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Driving indicators for implementation of sustainable procurement behavior and practices

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Abstract:

Environmental issues have been universally accepted as the greatest threat to mankind and planet. States and organisations are implementing strategies and policies to address these issues. Sustainable public procurement (SPP) is considered as one of the strategy to mitigate the adverse environmental effects. Government of Pakistan has already taken few initiatives, and despite country leadership's will, the pace of SPP implementation is low. In Pakistan there are regulations and legal frame work for procurement but there is lack of specific guide lines for procurement officers for implementations of SPP practices in Pakistan. There are numerous driving indicators but this study has shed light on effects of awareness, organizational commitment towards change and approach to green suppliers on sustainable procurement implementation. Finding from study on procurement managers working in government departments of Pakistan indicated that awareness and organizational commitment to change and approach to green supplier and products were positively related to sustainable public procurement implementation. These results implicate the need to create and enhance more awareness and organizational commitment more over availability of green supplier is needed to implement SPP successfully. The study may provide a useful insight for procurement managers and policy makers and can enable them to be successfully implemented the SPP practices in Pakistan.

Key words: Sustainability, Sustainable Public procurement, awareness, organizational commitment towards change.

1. INTRODUCTION

Global climate Change is considered as a foremost threat to the economic prospects, food, health and water sources of billions of people (IPCC, 2015). In today's globalized economy, market dynamics are changing in terms of delivery time, cost of product, environmental and safety issues. Performance measurements are also changed from conventional measures to environmental factors as integral part of assessment system of performance measurement. In this regard, Subramanian and Gunasekaran (2015) highlighted that in present context of globalization, organizations are required to incorporate the sustainability aspect in their strategic planning.

Public procurement is considered as a strategic instrument to mitigate the environmental issues as more environmentally sustainable products and services would cause less damage to the environment. A large proportion of government budgets are used in both developed and developing countries which falls between 10-20% of their total budgets (UNEP, 2014).

A government plays a significant role in persuading the demand of sustainable services and products and encourages the corporate entities to make such products which are environmentally friendly thus successful implementation of SPP needs commitment from the government. However, in south East Asia the implementation of sustainable procurement is very low (UNEP, 2014).

In the context of Pakistan, the implementation of sustainable procurement is still in initial phases. Increased depleting resources and environmental sustainability concerns

are pushing government officials to implement sustainable public procurement to mitigate these adverse effects.

Although SPP is new concept in Pakistan. The government is making attempts to develop guidelines and polices related to SPP, for this Ministry of finance and Pakistan Public Procurement Authority (PPRA) have been working on addressing the issue. Sustainable procurement procedures, standards, manuals, labelling and certification will be evolved to make a mechanism of sustainable procurement.

A Study carried out by Jang, Park, Roh and Han, (2015) on 17 Asian countries about sustainable innovation polices, these 17 countries were categorised into: leaders, followers, loungers and laggards. Pakistan falls into the category of loungers that indicates Pakistan is still in the early stages of policy making in SPP.

In initial stages of implementation of SPP, government commitment is vitally important. SPP can be defined as the pursuit of sustainable development objectives through the purchasing and supply process, incorporating social, environmental and economic aspects. (Walker and Brammer, 2012). SPP can be considered as the means that authorities stipulate and consider environmental criteria when public contracts are allocated to private suppliers and is becoming an established approach to pursue environmental policy in many parts of the world (Testa et al. 2015).

Though the importance of sustainable procurement in combating the issues related to environment are established however available evidences indicates that sustainable procurement is not widely implemented in Pakistan.

The sustainable procurement is being implemented in many countries but the still there is limited knowledge (Walker and Phillips, 2012). Research from low-income countries dealing with sustainability issues are urgently needed. (Govindan, Seuring, Zhu, and Azevedo, 2016).

Drivers are the motivators those persuades organization to implement sustainable procurement practices. In diffusion of sustainable procurement among organizations these drivers are expected to contribute positively (Preuss, 2009). In a study in UK, Walker et al. (2011) found numerous barriers and drivers about sustainable procurement practices.

In Pakistan, there is shortage of empirical studies in the area of sustainable procurement. Moreover, there is less clarity in literature about the implementation of sustainable practice's barriers and drivers (Busse, Schleper, Niu & Wagner, 2016).

The previous studies investigated the drivers of SPP and produced mixed results. For example a study found positive relationship between sustainable procurement implementation and legislation, awareness and organizational commitment (Balasubramanian & Sundarakani, 2016) on the other hand studies of Bowen (2001) and Zhu (2007) showed non-existence of significant relationship between legislation, awareness, organizational commitment and sustainable procurement.

Lack of awareness is identified as a barrier by Lember (2016) in study conducted on the public procurement on public authorities. Kattel and Kalvet (2013) postulates that non-awareness in policy makers and official exists which refrain them from taking risk in procurement innovation such as SPP. Contradictory to these views some authors argue that many public officials claims they are aware of environmental issues but still there behavior of procurement is not effected (Mas'od & Chin, 2014 ; Wahid & Shyan, 2011).

According to Lozano (2013), role of leadership to develop organizational commitment is needed in successful adaption of SPP. Buniamin and Ahmad (2016) highlighted that leaders support is a main facilitator in SPP implementation. However, on the other hand Correia et al. (2013) pointed out that lack of interest of leaders can effect negatively on the organizational commitment in engaging in initiatives of sustainability. Above

arguments highlights that there exists mixed views about the driving indicators that induces organization to implement SPP. In light of the scarcity of studies on the SPP in Pakistan and inconsistent results produced by earlier studies, this study empirically examines the driving factors which motivates organization to implement the SPP in Pakistan.

The paper will explore three main driving indicators awareness and organizational, commitment to change and approach to green products and suppliers and there effect on implementation of SPP. Moreover this area is understudy in context of developing countries as well as in Pakistan. This paper is first of its kind, studying the driving indicators of SPP in the context of Pakistan and it can enhance the understanding of policy makers and practitioners of public procurement in implementation of SPP in Pakistan.

2. LITERATURE REVIEW

2.1 Emergence of Sustainable Public Procurement

Sustainable development generally referred to Triple bottom line (TBL) of Elkington (1997) which was conceptualized in three dimensions (3 Ps) including economic (Profit), social (People) and environmental(Planet) (Seegebarth & Balderjahn, 2016). Sustainable procurement in simpler terms can be explained as a method, by adapting which an organization can improve the process of procurement of services and products by economic, social and environmental means (Oruezabala & Rico 2012).

According to Meehan and Bryde (2015) sustainable procurement can be defined as the procedure utilized to acquire services and good in manner which causes minimum effect on environment and society during whole life cycle. SPP was identified in Agenda 21 and in Chapter III of the World Summit

on Sustainable Development (WSSD) as one of the means to achieve sustainability (UNEP, 2012).

Public procurement has big chunk in public budgets therefore governments can use their purchasing power to advance the environmental and social objectives (Lundberg & Marklund, 2013). The public procurement can considerably contribute to the sustainability of environment, society and economy. Thus, government can play important role in stimulating the demand of environmentally sustainable product and services and encouraging the corporates to play a part in sustainable activities.

It is recognized by earlier publications and by collective body of research that procurement function can play a pivotal role in assisting organizations to reach to their objectives of sustainable development (Walker & Phillips, 2008).

An effective implementation of SPP is urgently required in developing countries due to rapid depletion of resource and increased environmental issues (Testa, Annunziata, Iraldo & Frey, 2016). In developed countries, tools and guide lines related to sustainable procurement has been adopted, for example in Norway, Denmark, Sweden, United Kingdom, United States of America and European Union. Nonetheless, in developing countries SPP practices are still in initial stages as few countries has specific policies, rules and guidelines about SPP.

Sustainable procurement practices in public sector in many developed countries are already giving fruitful results (Testa, F., et al, 2015) but the implementation of sustainable government procurement practices is low in South Asia. Sri Lanka and Bangladesh are making some progress followed by India but pace of implementation is unsatisfactory in Nepal, Bhutan and Pakistan. (UNEP, 2014).

2.2 Public Procurement and Implementation of SPP in Pakistan

As the other countries in the world are encouraging green initiatives to safe guard the global environment, the Pakistani government has also taken up steps to promote green technology and eco-friendly products/service in all sectors of economy. In this regard various polices, strategies are being followed by the government of Pakistan such as: National Sustainable Development Strategy (2012) Alternative and Renewable Energy Policy (2011) and Pakistan Energy Vision 2035. In order to implement sustainability and SPP, government of Pakistan has evolved legal instruments such as Pakistan Environmental Protection Act (1997), Hazardous Substances Rules (1999), Renewable Energy Technologies Act (2010), National Clean Air Act and in relation to economic instruments, government of Pakistan has established Pakistan Provincial Sustainable Development Funds (2011) at the provincial level.

Government of Pakistan's commitment is reflected in the policies, strategies and the institutions that has been instituted for the green the economy. The United Nations in Pakistan has also joined the global initiative on sustainable procurement and strives to roll it out on the country level (UNDP, 2015).

In Pakistan, at federal level Public Procurement Regulatory Authority regulates the system of procurement of product, work and services in Pakistan. The provincial governments have also regulatory authorities at their level. PPRA's main rules and ordinances are called ordinance of 2002 and rules of government 2004. Initially the buying of good, works and services was governed by the GFR (General Financial Rules) but new legislation was made in 1977 (GOP, 2011).Financially, the PPRA is dependent on annual grants allocated by the Ministry of Finance.

To enhance effectiveness and efficiency Government of Pakistan (GOP) in 2002 promulgated PPRA ordinance of 2002(a). According to this ordinance the Public Procurement Regulatory Authority (PPRA) became the regulator of public procurement.

Ordinance of 2002 also empowered PPRA implement and make supporting rules to ensure efficiency in procurement management. PPRA has all the powers required to execute its function however it has no punitive powers (PPRA, 2015).

A study was conducted on national policies of sustainability innovation in 17 Asian developing countries by Jang, Park, Roh and Han (2015) which indicated that Pakistan remains at initial stage among other 17 countries, it is depicted in figure 1.1, these results provide insight of national strategies of countries for sustainability-innovation in developing countries in Asia.

Stage	Countries
1	Vietnam, Cambodia, Bangladesh, Myanmar and Pakistan
1-2	Mongolia, Philippines and Brunei Darussalam
2	China, Thailand and Indonesia
2-3	Malaysia
3	Singapore, Japan and Republic of Korea

Figure 1.1: Stages of environmental sustainability in Asian developing countries

To promote sustainability government of Pakistan has taken few initiatives for example awareness campaigns are used as strategy for success implementation of sustainability programs and policies. Sustainable products and green technology exhibitions are arranged to encourage use of green technology and green products and services. These initiative can contributes to green growth and SPP.

Small Medium Enterprise development Authority (SMEDA) has introduced tools for energy assessment called Energy Efficiency Self-Assessment Tools (ESPIRE). The objective of ESPIRE is to support the industry to work

economically, more efficiently and to be more environmentally sustainable. These tools helps industries to measure and enhance their energy performance (SMEDA, 2016).

2.3 Sustainable Public Procurement Implementation

Sustainable public procurement is defined as "the acquisition of goods and services in a way that ensures that there is the least impact on society and the environment throughout the full life cycle of the product"(Meehan & Bryde, 2011).

There are numerous driving indicators of SPP. Previous research highlighted drivers of sustainable procurement such as leader's role, organizational commitment, regulatory compliance, public pressure, ethical concerns, awareness international commitments and certifications standards(Amann & Harland, 2014; Bansal and Roth, 2000; Hawkins 2006; Smith, Andersson, Gourlay & Karner,2016 ; Sroufe, 2003).

Gabzdylova et al. (2009) argued that drivers of sustainable procurement can be summarized into two groups: internal and external. Three major driving indicators of SPP implementation including awareness and organizational commitment to change and approach to green supplier will be discussed in the following subsections. While towards barrier in organisations were lack of consideration for sustainability in leaders, insufficient regulations and standards, cost and benefits issues (Giunipero, Hooker & Denslow, 2012). In the context of Pakistan it has been considered that there is lack of general sustainable behaviour (Nazish, 2015) which also effects the public procurement managers in implementation of SPP practices in government departments.

2.4.1. Awareness

One of the major driver which can lead to effective implementation of sustainable procurement practices is awareness and familiarity about the regulations, polices and

laws connected to sustainable procurement. Awareness can influence the adaption of sustainable procurement practices in organizations and countries (Yang and Zhang, 2012). Zhao et al. (2014) suggests that environmental awareness has frequently been assumed to be the main driver of sustainable behavior, such behavior can lead to successful implementation of SPP.

Brammer and Walker (2011) highlighted that the awareness and familiarity with polices can influence implementation of SPP. Thus, availability and awareness of toolkits and documents could be one path towards improving the implementation of SPP practices (Testa et al., 2016).

Procurers are required to be acquainted with laws, regulations and policies related to contracting and tendering for sustainable procurement (Lin, 2015). Procurement management is required to follow the regulations and laws set by government to enhance the sustainability (Amann, Roehrich, & Harland, 2014). Moreover, government can imposed penalties in shape of taxes and additional charges, on violation of rules and regulations of sustainable procurement. In terms of increasing compliance of sustainable procurement guidelines and polices, awareness and training of procurer can have significant effect on implementation of sustainable practices (Gelderman et al. 2006; Walker & Brammer, 2009).

Apart from this, awareness in the form of policies and legislation can support the procurers to be engaged in sustainable practices (Lamming and Hampson, 1996), more awareness can also help in overcoming the barriers of inertia and risk avoidance of managers. (Rolfstam, 2011; Tsipouri, 2012). The significance of SPP guidelines and toolkits in promoting the SPP practices has been indicated in several studies (Arrowsmith, 2008; Meehan and Bryde, 2011). Awareness can change the minds of procurers which can effect pace of application of sustainable procurement (Tsipouri, 2012) especially in developing nations like Pakistan. It is considers

that awareness can effects the level and pace of implementation of SPP. Considering the above mentioned arguments, this study hypothesized that:

H1: Awareness is significantly related to SPP implementation in government departments.

2.4.2. Organizational Commitment to Change

Abdul & Rahman(2004) stated that a change in any organization means alteration of task or activities, prior studies shows the significance of commitment to change as the positive support during the organizational change like SPP(Jaros, 2010; Rafferty and Restubog, 2010). When an individual understand the value of change then commitment to change is developed (Castro & Gomes, 2016). Researcher studying the sustainable behavior considered commitment to change as major driver (Preuss and Walker 2011). In organizational change in regards to sustainability issues, awareness and training programs are often used to disseminate sustainable practices (Renwick & Wilkinson, 2016).Public procurer behavior can be changed by adapting motivational strategies so they are ready for implementation of sustainable procurement practices (Ones & Dilchert, 2013). Earlier findings suggests that individual carrying organizational commitment to environmental sustainability demonstrate more engagement in sustainable initiatives (Ramus and Steger, 2000).

Transformational leadership can uplift change commitment and trust in leadership (Herold, Fedor, Caldwell, & Liu, 2008).These leaders are also a strong internal political force that can foster organizational environmental sustainability (Banerjee et al., 2003). With the help of this type of leadership change initiatives as SPP can be accomplished since vital bond among leadership and individuals exists (Young & Adams, 2016; Herscovitch & Meyer, 2002; Kao, 2015).

Commitment to change can be positively relate to sustainable behavior of procurers and can lead to sustainable procurement implementation (Grandia, 2014).

By adopting such measures and by having leadership support and organizational commitment to change can lead to successful implementation of SPP in Pakistan Thus, national aspiration which are outlined by Government of Pakistan can be achieved.

Considering the above argument, the study hypothesized that:

H 2: Commitment to change is significantly related to implementation of SPP practices.

2.4.3. Approach to green suppliers

Access to green product and services is important part in implementation of SPP in Pakistan. Certification requirement such as ISO 9000 and ISO 140001 pushed industries to adapt the sustainability and produce sustainable products and services (Sarkis and Zhu, 2012; Zhu et al., 2013). On a similar note Handfield et al. (2002) identified that introduction of standard certification as ISO 14001 and ISO 9000 and regulations about waste reduction can drive manufacturing industries to make sustainable products and provide sustainable services to governments.

Brammer and Walker (2011) highlighted that the availability of green products and services can influence adaption of SPP practices. Zhu, Geng and Sarkis (2013) conducted a survey study on 193 Chinese government officials and identified that regulations and incentives motivates adaption of SPP practices. Organizations are expected to adopt sustainable practices in response to environmental sustainability rules set by regulatory institutions for example government bodies in the country. These rules and regulations

can be in the form of formal laws, rules, incentives and sanctions (Scott, 1995).Regulations and standards are seen as a driver for change (Ageron et al., 2012) like SPP in Pakistan.

In order to implement SPP effectively availability of sustainable good and services has an important role (Walker & Brammer, 2009). Government rules and regulations about sustainable environment can propel organizations to make necessary changes in their structure and processes (Powell and DiMaggio, 2012) thus can provide green products and services.

Availability of green suppliers is also pivotal. Moreover, supplier's awareness about rules and regulation of contracting and tendering of sustainable goods also plays a significant role in adaption of sustainable procurement in public sector. Environmentally sustainable proactive organizations generally encourage there supplier to take environmental certifications (Hsu et al. 2013). In an empirical study Hines and Jones (2001) identified that mentoring role of management is a new concept that can improve the relationship between management and supplier thus can encourage supplier to provide sustainable products and services.

Some researchers indicated that non availability of environmentally sustainable products is one of major barrier for procurers, availability means level of ease or difficulty to get a specific service or product (Byrne, 1991; Davies, 1995). Another study conducted by Vermeir and Verbeke(2004) also identified that, although procurers have motives to purchase sustainable produces but due to less availability of green products they cannot translate into purchasing behaviour.

To encourage suppliers for green goods regulator institutions can provide inducement to suppliers and manufactures. Incentives such as tax exemptions, import duties exemptions, rebate in sales tax and investment tax allowances can be provided to organizations/suppliers those follow the guidelines of regulators.

A survey conducted by Perry and Singh (2002) on 91 multinational companies in Malaysia identified that the foremost influence on sustainable actions were pressures to adhere to the environmental criteria, this indicates that if Pakistani government pushes the manufacturers/suppliers to follow the set criterions of sustainable procurement, it may lead to successful implementation of SPP. Keeping in view the above argument, the study hypothesized that:

H 3: Approach to green supplier is significantly related to implementation of SPP practices.

3. METHODOLOGY

3.1 Research Instruments

A survey study carried out and primary data was collected through a questionnaire. The questionnaire was adapted from previous studies which includes Agboola & Emmanuel (2016), Griffin et al. (2007) and Herscovitch and Meyer (2002). The instruments were selected according to the variables that are used in this study.

3.2. Data Collection

For more reliability and precision only yes or no questions are considered insufficient (Single & Straits, 2005). From existing literature tested items are adapted that brought more validity and reliability to study. Structured questionnaire was used and in order to adapt the questionnaires a face and content validity before the pilot test was conducted.

This survey study has been conducted on 100 procurement officers working in government departments (education and health) in Punjab, Pakistan.

4. FINDINGS

4.1. Descriptive Analysis

The purpose of the descriptive analysis is to have data exploration of the data collected, and to summarize and describe the observation. As for this study, Table 1 will provide the result of demographic background of the procurement officers. The descriptive analysis is conducted to have exploration of collected data.

Table 1: ***Results of Demographics***

	No Statistic	Mean Statistic	Std. Deviation Statistic	Variance Statistic
Gender	100	1.36	.488	.238
Age	100	3.07	.813	.661
Level of Education	100	2.57	.879	.772
Position in organization	100	1.18	.390	.152
Working Experience	100	2.57	.742	.550

The procurement officers were consisted of male respondent (75) and female respondents (25). The gender mean is 1.36 with standard of deviation of 0.448. The mean for the age is 3.07 and with having SD of .813. The working experience of procurement officers and their level of education comprises of mean 2.57 and there SD was 0.879 and 0.742. In regards to position in organization, result of mean is 1.18 along the SD of 0.39.

4.2. Construct Validity

The convergent and discriminant validity was used to the evaluate construct validity. The procedure is to look at cross loading and loading using a cut off value of 0.5 which is considered significant (Hair, Black, Babin and Anderson, 2010). The convergent validity testing aims to determine the extent to which the diversity of items measure the same concept. Hair et al. (2010) suggested that the use of factor loadings, composite

reliability and average variance extracted is taken into account to assess the convergence validity. Through Table 2 below, all the values of loading factors are greater than 0.5 as proposed by Hair et al.'s (2010). Hair et al. (2010) also proposed that all constructs must have a composite reliability more than 0.6 to indicate that they are at the high levels of internal consistency. Table 2 below shows that all constructs are in the range of 0.874-0.996, exceeding what is proposed. Average variance extracted (AVE) measures the variance that can be observed by the indicators (indicators relative) of measurement error and it must be greater than 0.50 to justify the application of the construct Barclay and Higgins, 1995).

As suggested by Fornell (1981) and Hulland (1999) convergent validity was examined by calculating of Cronbach's alpha, the composite reliability and communality coefficients. This study followed Nunnally and Bernstein (1994) and George and Mallery (2003) and considered good Cronbach's alpha and composite reliability level of 0.70.

Composite reliability depends on actual loadings in order to construct the factor score therefore can be superior measure to check internal consistency (Wixom and Watson, 2001).

Communality measures are more than 0.50 which indicates acceptable explanatory power of the construct used. Cronbach's a, composite reliability and communality for each construct was more than the minimum threshold as depicted in below Table 2:

Table 2. Convergent Construct Validity

Construct	Cronbach's α	Composite Reliability	Communality
AW	0.9096	0.9365	0.7869
CTC	0.8742	0.9141	0.7271
SPP	0.9069	0.9354	0.7841

4.3. Discriminant Validity

Discriminant validity is the extent of the difference between the constructs or item in a different size concept (distinct concepts) (Ramayah, Jason and Julie, 2011). As shown in Table 3, the square root (√ AVE) shown diagonally is larger than the correlation between the constructs not shown diagonally (Henseler et al., 2009). This study has shown that the results of the analysis have reached a sufficient discriminant test criteria as prescribed and at the same time it justifies for the construct of this study to be maintained for further analysis.

As recommended by Fornell and Larcker (1981) squared average variance extracted (AVE) method was used for checking the discriminant validity in order to assess the extent to which two construct were distinct.

The procedure of AVE is the "average variance shared between a construct and its measures…This measure needs to be greater than the variance shared between the construct and other constructs in the model" (Hulland, 1999, p. 200). The results of test of discriminant validity are shown in Table 3. The on-diagonal values reflect values more than minimum threshold of .50 and more than their particular off diagonal values this indicates acceptable discriminant validity of the model understudy.

Table 3: ***Discriminant Validity Analysis***

Variable	AW	CTC	SPP
AW	**0.8871**		
CTC	0.3055	**0.8527**	
SPP	0.7355	0.1512	**0.7955**

4.4. Structural Model and Hypothesis Testing

By estimating structural path coefficients and corresponding t-statistics the structural model was tested. As suggested by Efron and Gong (1983) to estimate standard errors, sample

mean and path significance, bootstrapping with replacement technique was used with a 100 re-sampling.

As recommended by Chin (1998) that adequate explanatory power is indicated if path coefficients are 0.20 or greater. Table 4 below depicts the path coefficients and indicates all three hypothesized relationships in our theoretical model were supported along with all structural paths showing excellent explanatory power and significance at $p < .01$.

Table 4. Summary of Hypotheses

Hypothesis	Symbol	Structural Path Coefficients / (T-Statistics)		Hypothesis Supported?
H1	AW	.422	(10.644)	Supported
H2	CTC	.207	(4.022)	Supported
H3	SPP	.357	(6.020)	Supported

5. CONCLUSION AND FUTURE RESEARCH

Awareness, commitment towards change, approach to green suppliers and SPP implementation have been and continue to be an important fields of study for both practitioners and researchers. The objective of this study was to investigate driving indicators of SPP implementation. The results of this study illustrates the significant relationship of awareness, commitment towards change and approach to green suppliers in implementation of SPP practices in Pakistan.

Most importantly, these results demonstrates the importance of awareness, commitment towards change and approach to green supplier in the process of implementation of SPP practices therefore there is need to enhance the awareness and commitment of change in government department and access to green suppliers. This study will enhance the understanding and knowledge of SPP concept. Measures which can induce awareness and commitment to change and encourage supplier to be green may be investigated in future investigations.

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