



INNOVATION PRACTICES IN SME –A REVIEW

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ABSTRACT

Globalization has created a world market driven by fierce competition among organizations. Globalization have forced SMEs to develop a variety of global-level capabilities, and contributed a lot to enhancing innovativeness. This paper attempts to focus the importance of innovation to achieve sustainable development of an organization. The key to achieve sustainable development lies in the customer satisfaction through improved quality, reduced cost, reduced delivery lead times and proper communication. A number of studies suggest that a variety of methodology are used on SME's innovativeness and further investigate how those affect SME's business and innovation performance. This paper reviews the different issues related to innovation practices in SMEs.

Keywords: *Globalization, Innovation, Industry, Sme.*

I. INTRODUCTION

The desirable goal for all industries and organizations is that they want to grow quantitatively .But in the current manufacturing scenario; industries are facing tremendous pressure of diversified nature due to extensive sophisticated market, changing customer choice and global competition. Recently, small and medium enterprises (SMEs) have been regarded as the engine of economic growth and employment. As the growth of industry giants have been slowing, the role of SMEs becomes more important [1]. Due to importance of supply chain management issues in the global market environment, big organizations are heavily dependent on SMEs for the provision of high quality product and services with the lowest possible cost. Overcoming challenges, finding adequate financing, are not the only setback for SMEs to be successful [2]. Market pressure now necessitates a strategic and tactical framework that allows companies to behave in an adaptive manner that permits continuous evolution in the market. To boost national innovation and economic growth, it is crucial to drive SMEs' innovation [1].The changing circumstances and growing demands of customers for excellence in quality requires major innovative drives by SMEs in all fields.

Flourishing amidst a challenging environment, the small and medium enterprises are the socio economic developers of the country with a major advantage of generating employment at low cost. Despite various suggestions, there is a consensus that innovation should depend on a firm's innovativeness, in other words, the capability to introduce new processes, products, ideas, etc. [4,5]. Technology covers all techniques, processes, systems and skills, which are used to convert the sources into products. In any case, development in technology (quitting old and traditional methods of doing tasks) is called "Innovation" [6, 7].

A number of studies have suggested a variety of key determinants on SME's innovativeness, and further investigate how those affect SME's business and innovation performance [8, 9,10].

II. ISSUES RELATED TO INNOVATION

This study is motivated by innovation activity in India’s fast-changing business scenario influencing SMEs sector which is backbone of economy. Tohidi [7] said Innovation is introduced as any change in technology, and is studied in three parts: product, process, and organization. Rahmana et al [2] said the practice of technological innovation is significantly associated with business performance but its effect towards SME survival is underexplored. Lee,et al[1] felt that requirement of the hour is identifying principal types of business models, and of finding evolving paths of SME's business models with the changing pattern of innovativeness. Klewitz and Hansen [11] found that SME strategic sustainability behavior ranges from resistant, reactive, anticipatory, and innovation-based to sustainability-rooted. Most published work provides significant proofs of implementation of Innovation in SMEs, though cases of Innovation in Indian industries are very few. Various issues related to innovation in SMEs have been studied from various literatures and given in Table 1.

Table 1: Overview of Issues of Innovation in Sme

SN	Issue	References	Key Observation
1	Importance of innovations	Seo and Chae(2016) N.A Rahmana,et al (2015) Lee, et al.(2012) Apanasovich, et al.(2016) Klewitz and Hansen (2013)	<ul style="list-style-type: none"> • Market dynamics and firm diversity influences the amount of performance manifested by SMEs’ innovative activities. • When market dynamics is high, innovative activities play a more crucial role in contributing to the revelation of performance after a certain period of time has passed, whereas exploitative activities are comparatively important in the early time periods. • SME use technological innovation to improve performance. • Globalization has forced small and medium enterprises to change business models with new innovative capabilities. • Before engaging in any innovation activity, managers should analyze their current resources and capabilities associated to the adoption of specific innovation modes. • Organizational innovation requires a higher endeavor in managerial and teamwork practices. • Innovation involves new ways of introducing and organizing management systems for production, such as supply chain management systems, business re-engineering, lean production, and quality- management systems. • Knowledge on the specificities of sustainability-oriented innovations (SOIs)in SMEs are increasingly recognized as central contributors to sustainable development.



		Verdú et al.(2016)	<ul style="list-style-type: none"> • Combination of high levels of collaboration among small- and medium-sized enterprises, and public investment in research and development facilitates significant rates of organizational innovation. • Collaboration among firms promotes organizational innovation.
2	Areas of innovations	<p>Seo and Chae(2016)</p> <p>N.A Rahmana, et al (2015)</p> <p>Lee, et al.(2012)</p> <p>Apanasovi, et al(2016)</p> <p>Klewitz and Hansen (2013)</p> <p>Verdú et al.(2016)</p>	<ul style="list-style-type: none"> • Firm performance. • Diversity of product/service range, technological innovations • Business Model Globalization • This study analyzes the most effective innovation modes(‘science and technology-based innovation’, STI, and ‘doing, using and interacting-based innovation’, DUI)for business innovation performance. • Eco-innovation (e.g. eco-design, cleaner production) and sustainability-oriented innovations (SOIs), that is, the integration of ecological and social aspects into products, processes, and organizational structures. • Key element of regional growth is its ability to transform knowledge into innovation.
3	Processes of innovations	<p>Seo and Chae(2016)</p> <p>N.A Rahmana et. (2015)</p> <p>Lee at al.(2012)</p>	<ul style="list-style-type: none"> • Considering an SME as an agent, this study analyzed the effects that market dynamics and firm diversity have on innovative activity and firm performance by using an ABS approach. Specifically, NetLogo was utilized to conduct the ABS. • Social networking, computerized record, online marketing • Business Model (BM) of any company goes through transformation, augmentation, extension or evolution to sustain competitiveness, hence the need of Global BM .



		<p>Apanasovich, et al.(2016)</p> <p>Klewitz and Hansen(2013)</p> <p>Verdú et al.(2016)</p>	<ul style="list-style-type: none"> • Firms that combine the STI and DUI modes of innovation are more likely to generate technological innovation than those firms that focus on STI or DUI modes alone • Interaction with external factors (e.g. customers, authorities, research institutes) can ultimately increase the innovative capacity of SMEs for sustainability-oriented innovations (SOI) • Innovations are no longer developed only within organizational boundaries; Innovation frequently is the result of collaboration involving an extensive network of external agents (suppliers, partners, customers)
4	Tools used	<p>Seo and Chae(2016)</p> <p>Lee at al.(2012)</p> <p>Apanasovic,et al.(2016)</p> <p>Verdú, et al.(2016)</p>	<ul style="list-style-type: none"> • Agent-Based Simulation (ABS) ,ABIS(Agent-Based Innovation Simulator) using NetLogo . • Reviewing 125 previous Business model (BM) studies, principal types of Korean BMs are identified by using K-means vector clustering. • Formulation of hypotheses. • Qualitative comparative analysis (QCA).
5	Difficulties	<p>Seo and Chae(2016)</p> <p>Y.-P. Ho et al(2016)</p> <p>Lee at al.(2012)</p> <p>Apanasovih, et al.(2016)</p> <p>Klewitz and Hansen (2013)</p>	<ul style="list-style-type: none"> • Rapid technological changes, intense fluctuations in customer demand, and the instability of market structure. • One key challenge faced by Newly Industrialized Economies (NIEs) is the evolution of an appropriate strategy to sustain long-term economic growth. • SMEs with global infant Business Models(BM) cannot decide which innovation to push because they have little knowledge about global markets and competitors. • The lack of financial capital, innovation management experience and state-of-the-art technology are the peculiarities of developing countries. • While prior research has often dealt with sustainability-oriented



			<p>innovations (SOI)s in large firms, the last decade has begun to generate broad knowledge on the specificities of SOIs in small and medium sized enterprises (SMEs) as they are increasingly recognized as central contributors to sustainable development. However, this knowledge is scattered across different disciplines, research communities, and journals.</p>
6	Empirical Studies	<p>Seo and Chae(2016)</p> <p>N.A Rahmana et al (2015)</p> <p>Lee at al.(2012)</p> <p>Apanasovic, et al.(2016)</p> <p>Klewitz and Hansen(2013)</p>	<ul style="list-style-type: none"> • Developed a program to simulate real situations using NetLogo, a well-known multi-agent system. • Library search and evaluate previous literature review on the subject of SME Survival and Technological Innovation. • Survey result of 400 Korean SMEs • For empirical analysis, Belarus was selected It is a small open catching-up country with a poor R&D expenditure and a highly educated population. • Systematic review of 84 key journal articles in a time frame between 1987 and 2010

III. LITERATURE REVIEW

Recent large-scale surveys on corporate and public sector leaders show that SME innovation gained lots of importance in practice [12]. Scholars are turning their interest to study SME performance and success factor which significantly heading towards proposing frameworks and models to improve the SME industry from 2009 up till the year 2016 [13,14,15,16]. Findings from these studies, proposed that technology is the determinants of SME success.

3.1 Importance of Innovation

It is an indisputable fact that a nation’s economic wealth and growth are dependent on the prosperity of its industrial sector. However, as a consequence of globalization, the manufacturing industry is constantly under tough pressure to increase its competitiveness. Globalization has forced small and medium enterprises to change business models with new innovative capabilities [1]. N.A Rahmana et al.[2] said SME use technological innovation to improve performance. Apanasovich, et al.[18] explains that before engaging in any innovation activity ,managers should analyze their current resources and capabilities associated to the adoption of specific innovation modes. According to him organizational innovation requires a higher endeavor in managerial and teamwork practices. Klewitz and Hansen [11] feels knowledge on the specificities of sustainability-oriented



innovations (SOIs) in SMEs are increasingly recognized as central contributors to sustainable development. Combination of high levels of collaboration among small- and medium-sized enterprises, and public investment in research and development facilitates significant rates of organizational innovation [18]. According to him collaboration among firms promotes organizational innovation. Innovation involves new ways of introducing and organizing management systems for production, such as supply chain management systems, business re-engineering, lean production, and quality- management systems [17]. Market dynamics and firm diversity influences the amount of performance manifested by SMEs' innovative activities. Seo and Chae [19] says when market dynamics is high, innovative activities play a more crucial role in contributing to the revelation of performance after a certain period of time has passed, whereas exploitative activities are comparatively important in the early time periods.

3.2 Areas of Innovations

Lots of Research work has been done on various area of innovation. Seo and Chae [19] dealt in innovation for firm performance . N.A Rahmana et al. [2] conducted their research work in diversity of product/service range and technological innovations. Lee et al. [1] spoke of Business Model Globalization. Apanasovich, et al. [17] analyzed the most effective innovation modes ('science and technology-based innovation', STI, and 'doing, using and interacting-based innovation', DUI) for business innovation performance. Klewitz and Hansen [11] dealt in eco -innovation (e.g. eco-design, cleaner production) and sustainability-oriented innovations (SOIs), that is, the integration of ecological and social aspects into products, processes, and organizational structures. Verdú et al. [18] said that key element of regional growth is its ability to transform knowledge into innovation.

3.3 Processes of Innovations

Business cannot be successful without the process of innovation. The effective deployment of different processes in innovation in SME has been widely recognized in recent years as a mean of building sustainable competitive advantage and thereby enhancing organizational performance. Considering SME as an agent, Seo and Chae [19], in their research analyzed the effects that market dynamics and firm diversity have on innovative activity and firm performance by using an ABS approach. Specifically, Net Logo was utilized to conduct the ABS. N.A Rahmana et. al [2] said social networking, computerized record, online marketing are the framework of innovation process. Lee et al.[1] elaborates that Business Model (BM) of any company goes through transformation, augmentation, extension or evolution to sustain competitiveness, hence the need of Global BM. Apanasovich, et al [17] said that firms that combine the sustainability-oriented innovations (STI) and doing, using and interacting-based innovation (DUI) modes of innovation are that more likely to generate technological innovation than those firms that focus on STI or DUI modes alone. Klewitz and Hansen [11] elaborates that interaction with external factors (e.g. customers, authorities, research institutes) can ultimately increase the innovative capacity of SMEs for sustainability-oriented innovations (SOI). Verdú et al.[18] said innovations are no longer developed only within organizational boundaries; Innovation frequently is the result of collaboration involving an extensive network of external agents (suppliers, partners, customers).



3.4 Tools Used

Various authors have researched in various areas of innovation in SME using various tools to find out methods to improve the manufacturing parameters. Seo and Chae [19] used Agent-Based Simulation (ABS) ,ABIS(Agent-Based Innovation Simulator) using NetLogo. Lee at al. [1] reviewed 125 previous Business model (BM) studies; principal types of Korean BMs were identified by using K-means vector clustering. Apanasovich, et al. [17] used formulation of hypotheses method. Verdú et al [18] used Qualitative comparative analysis (QCA).

3.5 Difficulties

A lot of difficulties may arise during implementation of innovation in SMEs. The growing number of business failure and higher failure rate for infant business demands SME survival to be the center of attention with technological innovation acting as the medium leading to higher survival rate. Seo and Chae[19] felt difficulties in innovation arise due to rapid technological changes, intense fluctuations in customer demand, and the instability of market structure. Y.-P. Ho et al [20] said difficulty in innovation may arise due to challenges faced by Newly Industrialized Economies (NIEs) is the evolution of an appropriate strategy to sustain long-term economic growth. Lee at al[1] elaborates that major difficulty in implementation of innovation is due to the fact SMEs with global infant Business Models (BM) cannot decide which innovation to push because they have little knowledge about global markets and competitors. Apanasovich, et al.[17] said that implementation of innovation may difficult due to the lack of financial capital, innovation management experience and state-of-the-art technology of developing countries. Klewitz and Hansen [11] said while prior research has often dealt with sustainability-oriented innovations (SOI) s in large firms, the last decade has begun to generate broad knowledge on the specificities of SOIs in small and medium sized enterprises (SMEs) as they are increasingly recognized as central contributors to sustainable development. However, this knowledge is scattered across different disciplines, research communities, and journals and may be the cause of difficulty to implement innovation strategies in SMEs.

3.6 Empirical Studies

Several empirical studies have been made for innovation and development of SME. Seo and Chae [19] developed a program to simulate real situations using Net Logo, a well-known multi-agent system. After 300 simulated instances using Net Logo, the firm diversity values were distributed from 0.14 to 0.92. Market dynamics was manipulated by the length of the bit string in the solution of the task with 3 (low) and 30 (high). N.A Rahmana et al [2] conducted Library search and evaluate previous literature review on the subject of SME Survival and Technological Innovation and found out that theoretically, social networking, computerized record and online marketing are the main variables that found to be signify cant to SME survival but empirical data is required to prove these connections. Lee at al.[1] analyzed survey result of 400 Korean SMEs identifying principal types of those business models, and of finding evolving paths of SME's business models with the changing pattern of innovativeness. Apanasovich, et al.[17]for their empirical analysis, selected Belarus. It is a small open catching-up country with a poor R&D expenditure and a highly educated population. For the sake of completeness, in this paper, the impact of STI and DUI mode is studied .Klewitz and Hansen [11] made



systematic review of 84 key journal articles in a time frame between 1987 and 2010 and found that SME strategic sustainability behavior ranges from resistant, reactive, anticipatory, and innovation-based to sustainability-rooted. They proposed that interaction with external actors (e.g. customers, authorities, research institutes) can ultimately increase the innovative capacity of SMEs.

IV. CONCLUSION

It is an indisputable fact that a nation's economic wealth and growth are dependent on the prosperity of its industrial sector. SME's innovation is essential for economic growth of any country. Although it is quite evident that innovation of any sector should depend on innovativeness, the problem arises that there are too many determinants and influencing factors on innovativeness. In order to overcome this, SME's innovativeness has been investigated based on some key issues.

A number of studies have tackled these issues, and identified several internal and external factors. Importance of innovation have been studied in details, Areas of innovation looked into and effective deployment of various process of innovation reviewed. The different tools used for implementation of innovation and improve manufacturing are studied, the difficulties that are faces are discussed and details of empirical studies related to innovation examined. Innovation will be definitely helpful for Indian industries to improve quality and reduce cost at faster delivery.

This paper tries to highlight the different aspects and benefits of innovation and its implementation in SMEs. Organization in global competitive market as well as those wish to achieve sustainable development should strive for innovation through the application of tools and techniques suitable to their situation. As industry giants face the growth limitation, many countries regard SMEs as new growth engines, and set various policies in motion to increase the number of global leading SMEs. Without any systematic guide of SME's evolution through globalization, doubts cannot help being cast continuously both on effectiveness and efficiency of SME policies. In that regard, this study can serve to improve relevant SME policies and procedure.

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