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Developing an extended theory of planned behavior model to explore circular economy readiness in manufacturing MSMEs, India

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ABSTRACT

Circular Economy (CE) is considered as a significant sustainable initiative for waste minimization in manufacturing firms, but very little research is available on circular economy readiness in Micro, Small and Medium Enterprises (MSMEs). This study aims to develop an extended Theory of Planned Behavior model (ETPB) to explore small firm's readiness towards circular economy. Environmental commitment and green economic incentives were considered as additional components of the ETPB model. The empirical results of the ETPB model are based on structural equation modeling (SEM), indicate that environmental commitment and green economic incentives with standard components better explains the CE readiness in comparison to the original TPB model. The extended TPB-1 model established the interrelationship between attitude, social norm, perceived behavioral control, additional components and improves the explanatory power of ETPB model. The findings show the impact of attitude, social pressure, environmental commitment and green economic incentives on CE readiness is positive and significant whereas the impact of perceived behavioral control is non-significant. Social pressure and green economic incentives found significantly influencing other predictive components. The research findings will provide a strong platform to understand the relevance of CE readiness in MSMEs and designing strategic plans to encourage circular economy implementation in manufacturing small firms.

1. Introduction

The Indian Micro, Small and Medium Enterprise (MSME) sector is of significant economic importance and contributes to 8 percent of Gross Domestic Product (GDP) and approximately 46 percent of the total exports (MSME, 2016a; CII, 2015). MSMEs consist of 36.17 million units and provide employment to over 80 million people (Basha, 2013; MSME, 2016b; SMBDCI, 2016). In one hand, the sector acts as a bulwark for the economy and provides pliability to ward off global economic shocks and adversities (CII, 2015) and on the other hand, accounts for 70 percent of the industrial pollution (MoEF, 2012) resulting in \$ 32 billion environmental cost, serious health hazards and permanent damage to the natural environment (NPC and Parvez, 2013; Saxena and Bhattacharyya, 2010; Wath et al., 2011; Khwaja, 2010). Thus, circular economy approach has been adopted by the Government of India in collaboration with countries like Japan, Germany and European Union to manage waste and achieve a sustainable economy (Mutz, 2015; Lehmann et al., 2014; MacArthur et al., 2015).

Circular economy (CE) approach is a competitive environmental strategy that aims at realizing waste minimization, environmental conservation, energy efficiency and economic development (Bastein

et al., 2013; MacArthur, 2013). CE approach promotes continuous economic development without posing significant environmental and resource challenges. In circular economy, industrial waste becomes valuable input where it can be repaired, reused and upcycled using cost-effective waste management techniques, resulting in eco-efficient and value-added product and processes (Granek, 2011; Crowther and Gilman, 2014). Circular economy benefits the business and society as a whole with better supply chain, low price volatility of resources, improved customer relationship and new employment opportunities (Kok et al., 2013).

Circular economy is a widely used approach in different countries but its implementation in India is in very nascent stage (Mutz, 2015). Various research has addressed the key issues in introduction, development and implementation of CE approach in Indian firms (Salotra, 2015; Khwaja, 2010). Mutz (2015) found that poor information sharing, lack of political willpower, weak inter-agency coordination and profit maximization approach hinders the progress towards resource sufficient economy. Fusion Report (2014) identified that lack of finance, inconsistent environmental legislations and low commitment are the top three barriers for CE implementation. It has been also observed that ineffective enforcement of relevant regulations, poor

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institutional support, lack of economic incentives, poor technical skills and low environmental awareness also affects the CE readiness in small firms (Rizos et al., 2015; Agnello et al., 2015; Möllemann, 2016). Plentiful studies indicated that both internal and external factors are responsible for firm's CE behavior (Shi, 2003; Zhang et al., 2013). Internal factors including attitude, environmental commitment and internal capabilities have been identified as significant determinants of cleaner production (Montalvo, 2003). Social pressure, government regulations and competition are identified as important external factors for managing the waste in a sustainable manner (Lozano, 2012). Research on Indian firms claimed that the owner-manager attitude, social pressure, human resource capabilities and green economic incentives significantly impact firms' environmental initiatives (Singh et al., 2014; Sangle, 2010; Singh et al., 2016c). Government subsidy, tax benefits, financial capabilities and infrastructure equip small firms to act pro-environmentally (Singh et al., 2015; Mutz, 2015; Bhupendra and Sangle, 2016).

This study applies Theory of Planned Behavior (Ajzen, 1991), a most influential psychological theory to examine the internal and external factors that support circular economy readiness of manufacturing MSMEs (Zhang et al., 2013). We expand the interpretative schema of the study with environmental commitment and green economic incentives as additional predictive components. To the best of our knowledge, CE readiness and additional components have never been used in conjunction with TPB model to address the issue of sustainable waste management. Therefore, the present study aims to develop an extended theory of planned behavior model to address the following questions. First, to examine the influence of attitude, social pressure and perceived behavioral control on CE readiness in small manufacturing firms. Second, to examine whether the two additional predictive components can improve the explanatory power of firm's CE readiness. The study also investigates the interrelationship among standard and additional predictors of ETPB model and test the relative strength of social pressure on attitude towards CE readiness in a collectivistic culture like India where subjective norm is expected to have greater strength compared to attitude.

The research results will endow information for CE promotional strategies and encourage further normative research on CE application at the organizational level. Insights developed from extant literature have been organized in Section 2. Section 3 presents the research methodology for obtaining data and explanatory variables followed by data analysis and results in Section 4. Section 5 discusses the derived findings and conclusion covered in section 6.

2. Review of literature

2.1. Theory of planned behavior model

The Theory of Planned Behavior (TPB) derived from the Theory of Reasoned Action (TRA) considers the influence of personal determinants in the prediction of firm's readiness to implement circular economy approach (Ajzen, 1991). In TPB, behavioral intention is determined by three major factors namely attitude, subjective norms and perceived behavioral control. Attitude (A) is defined as the mental and neural state of owner-managers of the firm which influences the implementation of circular economy in firm's product and processes (Montalvo, 2003; Kumar, 2012). Subjective norm is a perception about undertaking or not undertaking specific behavior by the firm due to the pressure of the external stakeholders. The Perceived Behavioral Control (PBC) focuses on internal capabilities and management beliefs of the firms to execute CE readiness (Montalvo, 2003).

Two additional factors such as environmental commitment and green economic incentives are included in TPB model to test the predictive ability of the circular economy readiness. Environmental commitment shows willingness and engagement of the firms to adopt circular economy whereas green economic incentives are defined as the

benefits provided by the government and non-government agencies for applying green management practices (Agnello et al., 2015; Moorthy et al., 2012).

2.2. The components of extended theory of planned behavior model

2.2.1. Attitude (A)

Attitude is defined as a psychological emotion with positive or negative evaluation of individual behavior. Attitude (A) toward the implementation of circular economy is explained as the degree to which firm's owner or manager anticipate favorable or unfavorable outcome from the performance of such behavioral action (Montalvo, 2003). If CE implementation associate with economic benefit, cost effectiveness and resourcefulness, the attitude will tend to be positive (Tseng et al., 2008; Tseng et al., 2009). On the contrary, association of CE implementation with increased capital investment, high technology infusion, trained human resources results in negative attitude. Strong awareness, salient beliefs and organizational culture foster individual's attitude towards adoption of such behavior (Montalvo, 2003; Tseng et al., 2009). It has been also acknowledged that positive owner/manager's attitude towards the natural environment has a profound effect on firm's green commitment and leads to the adoption and implementation of sustainable waste management practices in their firms (Roxas and Coetzer, 2012). Therefore, the study considered resourceful and energy efficient (REE), waste management (WM), radical approach (RA) and cost-effectiveness (CE) as firm's attitudinal notion.

2.2.2. Social pressure (SP)

Subjective norm is defined as the degree of perceived social pressure in execution of any behavioral action (Ajzen, 1991). In other words, social pressure is a combination of injunctive and descriptive norm which promulgate firm's perception of what important referents including government, customers, market, community and banks, think they ought to do and beliefs concerning the significant referent's own behavior (Rivis and Sheeran, 2003). Drake et al. (2004) identified that environmental regulations play a vital role in shaping environmental awareness among firms towards waste management. Extant literature on recycling behavior argued that social pressure is a key component in TPB model and play a crucial role in improving perceived attitude, green commitment and promoting sustainable behavior (Montalvo, 2003; Roxas and Coetzer, 2012). The external factor such as community and market influences an individual's or firm's responsibility towards environment and the society as a whole (Pratarelli, 2010). The pressure from regulatory bodies also induces firms towards sustainable actions such as green innovation and waste minimization (Singh et al., 2016c). Research asserted that external referents have significant influence on altitudinal notion of individual and affect green behavior (Zhang et al., 2013). For example, market and society increase awareness towards environmental risk that insists enterprise towards sustainable actions which bring economic benefit and social recognition. Few studies explored that social norms act as a strategic vigor through environmental standards and regulations (Delmas, 2002; Singh et al., 2014; Wang et al., 2007; Wen et al., 2009), market demand (Johnstone and Labonne, 2009) and pressure from community, banks (Chen and Soyez, 2003) for the implementation of sustainable waste management practices within the firm (Zhang et al., 2013; Han et al., 2010; Sangle, 2010). Therefore, our study considered market pressure (MR), community demand (CD), regulatory institutions (RI) and financial institutions (FI) as the components of social pressure.

2.2.3. Perceived behavioral control (PBC)

Perceived behavioral control (PBC) is considered as another key component of the TPB model. It is defined as the perception of possible existing or upcoming ease or difficulties in performing certain behavior (Ajzen, 1991). PBC evaluates controlling factors that may facilitate or impede specific behavioral action to embark upon particular situation

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