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Techno-Entrepreneurial Leadership: An Emerging thought on Indian MSMEs

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Abstract:

Technology entrepreneurship is a vehicle that facilitates prosperity in individuals, firms, regions, and nations. The study of leadership therefore, serves an important function for success of any firm. The field of techno-entrepreneur leadership is in its infancy when compared to other fields such as leadership, entrepreneurship development and innovation management. However, we are at a point where we can leverage the insights contributed by previous work to understand and explore the concept of techno- entrepreneurial leadership. In this regard, this paper seeks to strengthen the connection between research in two fields that are not well-established in themselves and not often studied together: Techno-entrepreneurship and leadership. Hence, this study employed systematic literature review to explore the concept of techno-entrepreneurial leadership in MSME context.

Keywords: Entrepreneurship, India, technology

1. Introduction

In the entrepreneurship literature, entrepreneurial leadership is referred as the potential of the entrepreneur to influence and lead the activities of team members towards the achievement of the organizations' objects (Renko et al., 2015). In the entrepreneurship literature, entrepreneurial leadership is referred as the potential of the entrepreneur to influence and lead the activities of team members towards the achievement of the organizations' objects Techno-entrepreneurial leadership needs all of these, plus the development of dynamic capabilities for continuously exploring and exploiting of new entrepreneurial opportunities. The literature on leadership is well- established. However, there is limited literature described the leadership potential of techno-entrepreneurs. Hence, the main objective of this research is to explore the concept of techno-entrepreneurial leadership.

Techno-entrepreneurial leadership is defined as the capability of techno-entrepreneur to provide guideline, implement plans and motivate the people to achieve the goal of the organization. Technology entrepreneurship is referred as the investment of techno-entrepreneur to deploy human resources and assets and advance in technological knowledge for the purpose of creating and capturing new value in the firm. Hence, techno-entrepreneur needs to have technical skill, management skills, good attitude, and leadership, then only he/she can be a complete successful Techno – Entrepreneur (Oakey R.P., 2003). Techno-entrepreneurial leadership emphasizes on leadership and entrepreneurial potential, whereas its main focus on dynamic capabilities. In general, techno-entrepreneurs focus investing a significant amount of financial resources to science, technologies, and research and development activities (Blanco, 2007). However, developing leadership skill plays an important role to achieve entrepreneurial success (Örnek and Danyal, 2015). Hence, the main focus of this study is techno-entrepreneurial leadership in MSME context. The literature on techno-entrepreneurial leadership is still underdeveloped. To address this issue, this study designs to understand the techno-entrepreneurship.

2. Literature Review

In entrepreneurship literature, a number of researchers have identified the measures of entrepreneurial leadership and their effect on firm performance. Limited studies have addressed the dynamic capabilities aspect of techno-entrepreneur. This study employed a systematic literature review on the theme of techno-entrepreneurial leadership. This research categorizes literature into four subsections, (1) micro, small and medium enterprise; (1) entrepreneurial leadership, (3) entrepreneurial leadership in the MSME sector (4) dynamic capability of entrepreneurial leadership. Figure 1 illustrates the research growth of each categorization. From the figure 1, it is clear that the research growth in the allied

field is continuously flourishing noticeably. In this study, researchers have used a simple technique to collect, short and select paper. The keywords of each category are investigated on Scopus database with the constraint 'paper' in document type to gather the relevant papers published in Scopus indexed journals.

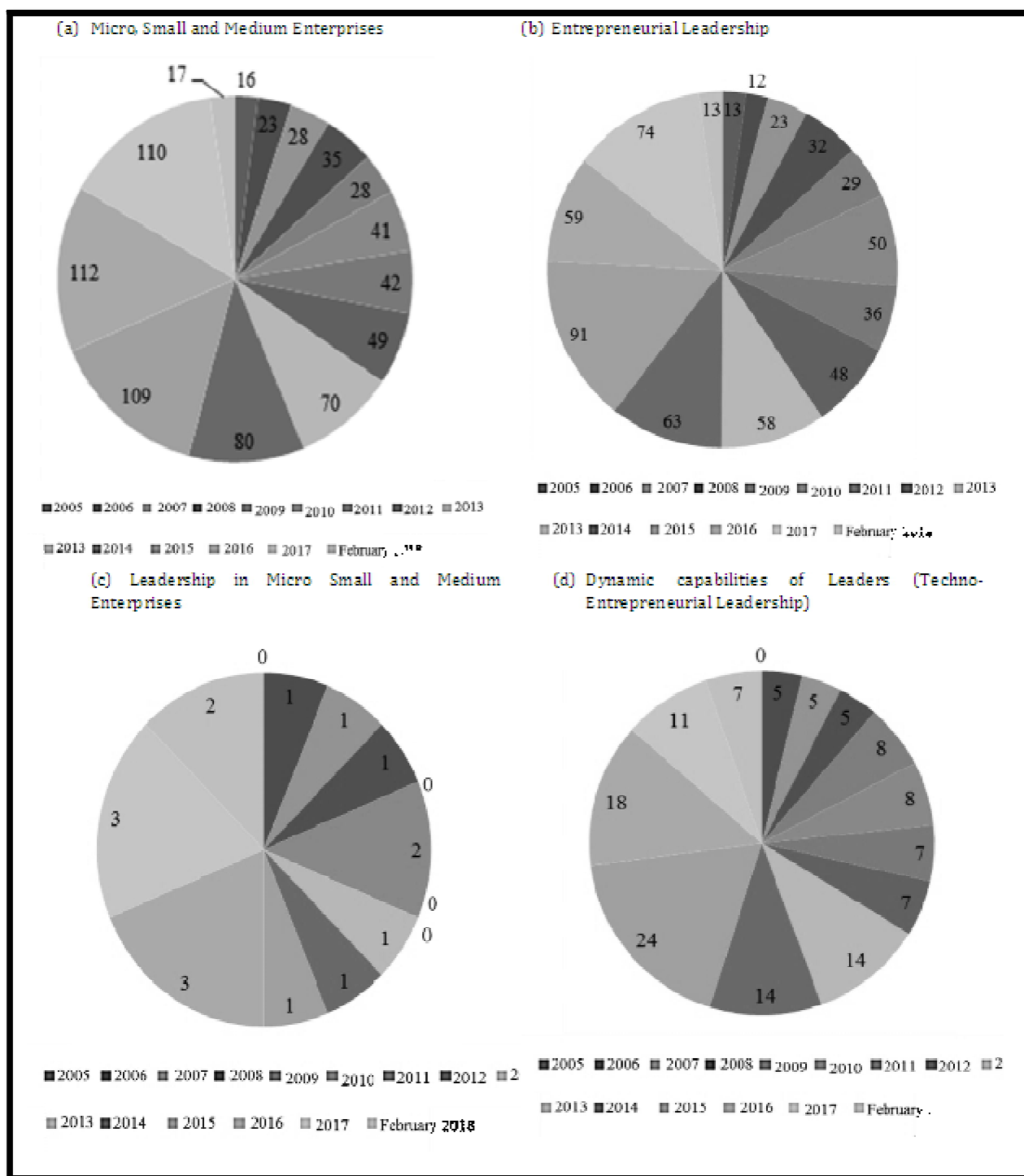


Figure 1: Published Articles in Scopus Indexed Journals

Figure 1 shows that the literature on entrepreneurial leadership is broader and multidisciplinary, but techno-entrepreneurial leadership is an underdeveloped niche. This research enriches the entrepreneurial literature by consolidating elements from the above mentioned four categories of leadership research into a comprehensive conceptualization of techno-entrepreneurial leadership, illustrated in the following section.

2.1. Micro, Small and Medium Enterprise (MSME)

In entrepreneurship literature, MSME has been defined in different ways. According to Vandenberg (2016), MSME is defined as the enterprises which having more than 250 employees and its turnover and balance sheet total are not more than 50 million euro and 43 million euro, respectively. However, the definition of MSME varies in different contexts or country (O'Regan and Ghobadian, 2004). For example, India, Korea and Thailand possess different definitions for SMEs. In both Korea and Thailand, MSMEs are defined on the basis of the number of employees in the company (companies having

employees less than 300 and 200 respectively). According to MSMEs Act (2006), MEMEs are defined on the basis of their investment in equipment, plant and machinery. Table 1 illustrates the classification of MSMEs.

| Classification | Manufacturing Enterprises | Service Enterprises |
|--|--------------------------------|------------------------------|
| Micro | Rs. 2.5 million / Rs. 25 lakhs | Rs. 1 million / Rs. 10 lakhs |
| Small | Rs.50 million / Rs. 5 crores | Rs. 20 million / Rs 2 crore |
| Medium | Rs 100 million / Rs 10 crore | Rs. 50 million / Rs 5 crore |
| (Source: Zaidi, 2013) | | |
| N Category | Investment (Plant & Machinery) | Service (Turnover) |
| Micro | Less than Rs 25 lakh | Less than Rs10 lakh |
| Small | Less than Rs 5 crore | Less than Rs 2 crore |
| Medium | Less than Rs 10 crore | Less than Rs 5 crore |
| (Source: http://www.dcmsme.gov.in/ssiindia/defination_msme.htm) | | |

Table 1: Classification of Micro, Small and Medium Enterprise

MSME sector in India always faced a shortage of skilled labor required for production, servicing and marketing (Saluja, 2012). The other shortcomings of MSME that makes this sector lagging behind the large firms are the nature of innovation that takes place in such firms (Gupta and Barua, 2016; Elenkov et al., 2005), lack of customer insight and industrial foresight for longer execution of strategy (Hadjimanolis, 2000; Wolfe, 1994) and high rate of failure of product development due to poor design, quality, after sales services, distribution contacts, marketing knowledge, financial weakness etc. (Griffin and Page, 1993). All these problems arise due to lack of the dynamic capabilities of leader to explore and exploit new opportunities. However, there is a paucity of research on dynamic capabilities of leaders in MSME sector. Zahra et al. (2006) stressed on the significant and effective role of technology leadership to enhance niche performance of MSMEs and to transfigure themselves into world-class companies. O'Regan and Ghobadian (2004) mentioned that organization size is not a significant variable in the degree of emphasis on strategic planning process, leadership and organizational cluster in MSME sector. This study includes a number of characteristics of techno-entrepreneurial leadership that are persistent with knowledge and information-based capabilities.

2.2. Entrepreneurial Leadership

Entrepreneurial leadership is a well-recognized concept in management literature which includes clear objectives, generating opportunities, conserving organizational intimacy, empowering team members and improving the capabilities of team members (Cunningham and Lischeron, 1991). However, leadership has been associated to an individual's skills, abilities and degree of influencing people for new tasks and achieving outstanding performance. Pettman and Dobbins (2002) defined leadership as the ability to influence and encourage people to work together achieving common goal, and nurture ordinary people for extraordinary performance. However, entrepreneurial leadership is defined as the potential to promote other members to effectively manage resources and develop opportunity seeking and advantage-seeking behaviors (Ireland et al., 2003). The main concern of leadership is to generate visionary scenarios that emphasize to assemble and assemble human resources and create new values to discover and exploit new opportunities (Gupta et al., 2004). Leadership includes passion, vision, focus and the ability to encourage others (Springborg, 2010), whereas entrepreneurial leadership includes all these, plus a set of skills and mindset that assist to identify, develop and capture new entrepreneurial opportunities (Thornberry, 2006). Entrepreneurial leadership emphasizes on attributes, behaviors and activities of entrepreneurial leaders to recognize and exploit new entrepreneurial opportunities (Cogliser and Brigham 2004; Stogdill 1948). Entrepreneurial opportunity refers as the possibility to introduce innovative products or services in the market, whereas recognizing opportunity is about perception. On the other hand, exploitation of opportunities is about action or investment to gain return from opportunity. Entrepreneurial leader engages in opportunity focused activity and encourage their followers to pursue entrepreneurial behavior (Cunningham and Lischeron 1991; Thornberry 2006). Entrepreneurial leaders motivate their followers to work towards organizational goals and work in innovative ways. The above-mentioned characteristics allied with two other leadership: transformational leadership (Avolio and Bass, 1995) and creativity to improve leadership (Makri and Scandura, 2010).

Among the theories of leadership (Kanste et al., 2007; Dassault et al., 2013) such as transactional/ transformational (Bass, 1985), charismatic (Conger and Kanungo, 2000), and visionary leadership theory (Sashkin, 1988), the most cited leadership theory is Bass's transactional/ transformational leadership theory (Dussault et al., 2013). According to Avolio et al. (1999), transformational leadership includes four elements such as charismatic role modeling, individualized consideration, motivation and intellectual stimulation. These constructs were used in a number of entrepreneurship research (Ensley et al., 2006; Ling et al. 2008; Peterson et al. 2009; Baum et al., 1998). The transformational entrepreneurial leader acts as a role model for their followers or team members and motivate the efforts of team members to achieve organizational goals (Prochazka, et al., 2017). Furthermore, transformational leadership recognizes the unique needs of individuals and considers their skills and knowledge. Transformational leadership enhances the belief of team members on their entrepreneurial skill, ability and passion for innovation and creativity. The other leadership style related to employee creativity where leader encourages followers to generate new insights, create new ideas and make breakthrough discoveries (Hooker and Csikszentmihalyi, 2003). Few researchers mentioned that few characteristics of entrepreneurial leadership similar with the entrepreneurial oriented construct. Entrepreneurial orientation defined as the process, practices and decision-making activities that help to make a new entry in the market (Lumpkin and Dess, 1996).

Few researchers have provided various alternative factor models using multifactor leadership questionnaire (MLQ) survey (Bycio et al., 1995; Howell and Avolio, 1993). Avolio et al. (1999) conducted a study to re-examine the elements of transformational and transactional leadership dimensions using the MLQ. Dussault et al. (2013) developed a new self-reported multi-factor leadership scale and concentrated on the various dimensions of leadership such as transformational, transactional, and Laissez-faire leadership (Vandenberg et al., 2002; Avolio et al., 1999). The scale developed by Dussault et al. (2013) considers charisma, intellectual stimulation and individualized consideration as factors of transformational dimension, management-by-exception, and contingent reward as factors of transactional dimension and also a passive-avoidant leadership for Laissez-faire dimension. Carless et al. (2000) performed a study on the large Australian financial organizations to develop measures of transformational leadership. The factors used by Carless et al. (2000) capture the transformational leadership behavior such as vision, staff development, supportive leadership, empowerment and innovative thinking. Conger et al. (2000) examined the leadership among manager of larger diversified firms by employing the Conger and Kanungo (1994) scale. According to Conger and Kanungo (1994), the measures of leadership include strategic vision and its expression, personal risk, sensitivity to the (external and internal) environment, unconventional behavior and sensitivity to the team member's requirements.

2.3. Entrepreneurial Leadership in MSME Sector

Entrepreneurial leadership in MSMEs includes the multiple roles and capabilities of organizing, leading from the front and sound knowledge in all functional areas that help the firm towards a meaningful aim (Aslan et al., 2011). Gaining competitive advantage of a firm is enhanced by nurturing dynamic capability that lies in a large proportion with the firm's top management team or team leaders (Teece et al., 1997). Augier and Teece (2009) emphasized that leader must be entrepreneurial, strategic and flawless performer to enhance firm performance. MSMEs in India suffer from the incompetent supply chain system, obsolete technology and poor accessibility of resources and information. Furthermore, it is very difficult for MSMEs to nurture their inherent capabilities and strengthen their position in highly competitive and uncertain market. (Yamazawa, 1994). Gumusluoglu and Ilsev (2009) mentioned that transformational leadership has significant influence on creativity at both the individual level and organizational level. A number of studies revealed that leadership has significant influence on innovation (Gupta and Barua, 2016; Vaccaro, et al., 2012; Miles, 2007). Dunne et al. (2016) mentioned that a few features of leadership such as inspirational, negotiate competitively and efficacious leading organizations have significant influence on new product innovations in small organizations. Strategies and visionary leadership are most required component for MSMEs during the transitional period (Visagie, 1997). According to Hua (2007), MSMEs support technological leadership while acquiring new capabilities. Although few trade associations play a vital role in developing sustainable practices among SME, they remain behind to promote leadership and significantly influence entrepreneurial behavior (Clarke, 2010). However, there is no comprehensive research on development and sustenance of MSME leaderships in Indian context.

2.4. Dynamic Capabilities of Leadership

Dynamic capabilities are defined as a set of unique characteristics that help to develop new product, make effective decision and create alliances with other organizations (Eisenhardt and Martin, 2000). Dynamic capabilities emphasize to combine and reconfigure resources to capture new opportunities (Simpson and French, 2006; Wallace and Tomlinson, 2010). Dynamic capabilities also referred as the organizational and strategic practices of entrepreneurs that help to develop innovative product and enhance accessibility to new sources (Teece et al., 1997; Teece, 2016). Few researchers have deliberated dynamic capabilities play a significant role to create competitive advantage in highly competitive and uncertain environment (Teece, 2007; Winter, 2000). Dynamic capabilities have been recognized as effective strategic practices by which leaders modify their resource base- obtain new resources, combine them together, and reorganize them to create a new effective strategy (Grant, 1999; Zahra et al., 2006). According to Winter (2003), dynamic capabilities emphasize on a set of decision options of leaders to generate significant outputs from entrepreneurial activity.

Zahra et al. (1999) mentioned that firms require to improve corporate accountability, sustain investment, harvest the wellspring of creativity and share new ideas and knowledge among the employees or team members which help to develop dynamic capabilities and offer a podium to create new products and services. The dynamic nature of the leaders somehow reflected in understanding entrepreneurial leadership. In a competitive environment, developing studies of leadership have been limited by the traditional approaches and highlighted a need for developing entrepreneurial approaches (Ruvio et al, 2010; Gupta et al, 2004).

A multi-cultural evaluation tool has been designed to evaluate entrepreneurial leadership. In various cultures, this tool is used to examine the satisfaction and perceptions of students at social and organizational levels and partially generalizable at the personal level (Gupta, et al, 2004). However, there is limited studies dealt with entrepreneurial leadership qualities as an essentially part of strategic management (Ruvio et al, 2010; Kuratko, 2007). This limitation of the entrepreneurial leadership tool tried to be compensated by developing a multi-dimensional and coherent scale based on strategic and dynamic environment (Leih and Teece, 2016). Previous studies performed on the founders and top managers in SMEs, situated in Tehran in which entrepreneurial leadership defined as fusion of four factors: strategic, communicative, personal and motivational factors (Chen, 2007). On the other hand, Teece (2016) mentioned that entrepreneurship and leadership roles include perceiving opportunities, developing and executing viable entrepreneurial strategies, building capabilities and leading organizations through transformation. An understanding of the dynamic capabilities of leaders of MSME contributes to develop more reliable entrepreneurial strategy and provide better

understanding of environmental dynamics. Deeds et al. (1999) proposed that capabilities of developing new product are function of entrepreneur' scientific knowledge, technical skill, and managerial skills. It has been recommended by a few researchers that leadership emphasizes to share knowledge and experience and manage the new product development process which significantly impact new product development capabilities of the organization. Organizational capabilities have been considered as a supportive measure of firm performance as it helps to identify and exploit new opportunity (Koryak et al., 2015). This study points out, however, that there is limited research addressing the research question of how dynamic capabilities of leaders of MSMEs can help to explore and exploit new opportunities. Hence, this study draws attention towards understanding and conceptualizing the dynamic capabilities of leaders underlining the growth of MSMEs.

Table 2 shows that researchers have developed scales on entrepreneurial leadership qualities, but failed to capture the features of dynamic capability (Teece, 2007). The conceptualization of 'techno-entrepreneurial leadership' must include the above said qualities of leadership. The next level question comes- 'sensing what?' These leads to an opportunity of development of a scale on leadership which can facilitate understanding leadership issues in emerging countries like India in MSME sector, which is an urgent need for the MSME sector for their sustenance in Indian perspective. Therefore, focused efforts have to be laid on development of Techno-entrepreneurial leadership measures. The existing scale captures the leadership qualities of cooperation, communication, creativity and motivation. These facilitate the neo-charismatic leadership, but lack the idea of "Techno-Entrepreneurial leadership", which is critical in development, sustenance, and succession of Indian MSMEs. This Paper thus tries to identify the measures of Techno-Entrepreneurial leadership for future scale development. Table 2 shows the summary of relevant studies on dynamic capability of entrepreneurial leadership in MSMEs. It appears from table 2 that research on techno-entrepreneurial leadership is unfledged. Hence, this study makes an attempt to explore the concept of techno-entrepreneurial leadership in MSMEs context.

In entrepreneurship literature, there are numerous terms used for techno-entrepreneurship such as technology entrepreneurship, technological entrepreneurship and techno-preneurship. Techno-entrepreneurship has been acknowledged as a leading driver of the development of any nation (Schumpeter, 1934) and can equally considered a vital concept in the development of technology entrepreneurs increasingly beset by competition. The challenging task of techno-entrepreneur is to build capability to continue explore and exploit new competitive opportunities. According to Neomanagetail theory (Boston et al. 1996), a traditional approach emphasizes on creating value through empowerment and decentralization in a stable environment. In the era of globalization and highly competitive environment, the new approach shifts from a stable environment to turbulent environment where entrepreneur's emphasis on organizing and controlling practices and focus more adaptive and innovative action.

Techno-entrepreneurship is defined as a style of entrepreneurial leadership that includes identifying technology intensive competitive opportunities, gathering resources such as talent and capital, and managing entrepreneurial activities and growth using effective decision-making skills (Dorf and Byers, 2005). Techno-entrepreneurs exploit breakthrough progress in science and engineering to generate better products and services. Few features of techno-entrepreneurs create a differential line between techno-entrepreneur and entrepreneurs. Techno-entrepreneurs usually implement a demonstrate approach with passion and unrelenting attitude which make them successful entrepreneur. Techno-entrepreneurship refers as the process by which techno-entrepreneur assemble, organize resources and technical system, and the strategies used by firm to pursue opportunities (Shane and Venkataraman, 2004). Techno-entrepreneurs also defined as an innovative application of scientific and technical knowledge by one or more persons who initiate entrepreneurial action and undertake financial risk to achieve their vision and goals (Canadian Academy of Engineering, 1998). In general, engineers are well-qualified in many aspects of techno-entrepreneurial activities such as scientific knowledge and technical skill, but lack in entrepreneurial skill and behaviour. As techno-entrepreneurs lack the necessary knowledge of entrepreneurship, they need to develop leadership skill, which involve being comfortable with constant change, contributing to innovative team and always demonstrating passion in their efforts. Hence, techno-entrepreneurs require to nurture technical and non-technical skill so that they enable to transform their new technology into the commercially viable product in a highly competitive environment.

While working in entrepreneurial firms, entrepreneurs require to organize, plan, control and lead different entrepreneurial activities to strengthen market position of firm in the market. In doing so, techno-entrepreneurs need to develop non-technical skill such as entrepreneurial skill and entrepreneurial behavior. One of the important behaviour is "entrepreneurial leadership". In techno-entrepreneurship context, this paper proposes the concept of techno-entrepreneurial leadership. Techno-entrepreneurship also defined as the entrepreneurship in the technology domain and the person who create new technology and commercialize it into market.

Techno-entrepreneurial leadership exists at the intersection of techno-entrepreneur, entrepreneurship and leadership. Here, leadership refers as a process to reshape the behavior of team members so that they get motivated and influenced towards achieving organizational goals. In a similar way, techno-entrepreneurs focus not only on entrepreneurs, but also on the intersection of technology, people and opportunities.

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