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Examining the effect of External Pressures and Organizational Culture on shaping Performance Measurement Systems (PMS) for Sustainability Benchmarking: Some Empirical Findings

Abstract

Sustainability benchmarking is gaining importance in industry. Despite its increasing popularity, the existing research utilizing theory to explain the organizations intention to shape performance measurement systems (PMS) for sustainability benchmarking is limited. Drawing upon institutional theory and organizational culture, this study investigates how institutional pressures motivate organizations to shape PMS for sustainability benchmarking and how such effects are moderated by organizational culture. The results of a survey of 277 respondents, gathered from Indian manufacturing firms, suggest that two of the dimensions of the institutional pressures (i.e. coercive pressures and normative pressures) are positively related to the PMS whereas the third dimension (i.e. mimetic pressures) does not affect PMS. Furthermore, organizational culture (i.e. flexible orientation and control orientation) plays a different role on the differential effect of coercive pressures, normative pressures and mimetic pressures on shaping PMS for sustainability benchmarking.. To theoretically substantiate our empirical results, we integrate two important perspectives of external pressures and organizational culture, because neither perspective can on its own shape the PMS for sustainability benchmarking, and organizational structure under which the external pressures are most effective. From managers perspective, our study provides theory-driven and empirically-proven guidance for managers to understand the effect of external pressures and the role of organizational structure on PMS for sustainability benchmarking.

Keywords: *Benchmarking, Sustainability, Sustainable Operations, Performance Measurement Systems (PMS), Sustainability Measurements, Institutional Theory, Organizational Culture.*

1. Introduction

With the promise of meeting stakeholders increasing expectations, corporations are increasingly committing themselves to more sustainable business development activities (Jabbour et al. 2015, 2016; Song et al. 2016). Seles et al. (2016) discuss how external stakeholder pressures play a significant role in the diffusion of the green supply chain management (GSCM) or its related practices. Sustainability

benchmarking remains a key managerial challenge that affects the organizational performance (Yakovleva et al. 2012; Glover et al. 2014; Silvestre, 2015; Wang et al. 2015; Sureeyatanapas et al. 2015). Despite increased attention from academia and industry, the failure rate of sustainability practices in supply chains remains stubbornly high (Eccles et al. 2014). This may be ascribed partly to the poor involvement and participation of various corporations' top-management in sustainability related practices (Eccles et al. 2014; Geng et al. 2017; Jabbour et al. 2017), and partly to dynamic market conditions which are outside of managerial controls. There is ample anecdotal and conceptual literature suggesting that firms can experience serious losses from social, ecological or ethical problems that exist in their supply chains (Hofmann et al. 2014).

As a result, many organizations, including Nestle, Tata Steel, Nokia, Coca-Cola and ITC, are working with organizations in their supply chains to create performance measurement systems (PMS) to benchmark their sustainability performance (Baskaran et al. 2012). We define benchmarking as the process of comparing and assessing operations - including services - with respect to the best practices adopted in the domain. In recent years benchmarking has been accepted as an effective tool for continuous improvement of organizational performance, through emulation of best practices in one own domain or across industries (Yakovleva and Vazquez-Brust, 2012; Parast and Adams, 2012; Tseng et al. 2013). Scholars from emerging economies like Brazil (see Silvestre, 2015; Seles et al. 2016; Jabbour et al. 2017), India (see Chandra Shukla et al. 2009; Baskaran et al. 2012; Dubey et al. 2015) and China (see Tseng et al. 2013; Zhu et al. 2013; Song et al. 2016) have made significant contributions to the understanding of the growing literature on sustainability, research on implementation of PMS for benchmarking of supply chain sustainability in context to emerging economy is limited. Hence, to address these specific gaps we have outlined two research objectives as:

(i) To develop a theoretical framework for PMS for sustainability benchmarking;

(ii) To empirically validate our theoretical framework.

To address our first research objective, this study utilizes institutional theory (DiMaggio and Powell, 1983; Bhakoo and Choi, 2013) and organizational culture (Hewett et al. 2002; Khazanchi et al. 2007), to help understand how and when organizations can benchmark sustainability performance in supply chains. The institutional theory argues that organisational processes are institutionalised through a series of adaptive processes that are less influenced by individual members (Colwell and Joshi, 2013). These adaptive processes lead to organisational isomorphism that is the result of imitation of the best practices or due to government or regulatory norms (Kauppi, 2013; Dubey et al. 2015). Adaptation is

hence leading organizations to adopt similar structures, strategies and processes (Sarkis et al., 2011; Kauppi, 2013). DiMaggio and Powell (1983) argued that forces within the organisations and the environment encourage convergent business practices.

Isomorphism can take place through coercive pressures, normative pressures and mimetic pressures (DiMaggio and Powell, 1983). The *coercive isomorphism* occurs from both formal and informal pressures exerted on organisations by other organisations (e.g. buyers, government agencies, regulatory norms) due to expectations from society (DiMaggio and Powell, 1983). When buyers are strong and supply market strength is low, companies can exercise coercion to serve their own interest by demanding that partners adopt their most favourable operational practices (Liu et al., 2010). Companies are under pressure from government, customers and other stakeholders to implement best practices. *Normative isomorphism* occurs because of professionalization which is defined as "the collective struggle of members of an occupation to define the working conditions and their methods to work and in future guide the future professionals through legitimacy" (Liang et al., 2007: p. 62). *Mimetic isomorphism* results from mimicking the actions of other organisations. An organisation mimics other actions when there is lack of clarity in its organisational goals or there is environmental uncertainty or technology is not well understood (DiMaggio and Powell, 1983; Liang et al., 2007).

Institutional Theory looks for evidence behind the adoption of any practice that enhances its legitimacy (DiMaggio and Powell, 1983) and can help us understand the intention behind the adoption or implementation of best practices with operations and supply chain management (O&SCM) concepts (Kauppi, 2013). We have seen the use of various theories, including institutional theory, in the field of O&SCM to explain 'unresolved puzzles' (Ketokivi and Schroeder, 2004; Ketchen and Hult, 2007; Liu et al., 2010; Sarkis et al., 2011; Bhakoo and Choi, 2013; Kauppi, 2013; Seles et al. 2016; Vanalle et al. 2017). Zhu et al. (2007a) have shown the impact of coercive and normative pressures on managers' commitment towards the adoption of sustainable supply chain management practices. Ke et al. (2009) investigated the impact of institutional pressures which includes coercive pressures, normative pressures and mimetic pressures on firm intentions to adopt e-SCM. In a recent study, Bhakoo and Choi (2013) investigate the response of organisations residing in different tiers of the supply chain to institutional pressures during the implementation of inter-organisational systems. Although there has been wide acknowledgement of the use of Institutional Theory among the O&SCM community, the impact of institutional pressures on the behaviour of supply chain members is yet to be explored (Ketchen and Hult, 2007; Cai et al., 2010; Kauppi, 2013).

While the core arguments of institutional theory have received substantial support (Rogers et al., 2007; Heugens and Lander, 2009; Kauppi, 2013; Khor et al. 2016; Hemmert et al. 2016), the theory has also attracted criticism (see Dacin et al. 2002; Kostova and Roth, 2002). However, two noteworthy arguments make significant contribution to the institutional theory. First, Greenwood and Hinings (1996) argue that institutional theory remains silent on why some organizations adopt radical changes whereas others do not, despite experiencing the same institutional pressures. In a similar vein, Delmas and Toffel (2008) note that the relationships between organizational factors and institutional pressures are not well understood. Although, the existing literature on sustainability has ignored the role of human resource management (HRM), there are some noteworthy contributions in this direction (see Jabbour and Santos, 2008; Jackson and Seo, 2010; Jackson et al. 2011; Taylor et al. 2012; Renwick et al. 2013; Jabbour et al. 2017). Hence to address this gap we show how contextual factors can moderate the relationship between institutional pressures and PMS for sustainability benchmarking.

The prior research has established that conforming to institutional pressures for sustainable supply chain performance fosters organizational legitimacy (Delmas and Toffel, 2008; Grekova et al. 2014), which in turn improves the organization's survival prospects (Deephouse, 1996; Colwell and Joshi, 2013). Organizations seek to gain competitive advantage that will enable them to thrive and grow. Deephouse (1999) argues that for institutional theory to play a greater role in understanding for-profit business it needs to recognize the effects of conformity on competition and performance. However, the effect of the institutional pressures hinges on the environmental context (Colwell and Joshi, 2013; Song and Wang, 2016). Hewett et al. (2002) further argues that moderating role of organizational culture may help to resolve the existing inconsistencies in the institutional theory. Jackson et al. (2011) have noted the importance of building eco-friendly organizational culture. There is growing consensus regarding the effect of organizational culture (OC) among strategic management scholars (Detert et al. 2000; Fey et al. 2003; Griffiths and Zammuto, 2005; Liu et al. 2010). OC may be defined as a system of socially transmitted behaviour patterns that serve to relate human communities to their social settings (Schein, 1990). It manifests itself in the ends the organization seeks and the means it uses to attain social settings. Therefore, OC plays an important role in a firm's decision to collaborate with partners. Yet, OC as the belief and the values of a firm has been largely ignored by our O&SCM researchers in their studies.

However, the effect of institutional pressures under contingent effect has not, to the best of our knowledge, has been examined in prior research. Our research addresses this gap by examining

the contingent effect of the organizational culture (Sousa and Voss, 2008) on the PMS for the sustainability benchmarking. For instance, organizations may react differently to the same level of external pressures to adopt PMS for sustainability benchmarking due to differences in their organizational cultures. There is significant literature which argues that social relationship with partners and institutional factors play a critical role in a firm's adoption of PMS for sustainability benchmarking (Gimzauskiene and Kloviene, 2011; Yakovleva et al. 2012). In a similar vein, we examine the moderating influence of organizational culture (OC).

To address our second research objective, we have empirically tested our theoretical model with sample of 277 Indian manufacturing firms, using hierarchical moderated regression analysis. In doing so, we add to the understanding of the links between external pressures, organizational culture and PMS for sustainability benchmarking. India provides a befitting context for our study. The strong economic growth and enhanced business activity in recent years, combined with the lack of sustainable infrastructure has motivated political initiatives to ensure energy and environmental sustainability. New taxes on coal or emission of particles have been imposed. There is a growing momentum amongst Indian corporations to adopt sustainability practices and report their sustainability performance. Hence, the study in context to Indian manufacturing organizations may provide enough guidance to other nations among the BRICS block to emulate.

The rest of the paper is organised as follows. The next section deals with theoretical framework and hypotheses development. In the third section, we discuss our research design. In the fourth section, we describe our data analysis which includes testing construct validity and hypotheses testing using hierarchical regression analysis and mediating regression tests. In the fifth section, we discuss our research findings and outline theoretical implications, managerial implications, limitations and further research directions of our studies before reaching our conclusions.

2. Review of related research, theoretical framework and hypotheses development

The foundation of our theoretical framework comprises of two elements: institutional theory and organizational culture. In recent years, institutional theory (DiMaggio and Powell, 1983) has emerged as a powerful explanation to account for the influence of external forces on organizational decision making and outcomes. Following some criticisms (see, Greenwood and Hinings, 1996; Colwell and Joshi, 2013) we argue that along with top management commitment (TMC), the OC may help to

resolve the existing consistencies in the studies utilizing institutional theory (Liu et al. 2010). The OC has been extensively used in prior O&SCM literature (e.g. Leidner and Kayworth, 2006; Khazanchi et al. 2007; Liu et al. 2010; Jackson et al. 2011). However, studies utilizing institutional theory and OC to explain the motivation behind adoption or implementation are still limited. A firm is more likely to adopt information systems if the values embedded in the system fit its organizational culture (Leidner and Kayworth, 2006). Greening and Gray (1994) argue that a firm is likely to exert its own discretion by following its own rules and values, rather than passively submitting to conventions prevailing in its organizational field. The organizational field refers to "those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products" (DiMaggio and Powell 1983, p. 148). Hence, we argue that institutional pressures and OC may work together and interact with each other to affect PMS for benchmarking sustainability.
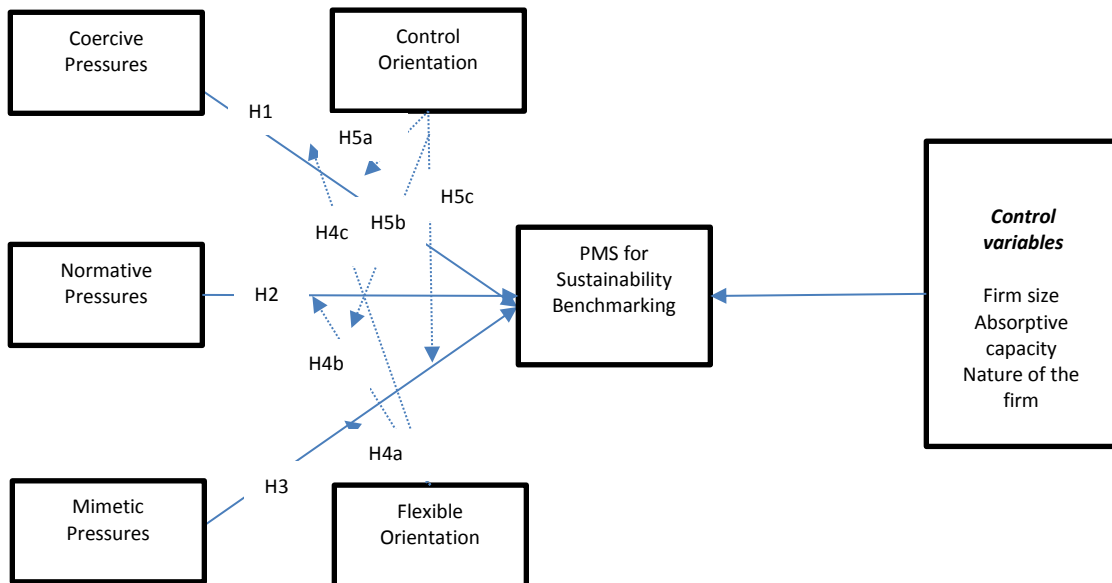

Figure 1: Theoretical Framework

2.1 Institutional Theory and Performance Measurement Systems

Gimzauskiene and Kloviene (2011) argue that new business environment which varies constantly influenced a strong interest in the PMS. Waggoner et al. (1999) argue how internal factors (including search for legitimacy, peer pressure, power relationships) and external factors (including legislation, market volatility and information technology) shape the PMS of the organization. Brignall and Modell (2000) argue based on institutional theory that the PMS of the organization is the result of external pressures exerted by external and internal constituencies of an organization to conform with a set of expectations to gain legitimacy and so secure access to vital resources and long-term survival. Meyer and Rowan (1977) argue that a common means of gaining legitimacy is alignment with rationalized institutional myth, which is occasionally manifested by the adoption of structural attributes displayed by other significant organizations through the isomorphic process (DiMaggio and Powell, 1983; Brignall and Modell, 2000). Ye et al. (2013) have investigated that the institutional pressures have positive influence on the top manager's posture towards reverse logistics implementation in context to China. Abdul-Rashid et al. (2017) have examined empirically using data gathered from 115 manufacturing organizations engaged in sustainable manufacturing activities, found positive support between sustainable manufacturing activities and three dimensions of sustainable supply chain performance measures (i.e. SP, EP and ECOP). Seles et al. (2016) in one of the works have examined the assimilation of green supply chain management (GSCM) practices using institutional theory. Vanalle et al. (2017) in one of their studies in context to Brazilian automotive sector, found that institutional pressures have significant and positive impact on environmental and economic performance. Hence, based on prior studies, we can argue that institutional pressures will influence PMS for sustainability benchmarking. Thus, we can hypothesize:

H1: Coercive pressures (CP) have positive impact on PMS for sustainability benchmarking;
H2: Normative pressures have positive impact on PMS for sustainability benchmarking;
H3: Mimetic pressures have positive impact on PMS for sustainability benchmarking;

Following Yakovleva et al. (2012) we further split the PMS for sustainability benchmarking into three components (i.e. social performance, environmental performance and economic performance), which constitute the triple-bottom line (TBL) or PMS of any organization. Hence, we further split hypothesis into sub-hypotheses as follows

H1a: Coercive pressures (CP) have positive impact on social performance (SP);

H1b: Coercive pressures (CP) have positive impact on environmental performance (EP);

H1c: Coercive pressures (CP) have positive impact on economic performance (ECOP);

H2a: Normative pressures (NP) have positive impact on social performance (SP);

H2b: Normative pressures (NP) have positive impact on environmental performance (EP);

H2c: Normative pressures (NP) have positive impact on economic performance (ECOP);

H3a: Mimetic pressures (MP) have positive impact on social performance (SP);

H3b: Mimetic pressures (MP) have positive impact on environmental performance (EP);

H3c: Mimetic pressures (MP) have positive impact on economic performance (ECOP);

2.2 Moderating Role of Organizational Culture

Hewett et al. (2002) argues that moderating role of organizational culture (OC) may further help to resolve the limitations of the institutional theory as noted by various scholars. DiMaggio and Powell (1983) argues that organizations in aggregate constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products. Thus, institutional pressures and organizational culture may work together and interact with each other affect adoption of PMS for sustainability for benchmarking. Khazanchi et al. (2007) argue that OC is a collection of shared assumptions, values, and beliefs that is reflected in organizational practices and goals, thereby helping its members understand organizational functioning. Jackson et al. (2011) further argues that there is need for creating eco-friendly OC within green HRM or sustainability HRM practices.

Hence, OC may be regarded as a predictor of organizational responsiveness towards dynamic external conditions (Zammuto and O'Connor, 1992). Scholars have proposed several alternative ways to categorize OC, such as relation- and transaction-oriented culture (e.g. McAfee et al. 2002) and flexibility-control orientation (e.g., Khazanchi et al. 2007).

In the current study, we adopt the framework of flexibility-control orientation in the Competing Values Model (CVM) of organizational effectiveness proposed by Quinn and Rohrbaugh (1983). In recent years,authors have grounded their studies in CVM to see the influence of OC in the context of supply chains (see Braunscheidel et al. 2010; Liu et al. 2010; Cao et al. 2015). We use CVM to study

organizational culture, as our samples are drawn from India-based firms, which are still in an expansion stage. Furthermore, most of the scholar's view CVM as a reliable way of quantifying OC (Liu et al. 2010).

The CVM categorizes organizational culture into four types (see Liu et al. 2010). First, the group culture emphasizes flexibility and change, and values responsiveness. Second, the developmental culture is externally-focused and change-oriented. It encourages entrepreneurship, creativity, and risk taking. Third, the hierarchical culture is characterized as emphasizing uniformity, coordination, efficiency, and a close adherence to rules and regulations. Fourth, the rational culture values productivity and achievement. It is typically motivated by external competition (Quinn and Rohrbaugh, 1983; Liu et al. 2010; Cao et al. 2015).

Recently OM scholars have increasingly advocated the role of OC in shaping organizational strategies (see Khazanchi et al. 2007; Liu et al. 2010). Oliver (1991) argues that organizational culture can impact a manager's ability to process information, rationalize and exercise discretion in their decision making. Khazanchi et al. (2007) and Liu et al. (2010) have noted that flexibility-oriented (i.e. group and developmental culture) and control-oriented (i.e. rational and hierarchical culture) approaches have differential impacts on the manager's response based on the external pressures. Oliver (1991) argues that firms exercise their own discretion in responding to the institutional pressures. Hence, based on previous research we can argue that the flexibility and control orientations have different responses to the institutional pressures on PMS for sustainability benchmarking.

Institutional theorists argue that isomorphism leads to homogenizing of organizations both in terms of process and structure (DiMaggio and Powell, 1983; Oliver, 1991; Ketokivi and Schroeder, 2004). In contrast, flexibility orientation values creativity, risk-taking and change (Khazanchi et al. 2007; Liu et al. 2010). Thus, a flexibility orientation may not support aligning organizational strategies in the direction of institutional pressures. Instead, the flexibility orientation prefers to invest its resources in developing distinct capabilities to differentiate themselves from their competitors. In simple words, the organizations with flexible orientations seek to gain competitive advantage from heterogeneity (White et al. 2003). Thus, we may argue that flexible orientations may negatively moderate the relationship between institutional pressures and PMS for sustainability benchmarking. Hence, we hypothesize:

H4a: Flexible orientation negatively moderates the relationship between coercive pressures and PMS for sustainability benchmarking;

H4a1: Flexible orientation negatively moderates the relationship between coercive pressures and SP;

H4a2: Flexible orientation negatively moderates the relationship between coercive pressures and EP;

H4a3: Flexible orientation negatively moderates the relationship between coercive pressures and ECOP;

H4b: Flexible orientation negatively moderates the relationship between normative pressures and PMS for sustainability benchmarking;

H4b1: Flexible orientation negatively moderates the relationship between normative pressures and SP;

H4b2: Flexible orientation negatively moderates the relationship between normative pressures and EP;

H4b3: Flexible orientation negatively moderates the relationship between normative pressures and ECOP;

H4c: Flexible orientation negatively moderates the relationship between mimetic pressures and PMS for sustainability benchmarking;

H4c1: Flexible orientation negatively moderates the relationship between mimetic pressures and SP;

H4c2: Flexible orientation negatively moderates the relationship between mimetic pressures and EP;

H4c3: Flexible orientation negatively moderates the relationship between mimetic pressures and ECOP;

Next, conforming to external pressures allows the firm to ensure its legitimacy, make it intelligible, and avoid confusion (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Liu et al. 2010). Liu et al. (2010) argue that organizations with a control orientation would regard such conformity to the external pressures as a chance to maintain stability and thus value the expected homogeneity resulting from the conformity. When the firm perceives a high level of normative and mimetic pressures for adoption of PMS for sustainability benchmarking, it would interpret it as a signal that adopting PMS for sustainability benchmarking is the trend to follow. Khazanchi et al. (2007) argue that organizations with control orientation generally value efficiency. Thus, the firm with a control orientation would be more likely to adopt PMS for sustainability benchmarking. Similarly, when a firm perceives a high level of coercive pressures, it is informed by its powerful suppliers/customers that members of the network would orchestrate operations of the supply chain. Compared to its low control orientation counterparts, a firm with a high control orientation may be more likely to value the great operational benefits enabled by such seamless and timely collaboration, which makes it formulate a more favourable attitude toward PMS for sustainable benchmarking. Hence, we hypothesize that given the same level of perceived institutional pressures, the firm with more control orientation is more inclined to adopt PMS for sustainable benchmarking:

H5a: Control orientation positively moderates the relationship between coercive pressures and PMS for sustainability benchmarking;

H5a1: Control orientation negatively moderates the relationship between coercive pressures and SP;

H5a2: Control orientation negatively moderates the relationship between coercive pressures and EP;

H5a3: Control orientation negatively moderates the relationship between coercive pressures and ECOP;

H5b: Control orientation positively moderates the relationship between normative pressures and PMS for sustainability benchmarking;

H5b1: Control orientation negatively moderates the relationship between normative pressures and SP;

H5b2: Control orientation negatively moderates the relationship between normative pressures and EP;

H5b3: Control orientation negatively moderates the relationship between normative pressures and ECOP;

H5c: Control orientation positively moderates the relationship between mimetic pressures and PMS for sustainability benchmarking;

H5c1: Control orientation negatively moderates the relationship between mimetic pressures and SP;

H5c2: Control orientation negatively moderates the relationship between mimetic pressures and EP;

H5c3: Control orientation negatively moderates the relationship between mimetic pressures and ECOP.

2.3 Control Variables

To fully account for the differences among organizations, we include two control variables: organization size and absorptive capacity. We select these two variables because of their potential impact on design of PMS for sustainability benchmarking as suggested by existing literature.

2.3.1 Firm Size

We use number of employees and revenue as two measures of firm size (Liang et al., 2007). The larger the size of the firm, the greater the external pressures on top managers to adopt PMS for sustainability benchmarking. Zhu et al. (2008, 2008a) controlled the size of the firm to study the impact of firm level correlates on sustainable supply chain management practices in Chinese context. Harms et al. (2013) investigated sustainable supply chain management practices in large firm. We therefore consider the size of the firm as an important control variable.

2.3.2 Absorptive Capacity

Absorptive capacity (AC) is the *"the ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends is critical to its innovative capabilities"* (Cohen and Levinthal, 1990: p. 128). It is related to knowledge creation and utilisation to enable a firm to enhance its abilities to achieve and sustain competitive advantage (Zahra and George, 2002). Zahra and George (2002) conceptualized AC as a set of internal routines and processes through which companies can explore, assimilate and exploit new knowledge that is applicable both to technological, but also to managerial practices (Lane et al, 2006). Building on their study, Malhotra et al., (2005) argued that process mechanisms between an organisation and its supply chain partners can influence AC, by enabling the information acquisition and assimilation in a better way. An organisation's prior knowledge, the mechanisms to search for new knowledge and the communication processes of this knowledge to the rest of the organization are considered as the fundamental elements of AC (Cohen and Levinthal, 1990). As the ability to identify and integrate new knowledge and business practices can vary within companies, we expect AC to control the adoption of performance management systems for sustainability benchmarking practices. Accordingly, to account for the difference in innovative capabilities on benchmarking practices in sustainable supply chain networks, it is important to control for the AC of the organisation and hence we treat AC as one of the control variables.

3. Research Methodology

3.1 Construct Operationalization

To test our research hypotheses, we have utilized a survey-based approach. The items tapping the theoretical constructs were developed based on an extensive literature review. They were measured on a five-point Likert scale with anchors ranging from strongly disagree (1) to strongly agree (5) to ensure high statistical variability among the survey responses (Chen and Paulraj, 2004). We adapted existing scales to make them more suitable in the context of PMS for sustainable benchmarking. Since the target organisations are companies that have embraced sustainable practices across entire supply chain network in India, the questionnaire was pre-tested by experts from industry and academia with proven expertise in sustainable supply chain practices. Based on the comments we received from experts, we dropped some measures and brought in others that were representative of the Indian context. These constructs were operationalized as reflective constructs (see Table 1).

Table 1: Operationalization of Constructs

Construct	Nature	Source	Measuring Items
Coercive Pressures (CP)	Reflective	Shi et al., 2012; Wu et al., 2012; Zhu et al., 2013; Colwell and Joshi, 2013; Gualandris and Kalchschmidt, 2014	1. Firms in our industry that do not meet the legislated standards for pollution control face a significant thread for legal prosecution (CP1). 2. Firms in our industry are aware of the fines and penalties associated with environmentally irresponsible behaviour (CP2). 3. If the firms in our industry commit an environmental or people related infraction, the consequence would include negative reports by industry/ stock market analysts (CP3). 4.There are negative consequences for organizations that fail to comply with the federal and provincial regulations related to environment or people (CP4)
Normative Pressures (NP)	Reflective	Zhu and Sarkis, 2007; Ball and Craig, 2010; Lin, 2013; Colwell and Joshi, 2013	1. Our industry has trade associations (or professional associations) that encourage organizations within the industry to become more environmentally responsible (NP1). 2. Our industry expects all firms in the industry to be environmentally and socially responsible (NP2). 3. Being environmentally and socially responsible is a requirement for firms to be part of this industry (NP3).
Mimetic Pressures (MP)	Reflective	Zhu and Sarkis, 2007; Colwell and Joshi, 2013	1. The leading companies in our industry set an example for environmentally and socially responsible conduct (MP1). 2. The leading companies in our industry are known for their practices that promote environmental preservation and take care of peoples' needs (MP2).

			3. The leading organizations in our industry have worked on ways to reduce their impact on environment (MP3).
Organizational Culture (OC)	Reflective	Liu et al. 2010	*Flexible orientation (FO):* 1. We value loyalty and tradition in our organization. The commitment runs high (FO1). 2. Our people are willing to stick their necks out and take risks (FO2). 3. We are committed to innovation and development (FO3). 4. Our organization emphasizes growth through developing new ideas (FO4). *Control orientation (CO):* 1. Our organization follow formal rules and policies (CO1). 2. Our organization values permanence and stability (CO2). 3. Our organization is output driven (CO3). 4. Our organization places high importance to accomplishing goals (CO4).
PMS for Sustainability Benchmarking (PMS)	Reflective	Yakovleva et al. (2012)	*Social performance (SP)* 1. Total employment (SP1) 2. Employee per enterprise (SP2) 3.Average gross wages per employee (SP3) 4. Male vs female full time employment (SP4) *Environmental performance (EP)* 1.Reduction of air emission (EP1) 2. Reduction of waste water (EP2) 3. Reduction of solid wastes (EP3) 4. Decrease in consumption of hazardous/harmful materials (EP4) 5. Improve an enterprise environmental situation (EP5)

			Economic performance (ECOP)
			1. Number of enterprises (ECOP1)
			2. Export vs Import (ECOP2)
			3. Labour productivity (ECOP3)
			4. Increase in market share (ECOP4)
			5. Increase in profit margin (ECOP5)
Absorptive Capacity (AC)	Reflective	Szulanski (1996)	(i) Our employees had extensive training in performance measurement systems (AC1). (ii) It is well known who can use performance measurement systems (AC2). (iii) Our organization can provide adequate technical support to using performance measurement systems (AC3). (iv) The extent to which professional bodies' initiatives towards performance measurement systems can influence our organization to adopt the benchmarking practices (AC4).

3.2 Data Collection

In this study, we utilized a cross-sectional e-mail survey guided by Dillman's (2007) total design test method. The sample of Indian manufacturing firms was drawn from CII Naoroji Godrej Institute of Manufacturing Excellence database. We selected over 1200 respondents from the membership list. The title of the specific respondents sought was primarily the Vice President or General Manager of SCM, accounting/finance, human resource department (HRD) and corporate social responsibility (CSR).

The data was collected through a two-part electronic survey (see Dillman, 2007) from 3rd January to 26th May, 2016. The first part consisted of questions related to the respondent and their firm (i.e. name, age, gender, designation, number of employees, annual revenue) and the second part consisted of questions related to coercive pressures, normative pressures, mimetic pressures, top-management commitment, flexible orientation, control orientation and absorptive capacity of the firm. The survey questionnaire was sent to targeted individuals in SCM departments. Managers were requested to pass this questionnaire to accounting/ finance, HRM and CSR department managers. In this way, we attempted to reduce the bias resulting from perceptual scales used in our survey

(Podsakoff et al., 2003; Ketokivi and Schroeder, 2004a; Guide and Ketokivi, 2015). Prior to questioning, the respondents were reassured that responses would be kept strictly confidential. A two-stage data collection approach was used that consisted pre-testing and testing the survey (Malhotra and Grover, 1998; Eckstein et al. 2015).

We received 323 responses. Out of 323 responses we discarded 46 responses due to incomplete information. There were 277 effective responses resulting in an effective response rate of 23.08 % (see Table 2). The sample size is sufficient for studying the hypotheses developed in this study (Hair et al., 2006).

3.3 Non-Response Bias Test

Chen and Paulraj (2004) argue that the non-response bias is the difference between the answers of respondents and non-respondents. Armstrong and Overton (1977), suggested wave-analysis to assess the influence of non-response bias on gathered data. Following suggestions of previous scholars (see Armstrong and Overton, 1977; Chen and Paulraj, 2004; Eckstein et al. 2015), we split our survey responses into equally sized-groups, based on date of survey responses. The t-statistics yielded no significant differences ($p < 0.05$). However, in recent years, scholars (see Wagner and Kemmerling, 2010; Fawcett et al. 2014) argue that comparing early to late respondents is not a strong test for non-response bias. Instead one tends to create more confidence in data when tracking the respondents and then comparing them to non-respondents. Hence, based on Wagner and Kemmerling (2010) we compared the demographics of respondents to non-respondents via the Dun and Bradstreet database. These results suggest that non-response bias is not a serious concern in our data set.

4. Data Analyses and Results

We tested the indicators for assumption of constant variance, existence of outliers, and normality (see Eckstein et al. 2015). We used residuals plot by predicted value, rankits plot of residuals, and statistics of skewness and kurtosis. To further detect multivariate outliers, we used Mahalanobis distances of predicted variables (Stevens, 1984). The maximum absolute values of skewness and the kurtosis of the indicators in the remaining dataset were found to be 2.03 and 4.14 respectively. These values are well within the limits recommended by Kline (2011): univariate skewness <3, kurtosis <10. For multicollinearity, the variance inflation factors (VIF) were calculated. All the VIFs were less than 3.0,

and therefore considerably lower than recommended threshold of 10.0, suggesting that multicollinearity was not a problem (Hair et al., 2006).

Table 2: Respondents profile

		Number of respondents	Percentage of respondents
Job Title	Vice President	113	40.79
	General Manager	164	59.21
Work experience (years)	Above 20	198	71.48
	15-20	79	28.52
Type of business	Auto Components manufacturing	90	32.49
	Heavy Machinery	50	18.05
	Electrical Components	43	15.52
	Steel Sector	57	20.58
	Chemical	37	13.36
Age of the firm (years)	>20	135	48.74
	15-20	85	30.69
	14-0	57	20.58
Annual Revenue (Million INR)	>302	38	13.72
	226.5 - 302	75	27.08
	151 - 226.49	47	16.97
	75.5 - 150.85	44	15.88
	<75.5	73	26.35
Number of employees	Greater than 500	96	34.66
	250-500	76	27.44
	100-249	65	23.47
	Less than 100	40	14.44

4.1 Measurement Model

Before testing for significant relationships in the proposed theoretical framework, it is pertinent to demonstrate that the proposed theoretical framework has a satisfactory level of validity and reliability (see, Fornell and Larcker, 198; Chen and Paulraj, 2004; Eckstein et al. 2015). From Table 2 one can note that the composite reliability of constructs of the proposed theoretical framework is found to be greater than 0.7 and each average variance extracted (AVE) is greater than 0.5, indicating that the measurements are reliable and the latent construct can account for at least 50 percent of the variance in the items. As shown in Table 2, the loadings are in the acceptable range and the t-value indicates that they are significant at the 0.05 level.

Table 2: Loadings of the Indicator Variables (Composite Reliability) (AVE)

Construct	Indicator	Mean	SD	Loading	T-value
Coercive Pressure (CP) (SCR=0.89) (AVE=0.73)	CP1	4.07	0.65	0.67	56.27
	CP2	3.63	0.55	0.93	51.24
	CP3	3.64	0.56	0.94	34.89
Normative Pressure (NP) (SCR=0.83) (AVE=0.63)	NP1	4.24	0.89	0.74	50.84
	NP2	3.71	1.03	0.86	60.09
	NP3	3.77	1.01	0.77	49.22
Mimetic Pressure (MP) (SCR=0.97) (AVE=0.94)	MP1	3.91	1.31	0.97	33.21
	MP2	3.06	1.21	0.97	28.09
Top Management (TMC) (SCR=0.94) (AVE=0.79)	TMC1	2.77	1.26	0.91	63.64
	TMC2	3.20	1.13	0.94	51.12
	TMC3	3.31	1.01	0.89	66.59
	TMC4	2.49	1.54	0.82	27.13
Social Performance (SP) (SCR=0.97) (AVE=0.88)	SP1	2.33	0.53	0.97	90.60
	SP2	2.35	0.54	0.98	115.63
	SP3	2.36	0.57	0.98	110.25
	SP4	2.33	0.56	0.89	112.26
	SP5	2.72	0.54	0.88	93.16
Environmental Performance (EP) (SCR=0.95) (AVE=0.80)	EP1	3.36	0.52	.755	96.67
	EP2	3.27	0.55	.824	92.85
	EP3	2.56	0.61	.954	84.75
	EP4	3.11	0.59	.967	88.92
	EP5	3.98	0.62	.945	84.53
Economic Performance (ECOP) (SCR=0.93) (AVE=0.73)	ECOP1	4.19	0.62	.795	81.75
	ECOP2	4.35	0.68	.929	78.72
	ECOP3	3.94	0.73	.872	53.48
	ECOP4	3.59	0.98	.876	44.06
	ECOP5	3.84	1.08	.806	51.90
Product Complexity (AC) (SCR=0.89) (AVE=0.73)	AC1	4.07	0.98	0.67	83.41
	AC2	3.63	0.55	0.93	87.18
	AC3	3.64	0.56	0.94	86.27
Flexible Orientation FO) (SCR=0.98) (AVE=0.93)	FO1	4.28	0.64	.978	88.89
	FO2	4.26	0.67	.960	84.84
	FO3	4.30	0.66	.971	86.11
	FO4	4.32	0.67	.949	85.63
Control Orientation (CO) (SCR=0.97) (AVE=0.88)	CO1	4.07	0.72	.939	75.35
	CO2	4.16	0.66	.918	83.98
	CO3	4.20	0.61	.973	90.90
	CO4	4.06	0.67	.923	80.57

To establish discriminant validity the square root of AVE was compared with the inter-construct correlations as shown in Table 3. The leading diagonal of the matrix (i.e. square root of AVE) is

significantly greater than inter-construct correlation. It therefore shows that the constructs of our framework possess discriminant validity (see Fornell and Larcker, 1981; Chen and Paulraj, 2004; Flynn et al., 2010).

Table 3: Correlations among Major Constructs

	CP	NP	MP	SP	EP	ECOP	PC	FO	CO
CP	0.86								
NP	0.25	0.79							
TMC	-0.10	-0.02	0.01						
SP	0.37	0.19	-0.09	0.94					
EP	0.05	-0.06	-0.18	0.21	0.89				
ECOP	0.10	0.00	-0.09	0.11	0.12	0.86			
PC	0.04	0.05	-0.08	0.08	0.33	0.32	0.86		
FO	-0.15	-0.15	0.00	0.01	0.13	0.12	0.09	0.96	
CO	0.01	0.00	0.03	-0.04	0.11	-0.26	0.02	-0.30	0.94

The survey method adopted in our study is likely to suffer from common method bias. To check for common method bias in our study we performed Harman's single-factor test (see Podsakoff et al., 2003). In this case, we have loaded our variables into an exploratory factor analysis and examined the unrotated factor solution. In this case, we have obtained a single factor explaining 23.65% of the total variance (see Appendix 1).

4.2 Endogeneity Test

We tested for endogeneity of the exogenous variable in our model (see Guide and Ketokivi, 2015). The institutional pressures (i.e. CP, NP and MP) were conceptualized as a variable exogenous to PMS for sustainability benchmarking, in the sense that external pressures can shape the PMS for sustainability benchmarking of the organization but not the other way around (Guide and Ketokivi, 2015; Dong et al. 2016). Thus, endogeneity is unlikely to be a concern in this context. We also tested empirically whether endogeneity was an issue by conducting Durbin-Wu-Hausman test (Davidson and MacKinnon, 1993). We regressed CP, NP and MP on all controls and moderating variables, then used the residual of this regression as an additional regressor in our hypothesized equations. The parameter estimate for the residual was found to be insignificant, indicating that institutional pressures (i.e. CP, NP and MP) were not endogenous in our case which is consistent with our conceptualization.

4.3 Hypothesis Testing

The research hypotheses H1-H3 were tested using multiple regression analyses, with hierarchical moderation tests applied in the cases of hypotheses H4a-H4c and H5a-H5c. All variables are mean-centred to reduce the risk of multicollinearity of the interaction terms (Aiken and West, 1991). We tested the multicollinearity for each regression coefficient. The VIF values ranged from 1.024 to 2.815, significantly below the recommended threshold of 10 (Hair et al. 2006). Table 4 provides the results of the regression analyses and extrapolates the hypothesized linkages between institutional pressures and the PMS for sustainability benchmarking as specified in H1-H3. Addressing H1 (i.e. H1a, H1b and H1c) respectively, we found support for H1a ($\beta=0.314$; p=0.000), H1b ($\beta=0.201$; p=0.002) and H1c ($\beta=0.468$; p=0.000). This result is found to be consistent with prior research (Zhu and Sarkis, 2004; Colwell and Joshi, 2013) and further supports the arguments by Glover et al. (2014) and Seles et al. (2016). The control variable 'organization size' does not have a significant effect. However, AC has a significant influence on the model. We interpret these observations to mean that the influence of CP, NP and MP on shaping social performance metrics of PMS for sustainability benchmarking is not influenced by organization size. However, AC may help the organization to translate the CP, NP and MP into shaping effective social performance metrics of PMS for sustainability benchmarking. This finding of ours is unique in context to PMS for sustainable benchmarking. Our results support Teo et al. (2003) findings.

Next addressing H2 (i.e. H2a, H2b and H2c) respectively, we found support for H2a (β=0.219; p=0.009) and H2b (0.117; p=0.05). However, H2c (β=0.056; p=0.307) is not supported. We also note that organization size does not have significant influence on NP. However, the AC has significant influence on the model. Hence, we can interpret that AC has important role to play in shaping the PMS of the organization. The learning perspective suggests that prior knowledge helps the organization translate the NP into PMS for sustainability benchmarking. The prior literature argues that AC has significant influence on an organization's innovative capabilities (see Teo et al. 2003; Liang et al. 2007).

Addressing H3 (i.e. H3a, H3b & H3c), we found support for H3a (β=0.166; p=0.027) (i.e. MP has positive influence on the SP), however the H3b (β=-0.127; p=0.0504) and H3c (β=0.078; p=0.201) were not supported. As suggested by Liu et al. (2010) (cf. Teo et al. 2003), the mimetic pressures play a role when the systems are highly complex to understand and use. Compared to technology, the PMS for sustainability benchmarking are comparatively easy to implement (see Sarkis, 2011; Kuei et al. 2013). The control variable 'organization size' does not have significant effect (β=-0.251; p=0.369). However, AC (β=0.361; p=0.000) has significant influence on the model. We interpret these observations that the institutional pressures (i.e. CP, NP and MP) have significant influence on shaping social performance metrics. However, the CP and NP has significant influence on shaping environmental performance metrics but except CP, the NP and MP has no significant influence on economic performance metrics. The AC has significant influence on shaping PMS for sustainability benchmarking. Thus, organizational knowledge is vital for those organizations interested in shaping PMS to align their objectives in the line of institutional pressures.

Table 4: Regression Results for PMS for Sustainability Benchmarking

Variables	DV=SP		DV=EP		DV=ECOP	
	β	p- Value	β	p- Value	β	p- Value
Controls						
Absorptive capacity	0.207	0.024	0.481	0.016	0.361	0.000
Organization size	**-0.117**	**0.801**	**0.414**	**0.217**	**-0.251**	**0.369**
Main effects						
CP	0.314	0.000	0.201	0.002	0.468	0.000
NP	0.219	0.009	0.117	0.05	**0.056**	**0.307**
MP	0.166	0.027	**-0.127**	**0.054**	**0.078**	**0.201**
Model Summary						
R²	0.230		0.364		0.544	
Adjusted R²	0.207		0.345		0.531	
Model F	9.43		34.934		35.859	

H4 (H4a, H4b and H4c) were tested using hierarchical moderated multiple regression. Step 1 of Tables 5, 6 and 7 shows that only one of the control variables (i.e. AC), has a significant effect on SP (β=0.389; p=0.000), EP (β=0.526; p=0.000) and ECOP (β=0.499; p=0.000).

Step 2 includes the direct effect of CP, NP and MP and moderator variable FO. Tables 5, 6 and 7 shows that the direct effect of FO on SP (β=0.107; p=0.117) and ECOP (β=-0.011; p=0.780) was not significant. However, the direct effect on EP (β=0.117; p=0.018) was significant.

Step 3 adds the interaction effect of FO to our model. Tables 5, 6 and 7 suggest that FO has significant interaction effects on paths (NP→SP; MP→SP). However, the interaction effect of FO on path (CP→SP) was significant but the impact of CP on SP decreases when the FO is higher (Table 5).

Next, the interaction effect of FO on the paths CP→EP (β=0.274; p=0.00) and MP→EP (β=0.361; p=0.000) was significant. Hence, we can interpret from these observations that the influence of CP and MP on EP increases with an increase in FO. However, the interaction effect of FO on the path NP→EP is also significant (β=-0.057; p=0.000), but the impact of NP on EP decreases with the increase in FO.

Similarly, the interaction effects of FO on the paths CP→ECOP (β=-0.003; p=0.981) and MP→ECOP (β=0.081; p= 0.212) were found to be not significant. We therefore can interpret that the FO has no influence on the direct influence of CP and MP has no influence on the ECOP. However, the interaction effect of FO on the path NP (β=0.520; p=0.000) suggest that the influence of NP on ECOP increases with higher level of FO.

Table 5: Hierarchical Moderated Regression Results for SP

Variables	Control Model		Main Effects Model		Full Model	
	β	p- Value	β	p- Value	β	p- Value
Controls						
Absorptive capacity	0.389	0.000	0.196	0.032	0.798	0.00
Organization size	**-0.045**	**0.927**	**-0.131**	**0.775**	**-0.129**	**0.785**
Main effects						
CP			0.311	0.000	0.513	0.001
NP			0.214	0.010	0.245	0.042
MP			**0.105**	**0.250**	**0.113**	**0.466**
FO			**0.107**	**0.117**	**0.124**	**0.070**
Interaction effects						
CP*FO					**-0.137**	**0.004**
NP*FO					0.066	0.029
MP*FO					0.076	0.002
Model Summary						
R^2	0.098		0.241		0.253	
Adjusted R^2	0.088		0.214		0.212	
Model F	9.430		8.947		6.238	
ΔF			5.824		4.901	
ΔR²			0.084		0.154	

Table 6: Hierarchical Moderated Regression Results for EP

Variables	Control Model		Main Effects Model		Full Model	
	β	p- Value	β	p- Value	β	p- Value
Controls						
Absorptive capacity	0.526	0.000	0.469	0.000	1.253	0.000
Organization size	**0.410**	**0.241**	**0.398**	**0.229**	**0.336**	**0.062**
Main effects						
CP			0.198	0.002	0.678	0.000
NP			0.112	0.05	0.168	0.013
MP			**-0.187**	**0.005**	**-0.017**	**0.812**
FO			0.117	0.018	**0.062**	**0.062**
Interaction effects						
CP*FO					0.274	0.000
NP*FO					-0.057	0.000
MP*FO					0.361	0.000
Model Summary						
R²	0.288		0.385		0.741	
Adjusted R²	0.279		0.363		0.727	
Model F	34.934		17.603		52.784	
ΔF			6.654		41.520	
ΔR²			0.097		0.453	

Table 7: Hierarchical Moderated Regression Results for ECOP

Variables	Control Model		Main Effects Model		Full Model	
	β	p- Value	β	p- Value	β	p- Value
Controls						
Absorptive capacity	0.499	0.000	0.499	0.000	1.142	0.000
Organization size	**-0.033**	**0.919**	**-0.033**	**0.919**	**-0.0287**	**0.155**
Main effects						
CP			0.469	0.000	0.518	0.000
NP			**-0.023**	**0.621**	**-0.096**	**0.072**
MP			**0.060**	**0.255**	0.139	0.016
FO			**-0.011**	**0.780**	**-0.055**	**0.074**
Interaction effects						
CP*FO					**-.003**	**.981**
NP*FO					.520	.000
MP*FO					**.081**	**.212**
Model Summary						
R²	0.293		0.544		0.742	
Adjusted R²	0.285		0.528		0.728	
Model F	35.859		33.651		52.949	
ΔF			23.302		41.176	
ΔR²			0.251		0.449	

We approached the interaction effect of CO on the paths connecting CP, NP and MP with SP, EP and ECOP as shown in Figure 2 to address H5 (H5a, H5b and H5c). Here, we performed Step 2, the direct effect of CP, NP and MP and moderator variable CO. Tables 8, 9 and 10 show that the direct effects of CO on SP (β=0.213; p=0.068), ECOP (β=0.201; p=0.197) and EP (β=-0.036; p=0.673) were not significant.

Step 3 adds the interaction effect of CO to our model. Tables 8, 9, and 10 suggest that CO has a significant interaction effect on the path NP→SP (β=-0.115; p=0.035) but the effect of the NP on the SP decreases with the increase in CO. However, the interaction effect of CO on path CP→SP (β=0.138; p=0.080) and MP→SP (β=0.004; p=0.951) were not significant.

Next, the interaction effect of CO on the path CP→EP (β=-0.323; p=0.00) was significant. However, we interpret this result is that the impact of CP on EP decreases with the increase in CO. The interaction effect of CO on the path NP→EP (β=0.399; p=0.000) was found to be significant. From this we interpret that the impact of NP on EP, increases with higher level of CO. The interaction effect of CO on the path MP→EP (β=-0.051; p=0.071) was not significant.

Similarly, the interaction effects of CO on the path CP→ECOP (β=0.233; p=0.000), NP→ECOP (β=0.255; p= 0.000) were found to be significant. From these results, we can interpret that the impact of the CP and NP increases with the increase in level of CO. However, the interaction effect of CO on the path MP→ECOP (β=-0.037; p=0.185) was not significant.

Table 8: Hierarchical Moderated Regression Results for SP

Variables	Control Model		Main Effects Model		Full Model	
	β	p- Value	β	p- Value	β	p- Value
Controls						
Absorptive capacity	0.389	0.000	0.088	0.428	**-0.377**	**0.250**
Organization size	**-0.045**	**0.927**	-0.023	0.961	**0.027**	**0.953**
Main effects						
CP			0.305	0.000	0.240	0.042
NP			0.222	0.008	0.576	0.000
MP			**0.129**	**0.159**	**0.252**	**0.069**
CO			**0.213**	**0.068**	**0.118**	**0.432**
Interaction effects						
CP*CO					**0.138**	**0.080**
NP*CO					**-0.115**	**0.035**
MP*CO					**0.004**	**0.951**
Model Summary						
R²	0.098		0.245		0.267	
Adjusted R²	0.088		0.218		0.228	
Model F	9.430		9.141		6.727	
ΔF			8.211		5.468	
ΔR²			0.147		0.169	

Table 9: Hierarchical Moderated Regression Results for EP

Variables	Control Model		Main Effects Model		Full Model	
	β	p- Value	β	p- Value	β	p- Value
Controls						
Absorptive capacity	0.526	0.000	0.526	0.000	1.444	0.000
Organization size	**0.410**	**0.241**	**0.410**	**0.241**	**0.256**	**0.228**
Main effects						
CP			0.203	0.001	-0.714	0.000
NP			0.117	0.054	0.159	0.014
MP			-0.183	0.007	**-0.047**	**0.499**
CO			**-0.036**	**0.673**	-0.110	0.044
Interaction effects						
CP*CO					**-0.323**	**0.000**
NP*CO					0.399	0.000
MP*CO					**-0.051**	**0.071**
Model Summary						
R^2	0.288		0.364		0.755	
Adjusted R^2	0.279		0.342		0.742	
Model F	34.934		16.154		56.826	
ΔF			5.106		45.222	
ΔR^2			0.077		0.467	

Table 10: Hierarchical Moderated Regression Results for ECOP

Variables	Control Model		Main Effects Model		Full Model	
	β	p- Value	β	p- Value	β	p- Value
Controls						
Absorptive capacity	0.499	0.000	0.499	0.000	1.007	0.000
Organization size	**-0.033**	**0.919**	**-0.033**	**0.919**	**-0.308**	**0.138**
Main effects						
CP			0.468	0.000	-0.122	0.077
NP			**-0.024**	**0.613**	**0.004**	**0.944**
MP			**0.059**	**0.259**	0.163	0.017
CO			**0.201**	**0.197**	0.218	0.006
Interaction effects						
CP*CO					-0.233	0.000
NP*CO					0.255	0.000
MP*CO					**-0.037**	**0.185**
Model Summary						
R²	0.293		0.544		0.725	
Adjusted R²	0.285		0.531		0.712	
Model F	35.859		40.586		54.968	
ΔF			31.212		43.655	
ΔR²			0.251		0.432	

We finally summarised our hypotheses testing in Table 11, based on syntheses of the Tables 4- 10.

Table 11: Summary Report of Hypothesis Testing

Hypothesis	Statement	Supported/Not Supported
H1	*Coercive pressures (CP) have positive impact on PMS for sustainability benchmarking*	
H1a	CP→SP (+)	Supported
H1b	CP→EP (+)	Supported
H1c	CP→ECOP (+)	Supported
H2	*Normative pressures (NP)have positive impact on PMS for sustainability benchmarking*	
H2a	NP→SP (+)	Supported
H2b	NP→EP (+)	Supported
H2c	NP→ECOP (+)	Not Supported
H3	*Mimetic pressures (NP)have positive impact on PMS for sustainability benchmarking*	
H3a	MP→SP (+)	Supported
H3b	MP→EP (+)	Not Supported
H3c	MP→ECOP (+)	Not Supported
H4	*Flexible orientation negatively moderates the relationship between institutional pressures and PMS for sustainability benchmarking;*	
H4a	*Flexible orientation negatively moderates the relationship between coercive pressures and PMS for sustainability benchmarking;*	
H4a1	(FO*CP) →SP (-)	Supported
H4a2	(FO*CP) →EP (-)	Not Supported
H4a3	(FO*CP) →ECOP (-)	Not Supported
H4b	*Flexible orientation negatively moderates the relationship between normative pressures and PMS for sustainability benchmarking;*	
H4b1	(FO*NP) →SP (-)	Not Supported
H4b2	(FO*NP) →EP (-)	Supported
H4b3	(FO*NP) →ECOP (-)	Not Supported
H4c	*Flexible orientation negatively moderates the relationship between mimetic pressures and PMS for sustainability benchmarking;*	

H4c1	(FO*MP) →SP (-)	Not Supported
H4c2	(FO*MP) →EP (-)	Not Supported
H4c3	(FO*MP) →ECOP (-)	Not Supported
H5	*Control orientation positively moderates the relationship between institutional pressures and PMS for sustainability benchmarking;*	
H5a	*Control orientation positively moderates the relationship between coercive pressures and PMS for sustainability benchmarking;*	
H5a1	(CO*CP) →SP (+)	Supported
H5a2	(CO*CP) →EP (+)	Supported
H5a3	(CO*CP) →ECOP (+)	Supported
H5b	*Control orientation positively moderates the relationship between normative pressures and PMS for sustainability benchmarking;*	
H5b1	(CO*NP) →SP (+)	Not Supported
H5b2	(CO*NP) →EP (+)	Supported
H5b3	(CO*NP) →ECOP (+)	Supported
H5c	*Control orientation positively moderates the relationship between mimetic pressures and PMS for sustainability benchmarking;*	
H5c1	(CO*MP) →SP (+)	Not Supported
H5c2	(CO*MP) →EP (+)	Not Supported
H5c3	(CO*MP) →ECOP (+)	Not Supported

5. Discussion

Our current interest in investigating the role of the different dimensions of institutional pressures in shaping PMS for sustainability benchmarking was triggered by two facets of the sustainability benchmarking: firstly, even though research has broadly discussed sustainability benchmarking, thereby providing conceptual and anecdotal evidence, little rigorous empirical testing exists of such practices. Secondly, how the institutional pressures different direct effects on PMS are moderated by flexible orientation and the control orientation of the organization remains largely unexplored.

Scholars have identified the limitations of the institutional theory in explaining the extent to which organizations within the same institutional field implement different programs for sustainability benchmarking (Dacin et al. 2002; Kostova and Roth, 2002). To address these limitations several scholars have incorporated the role of intra-organizational dynamics within the institutional theory framework (see Colwell and Joshi, 2013). Hence, following Liu et al. (2010) we have incorporated organizational culture within the institutional theory framework.

By elaborating our theoretical model in terms of three distinct institutional pressures, flexible orientation and control orientation constructs, we offer a rich set of results. Broadly, we observed differential effect of the institutional pressures on PMS which is made up of three constructs (i.e. SP, EP and ECOP) under the moderating influence of flexible orientation and control orientation. Firstly, we noticed that AC has positive influence on the impact of the CP, NP and MP on shaping SP, EP and ECOP metrics for sustainability benchmarking. The prior literature has found significant association with the organizational absorptive capacity and technology implementation, however the understanding related to AC in relation to SP, EP and ECOP was less understood. Hence, our results offer new directions for the future research. By extending the findings of Malhotra et al. (2005), we have incorporated AC in our model as one of the control variable to understand how AC can influence the impact of the institutional pressures on shaping PMS of the organization has further extended Sarkis et al. (2010) findings that how training mediates between stakeholder pressures and the adoption of the environmental practices. The exact role of AC in the shaping of PMS and its relationships with the institutional pressures provides interesting questions for future research.

Secondly, we note that MP has no significant influence on EP and ECOP. This result is consistent with the findings of Liu et al. (2010) where Liu et al. (2010) argues in context to adoption of e-SCM. Similarly, we argue that the implementation of PMS for sustainability benchmarking is not complex. Teo et al. (2003) argues that MP plays a significant role when the innovations are highly complex to understand and use. However, MP has significant influence on SP. To further explain this interesting observation, we used Tolbert and Zucker (1983), two-stage model arguments. Based on their two-stage model, we can posit that both the early and later adopters of PMS for sustainability benchmarking are affected by logics of efficiency and legitimacy, because they often complement rather than conflict each other. The early adoption is associated with opportunity framing and motivations to achieve gains, both economic and social, while later adoption is associated with threat framing and motivations to avoid losses, again in both economic and social terms. Hence, such

argument may explain why the present study does not find support for the positive effect of mimetic pressures on firm's intention to shape PMS for sustainability benchmarking.

Thirdly, our current study shows that flexibility and control orientation have different moderating effects on the relationships between institutional pressures and the PMS for sustainability benchmarking. The SP of the organization which value flexibility is less affected by the CP in contrast to the EP and ECOP. The possible explanation for the differential effect of the CP on three performance measures suggests that any organization with flexible orientation values creativity, spontaneity and risk-taking. Hence, such organizations tend to be more people-centric. However, in contrast to the flexible orientation we find that those organizations having control orientation emphasize order, predictability and efficiency. In such cases the priorities of organizations shift towards EP and ECOP. However, we have noted that regardless of the orientation being 'flexible' or 'control' the effect of the mimetic pressures is not significant on shaping PMS. This observation may be contrary to the literature. A possible explanation is that mimetic pressures is an indication of the competitors deriving the first-mover advantage. The organization may interpret that imitating these successful competitors and integrating with similar customers or suppliers may not allow the achievement of competitive advantage. In such situations, organization tends to be less submissive to these mimetic pressures. However, our mixed results suggest that both these orientations have their own unique characteristics. Therefore, to achieve sustainable performance the organization must embrace hybrid orientation which is a fine blend of flexible and control orientation.

6. Implications, Limitations and Further Research Directions

6.1 Theoretical Contributions

The current study enriches sustainability benchmarking research by examining the institutional pressures effects on shaping PMS of the organization. Given that sustainability benchmarking is gaining importance in industry (Yakovleva et al. 2012), the current study reveals that institutional theory is a promising paradigm for sustainability benchmarking research. In recent years, organizations have started shifting their interest beyond financial performance measures which includes people- and planet-related measures (Gimzauskiene and Kloviene, 2011; Yakovleva et al. 2012). The increased attention to non-financial measures reflects the increased need for quality information exchange to enhance the decision-making process, because of strong competition and rapidly changing environment of the organization (Gimzauskiene and Kloviene, 2011). Hence, it could be stated that PMS, which covers financial and non-financial measures and fits with environment of organization is

critical for today's organizations. Our study explains the organization's intention to shape PMS for sustainability benchmarking, particularly the factors that affect the features and content of PMS in organizations and the relationship between these factors, performance measurement practices and environment of organization (Parast and Adams, 2012). Hence, we extend previous research (Parast and Adams, 2012; Yakovleva et al., 2012) by using institutional theory and organizational culture. Firstly, by using institutional theory, we attempted to answer the question – what factors form and influence internal and external environment of organizations and therefore the features and content of PMS. Secondly, by using organizational culture we attempted to answer the question – which orientation (i.e. flexible or control) of the organization moderates the influence of the external pressures on shaping PMS for sustainability benchmarking.

Our empirical findings lend support to the interaction effects of the institutional pressures and organizational culture on shaping PMS for sustainability benchmarking (i.e. Gimzauskiene and Kloviene, 2011). Complementing these studies, our study argues that the immediate motivation for shaping PMS stems from institutional pressures. Also, the role of organizational culture, as a stable element of the organization, is to moderate the effect of institutional pressures. As such, our empirical findings shed new light on the role of organizational culture in shaping PMS for sustainability benchmarking. Our empirical findings open new avenues for research focusing on how the organizational culture may differ in different contexts. We believe that use of alternative theories (e.g. contingency theory and complexity theory) may help to further our understanding of the differential effect of the institutional pressures on PMS for sustainability benchmarking.

6.2 Managerial Implications

Our empirical findings may offer practitioners guidelines for shaping PMS for sustainability benchmarking of their organizations as well as the influences of CP, NP, and MP on PMS. Specifically, firms that value control orientation are going to respond actively to the CP and NP. However, organizations that value flexible orientation or control orientation, are less likely to respond to the MP. Organizations that value flexible orientation are more likely to submit to CP for shaping SP. However, organizations with low flexible orientation and high control orientation are likely to submit to CP and NP for shaping PMS. The findings of our study could provide useful insights to managerial decision making, i.e. informing managers about which external pressures are likely to influence PMS so that they either provide incentives to work or take measures against the influence of these factors.

6.3 Limitations and Further Research Directions

Our study has its own limitations. Firstly, in the current study we have gathered data at one point in time. A longitudinal study would further enrich our understanding by offering information over time to provide an in depth understanding of how organizational culture affects the shaping process of PMS and how the assimilation of PMS allows the organization to gain competitive advantage. Guide and Ketokivi (2015) noted that despite of any level of precaution, the common method bias (CMB) remains an issue with data gathered at one point in time. Hence, the longitudinal data may reduce CMB (Podsakoff and Organ, 1986; Ketokivi and Schroeder, 2004) that undermines the validity of studies with data from a single source at a single point in time.

Secondly, the current study focuses on the organization perception rather than actual adoption. To ensure that the measures of the perception can accurately predict the actual process, we have conducted rigorous operationalization of the item development to ensure high validity and compatibility of the indicators (Eckstein et al. 2015). A perception of the managers regarding perception to shape PMS for sustainability benchmarking has been utilized as a proxy for the decision to shape the PMS. But the indicators of the perception may not represent nomological net for the actual process. Hence, we believe, the future research may be interesting to measure the actual process of shaping PMS for sustainability benchmarking, exposed to institutional pressures.

Thirdly, we have grounded our discussion in institutional theory. However, the future research may explore both contingency theory to answer the question – what external environment is surrounding the organization and influencing its internal environment - and complexity theory, which will help to answer the question - how an organization reacts to its external environment. Hence, the future research can develop a theoretical model grounded in the integration of the main presumptions of institutional, contingency and complexity theories.

Fourth, we recommend developing comprehensive scale for measurement of PMS for sustainability benchmarking for emerging economies. Currently, the existing scale does not include many dimensions which may be relevant in context to emerging ecomies.

Finally, the demographic of our study sample may limit the generalizability of our findings. To avoid the noise caused by industry differences, we purposely chose to study organizations in manufacturing industries. To further avoid noise caused by personal background differences, we chose informants who had similar training from similar institutions. Although these choices may help to enhance internal

validity of the current study, they limit the external validity. Hence, we firmly believe that our study should be applied to different settings.

7. Conclusions

Drawing broadly on external pressures, organizational culture and sustainable performance measurement systems, we developed and tested our framework in context to sustainability benchmarking among Indian manufacturing organizations. Our theoretical framework reconciles the independent contributions of institutional theory, organizational culture and sustainability benchmarking. We have tested our framework based on 277 manufacturing organizations from India which is one of the fastest developing economy and one of the key members of the BRICS nations. The results based on statistical analyses contributes to our understanding of the role of external pressures and organizational culture on shaping PMS for sustainability benchmarking. This study further contributes to the understanding of the role of human resource management (HRM) in building appropriate culture for shaping PMS for sustainability benchmarking which is one of the important theoretical contribution and provides extensive guidance to the managers who often ignores the soft- dimension perspective.

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Appendix 1: Harman's Single Factor Test
Total Variance Explained

Component		Initial Eigenvalues			Extraction Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.989	23.655	23.655	8.989	23.655	23.655
2	4.760	12.526	36.181			
3	3.854	10.142	46.322			
4	3.003	7.901	54.224			
5	2.742	7.216	61.440			
6	2.282	6.006	67.446			
7	1.797	4.729	72.175			
8	1.253	3.298	75.472			
9	1.120	2.947	78.420			
10	.948	2.496	80.916			
11	.875	2.303	83.218			
12	.779	2.051	85.269			
13	.686	1.806	87.076			
14	.658	1.730	88.806			
dim 15	.539	1.417	90.224			
ensi 16	.499	1.312	91.536			
on0 17	.431	1.135	92.671			
18	.367	.965	93.636			
19	.325	.856	94.492			
20	.294	.773	95.266			
21	.259	.681	95.947			
22	.236	.622	96.568			
23	.210	.553	97.122			
24	.193	.507	97.628			
25	.184	.483	98.111			
26	.133	.351	98.462			
27	.114	.299	98.761			
28	.105	.277	99.039			
29	.084	.220	99.259			
30	.080	.211	99.470			
31	.056	.148	99.618			

	32	.046	.120	99.738			
	33	.041	.108	99.846			
	34	.027	.072	99.918			
	35	.012	.031	99.949			
	36	.008	.021	99.970			
	37	.007	.018	99.988			
	38	.005	.012	100.000			

Extraction Method: Principal Component Analysis.