

# Innovation Management Capabilities for R&D in Pakistan

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## INTRODUCTION

Today major issues are: unpredicted global business climate in every business sector. The significant emergences of domestic and international business dynamism, challenging business competition, rising growth in knowledge driven economies with all comprehensive technological tools have browse innovation and innovative capabilities as major instrument that used to compete global business dynamism. Number of studies and publication in context of evaluating effectiveness of innovation management capabilities on R&D activities particularly during the developing on National innovation system (NIS) (Naqvi, 2011) for the developing economies like Pakistan,

A national innovation system- as theoretical framework- is generally translated as a specific cluster or range of linkages among the factors implied in innovation processes, and interrelationship among these factors determines the performance related to innovation process (i.e. innovation efficiency) (Freeman, 1987; Metcalfe, 1995; Nelson, 1993; Numminen, 1996). This interpretation attracts many researchers to draw their conclusion on new structure of knowledge based economies in case of both developing and developed economies (Correa, 1998; Foray, 1994; Lundvall, 1998)

Innovation capability influence imperative stake in developing R&D activities in recognized to confront the uncertain business environment and counter domestic and global business competencies, it encourages firms to reduce their production expenditure, starched the business potential and excel societal source of revenue (Pannirselvan et al., 2016; Sorooshian et al, 2013). The existing circumstances recognized as knowledge era, and the global business challenges experience to “Knowledge revolution” drive by the accelerating growth of scientific and technological progression (Gilani, 2015a)

Pakistan has made inspiring pace towards creating an advance infrastructure for R&D through aggressive policy with potential financial backing but the expected targets could not be accomplished. It finds quite reluctant to R&D and innovative activities developed through academia, while some limited momentum adds up from the private sector (Naqvi, 2011). Developing capabilities in various sectors consider as significant step to superimpose the innovation effectiveness (Lau, 2010), In this context, number of scholar’s have understood such innovation capabilities considers as key factor to influence overall innovation effectiveness that impact on R&D spending specifically translating into innovational design with respect to market environment (Paolo Landoni, 2016; Yam, 2011).

In holistic view, there is certainly a problem with determining innovation inputs and outputs, particularly in context of a dynamic business environment. There are few other complex issues for instance: Emergences of domestic and international business dynamism, and challenging business competition, rising growth in knowledge driven economies. In general narrative all the estimations related to innova-

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tion inputs explicitly and implicitly comprise of elements that depends on R&D spending (or developing the circumstance for increasing R&D spending) (Jankowska et al., 2017).

There are comparatively unexplored literature regarding criteria for general decision guideline about involvement of innovation capabilities as useful under limited expenditure and lack of empirical evidence regarding supportive indicators to cater policy making in order to propel research and development (Dimitrios Kafetzopoulos 2015; HaoJiaoa, 2016; Mei-Chih Hu, 2016; Samson, 2014; Yam, 2011; Zhu, 2014). However, there are more investigation and in depth emphasis required on relationship among the dimensions and criteria's of innovation capabilities and their influence to R&D to draw a general guideline that helps decision makers to develop policies by using these criteria's to strategies R&D configuration in order to expend and achieve business competitiveness (Alberto Di Minin 2012; Hosseinia, 2016; Martin, 2015)

In contrast developed economies, finite research is being done on R&D with science and technological advancement in Pakistan (BPTC, 1998; Naim, 2001; Qureshi, 1998) but specifically with angle of innovation and technological advancement system in Pakistan. Pakistan council of Science and Technology (PCST) highlights Science and Technology (S&T) Indicators (Gilani, 2015b) over a period of time. One of research purpose is to evaluate S&T significant drivers with a specific dimension of innovative mechanism in order to screen progressive national innovation initiative. But due to the instable government political drawback creates difficulties for sustaining R&D activities (Naqvi, 2011).

## BACKGROUND

Developing innovation capabilities consider as an expensive and uncertain process. From business perspective, in general argument innovation can be describe as a complicated systemic process of developing new conceptual ideas- start with the procedure of their development, process of their modeling, and commercial application- using technical knowledge, technological capabilities, and comprehensive firms resources (W. Artz, M. Norman, E. Hatfield, and L. Cardinal., 2010; Karlsson, 2015a). Similarly, number of firms used innovation an instrument for consistent growth because it drives to influence number of complex functional strategies such as (marketing, production and product). Number of experts and scholars figure out innovation capabilities as crucial enabler of business competencies and recognized as essential indicator to the overall productivity and business growth (Karlsson, 2015a; Subrahmanya, 2012). In general, firms accomplished their innovation process by either developing in house innovation capabilities through concrete internal R&D process or by acquiring R&D capabilities through external collaboration. The initial aim to strength a extensive progress in technological drivers that retain the existing process capabilities and starched the product range with minimum production cost (Ganotakis, 2011).

Most of the innovation literature argues that innovation is the most essential resource for firm's accomplishment and survival (Abbing, 2010; Cho & Pucik, 2005) in dynamic business environment Innovation capabilities are consider as significant drivers for influencing innovation (Teece et al., 1997) and regard as the foundation of firms transformation to conceive competition, new market opportunities and external circumstances (Guan & Ma, 2003; M.Elmquist & Masson, 2009). Accordingly, there have been numerous and extensive discussion on innovation capabilities, which direct to various approaches to classify such capabilities.

There are various approaches to characterize innovation capabilities in prior studies are twofold. One has to observe the capabilities from the holistic angle for instance from outcome perspective, in which innovation outcome can be split into various components. For instance: Sulistiyani and Harwiki (2016)

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