



The Role of Intrapreneurship for Sustainable Innovation through Process Innovation in Small and Medium-sized Enterprises: A Conceptual Framework

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ABSTRACT

A focus on innovation alone is not sufficient for sustainability in the current hostile business environment. Environment awareness and social impact as well as economic place demands on firms to contribute to sustainable development. As such, there is increased interest in sustainable innovation. On the other sides, intrapreneurship spirit of internal initiative of a firm as firm-specific capabilities is proposed to facilitate this. In the manufacturing firms, process is considered as critical and source to be innovative. Hence, process innovation is utilized to translate intrapreneurship capability for sustainable innovation. To face new circumstances in the business environment for the sustainability of small and medium-sized enterprises (SMEs), the role of intrapreneurship in transforming process innovation under existing technology for sustainable innovation achievement is another interesting view to be explored. This paper discusses the role of intrapreneurship in attaining sustainable innovation through process innovation in SMEs and develop it into an integrated framework. The framework shows that the elements of proactiveness, risk taking and autonomy in intrapreneurship provides a leverage for sustainable economic, environmental and social innovation. The study further suggests empirical investigation in the firms for future research.

Keywords: Sustainable Innovation, Intrapreneurship, Process Innovation

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1. INTRODUCTION

According to the report Our Common Future of Brundland Commission (WCED, 1987), resource exploitation and path of technology development are pointed not only to fulfill the current demands but also to be consistent with the future needs. This is confirmed by "in 2050, around nine billion people live well, and within the limits of the planet" (WBCSD, 2010) that has contributed to the new economic development direction as a result of the increasing population number, increasing demands but reducing resources and potentially change the climate in the future. These issues lead to the effort on finding the balance way between the ecology preservation, social impact and economic while

satisfy people needs in the current time by considering the future health of the planet. To achieve this effort needs innovation as the main role of environmental degradation to change whether in the technologies, products or services (Porter and van der Linde, 1995; Nidumolu et al., 2009). The sustainability-oriented innovation increases the awareness of such policy-makers, non-government organizations, consumers and suppliers (Atack, 1999; Ewing and Sarigöllü, 2000; Raynolds et al., 2007) into environmental and societal factors. As a result, business environment is not determined merely by business market competition but have shifted into sustainable innovation consideration for its sustainable competitive advantage (Kemp et al., 1998; Rohracher, 2001; Smith et al., 2005).

2. LITERATURE REVIEW

2.1. Intrapreneurship as a Firm-specific Capability

There is a large volume of published studies describing the term of intrapreneurship as corporate intrapreneurship, entrepreneurial orientation, corporate entrepreneurship or corporate venturing (Heinonen and Korvela, 2004; Monnavarian and Ashena, 2009; Toftoy and Chatterjee, 2004; Brunåker and Kurvinen, 2006; Felicio et al., 2012) regards distinguishing the owner or manager of firm from the employees. The focus is entrepreneurial employees inside an existing organization whether individual or group for the aim of growth and development (Shane and Venkataraman, 2000; Maes, 2003; Serinkan et al., 2013).

Several studies have related this entrepreneurial action through the effort, such as new business creation (e.g., Gray, 2002), transformation or renewal business (e.g., Molina and Callahan, 2009) and changing needs for facing competitiveness (e.g., Gündoğdu, 2012). Under strategic management, these are aligned with what Stopford and Baden-Fuller (1994) have offered for types of forming internal entrepreneurship although also possible for having the all types into the same firm (e.g., Schmelter et al., 2010). As a result, the intrapreneurship can be identified according to its effort orientation considering the indicators are multidimensional. For example, achieving innovative performance associates with altering behavior of individuals or small teams (Alpkan et al., 2010) and differentiate positioning relates to the transforming resources by support from individuals (Keh et al., 2007).

On the other words, intrapreneurship is possible for a firm to use it as a tool to achieve the desired impact. Several scholars emphasized the prominence of entrepreneurship and sustainable development as promoting behavior within entrepreneurial organization for competitive advantage by attaining economic success, innovative environment and social practices (Schaltegger and Wagner, 2011; Lehman et al., 2005; Gerlach, 2003; Kyrö, 2001; Larson, 2000). However, the research is generally confined to the scientific discourse only and limited explanation on how the entrepreneurial organization capable to obtaining them.

Whilst, applying intrapreneurship for benefit of a firm describes a firm's capability approach regards possessing specific capacity to deploy and coordinate different resources, or combine them for a desired end (Sen, 1993; Aloulou and Fayolle, 2005). It shows a picture of dynamic capability theory (Teece et al., 1997; Eisenhardt and Martin, 2000) as an extended theory of resource-based view (Barney, 1991; Wernerfelt, 1984; Rumelt et al., 1991). This capability is considered as a firm's unique capability regardless the resources of what they currently controlled (Stevenson and Jarillo, 1990) and in this study is categorized as a firm-specific capability.

Aramand and Valliere (2012) indicated that; a "capability of change" within firm routines which considered as internal ordinary capabilities or substantive capabilities to seize and exploit opportunities. Urbano and Turró (2013) support this study by utilizing logistic regression analysis within 39 countries of global entrepreneurship monitor and found that entrepreneurial

However, focusing on how to gain sustainable innovation is considered still limited particularly in the small firms. In addition, other scholars view that doing sustainable innovation is expensive regards the prominence of radical new change technology investment (e.g., Markatou, 2012; Arnold and Hockerts, 2011) and no impact to the end users (e.g., Ozaki, 2011). Nevertheless, small firms with inadequate infrastructure need to synchronize these into their operational between producing products and market demands. Hence, questions that need to be asked, however, what approach is more suitable for gaining sustainable innovation for particularly small and medium sized firms? Whether intrapreneurship of firm-specific capability transformed by process innovation gives impact to the sustainable innovation?

Marin et al. (2015) captured that merely sectoral and geographical approaches is not sufficient to engage with sustainable innovation, it needs to be supported with specific attitudes of a firm. This is aligned with Cassiolato et al. (2003) that forming sustainable innovation needs specific capabilities of firms and supported by Thornhill and Amit (2003) that small size and young firms can get success as long as capable on establishing their resources and capabilities. Hence, several attempts have been made to this aim, such as networking (Biondi et al., 2002; Schaffers et al., 2011), knowledge management (Klewitz and Hansen, 2011) and stakeholder dialogue (Ayuso et al., 2011). Yet, these studies do not take account of the importance of organizational spirit on doing new things as capabilities, whereas they have noticed that intrapreneurship as a trigger for implementation of innovation (Johnson, 2001; Zhao, 2005). For example, IBM practices in the effort of sensing and seizing opportunities by aligning strategic insight from external information and integrating and utilizing resources as explicit diagnose for changed (Dutta, 2012).

Still, there are opportunities can be captured for firm advantages through managerial effort such as cost reduction (Lado et al., 1992). Thus, firms need more information to sense and seize opportunities. Keogh et al. (2005) utilized intrapreneurship not only to capture opportunities but also to inspire and motivate employees.

Regard to the process innovation as the extension of firm's capabilities, socio-technical support offers solution by utilizing organizational structure through technical approach as part-whole relationship (Van De Ven, 1986). This paper contributes for small firms on how to be sustainable innovation firms in the industry which considers economic, environmental and social factors by proposing intrapreneurship and relying on current technology with the changing is new in the firm but not new in the industry. Intrapreneurship study may flesh out the light on superior capacity of a firm for achieving sustainable innovation in which process innovation is explained as a mediator.

The rest of this paper is structured as follows. Section 2 discusses on literatures of intrapreneurship, sustainable innovation, and process innovation. Section 3 relates to the methodology of the paper. Section 4 describes on developing conceptual framework and propositions. Section 5 provides conceptual framework of study. Finally, section 6 discusses conclusion and direction for future studies, the results based on the research questions.

experience, entrepreneurial competences, and ability of capturing opportunities are key factor of intrapreneurship development. Kuratko and Morris (2003) highlight internal strategic initiatives by improving capabilities for internal adjustment from turbulence of external environment. In addition, small and medium-sized enterprises (SMEs) as businesses and a part of the planet, individuals, and communities need to identify new opportunities for business development into their business operation in order to contribute on quality of life (Loucks et al., 2010). This is affirmed by Burger and Christen (2011) that capability approach is important to shape sustainability. Hence, this paper will use and develop intrapreneurship for sustainable innovation achievement. The next section will discuss about sustainable innovation.

2.2. Sustainable Innovation

During the past 15 years definition of sustainable innovation has been introduced by some scholars derived by sustainability in different ways. Rennings (2000) highlight it as the increasing efficiency-input output; Little (2004) captured as new creation of market space, products and services, or processes; Charter and Clark (2007) viewed as integrated systems of process and idea generation in the firm; and Bos-Brouwes (2010) defined as development and renewal of products, processes or services. In this paper, the term of sustainable innovation is defined as innovation which impacts to the sustainable development goals of economic, environmental and social pillars.

The focus way to achieve the concept of sustainable innovation can be cleared through Figge and Hahn (2004) explanation by categorizing the concept into macro and micro perspectives. The former, by utilizing capital theory, sustainability is viewed as the effort of avoiding capital degradation by development or at least at constant level of capital stocks (i.e., man-made capital, human capital, natural capital, and social capital) for future generations. The latter, firm level is adopted at dynamic view which focused not only on economics, but also environmental and societal performance. Therefore, this increases some scholars to attempt on sustainable development (e.g., Maxwell et al., 2006; Potts, 2010; Qureshi et al., 2015; 2016).

Attaining this goal at micro level leads many types of studies whether internally such as innovative capacity relates to the technology development through research and development (R&D) expenditure (Boons and Ludeke-Freüd, 2013; Jaffe and Palmer, 1997) or knowledge management effort (Klewitz and Hansen, 2011) or externally driven such as considering political space through environmental regulation penetrates barrier of firms (Ashford and Hall, 2011). However, the efficacy approaches on sustainable innovation is limited regards the concept is new (McElroy, 2003; Hekkert et al., 2007; Boons and Lüdeke-Freund, 2013).

Basically, concept of sustainable innovation is grounded on three factors, economic, environmental and societal in which innovation is related. Relates to the environment, some studies view sustainable innovation as eco-innovation which mostly focused on reduction of environmental impact (Carillo-Hermosilla et al., 2010; European Commission, 2007; Rennings, 2000; Fussler and James, 1996) and also known as environmental innovation

(VINNOVA, 2001; Rennings and Zwick, 2003; Oltra and Saint Jean, 2009).

Societal factor relates to the sustainability with businesses which concern particularly on societal capital as quality of a firm serves its communities, such as good education and infrastructure (Dyllick and Hockerts, 2002), health and safety (Kleindorfer et al., 2005). In actualization, Gladwin et al. (1995) suggested to consider this into internalization of social costs, and maintaining and growing the stock of capital. Therefore, many scholars associate this as a firm's responsibility which largely known as corporate social responsibility (CSR) (e.g., Szekely and Knirsch, 2005; Kleine and VonHauff, 2009) regarding its ability to gain satisfaction of human needs and quality of lives through production process for customers of a firm while concern on ecology impact (DeSimone and Popoff, 1997).

The last, economic factor relates to the resource utilization in the appropriate way which converting into cost value. Low environmental impact can be acquired through product-in-use which is easily to compost, reuse or recycle which lead to the low cost of handling, storage and disposal of discharges, so that economic is considered to the value of waste reduction rather than competitiveness (Porter and Van der Linde, 1995; Kleiner, 1991). This makes different from consideration of innovation classic which emphasizes on economic dimension (Papinniemi, 1999).

However, the generalizability of much published research on valuing sustainable innovation is problematic. Even though Elkington (1997) had captured these three factors into concept of "triple bottom line" or people-planet-profit concurrently as interrelated of economic prosperity, environmental quality and social justice as well as Ayuso et al. (2011), but some studies prefer assessing sustainable innovation concept into separate ways. For example, measuring sustainable innovation by focusing on ecological and social contexts (Paramanathan et al., 2004; Ketata et al., 2014; Tseng et al., 2013; Schiederig et al., 2012), otherwise on environment-related independently (Klewitz et al., 2012; Kaebernick et al., 2003) or combination between ecology and economic (Rennings, 2000; Rennings et al., 2006). Since the aim of sustainable innovation is underpinned by sustainable development goal, hence the study might have been much more original if considered its mainstream.

2.3. Process Innovation

Ability of firm to stay align with the rapid changing of business environment can be seen through new technological adoption (Vanhaverbeke and Peeters, 2005; Laforet, 2008; Jayaram et al., 2014). Regardless the preference of innovation types in sustainability's goal, strategic orientation of SMEs based on Miles and Snow typology is more proactive in defender type of avoiding risks contrary from prospector type (Ghosh et al., 2001; Aragón-Correa et al., 2008; Hagen et al., 2012). For example, SMEs in China view innovation as something unpredictable and risky considering such as financial support access, support system and taxation are insufficient (Zhu et al., 2012). This associates with small firms condition on economic incentives, technical and organizational competencies and external knowledge linkages

for new technological development determines adoption of technological investment (Vonortas and Xue, 1997), thus incline to debug the technology after initial investment although the advantage is debated (Schroeder et al., 1989).

Notwithstanding, confronting rapid changed environment with current capability by improving previous technology is capable for small firms to sustain in the business. This is showed by Uddin (2006) in Bangladesh small industries that relying on local technology capability and indigenous knowledge to transform the production process as process innovation diffusion into technology have significant contribution to adaptive environment. This orientation resonates with Hervás-Oliver et al. (2014) who emphasized process innovation that mostly refers to the production process rather than R&D investments in SMEs.

Process innovation is distinguished by incremental or evolutionary change as a following process after radical or revolutionary change of initiation process on producing new products (Tushman and O'Reilly, 1996). The transformation can be done in the radically new way or significantly improved production (Piening and Salge, 2015; Papinniemi, 1999). Literatures in the manufacturing sector of SMEs which considers process change into measurement is unfortunately limited. Process innovation relates to the inherent value added in the process manufacturing. Thus, establishing the process whether contain value or not needs to capture. In addition, not all processes of a firm are similar to others regards to the product which will produce and occupied technology. Relates to the manufacturing process innovation of innovativeness of change (Yamamoto and Bellgran, 2013), this study is oriented on changing which is not new to the industry but new to the firm, particularly in the infrastructural change without physical asset investment.

Ettlie and Reza (1992) suggested successful process innovation adoption can be captured through restructuring a unique occasion or creating effective new patterns for alternative changes. Following this, not many studies offered process innovation measurement which may generalize considering the measurement is determined by innovation activities by region (Acs et al., 2002; Guan and Chen, 2010), level of achievement in innovation index (Rejeb et al., 2008) and specifically for high technology (Maine et al., 2012). Ayhan et al. (2013) who developed the measurement of Lee and Ahn (2008) utilized fundamental activities of manufacturing processes that pointed on the impact of end product by measuring labor utilization, bottleneck, production time and unit cost. Yet, the measurement is more technical, need calculation to implement and difficult to generalize regard the result is based on data which provided within the respective process of a firm. Simple measurement is needed which able to apply not only in large firms, but smaller one is also possible. Therefore, Ponsignon et al. (2014) with their four archetypes of process improvement based on Q-methodological study by utilizing principles of improvement success in industry to capturing the added value in the process can be considered.

3. METHODOLOGY

This study reviews previous research publications. A critical review of the literature on intrapreneurship was undertaken

relevant with strategic management and sustainability journals particularly related to the capability approach of dynamic capabilities in order to identify the prior studies and the lack approaches in sustainability. There are broad dynamic capability studies towards sustainable innovation, thus needs to focus on only the papers that deals with intrapreneurship. The objective of this literature review is to develop a conceptual framework by defining intrapreneurship clearly as part of capability approach of dynamic capability as a strategy to achieve sustainable innovation through process innovation.

In order to attain the objective, 11 major academic journals in business strategy and the environment, organizational behavior, and small business and enterprise development have been identified. Journals are selected according to the journal quality of ranking list and citation index. Following Harzing (2015) and ABS (2015), the papers are Journal of Small Business and Enterprise Development, CSR and Environmental Management, Business and the Environment, Journal of European Industrial Training, International Small Business Journal, Journal of Supply Chain Management, Business Strategy and the Environment, International Journal of Entrepreneurial Behavior, Journal of Enterprising Culture, and Cleaner Production.

Conceptual framework of antecedent of process innovation for sustainable innovation is explored by using a systematic content analysis. We suggest a quantitative research by distributing questionnaire for data collection. Thus, designing questionnaire would be needed for the conceptual framework.

4. DEVELOPMENT OF CONCEPTUAL FRAMEWORK AND PROPOSITIONS

4.1. Intrapreneurship and Process Innovation

Process innovation is a part of business process to perform activities supported by discrete initiative to imply specific change of using tool and technology as business process transformation in the aim of producing a given product for customers or markets (Papinniemi, 1999). This initiative of a firm relates to the organizational structure or organization-wide effort (Yamamoto and Bellgran, 2013; Chang and Hughes, 2012) in which embarking it is followed by possibility of success or failure to actualize the effort. For example, developing sustainable product service by using strategic design approach (Manzini and Vezzoli, 2003).

Considering process activity is conducted by people in the existing organization, this is linear with intrapreneurship that stressing on such encouragement of unexplored territories, emphasizing on finding new opportunities, and giving responsibility in the workplace (Lumpkin et al., 2009; Nasution and Mavondo, 2007; Venkatraman, 1989). Hence, the braveness and spirit of intrapreneurship is possible injected into process innovation.

This is confirmed by Wikström (2010) in the case study of Australian and Swedish SMEs in the aim of capturing management initiatives into sustainable business rather than organization for sustainability, who expressed that intrapreneurship with innovation

are a powerful strategic tools to maintain the process approach of ongoing activities.

Figure 1 shows the conceptual framework for this paper. The three propositions (P1, P2 and P3) that forms the basis of the framework are discussed in the next sections.

P1. There is a positive association between intrapreneurship and process innovation.

4.2. Process Innovation and Sustainable Innovation

According to Carrillo-hermosilla et al. (2009), innovation is viewed as knowledge in which needs available resources (e.g., capabilities and time) to exploit and create it, on the other sides, focused on evolutionary economics in the micro-level views technological and social change relate to the legislation, standards, norms, and routines. Based on these premises, the authors clarified that innovation shapes technology and/or social systemic change which comprise changing and action in practice through idea invention.

Focusing in the production process, process innovation consists of two types, developing new processes and improving existing processes (Ren, 2009). The former is considered as the equipment, engineering configuration and unit operations with radically new and raw material can be same, similar or totally different, the latter relates to the improvement of equipment, engineering configuration and unit operations but raw materials and engineering principles are still same (Stobaugh, 1988). In the case study of petrochemicals processes, Ren (2009) found that improving existing processes contributes to the energy efficiency as well as developing new processes. Process improvement can be conducted in such down-sizing operation (Hamel and Prahalad, 1994) or reducing non-valued activities (Hayes et al., 1988) which may lead to cost efficiency (Jermias and Gani, 2005).

In the environmentally, all firms have contribution to ecological impact through their activities such as production process whether in the small portion of lighting office building or in large effect such waste and emission (Bansal, 2005). Hart (1995) suggested pollution control as one of the way to reduce ecological effect. In the manufacturing process, this resonates with Gupta and Sharma (1996) rationale that pollution is viewed as procedures controller, and natural resources, energy, human and capital resources are consumed by equipment, thus production process is a source reduction. Regardless new technology investment, Porter and van der Linde (1995) explained that refer to the inefficient or ineffective resource utilization considered as pollution, such as scrap, harmful substances or energy forms is causing waste, defects and stored materials, and also hidden cost of product life cycle. This hidden cost, such as packaging, is additional cost of product

used by consumers or distributors that pollute and waste energy due to the usable materials of product are discarded.

The extended effort of reducing impact on environment to the general public from production process yields to the social performance (Paulraj, 2011). In addition, “production” refers to those “activities intended to create and distribute goods and services for economic and/or social benefits” which is supported with activities in such food preparation, health care and cleaning services (Quinn et al., 1998. p. 299). This rationale explicitly shows direct relationship impact on social factor of sustainable innovation on internal customer.

Hence, what Porter and van der Linde viewed on a response of firms to the environmental regulation by doing process innovation in such redesigning processes by considering pollution as side effect of resource utilization within processes is not merely impact to the economic factor of cost reduction and environmental factor in quality improvement and reducing pollution, but also to the social impact.

This study tries to utilize intrapreneurship as a firm-specific capability to contribute on sustainable innovation achievement through process innovation. Related to this, the proposition can be withdrawn as:

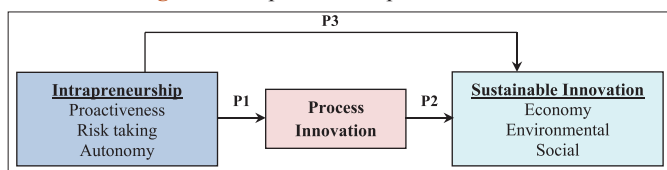
P2: There is a positive association between process innovation and sustainable innovation.

4.3. The Relationship between Intrapreneurship, Process Innovation and Sustainable Innovation

Innovation is a mediator of organizational objectives. This has confirmed by Scarbrough (1995) who is extended the Williamson approach on cost that between social and institutional forms of efficiency fit in the term of ‘strategies of social closure’ of firm level has a space where social control contribute to the achievement regards its independent views rather than coexist which its influence is not as deterministic but as tendencious. Edward et al. (2005) defined innovation as “a process of (temporary) accomplishment” with its own activities.

There are opportunities emergence as the requirement on fulfilling sustainability determinant to find alternative approaches in such processes of “doing what we do better” and “doing different” by dealing with dynamic capability to shape “best practices” innovation for all size of progressive organizations (Seebode et al., 2012). Explicitly, it shows particular ability as exogenous is needed for sustainable business achievement. Spirit of individuals effort in the organization as entrepreneurial activity able to establish innovation by sensing and seizing the opportunities (Zahra, 1995; Thornberry, 2001). In addition, Benitez-Amado et al. (2010) captured that capability of developing working environment has consisted within intrapreneurial culture so that able to influence the firm performance. Coakes et al. (2011) argued that to change in the organization, the role of intrapreneurship is needed for sustainable innovation and the existence of innovation gives direction for right to the market by develop ideas into marketable products. This paper clarifies process innovation type for manufacturing

Figure 1: Proposed conceptual framework



industry to transform intrapreneurship for sustainable innovation. Hence, the study intends to investigate the following proposition:

P3: There is a positive impact of intrapreneurship to the sustainable innovation through process innovation.

5. CONCEPTUAL FRAMEWORK

A positive association exists between intrapreneurship and process innovation. The same holds for process innovation and sustainable innovation. Hence, intrapreneurship can impact sustainable innovation through process innovation. In the manufacturing sector, operational procedures must be taken into consideration by intrapreneurship as process is central to the activities and hence, a determinant factor in the achievement of organizational goals. This relationship is summarized in the conceptual framework as shown in Figure 1. P1 and P2 provide the catalyst that enables process innovation in intrapreneurship for the achievement of sustainable innovation in the economy, the environment and the social settings.

6. CONCLUSION AND DIRECTION FOR FUTURE STUDIES

Attaining sustainable innovation within manufacturing industry of SMEs are needed regards to the sustainable development goals for future generation. Despite government policy, initiative of firms may also determine sustainability achievement. For this purpose, this research is the first research to investigate a firm-specific capability of intrapreneurship as antecedent of process innovation to contribute on sustainable innovation. This paper also suggests to examine the conceptual framework empirically in SMEs and develops the firm-specific capabilities for sustainable innovation achievement for future research.

The proposed intrapreneurship framework has practical implication. The shifting business environment to the sustainability despite facing competitors determine survival businesses. Hence, firms need to adjust their internal capability by configuring resource into process routines for process innovation. The conceptual framework also may clarify the efficacy of process improvement in capturing values for sustainable innovation achievement. On the other words, this study offer another insight as the way to improve firm-specific capabilities to contribute on sustainable development through process innovation, particularly in SMEs.

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