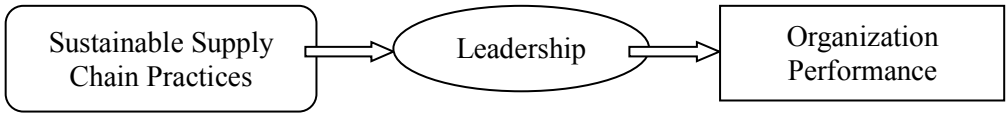


Fig 3.1: SSCM-L-OP Framework

Based on the literature review the research variables are presented in the below table 3.1

Table 3.1: Research variables

Research Variables	Dimensions/sub variables	Author(s)
Sustainable Supply Chain practices	Internal Environmental management	Darnall et al., (2008); Seuring & Müller (2008); Carter, & Rogers, (2008); Vachon, (2007); Zhu et al., (2007); Zhu, & Sarkis, (2006); Zhu, & Geng, (2005); Zhu, & Sarkis, (2004)
	External SSCM	
	Investment recovery	
	Eco-design	
Leadership	Innovation and learning	Yukl, (2012); Crossan, & Apaydin, (2010); Chang, & Lee, (2007); Ireland et al., (2003); Marsick, & Watkins, (2003); Hurley et al., 1998; Witt, (1998)
	Empowerment	
	Shared Vision	
Organization Performance	Environmental Performance	Dubey et al., 2013; Carter, & Rogers, (2008); Li et al., 2006;Zhu, & Geng, (2005); Zhu, & Sarkis, (2004); Tan eta l., 1999
	Economic Performance	
	Social Performance	

3.2 Hypothesis Formulation:

The following research hypothesis are proposed for testing the proposed framework
H1: Sustainable supply chain practices positively influences Organization performance;
H2: Sustainable supply chain practices and Leadership positively influences Organization performance;
H3: Leadership completely mediates through Sustainable supply chain practices and Organization performance

3.3 Assumptions of Study:

To test hypothesis researcher has made certain assumptions and are as under:-

- The variables are assumed to be orthogonal in nature;
- Macro variables are assumed to constant;
- To measure organization performance researcher captured perception of senior manager;
- There will be response and non-response error. However researcher has taken utmost care to minimize these sampling errors by designing questionnaire scientifically;

3.4 Questionnaire Design:

Resulting from the intensive literature review, the questionnaire is consolidated into four sections:

- Section 1: Demographic profiles of the target firms;
- Section 2: Includes questions on dimensions of SSCM in terms of 7 items of IEM, 8 items of External SSCM, 3 items of Investment recovery and 3 items of Eco design.
- Section 3: Includes questions on dimensions of Leadership in terms of 3 items of Innovation and learning, 8 items of Empowerment and 8 items of shared vision.
- Section 4: Includes questions on dimensions of organizational performance in terms of 14 items of 6 items of environmental performance, 5 items of Economic performance and 3 items of Social performance.

3.5 Pretesting:

Before questionnaire is finalized for survey, it was pretested with fifteen experts from the manufacturing sector who are having work experience for over twenty years and professional members of AIMA, CII and CILT. Based on the pretesting the questionnaire was changed and finalized for the final survey. In response to experts comment, ten items were dropped to avoid any puzzlement among survey respondents.

3.6 Sampling:

Several qualitative factors should be taken into consideration when determining the sample size. These include the importance of the decision, the nature of research, the number of variables, the nature of analysis, sample sizes used in similar studies, incidence rates, completion rates and response constraints.
Here Field (2005), (50+8K) formula is used to determine the sample size. Target respondents are senior level executives of each firm having more than ten years of work experience and from the area of supply chain. Targeted recipients were instructed to complete the survey themselves or refer it to an appropriate person for the same. Here convenience sampling technique was employed to collect the data.
Initially 114 firms were targeted but after two months of follow ups with targeted firms, 103 usable filled up questionnaires, which represent (88%) response rate.

Table 3.2: Distribution of Responded Firms

Nature of Enterprise	No. of Targeted Firms	No. of Responded Firms	Response Rate (%)
Large Scale	30	29	96
Medium Scale	50	40	80
MSME	34	34	91
	114	**103**	**88**

Data Analysis:

4.1 Exploratory Factor Analysis and Reliability test:

Exploratory factor analysis is applied and extracted six factors. Factors having Eigen value greater than 1 are extracted using principal component analysis method. The result is easily interpretable in below Table 4.1.

Table 4.1: Rotated Factor Matrix

		1	2	3	4	5	6
1	Commitment of GSCM from senior managers	0.881					
2	Support for GSCM from mid-level managers	0.887					
3	Cross-functional cooperation for environmental improvements	0.849					
4	Total quality environmental management	0.859					
5	Environmental compliance and auditing programs	0.74					
6	Providing design specification to suppliers that include environmental dimension	0.793					
7	Cooperation with suppliers for environmental objectives	0.893					
8	Environmental audit for suppliers' internal management	0.885					
9	Suppliers' ISO14000 certification	0.872					
10	Cooperation with customer for eco-design	0.780					
11	Cooperation with customers for cleaner production	0.777					
12	Sale of scrap and used materials	0.735					
13	Design of products for reuse, recycle, recovery of material, component parts	0.821					
14	Design of products to avoid or reduce use of hazardous of products and/or their manufacturing process	0.755					
15	Empower people to implement new strategies			0.785			
16	Consult with people on decision affecting them			0.725			
17	Help resolve conflicts					0.775	
18	Assign work to groups or individuals		0.724				
19	Plan short term operations			0.864			
20	Organize work activities to improve efficiency				0.868		
21	Reduction of air emission		0.786				
22	Reduction of waste water		0.766				
23	Reduction of solid wastes		0.772				
24	Decrease of consumption for hazardous/harmful/toxic materials		0.888				
25	Decrease of frequency for environmental accidents		0.844				
26	Decrease of cost for energy consumption						0.708
27	Decrease of fee for waste treatment						
28	Decrease of fee for waste discharge						
29	Decrease of fine for environmental accidents						
30	Improve community wellness						
31	Protecting human/worker rights						

The above matrix can be converted into highly correlated variables matrix as presented in Table 4.2.

Table 4.2: Highly correlated variables

Variables	Items	Factor Loadings
Sustainable supply chain practices	Commitment of GSCM from senior managers	0.917
	Support for GSCM from mid-level managers	0.915
	Cross-functional cooperation for environmental improvements	0.861
	Total quality environmental management	0.846
	Environmental compliance and auditing programs	0.833
	Providing design specification to suppliers that include environmental dimension	0.865
	Cooperation with suppliers for environmental objectives	0.958
	Environmental audit for suppliers' internal management	0.957
	Suppliers' ISO14000 certification	0.971
	Cooperation with customer for eco-design	0.942
	Cooperation with customers for cleaner production	0.919
	Sale of scrap and used materials	0.929
	Design of products for reuse, recycle, recovery of material, component parts	0.936
	Design of products to avoid or reduce use of hazardous of products and/or their manufacturing process	0.877
Leadership	Empower people to implement new strategies	0.896
	Consult with people on decision affecting them	0.924
	Help resolve conflicts	0.903
	Assign work to groups or individuals	0.909
	Plan short term operations	0.844
	Organize work activities to improve efficiency	0.834
	Reduction of air emission	0.905
	Reduction of waste water	0.924
	Reduction of solid wastes	0.952
	Decrease of consumption for hazardous/harmful/toxic materials	0.943
Organization Performance	Decrease of frequency for environmental accidents	0.972
	Decrease of cost for energy consumption	0.834
	Decrease of fee for waste treatment	0.919
	Decrease of fee for waste discharge	0.939
	Decrease of fine for environmental accidents	0.902
	Improve community wellness	0.854
	Protecting human/worker rights	0.763

The reliability test output in table 4.3 show that cronbach's alpha is greater than 0.5 as specified by Hair et al., 1998. The exploratory factor analysis output suggest that construct reliability is greater than 0.70 and extracted factor loadings is greater than 0.50 which shows that the constructs possess construct validity.

Table 4.3: Reliability test

Reliability Statistics	
Cronbach's Alpha	N of Items
.972	31

Source: SPSS output

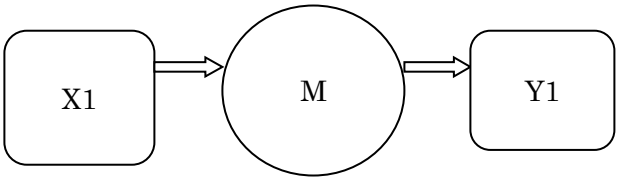
4.2 Mediating Regression Analysis:

On the basis of exploratory factor analysis output researchers will test the theoretical framework for one performance variable i.e. organization performance will be tested. The regression model is presented in Fig 4.1 and

X1= Sustainable supply chain practices

Y1= Organization performance

Fig: 4.1



To test the theoretical framework, mediating regression test (Baron and Kenny 1986; Judd and Kenny 1981) consisting of four steps is used as under:-

4.2.1 Step 1:

Presents that the predictor variable i.e. sustainable supply chain practices are correlated with organization performance. We used Y1 as the criterion variable and X1 as predictor variable. This step establishes that there is an effect that may be mediated.

Table 4.3

R	R^2	Adj. R^2	Durbin Watson	F Ratio	Sig	B coefficient Constant (2.507; t=10.891)	t	VIF
0.549	0.301	0.294	1.636	43.49	0.00	SSCM Practices 0.422	6.595	1.00

The above model is statistically significant. Fcr value (Df: 1,101) for the model is 4.00 as determined from statistical table for 0.05 significance level. The Fcal for the model is 43.49 which is well above Fcr, which indicates that the explanatory variable X1 explain organization performance variable well. The beta coefficients are statistically significant as the value of t is well above 2.

Variance Inflation Factor is lower than 5 which show that multicollinearity effect is minimum and Durbin-Watson statistics is between 1.5 and 2.5 which indicates non existence of autocorrelation effect. However the model explains only 30.1% of the total organization performance variable.

Step 1 can be expressed in equation form

Y1 (Organization Performance) = 2.507 + 0.422 X1 + e

4.2.2 Step 2:

This step shows that the initial variable is correlated with mediator. Here M is used as a criterion variable in the regression equation and X1 as predictor. This step involve considering the mediator as if it is an outcome variable. The output is presented in Table 4.4

Table 4.4

R	*R^2*	*Adj. R^2*	*Durbin Watson*	*F Ratio*	*Sig*	*B coefficient Constant (2.985; t=32.448)*	*t*	*VIF*
0.800	0.640	0.636	1.954	179.418	0.00	SSCM Practices 0.343	13.395	1.00

The above model is statistically significant. Fcr value (Df: 1,101) for the model is 4.00 as determined from statistical table for 0.05 significance level. The Fcal for the model is 179.418 which is well above Fcr, which indicates that the explanatory variable X1 explain leadership variable well. The beta coefficients are statistically significant as the value of t is well above 2.
Variance Inflation Factor is lower than 5 which show that multicollinearity effect is minimum and Durbin-Watson statistics is between 1.5 and 2.5 which indicates non existence of autocorrelation effect. However the model explains only 64% of the total organization performance variable.
Step 2 can be expressed in the form of linear equation as

M (Leadership) = 2.985 + 0.343 X1 + e1

4.2.3 Step 3:

This step presents that mediator affect the outcome variable. Y1 is used as a criterion variable in the regression equation and X1 and M as predictors.

Table 4.5

R	R^2	Adj. R^2	Durbin Watson	F Ratio	Sig	B coefficient Constant (-0.481; t=-0.671)	t	VIF
0.643	0.413	0.401	1.345	35.154	0.00	SSCM Practices 0.790	0.806	2.776
						Leadership 1.001	4.364	2.776

The above model is statistically significant. Fcr value (Df: 2,100) for the model is 3.15 as determined from statistical table for 0.05 significance level. The Fcal for the model is 35.154 which is well above Fcr, which explain organization performance variable well.
Step 3 can be expressed in the form of linear equation as

Y1 (Organization Performance) = -0.481 + 0.790 X1 + 1.001 M + e2

4.2.4 Step 4:

To establish that M completely mediates the X1-Y1 relationship, the effect of X1 on Y1 controlling for M should be 0. The effects in both step 3 and 4 are estimated in the same equation.
All the four steps are met and it can be concluded that data are consistent with research hypothesis that leadership completely mediates X1-Y1 relationship.

Conclusions and Recommendations:

The present research findings support the theory suggested by Yukl, (2012). Although the four meta-categories of Leadership (Task oriented, Relations oriented, Change oriented and External) has a different primary objective, but the objectives all involve determinants of performance. Leadership behavior must be carefully considered by every manufacturer failing which will hit successful implementation of Sustainable supply chain practices. Leadership behavior involves clarifying, planning, monitoring operations and problem solving and these are equally important in organizations SSCM practices. One interesting finding from the study is that empowering junior managers and employees will facilitate SSCM practices. Encouraging Innovation is also found to be meaningful and key in SSCM practices. Therefore leadership behaviors must be understood properly to influence performance of a team or organization while practicing SSCM.

Unique Contributions:

The research output provides deep insight into SSCM practices and its impact on organization performance under mediating effect of leadership.

Limitations:

The present study suffers from certain limitations which we feel can be the scope of future research.
The survey is conducted among manufacturers located in West Bengal and Gujarat. This can be extended by considering other states.
Secondly, we have employed exploratory factor analysis in which we have compressed the factor loadings less than 0.7 as the number of cases in our study was only 103. According to Hair et al. (1998), in case of sample size of 100, the cut of limit for factor loading is set at 0.55, but we chose higher value to obtain strong determinants.
However, in this process we may have eliminated other important variables which could be an important determinant.

Further Directions for Research:

We conclude with a call for research that examines the effectiveness of triangulation utilizing multiple measures, applies longitudinal data and brings to bear alternative methodological formulations as means of appropriately aligning research contexts with the measurement of SSCM performance. Validating these measurement approaches is an important agenda for further research.

References:

[1] Ageron, B., Gunasekaran, A., & Spalanzani, A. (2012). Sustainable supply management: An empirical study. *International Journal of Production Economics*, *140*(1), 168-182.
[2] Alimo-Metcalfe, B., & Alban-Metcalfe, J. (2005). Leadership: time for a new direction?. *Leadership*, *1*(1), 51-71.
[3] Attaran, M., & Attaran, S. (2007). Collaborative supply chain management: the most promising practice for building efficient and sustainable supply chains.*Business Process Management Journal*, *13*(3), 390-404.
[4] Azevedo. S., Carvalho. H., Machado. C.V. (2011), The influence of green practices on supply chain performance: A case study approach. *Transportation Research Part E*, 47. 850-871
[5] Bai, C., & Sarkis, J. (2010). Green supplier development: analytical evaluation using rough set theory. *Journal of Cleaner Production*, *18*(12), 1200-1210.
[6] Barari. S., Agarwal, G., Zhang, W.J. Mahanty,B. & Tiwary,M.K. (2012). A decision framework for the analysis of green supply chain contracts: An evolutionary game approach. Experts systems with applications, 39. 2965-2976
[7] Barratt, M., & Oke, A. (2007). Antecedents of supply chain visibility in retail supply chains: a resource-based theory perspective. *Journal of Operations Management*, *25*(6), 1217-1233.
[8] Baron, R.M., & Kenny, D.A. (1986). The moderator mediator variable distinction in social psychological research: conceptual strategic and statistical considerations: Journal of Personality and Social Psychology, 51, 1173-1182
[9] Bass, B. M. (1996). A new paradigm of leadership: An inquiry into transformational leadership. Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
[10] Bass, B. M., & Avolio, B. J. (1993). Transformational leadership: A response to critiques. In M. M. Chemers
[11] Bass, B. M. (1985). *Leadership and performance beyond expectations*. Collier Macmillan.
[12] Bass, B. M. (1990), Handbook of Leadership: A Survey of Theory and Research, New York: Free Press.
[13] Berger, G., Flynn, A., Hines, F., & Johns, R. (2001). Ecological modernization as a basis for environmental policy: current environmental discourse and policy and the implications on environmental supply chain management. *Innovation: The European Journal of Social Science Research*, *14*(1), 55-72.
[14] Bolden, R., & Gosling, J. (2006). Leadership competencies: time to change the tune?. *Leadership*, *2*(2), 147-163.
[15] Bose. I., Pal R., (2012). Do green supply chain management initiatives impact stock prices of firms? *Decision Support Systems*, 52. 624-634
[16] Brandenburg. M., Govindan K., Sarkis J., Seuring S.,(2012). Quantitative models for sustainable supply chain management: Developments and directions, *European Journal of Operational Research*, 233. 299-312
[17] Bandura, A. (1977). Social learning theory. Englewood Cliffs, NJ: Prentice-Hall.
[18] Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman
[19] Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice Hall.

[20] Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. *Organizational Behavior and Human Decision Processes*, 97, 117–134.
[21] Burgess, K., Singh, P. J., & Koroglu, R. (2006). Supply chain management: a structured literature review and implications for future research. *International Journal of Operations & Production Management*, *26*(7), 703-729.
[22] Carter, C. R., & Easton, P. L. (2011). Sustainable supply chain management: evolution and future directions. *International Journal of Physical Distribution & Logistics Management*, *41*(1), 46-62.
[23] Carter, C., & Rogers, D. (2008). A framework of sustainable supply chain Management - moving toward new theory. International Journal of Physical Distribution and Logistics Management, 38(5), 360–387.
[24] Carter, C. R., & Dresner,M. (2001). Purchasing's role in environmental management: cross functional development of grounded theory. Journal of Supply Chain Management: A Global Review of Purchasing & Supply, 37(3), 12–27
[25] Carter, C. R., Kale, R., & Grimm, C. M. (2000). Environmental purchasing and firm performance: An empirical investigation. Transportation Research Part E: Logistics and Transportation Review, 36(3), 219–228.
[26] Chaabane, A., Ramudhin, A., & Paquet, M. (2012). Design of sustainable supply chains under the emission trading scheme. *International Journal of Production Economics*, *135*(1), 37-49.
[27] Chang, S. C., & Lee, M. S. (2007). A study on relationship among leadership, organizational culture, the operation of learning organization and employees' job satisfaction. *Learning Organization, The*, *14*(2), 155-185.
[28] Christopher, M. (2012). *Logistics and supply chain management*. Pearson UK.
[29] Conger, J. A. and Kanungo, R. (1988), The empowerment process: Integrating theory and practice, Academy of Management Review, 13, .471-482.
[30] Croom. S., Romano P., Ginnakis M. (2000). Supply chain management: an analytic framework for critical literature review. *European J. of Purchasing & Supply Management*, 6. 67-83
[31] Crossan, M. M., & Apaydin, M. (2010). A multi-dimensional framework of organizational innovation: A systematic review of the literature. *Journal of Management Studies*, *47*(6), 1154-1191.
[32] Diabat, A., & Govindan, K. (2011). An analysis of the drivers affecting the implementation of green supply chain management. *Resources, Conservation and Recycling*, *55*(6), 659-667.
[33] Dirks, K. T., & Ferrin, D. L. (2002). Trust in leadership: meta-analytic findings and implications for research and practice. *Journal of applied psychology*, *87*(4), 611.
[34] Dubey.R. and Bag. S. (2014). Antecedents of Green Manufacturing Practices: A Journey towards Manufacturing Sustainability. Smart Manufacturing Innovation and Transformation: Interconnection and Intelligence, *IGI GLOBAL*. Chapter 13. 333-354.
[35] Dubey, R., Bag, S., Ali, S., and Venkatesh, V., (2013). Green purchasing is key to superior performance: an empirical study. International Journal of Procurement Management, 6(2). 187-210
[36] Dubey. R., and Bag. S., (2013). Exploring the dimensions of sustainable practices: An empirical study on Indian manufacturing firms. *International J. of Operations and Quantitative Management*, 19(2).101-124
[37] Curkovic, S., & Sroufe, R. (2011). Using ISO 14001 to promote a sustainable supply chain strategy. *Business Strategy and the Environment*, *20*(2), 71-93.
[38] Darnall, N., Jolley, G. J., & Handfield, R. (2008). Environmental management systems and green supply chain management: complements for sustainability?. *Business Strategy and the Environment*, *17*(1), 30-45.
[39] De Brito, M. P., Carbone, V., & Blanquart, C. M. (2008). Towards a sustainable fashion retail supply chain in Europe: organisation and performance.*International Journal of Production Economics*, *114*(2), 534-553.
[40] Dekker R., Bloemhof J., Mallidis I.(2012). Operations research for green logistics –An overview of aspects, issues, contributions and challenges. *European J. of Operational research*, 219. 671-679
[41] Hair, J.F., Anderson, R.E, Tatham, R.L. and Black, W.C. (1998). Multivariate Data Analysis, Prentice Hill International, Inc., Upper Saddle River, New Jersey
[42] Faisal, M. N., Banwet, D. K., & Shankar, R. (2006). Supply chain risk mitigation: modeling the enablers. *Business Process Management Journal*,*12*(4), 535-552.
[43] Field,A.P., (2005), Discovering statistics using SPSS: London: SAGE Publications.
[44] Fiedler, F. E. (1967). A theory of leadership effectiveness.
[45] Gimenez C., Sierra V., Rodon J., (2012). Sustainable Operations: Their impact on the triple bottom line. *Int. J. Production Economics*, 140. 149-159
[46] Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: a literature review. *Corporate Social Responsibility and Environmental Management*, *17*(4), 230-245.

[47] Green Purchasing Australia report (2009) available at http://www.ecobuy.org.au/uploads/documents/Green%20Purchasing%20Australia%20Report%20Summary%20 Document.pdf
[48] Green, K., Morton, B., & New, S. (1996). Purchasing and environmental management: interactions, policies and opportunities. *Business Strategy and the Environment*, 5(3), 188–197.
[49] Green, K., Morton, B., & New, S. (1998). Green purchasing and supply policies: do they improve companies' environmental performance?. *Supply Chain Management: An International Journal*, *3*(2), 89-95.
[50] Graen, G. B., & Scandura, T. A. (1987). Toward a psychology of dyadic organizing. Research in Organizational Behavior, 9, 175–208.
[51] Gil, F., Rico, R., Alcover, C. M. and Barrasa, A. (2005), Change-oriented leadership satisfaction and performance in work groups: Effects of team climate and group potency, *Journal of Managerial Psychology*, 20(3/4), .312-328.
[52] Guide Jr, V. D. R., & Van Wassenhove, L. N. (2009). OR FORUM-the evolution of closed-loop supply chain research. *Operations Research*, *57*(1), 10-18.
[53] Gunesekaran A., Spalanzani A. (2012). Sustainability of manufacturing and services: Investigations for research and applications. *Int. J. Production Economics*, 140. 35-47
[54] Gupta S., Desai P. O.D. 2011. Sustainable supply chain management: Review and research opportunities. *IIM B Management Review*, 23. 234-245
[55] Hall, J. (2000). Environmental supply chain dynamics. Journal of Cleaner Production, 8(6), 455–471.
[56] Halldorsson, A., Kotzab, H., Mikkola, J. H., & Skjøtt-Larsen, T. (2007). Complementary theories to supply chain management. *Supply chain management: An international journal*, *12*(4), 284-296.
[57] Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations* (pp. 9-28). R. J. House (Ed.). Thousand Oaks, CA: Sa
[58] Hassini E., Surti C., Searcy C., (2012). A literature review and a case study of sustainable supply chains with a focus on metrics. *Int. J. Production Economics*, 140.69-82
[59] Hersey, P., & Blanchard, K. H. (1969). Life cycle theory of leadership. *Training & Development Journal*.
[60] Hervani, A. A., Helms, M. M., & Sarkis, J. (2005). Performance measurement for green supply chain management. *Benchmarking: An International Journal*,*12*(4), 330-353.
[61] Hurley, R. F., & Hult, G. T. M. (1998). Innovation, market orientation, and organizational learning: an integration and empirical examination. *The Journal of Marketing*, 42-54.
[62] Hoejmose, S., Brammer, S., & Millington, A. (2012). "Green" supply chain management: The role of trust and top management in B2B and B2C markets.*Industrial Marketing Management*, *41*(4), 609-620.
[63] Ireland, R.D., Hitt, M. A., & Sirmon, D. G. (2003). A model of strategic entrepreneurship: The construct and its dimensions. *Journal of management*, *29*(6), 963-989.
[64] Jayal, A.D., Badurdeen, F., Dillon Jr, O. W., & Jawahir, I. S. (2010). Sustainable manufacturing: Modeling and optimization challenges at the product, process and system levels. *CIRP Journal of Manufacturing Science and Technology*, *2*(3), 144-152.
[65] Judd, C.M, & Kenny, D.A. (1981). Process analysis: Estimating mediation in treatment evaluations. *Evaluations Review*, 5, 602-619
[66] Kainuma, Y., & Tawara, N. (2006). A multiple attribute utility theory approach to lean and green supply chain management. *International Journal of Production Economics*, *101*(1), 99-108.
[67] Kerr, S., & Jermier, J. M. (1978). Substitutes for leadership: Their meaning and measurement. *Organizational behavior and human performance*, *22*(3), 375-403.
[68] Kotzab, H., Seuring, S., Müller, M., & Reiner, G. (2006). *Research methodologies in supply chain management*. Springer.
[69] Kumar, K., & Van Dissel, H. G. (1996). Sustainable collaboration: managing conflict and cooperation in interorganizational systems. *Mis Quarterly*, 279-300.
[70] Kumar, A., Mukherjee, K., & Kumar, N. (2013). Modelling, simulation and analysis of control mechanism of a dynamic supply chain system considering supply-price trade-off, using control theory. *Business Process Management Journal*, *19*(6), 933-946.
[71] Lamming, R., & Hampson, J. (1996). The environment as a supply chain management issue. British Journal of Management, 7, 45–62.

[72] Lee, K. H. (2011). Integrating carbon footprint into supply chain management: the case of Hyundai Motor Company (HMC) in the automobile industry. *Journal of Cleaner Production*, *19*(11), 1216-1223.
[73] Lee, S. Y. (2008). Drivers for the participation of small and medium-sized suppliers in green supply chain initiatives. *Supply Chain Management: An International Journal*, *13*(3), 185-198.
[74] Lee, H. L. (2004). The triple-A supply chain. *Harvard business review*, *82*(10), 102-113.
[75] Li, S., Ragu-Nathan, B., Ragu-Nathan, T. S., & Subba Rao, S. (2006). The impact of supply chain management practices on competitive advantage and organizational performance. *Omega*, *34*(2), 107-124.
[76] Liu, S., Kasturiratne, D., & Moizer, J. (2012). A hub-and-spoke model for multi-dimensional integration of green marketing and sustainable supply chain management. *Industrial Marketing Management*, *41*(4), 581-588.
[77] Linton, J. D., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: an introduction. *Journal of Operations Management*, *25*(6), 1075-1082.
[78] Markley, M. J., & Davis, L. (2007). Exploring future competitive advantage through sustainable supply chains. *International Journal of Physical Distribution & Logistics Management*, *37*(9), 763-774.
[79] Marsick, V. J., & Watkins, K. E. (2003). Demonstrating the value of an organization's learning culture: the dimensions of the learning organization questionnaire. *Advances in developing human resources*, *5*(2), 132-151.
[80] Mann, H., Kumar, U., Kumar, V., & Mann, I. J. S. (2010). Drivers of Sustainable Supply Chain Management. *IUP Journal of Operations Management*, *9*(4).
[81] Matos, S., & Hall, J. (2007). Integrating sustainable development in the supply chain: the case of life cycle assessment in oil and gas and agricultural biotechnology. *Journal of Operations Management*, *25*(6), 1083-1102.
[82] Melville, N. P. (2010). Information systems innovation for environmental sustainability. *MIS Quarterly*, *34*(1), 1-21.
[83] Miles, R. E., & Snow, C. C. (2007). Organization theory and supply chain management: an evolving research perspective. *Journal of Operations Management*, *25*(2), 459-463.
[84] Min, H., & Galle, W. P. (2001). Green purchasing practices of US firms. International Journal of Operations & Production Management, 21(9), 1222–1238.
[85] Mirhedayatian, S.M, Azadi M., Sean RF., (2014). A novel network data envelopment analysis model for evaluating green supply chain management, *Int. J. Production Economics*, 147. 544-554
[86] M. Schneider, M. Somers (2006), The Leadership Quarterly, 17.351–365
[87] Nagel, M. H. (2000). Environmental supply-chain management versus green procurement in the scope of a business and leadership perspective. In *Electronics and the Environment, 2000. ISEE 2000. Proceedings of the 2000 IEEE International Symposium on* (pp. 219-224). IEEE.
[88] Nahrgang, J. D., Morgeson, F. P., & Ilies, R. (2009). The development of leader– member exchanges: Exploring how personality and performance influence leader and member relationships over time. Organizational Behavior and Human Decision Processes, 108, 256–266.
[89] Nawrocka, D., Brorson, T., & Lindhqvist, T. (2009). ISO 14001 in environmental supply chain practices. *Journal of Cleaner Production*, *17*(16), 1435-1443.
[90] New, S. J. (1997). The scope of supply chain management research. *Supply Chain Management: An International Journal*, *2*(1), 15-22.
[91] Nicolis, G., & Prigogine, I. (1989). Exploring complexity. San Francisco, CA: Freeman.
[92] Nidumolu, R., Prahalad, C. K., & Rangaswami, M. R. (2009). Why sustainability is now the key driver of innovation. *Harvard business review*,*87*(9), 56-64.
[93] Olavarrieta, S., & Ellinger, A. E. (1997). Resource-based theory and strategic logistics research. *International Journal of Physical Distribution & Logistics Management*, *27*(9/10), 559-587.
[94] Pagell, M., & Wu, Z. (2009). Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars. *Journal of supply chain management*, *45*(2), 37-56.
[95] Pereira JV. (2009). The new supply chain's frontier: Information management. *Int. J. of Information Management*, 29. 372-379
[96] Peters, T. J., & Austin, N. (1985). A passion for excellence. The leadership difference.
[97] Rao, P., & Holt, D. (2005). Do green supply chains lead to competitiveness and economic performance?. *International Journal of Operations & Production Management*, *25*(9), 898-916.
[98] Rao, P. (2002). Greening the supply chain: a new initiative in South East Asia.*International Journal of Operations & Production Management*, *22*(6), 632-655.

[99] R. Ayman (Eds.), Leadership theory and research: Perspectives and directions. pp. 49–80. San Diego, CA: Academic Press.
[100] Reefke H, Trochhi M. (2013). Balanced scorecard for sustainable supply chains: design and development guidelines. *Int. J. Productivity and Performance Management*, 62(8). 805-826
[101] R.N. Osborn et al. / The Leadership Quarterly 13 (2002) 797–837
[102] Rungtusanatham, M., Salvador, F., Forza, C., & Choi, T. Y. (2003). Supply-chain linkages and operational performance: a resource-based-view perspective. *International Journal of Operations & Production Management*, *23*(9), 1084-1099.
[103] Sarkis, J., Zhu, Q., & Lai, K. H. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics*, *130*(1), 1-15.
[104] Shepherd, C., & Günter, H. (2006). Measuring supply chain performance: current research and future directions. *International Journal of Productivity and Performance Management*, *55*(3/4), 242-258.
[105] Suering S., (2013). A review of modeling approaches for sustainable supply chain management. *Decision Support Systems*", 54, 1513-1520
[106] Seuring, S., Sarkis, J., Müller, M., & Rao, P. (2008). Sustainability and supply chain management–an introduction to the special issue. *Journal of Cleaner Production*, *16*(15), 1545-1551.
[107] Seuring, S., & Müller, M. (2008a). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of cleaner production*, *16*(15), 1699-1710.
[108] Seuring, S., & Müller, M. (2008b). Core issues in sustainable supply chain management–a Delphi study. *Business Strategy and the Environment*, *17*(8), 455-466.
[109] Seuring, S. (2004). Industrial ecology, life cycles, supply chains: differences and interrelations. *Business Strategy and the Environment*, *13*(5), 306-319.
[110] Seyfang, G. (2006). Ecological citizenship and sustainable consumption: Examining local organic food networks. *Journal of rural studies*, *22*(4), 383-395.
[111] Shi, V. G., Koh, S. L., Baldwin, J., & Cucchiella, F. (2012). Natural resource based green supply chain management. *Supply Chain Management: An International Journal*, *17*(1), 54-67.
[112] Spekman, R. E., Kamauff Jr, J. W., & Myhr, N. (1998). An empirical investigation into supply chain management: a perspective on partnerships.*Supply Chain Management: An International Journal*, *3*(2), 53-67.
[113] Stogdill, R. M., & Coons, A. E. (1957). Leader behavior: Its description and measurement.
[114] Sundarakani, B., De Souza, R., Goh, M., Wagner, S. M., & Manikandan, S. (2010). Modeling carbon footprints across the supply chain. *International Journal of Production Economics*, *128*(1), 43-50.
[115] Svensson, G. (2007). Aspects of sustainable supply chain management (SSCM): conceptual framework and empirical example. *Supply chain management: An international journal*, *12*(4), 262-266.
[116] Tan, K. C., Kannan, V. R., Handfield, R. B., & Ghosh, S. (1999). Supply chain management: an empirical study of its impact on performance. *International Journal of Operations & Production Management*, *19*(10), 1034-1052.
[117] Teuscher, P., Grüninger, B., & Ferdinand, N. (2006). Risk management in sustainable supply chain management (SSCM): lessons learnt from the case of GMO-free soybeans. *Corporate Social Responsibility and Environmental Management*, *13*(1), 1-10.
[118] Tsai, W. H., & Hung, S. J. (2009). A fuzzy goal programming approach for green supply chain optimisation under activity-based costing and performance evaluation with a value-chain structure. *International Journal of Production Research*, *47*(18), 4991-5017.
[119] Vachon, S., & Klassen, R. D. (2008). Environmental management and manufacturing performance: the role of collaboration in the supply chain.*International Journal of Production Economics*, *111*(2), 299-315.
[120] Vachon, S. (2007). Green supply chain practices and the selection of environmental technologies. *International Journal of Production Research*,*45*(18-19), 4357-4379.
[121] 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.
[122] Van Hoek, R. I. (1999). From reversed logistics to green supply chains. *Supply Chain Management: An International Journal*, *4*(3), 129-135.

[123] Van der Vorst, J. G., Tromp, S. O., & Zee, D. J. V. D. (2009). Simulation modelling for food supply chain redesign; integrated decision making on product quality, sustainability and logistics. *International Journal of Production Research*, *47*(23), 6611-6631.
[124] Wagner, B., & Svensson, G. (2010). Sustainable supply chain practices: research propositions for the future. *International Journal of Logistics Economics and Globalisation*, *2*(2), 176-186.
[125] Walker, H., Di Sisto, L., & McBain, D. (2008). Drivers and barriers to environmental supply chain management practices: Lessons from the public and private sectors. Journal of Purchasing & Supply Management, 14(1), 69–85.
[126] Walker, H., & Jones, N. (2012). Sustainable supply chain management across the UK private sector. *Supply Chain Management: An International Journal*,*17*(1), 15-28.
[127] WCED (1987). Our Common Future. :World Commission on Environment and Development.
[128] Welford, R., & Frost, S. (2006). Corporate social responsibility in Asian supply chains. Corporate Social Responsibility and Environmental Management, 13(3), 166–176.
[129] Witt, U. (1998). Imagination and leadership–the neglected dimension of an evolutionary theory of the firm. *Journal of Economic Behavior & Organization*, *35*(2), 161-177.
[130] Wu Zhaohuti., Pagell M. (2011). Balancing priorities: Decision-making in sustainable supply chain management. Journal of Operations Management, 29. 577-590
[131] Yang, W. and Zhang, Y. (2012). Research on factors on green purchasing practices of Chinese. *Journal of Business Management and Economics*, 3 (5). 222–231.
[132] Young, A., & Kielkiewicz-Young, A. (2001). Sustainable supply network management. *Corporate Environmental Strategy*, *8*(3), 260-268.
[133] Yukl, G. (2012). Effective Leadership behavior: What we know and what questions need more attention. *Academy Management Perspectives*, 26(4). 66-85
[134] Yukl, G. A., & Heaton, H. (2002). Leadership in organizations.
[135] Yukl, G. A. (1989). *Leadership in organizations*. Pearson Education India.
[136] Yukl, G. (2002), Leadership in Organizations, Fifth Edition, Prentice Hall Inc., New Jersey.
[137] Zhu Q., Sarkis J., Lai K., (2013). Institutional based antecedents and performance outcomes of internal and external of green supply chain management practices, Journal of Purchasing & Supply Management, 19. 106-117
[138] Zhu, Q., Sarkis, J., & Lai, K. H. (2008). Confirmation of a measurement model for green supply chain management practices implementation. *International journal of production economics*, *111*(2), 261-273.
[139] Zhu, Q., Sarkis, J., & Lai, K. H. (2007). Green supply chain management: pressures, practices and performance within the Chinese automobile industry.*Journal of Cleaner Production*, *15*(11), 1041-1052.
[140] Zhu, Q., & Sarkis, J. (2006). An inter-sectoral comparison of green supply chain management in China: Drivers and practices. Journal of Cleaner Production, 14(5), 472–486.
[141] 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.
[142] Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management*, *22*(3), 265-289.
[143] Zsidisin, G. A., & Siferd, S. P. (2001). Environmental purchasing: a framework for theory development. *European Journal of Purchasing & Supply Management*,*7*(1), 61-73.

****