

Exploring the Relationship between Buyer-deceitful Practices, Buyer-Subtle Practices, Buyer Supplier Relationships, Supplier Development and Green Design: An Exploratory Study

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ABSTRACT

Green procurement is the integration of both environmental and social elements with traditional procurement practices. Green procurement is truly the pressing call of the day and has recently gained attention of both researchers and supply chain practitioners globally. However, there are scant research studies available in the direction of unethical practices and its influence on key green procurement variables. The aim of the current study is to explore the relationships between buyer-deceitful practices, buyer-subtle practices, buyer-supplier relationships, supplier development, and green design. Here, SPSS AMOS version 24.0 has been used to simultaneously assess the measurement instrument and hypothesized model. The findings show that relationship between buyer deceitful activities and supplier development is significant. Secondly, relationship between buyer-supplier relationship and green design is also found to be strong. The study provides some unique contributions to the theory and further extends the knowledge base.

Keywords: Buyer Deceitful Practices, Buyer Subtle Practices, Buyer-Supplier Relationship, Supplier Development, Green Design, Green Procurement, Structural Equation Modelling

INTRODUCTION

Today every company is operating under pressure of cut-throat competition. The question is how the company can successfully integrate social, environmental and financial elements and further align with corporate objectives. Globally companies are adopting certain measures to cut carbon emissions and reduce carbon footprint from every single business activity (Bag, 2016a). Moreover, there are huge pressures from customers, government regulations as well as internal employees to implement sustainable practices (Dubey, Bag, & Ali, 2014; Dubey, Bag, Ali, & Venkatesh, 2013; Dubey & Bag, 2013). Green supply chains (GSC) are highly complex and the important dimensions of GSC are green design, green procurement, green manufacturing and green logistics. Here, in the current study, the discussion will only centre on green procurement and its relationship with certain complex variables. Green procurement research has attracted increased attention in the recent years with increased number of outputs in leading SCM journals. However, there are still unexplored areas which need to be researched for deriving rich insights and further extending the knowledge base.

Green procurement initiatives in any company cannot be successful without collaboration, cooperation and coordination with key stakeholders (Bag, 2016b). Green procurement involves activities where the buyer is exposed with outside environment and deal with suppliers on a regular basis. At every moment, there are chances of buyers getting involved in certain activities which can be either categorised as deceitful or subtle practices. The temptation to achieve certain personal benefits from the deal can also be considered as an unethical practice (Carter, 2000a, 2000b, 2005; Cooper, Frank, & Kemp, 1997). South African steel and engineering sector involves daily dealings with millions of Rands (local currency) where such temptation for buyers are very natural. However, previous studies have shown that in western culture buyers attending dinner invitation of suppliers are not considered unethical (Carter, 2000a). In the current study, author shall limit only to buyer activities involving deceitful practices and subtle practices.

Buyer-supplier relationship is an integral part of green procurement which has been talked by earlier researchers. Green supplier development is also important to achieve success in any green project. Finally, in the green design

stage, suppliers need to be involved to prepare a blueprint which will be beneficial for both focal company and suppliers' perspective in terms of ease in manufacturing, ease in disassembly or re-manufacturing at economic costs and without any wastage of time (Bag, 2016c).

The motivation of the study is thus to explore the grey area involving relationships between buyer deceitful practices, buyer subtle practices, buyer-supplier relationship, supplier development and green design.

Rest of the sections is organised as follows. The second section deals with theoretical background followed by third section on data analysis and findings. The fifth section presents the conclusion drawn from data analysis and sixth section on managerial implications. The final section comprises limitations and future research directions.

THEORETICAL PERSPECTIVES ON BUYER DECEITFUL PRACTICES, BUYER SUBTLE PRACTICES, BUYER SUPPLIER RELATIONSHIP, SUPPLIER DEVELOPMENT AND GREEN DESIGN

There are numerous theories which have been used by past researchers in building green procurement theory namely resource-based view, ecological modernisation theory, stakeholder theory, institutional theory, and transaction cost economics theory. To examine inter relationships of elements in the current study; social network theory has been used as a theoretical lens. Social network theory considers organisational outcomes as a function of the social relationships between organisations or individuals in an organisation. Social network theory has been described as having two major elements namely, density and centrality (Rowley, 1997). This theoretical foundation provides us with critical insights into the green strategy phenomenon. Firstly, cost is involved in each stage of the green supply chain. Therefore, environmental practices must involve individual firm in specifically considering upstream players (suppliers) in the supply chain.

Secondly, relationship building encompasses three externally oriented value chain strategies: supplier development, supplier partnering and closer customer relationships (Jayaram, Vickery, & Droge, 2008). Supplier development centres on education and training of suppliers involved in green practices. Environmental certification and environmental audits are an important part of the greening process in order to reduce environmental impact

on the supply chain. Supplier integration i.e. participation of suppliers in design, procurement and production, use of information technology to exchange information is vital in controlling costs and enhancing performance of supply chain. Close relationship building will ultimately add more value, develop innovative products, reduce costs and enhance customer satisfaction (Blome, Hollos, & Paulraj, 2014; Burki & Buvik, 2010).

Supplier selection decision must be taken carefully so that suppliers are of high quality, and usage of resources and energy is minimised leading to less defects, low wastage and less pollution. Auditing of green suppliers is necessary to ensure that suppliers are continuously improving the supply chain metrics. It is not easy for buyers to manage such long and complex networks of suppliers and therefore, in today's context all companies prefer to work with a bunch of specialist suppliers. As discussed previously buyers may involve in activities such as deceitful and/or subtle practices. Such unethical practices may involve buyers making up a second source of supply to gain competitive advantage. Buyers using obscure contract terms to gain an advantage over suppliers; buyers exaggerating the seriousness of a problem to gain concessions; buyers purposefully misleading a salesperson in a negotiation; buyers giving preference to suppliers preferred by top management; buyers allowing personalities of the supplier to impact decisions; and buyers writing specifications that favour a particular supplier (Carter, 2000a, b). Such activities may be seen by buyers as short term beneficial for the company, however research study is required to understand if any real benefits can be derived from such activities.

RESEARCH METHODS

This section comprises the data collection and measures for the study.

Data Collection

The survey instrument included dimensions of buyer unethical practices, buyer-supplier relationship as well as green design for sustainability specific construct. The procurement managers of steel and engineering sector were selected to seek responses. The target sample frame consisted of South African firms who have successfully implemented green procurement practices. The samples were derived on the basis of convenience sampling technique. In this case, email survey method was employed. The initial email consisted of cover letter

and the questionnaire. Email list has been compiled from Steel and Engineering Industries Federation of Southern Africa (SEIFSA) database.

Before questionnaire was finalised for final survey, it was pretested with ten experts from the industry who are having work experience for over ten years and professional members of Mining Industry Association of South Africa (MIASA) and Chartered Institute of Logistics & Transport, South Africa (CILT SA). Based on the pretesting, the questionnaire was slightly modified for more clarity of few items. The final instrument for the final survey was measured basically using a five point Likert scale. The first section of the questionnaire includes questions on dimensions of unethical practices in terms of seven items. The second section includes questions on dimensions of buyer-supplier relationship in terms of twelve items. The third section includes questions on dimensions of green design in terms of nine items.

Initially, the questionnaire was sent to a sample size of 150 companies. Two weeks after sending the initial email, a gentle reminder email was sent to all potential respondents. Those respondents who did not reply within another 4 weeks were further telephoned and second friendly reminder was sent. In response, researcher received total 50 usable questionnaires, an effective response rate of 33.33%. The overview of responses is presented in Table 1.

Table 1: Sample Overview

Type of Companies	Annual Turnover	<i>n</i>	Percentage
Exempted Micro Enterprise ("EME")	< R10 million	5	10
Qualifying Small Enterprise ("QSE")	<R50 million	16	32
Generic ("GEN")	>R50 million	29	58

Measures

Extensive literature review was conducted to identify the theoretical constructs for current study. Therefore, the constructs has been adopted from previously tested scales.

Unethical practices explores it's influence on the relationship between buyer-supplier relationship and green design for sustainability using seven key indicators as outlined by Carter (2000b). Buyer-Supplier Relationship Management includes twelve indicators (Dubey *et al.*,

2013; Narasimham, Venkatasubbaiah, & Avadhani, 2012; Giannakis, 2012; Carter, 2005; Carter & Jennings, 2004; O'Toole & Donaldson, 2002; Shin, Collier, & Wilson, 2000; Carr & Pearson, 1999).

The indicators related to the green design have been considered from past studies such as (Bag, 2016b; Dubey, *et al.*, 2013; Carter, 2005; Carter & Jennings, 2004). This construct intend to measure the participation of buying company in the design of products for disassembly and participation in the design of products for recycling or reuse.

Hypotheses Development

Based on the review of literature and discussion with industry experts the following hypothesis has been proposed for the empirical testing:-

H₁: Buyer deceitful practices positively influences buyer-supplier relationships.

H₂: Buyer subtle practices positively influences buyer-supplier relationships.

H₃: Buyer deceitful practices positively influence supplier development.

H₄: Buyer subtle practices positively influence supplier development.

H₅: Buyer-supplier relationship positively influences supplier development.

H₆: Buyer-supplier relationship positively influences green design.

H₇: Supplier development positively influences supplier green design.

DATA ANALYSIS AND FINDINGS

In this section, the data analysis has been presented. Firstly, data cleaning procedure was followed. Next exploratory factor analysis was applied. Finally, the output of EFA was used as an input in the structural equation modelling.

Data Cleaning

The data was checked for any missing frequency. Author also checked normality and existence of any outlier in the data. No such cases were reported.

Exploratory Factor Analysis

EFA was run in SPSS 24.0 version using PCA method and the summary is presented in Table 3. In the EFA only six factors were retained after varimax rotation. The rotated component matrix is presented in Table 2. The first factor explains 47.67 percent of variance, followed by 10.90 percent by second factor, 8.87 percent by third factor, 7.71 percent by fourth factor, 7.65 percent by fifth factor, and 5.71 percent by sixth factor.

Table 2: Rotated Component Matrix

	Component					
	1	2	3	4	5	6
VAR00026	,939					
VAR00025	,927					
VAR00024	,913					
VAR00028	,913					
VAR00027	,913					
VAR00016	,875					
VAR00010	,869					

Contd.

VAR00012	,868					
VAR00011	,864					
VAR00014	,850					
VAR00015	,815					
VAR00009	,808					
VAR00013	,791					
VAR00017	,735		,422			
VAR00023	,719					-,429
VAR00018	,708		,419	,406		
VAR00019	,649		,402			
VAR00008	,638			,486		
VAR00004	-,454	-,781				
VAR00002	-,443	-,772				
VAR00003	-,518	-,761				
VAR00020			,803			-,430
VAR00021			,730			
VAR00022				,828		
VAR00005						,836
VAR00001						,754
VAR00006						,938
VAR00007						,753

Table 3: Means, Standard Deviations, Standardised Loadings, Cronbach's Alphas, and Total Variance Explained of the Proposed Model

Indicators	Source	Mean	Std. Dev.	Loading
Buyer-Supplier Relationship (CA=0,986; TVE=13,349)				
Cooperation with suppliers for environmental objectives	Narasimham <i>et al.</i> , 2012	1,388	0,996	0,939
Motivate suppliers for increased innovativeness	Bag, 2016b	1,408	0,998	0,927
Advise suppliers to commit to waste reduction goals	Dubey <i>et al.</i> , 2013; Carter, 2005; Carter & Jennings, 2004	1,429	1,000	0,913
Buyers actively involved in eco labelling and supplier evaluation and selection	Narasimham <i>et al.</i> , 2012	1,429	1,061	0,913
Environmental audit for suppliers' internal management	Narasimham <i>et al.</i> , 2012	1,429	1,061	0,913
Buyers are loyal to key suppliers	Carr & Pearson, 1999	1,490	0,938	0,875
There is high corporate level communication on important issues with key suppliers	Carr & Pearson, 1999	1,531	0,938	0,869
Buyers have frequent face-to-face planning/communication with key suppliers	Carr & Pearson, 1999	1,531	0,868	0,868
Suppliers are actively involved in our new product development process	Shin <i>et al.</i> , 2000; Giannakis, 2012	1,551	0,937	0,864

Contd.

Indicators	Source	Mean	Std. Dev.	Loading
Quality is our number one criterion in selecting suppliers	Shin <i>et al.</i> , 2000; Giannakis, 2012	1,449	0,891	0,850
Buyers rely on a small number of high quality suppliers	Carr & Pearson, 1999	1,510	0,938	0,815
Buyers enter into special agreements with suppliers relationships who have improved performance	Carr & Pearson, 1999	1,510	0,938	0,808
There are direct computer to computer links with key suppliers	Carr & Pearson, 1999	1,755	0,902	0,791
One of the main advantages of this partnership is its flexibility	Bag, 2016a; O'Toole & Donaldson, 2002	1,469	0,915	0,735
Buyers seeks suppliers with low energy consumption	Carter & Jennings, 2004	1,714	1,208	0,719
The long term profitability of this relationship is higher in comparison to alternatives	O'Toole & Donaldson, 2002	1,490	0,916	0,708
More costs are shared equally in this relationship when compared to others	O'Toole & Donaldson, 2002	1,612	0,909	0,649
Buyer strive to establish long-term relationship with suppliers	Shin <i>et al.</i> , 2000; Giannakis, 2012	1,653	1,052	0,638
Buyer activities: Deceitful Practices (CA=0,958; TVE=2,331)				
Buyer purposefully misleads a salesperson in a negotiation	Carter, 2000b	4,102	1,141	-0,781
Buyer uses obscure contract terms to gain an advantage over suppliers	Carter, 2000b	4,143	1,155	-0,772
Buyer exaggerates the seriousness of a problem to gain concessions	Carter, 2000b	4,184	1,112	-0,761
Green Design (CA=0,761; TVE=1,652)				
Our purchasing department participates in the design of products for disassembly	Carter, 2005; Carter & Jennings, 2004	4,163	1,179	0,803
Our purchasing department participates in the design of products for recycling or reuse	Bag, 2016b; Dubey <i>et al.</i> , 2103; Carter, 2005; Carter & Jennings, 2004	3,673	1,477	0,730
Supplier Management (CA=0,653; TVE=1,124)				
Buyer gives preference to suppliers preferred by top management	Carter, 2000b	2,531	1,529	0,836
Buyer selects a second source of supply to gain competitive advantage	Carter, 2000b	3,102	1,610	0,754
Buyer activities: Subtle Practices (CA=0,689; TVE=1,021)				
Buyer allows personalities of the supplier to impact decisions	Carter, 2000b	4,347	0,991	0,938
Buyer writes specifications that favour a particular supplier	Carter, 2000b	4,265	1,095	0,753

The output of EFA has been used as an input in the structural equation modelling (SEM). However, fourth factor has not been entered while conducting the SEM because there was only one item under the fourth factor.

Structural Equation Modelling

The application of multivariate techniques is mainly to expand the researchers' explanatory ability and statistical

efficiency. The first generation analytical techniques share a common limitation i.e. each technique can examine only a single relationship at a time. Structural equation modelling, an extension of several multivariate techniques is the technique popularly used today can examine a series of dependence relationships simultaneously (Bag, 2015).

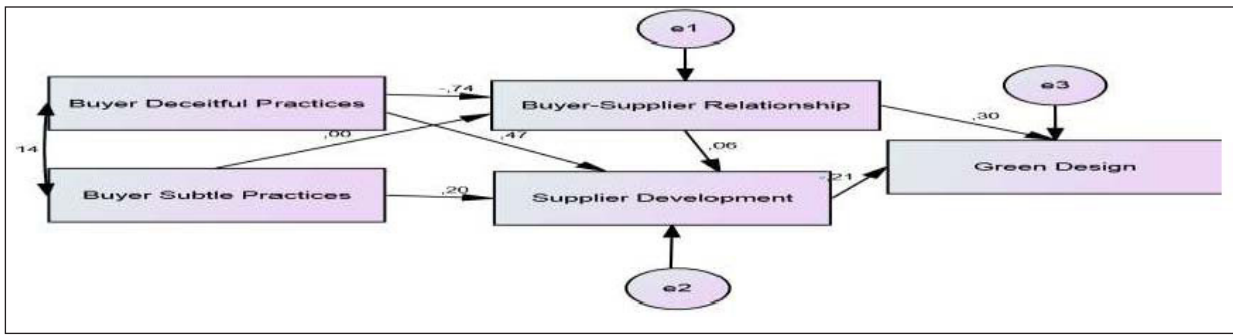


Fig. 1: Structural Model

Computation of degrees of freedom (Default Model)

No. of distinct sample moments: 15

No. of distinct parameters to be estimated: 13

Degrees of freedom (15-13): 2

Result (Default Model)

Minimum was achieved

Chi Square= 2,281

Degrees of freedom= 2

Probability level= 0.320

The Chi Square value is small but the important thing it is not significant. The P value for this Chi Square test statistic of 2,281 is greater than 0,320. This means that there is no significant difference between our model and saturated model which is good.

Now, we need to see if according to the output, if this is a good model fit. For this, we need to check the parameters (Table 4) under model fit. Here, CMIN is same as Chi Square value 2,281 and P value 0,320 which means there is no significant difference our model and perfect model.

Table 4: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	13	2,281	2	0,32	1,141
Saturated model	15	0	0		
Independence model	5	63,153	10	0	6,315

Next, we need to check GFI (Table 5). This basically should be greater than 0.9 and our value is 0.982 which means that our model is very good.

Table 5: GFI

Model	RMR	GFI	AGFI	PGFI
Default model	0,042	0,982	0,863	0,131
Saturated model	0	1		
Independence model	0,351	0,647	0,471	0,431

Next we look at base line comparisons (Table 6). Ideally NFI should be greater than 0.90. These fit indices tell us how good of a fit our model is as compared to the perfect model.

Table 6: Baseline Comparisons

Model	NFI	RFI	IFI	TLI	CFI
	Delta1	rho1	Delta2	rho2	
Default model	0,964	0,819	0,995	0,974	0,995
Saturated model	1,000		1,000		1,000
Independence model	0,000	0,000	0,000	0,000	0,000

We also checked RMSEA (Table 7) which is the error term and should be under 0.05 and our model is 0.05 which is good.

Table 7: RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	0,05	0,00	0,29	0,36
Independence model	0,33	0,25	0,41	0,00

The next step is to check which path coefficients are significant and which path coefficients are insignificant.

Here, the values are presented in Table 8 and we need to look at P value. P value less than 0.05 means there is a significant relationship.

Table 8: Regression Weights: (Group number 1 - Default model)

			Estimate	S.E.	C.R.	P	Hypothesis supports/not supported
Buyer-Supplier Relationship	<---	Buyer Deceitful Practices	-0,589	0,079	-7,447	***	Not supported
Buyer-Supplier Relationship	<---	Buyer Subtle Practices	0,002	0,095	0,022	0,98	Not supported
Supplier Development	<---	Buyer Subtle Practices	0,298	0,188	1,585	0,11	Not supported
Supplier Development	<---	Buyer Deceitful Practices	0,578	0,231	2,506	0,01	Supported
Supplier Development	<---	Buyer-Supplier Relationship	0,086	0,286	0,3	0,76	Not supported
Green Design	<---	Buyer-Supplier Relationship	0,409	0,19	2,151	0,03	Supported
Green Design	<---	Supplier Development	-0,183	0,123	-1,493	0,14	Not supported

Modification Indices (Group number 1 - Default model)

Covariances: (Group number 1 - Default model)

		M.I.	Par Change

Variances: (Group number 1 - Default model)

		M.I.	Par Change

Regression Weights: (Group number 1 - Default model)

		M.I.	Par Change

CONCLUSION

The study is very interesting and sheds light in the grey area which was so far unexplored. In the current study, emphasis has been taken to develop the theoretical background and identifying the variables for study. Further, EFA has been used to reduce all dimensions to six factors. However, one factor (green packaging) was dropped and rest of the six factors has been used for structural equation modelling. SEM produced two key findings. The first finding suggests that buyer deceitful practices leads to supplier development. Here, buyer may purposefully mislead a salesperson in a negotiation; buyer may use obscure contract terms to gain an advantage over suppliers; buyer may as well exaggerate the seriousness

of a problem to gain concessions which are found to be beneficial for the company in terms of cost savings and further helpful in screening and selection of key suppliers for signing annual rate contracts.

The second finding is that buyer supplier relationship leads to green design. Buyer may give preference to suppliers approved by top management and buyer making up a second source of supply to gain competitive advantage in the market. These practices will ultimately enhance green procurement performance and indirectly the business performance of company.

MANAGERIAL IMPLICATIONS

Procurement managers may find the research findings useful for ethical decision making in green procurement. Ethical policy and environmental policy must be framed so that junior buyers do not face any dilemma while making critical green procurement decisions.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The study suffers from few limitations. Firstly, convenience sampling technique was used for gathering data and secondly, small sample size has been used in the study. Future research will take care of these limitations and perform a comparative study by collecting samples from other countries.

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