

Does Entrepreneurial Leadership and Orientation Matter in Academic Commercialization of University Research?

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ABSTRACT

Universities have been the custodians of knowledge and technology for centuries. They are considered the hub of knowledge activity and are unique as they hold the key to inventions and commercialization of university innovations. These inventions and commercialization of innovations are due to the skilled knowledge centers that reside in the form of faculty and a reflection of the entrepreneurial leadership capability of the university leaders. Since faculty is the major source of all technological advancements that are attributed to the universities. There is need to encourage entrepreneurial activities among the faculty personnel so as to engender more commercialization of academic research. Some conventional ideologists still think that the responsibility of the universities is towards teaching and learning and not the entrepreneurial activities. However, considering the overarching emphasis of governments towards entrepreneurship and the roles universities should play in the economic development along with the increasing competition among the universities for public funding, the academic leaders have no choice but to become entrepreneurial in nature. The purpose of this paper is to review literatures that are related to entrepreneurship and expose the roles universities play in the form of commercialization of research. The paper seeks to better understand the role of entrepreneurial leadership, entrepreneurial orientation towards commercialization of university research activities carried out by the academic staff. The entrepreneurial leadership is put forth as the most suitable form of leadership, if universities want to become entrepreneurial in nature.

KEYWORDS: Entrepreneurship, Entrepreneurial Leadership, Academic Leadership, Entrepreneurial Orientation, Commercialization, Malaysia.

I. INTRODUCTION

Entrepreneurship is relatively new to the Malaysian academic environment and not many researchers have investigated how leadership in Malaysian universities affects commercialization activities. Researchers believe that if universities are to take a more entrepreneurial approach, it would require leaders who understand and possess entrepreneurial skills [41, 103]. It has been highlighted that the leaders need to have an entrepreneurial orientation if they want to tackle the challenges faced by their universities [23]. For successful technology commercialization requires leadership, therefore, it is pertinent that clear vision and missions for technology commercialization are established [80]. Even though [104] posit that organizational prosperity is not only a result of leadership method but is also due to job condition. They put forward that any identification of positions and situations and of course selecting a suitable leadership method may provide an effective avenue in achieving organizational purposes. However, for effective entrepreneurial organization or an effective entrepreneurial community, leadership makes an effort to demonstrate their support for entrepreneurial activities. Hence, there is a need to investigate whether university leaders understand the intricacies of commercialization and if so do they also understand that consequences of its success or failing [41, 3]. Universities and research institutions face multiple strategic and often conflicting mandates. Some are formal directives, but some are local cultural norms that are perceived as administrative mandates [67, 23, 58]. Leadership can serve the process well simply by clarifying what is and what is not expected. In addition, [104] reported that there is a close relationship between organizational culture, authority distance, uncertainty, pluralism rate and personalization and leadership style. These they mention indicate a meaningful relation from statistical point of view. Furthermore, leadership style of organizations investigated revealed an evolutionary type of leadership style and transactional style operations. Considering the outcome of the author organizational culture needs a transactional leadership style and entrepreneurship organizational culture needs an evolutionist leadership style. Some university administrators perceive a mandate to avoid commercialization and yet they do recognize the importance of entrepreneurship and entrepreneurial leadership [7].

Muenjohn [75] reports that many leaders of public institutions in United States have tried to break their institutional dependency on public funds by developing alternative sources of funding. He stresses that these leaders understood the need for a more diverse resource portfolio not only for the purpose of building and sustaining the quality of the institution, but also for providing flexibility to eliminate the inevitable downturns in state support [23].

In Malaysia, unfortunately, despite the government focus on entrepreneurship and the role universities can play in economic development, many university leaders are still practicing traditional modes of management, unaware of the breadth and depth of change that must take place to transform their institutions into centers of innovation. Keeping in view the overall economic and academic situation in Malaysia, the entrepreneurial leadership is forwarded as a new way of understanding the university commercialization. Entrepreneurial leadership is a new leadership construct [4, 13] that has yet to found its theoretical bases. Hence, by exploring this phenomenon, the study aims to help the field of academic entrepreneurship move from a position of fragmentation to consolidation.

The role of leadership or more specifically entrepreneurial leadership has become more important in this age of globalization and entrepreneurship and specifically for universities involved in the commercialization activities that require. Researchers highlight that entrepreneurship is more related to individualism while leadership explores the relevance of the perspectives and followers [41]. Findings of past researchers reveal that entrepreneurial orientation and commercialization are somewhat connected between the variables particularly in government organizations [103, 8]. Bass and Riggio [12] highlighted that the ability to influence people is essential ingredient for effective leadership in an academic setting. Although, individuals in any organization view and design their own vision and objectives that are influenced more by their self in the perspective of the business [67].

Several researchers have investigated and opined that there are inter-relationships between leadership and performance [83, 67, 75], entrepreneurial orientation and efficiency [83, 65] and some have taken leadership, entrepreneurial orientation and performance [101]. Researchers are of the opinion that leadership behaviors are essential to determine the success of firms, or even a nation as a whole [7]. Entrepreneurial orientation (EO) on the other hand has been defined by Arham and Muenjohn [7] as entrepreneurship at the organizational level; although, it can also be viewed as the penchant of senior managers to take calculated risks, to be innovative, and to demonstrate proactiveness in their approach to strategic judgment. Organizations are supposed to be entrepreneurially orientated so as to be competitive and entrepreneurial leaders are required to build, inspire, further and uphold entrepreneurial orientation within the organizational setting which eventually enhances the overall performance and efficiency [98, 7].

The study of entrepreneurial leadership, orientation and commercialization process is in need of future investigation before a detailed integration of the field can be recognized. It is important to consider the theoretical basis of this study. This particular research will be arranged in the following format. The next section briefly discusses the evolution of higher education and commercialization in Malaysia. Then the author looks at the limitations of current research, followed by a review of theoretical frameworks in this field of study. Finally conclusions with future directions are provided.

2.0 Evolution of Higher Education and Commercialization in Malaysia

Malaysia attained its freedom from the colonial masters about 5 decades ago. At the time of independence, there were no full-fledged universities with the exclusion of University of Malaya situated in the now republic of Singapore. In due course, an affiliate of the existing university was established in Kuala Lumpur, and the new branch with the status of a university commenced business with an admission of only some hundred students [68]. At the time Malaysia being an agricultural society followed labor intensive economy that did not require highly educated workforce, hence, the enrollment of just a few hundred students in the new university college was deemed sufficient. A larger increase of government funding for higher education commenced around 1970 and continued until 1990 to provide adequate manpower for the industries particularly the economy of Malaysia which was on the verge of transforming from an agricultural based to a manufacturing based economy. With the adoption of New Economic Policy of 1970, enrollment of different races into the institutions resulted in the restructuring of the Malaysian community. World Bank in its 2007 report also acknowledged the Malaysian policy due to which admissions were raised at every level of education and that peaked to 65 percent during the years 1970-75 [100, 68]. Capable ethnic Malays were also encouraged with foreign scholarship with the aim of building an unrestricted constant civilization to replace the Darwinian culture of the survival of the fittest [68, 66].

The change in the system of business was witnessed as a result of the delegation of government activities in business to some private companies through privatization and Malaysian Incorporated Act of 1983 during the 1980s. This led to a new source of private education funding in Malaysia. The 1985-1986 financial crunches further accelerated the privatization policy of the government because of the pressure to cater for the expansion of public higher education. Lessons learnt from the financial crises supported the need to participate in the world economic activities by transforming to a knowledge intensive economy. The liberalization of the education sector was

advantageous because it resulted in the production of knowledgeable graduates. The introduction of the Universities and University Colleges (Amendment) Act 1996 provided the much desired university independence to chart their financial freedom. Universities and University Colleges (Amendment) Act 1996 permitted the universities to source external funding; establish commercial ventures, set up firms and take up shareholdings from quoted companies [52]. The Act anticipates universities to source their own financing to cater for their running expenditure. This resulted in the development of university- industry partnerships and alliances in Malaysia [61, 68].

Things took a different dimension in the early 2000 when there was a chunk of unemployed graduates in the country. Malaysian government sought the help of industry in order to solve the challenge. The problem of unemployable graduates of was blamed on the Malaysian Universities' curriculum which was perceived to be too theoretical and not essential to the yearnings of the industries [6]. As a result, the opinion of the private sector practitioners was sought and the curriculum of the Malaysian universities' was aligned with the changing environment of businesses and industry. The revolutionization of the education industry in Malaysia occurred at the tail end of the 20th century with knowledge as the chief motivator of the global economy [42, 16].

The government of Malaysia under its Tenth Malaysia Plan budgeted a heavy chunk of capital for the education sector and also implemented various recommendations put forth by the review committee. The allocated amount in the tenth Malaysia Plan was substantially huge as per proportion of federal wealth for education compared to the countries of the OECD [36]. Since, the implementation of Tenth Plan, universities are now saddled with the responsibility to pilot the research and development sector with the aim of commercialising their research and development outcomes so that the country can move up the economic value chain ladder. Furthermore, commercialisation of research and development outcomes has been set aside as the next engine of development. The seriousness of the Malaysian government as the entrepreneurial leaders in pursuing this intention is even more evident with the implementation of National Science and Technology Policy to promote the culture of science, innovation, and techno-entrepreneurship among Malaysians [73]. The Second National Science and Technology Policy proposed to develop the much needed human resources in Science and Technology to become more competitive in terms of R&D and innovation. Table 1 highlights the commercialization activities of the universities in Malaysia. The data has been taken from higher education ministry and relates to the year 2010.

Table 1 Commercialization Activities of Universities

Universities	Total R&D Projects	Commercialized Products	Commercially potential products	IPR				
				Pending	Granted	Trademark	Copyright	Industrial design
Universiti Malaya	1190	23	98	115	0	0	0	0
Universiti Sains Malaysia	35	53	72	34	8	2	4	1
Universiti Kebangsaan Malaysia	110	27	11	21	2	18	1	2
Universiti Putra Malaysia	218	4	34	30	3	5	0	2
Universiti Teknologi Malaysia	118	3	56	3	7	0	10	0
Universiti Teknologi Mara	190	5	91	23	2	2	9	1
Universiti Islam Antarabangsa Malaysia	43	1	0	1	0	1	1	0
Universiti Utara Malaysia	15	0	7	0	0	2	7	0
Universiti Malaysia Sarawak	11	1	8	4	0	0	0	2
Universiti Malaysia Sabah	18	0	18	9	0	2	3	0
Universiti Pendidikan Sultan Idris	6	0	8	0	0	0	0	0
Universiti Sains Islamic Malaysia	6	0	1	0	0	1	0	0
Universiti Malaysia Terengganu	12	3	12	2	0	1	0	0
Universiti Tun Hussein Onn Malaysia	6	0	7	0	0	0	0	0
Universiti Teknikal Melaka	2	1	2	1	0	2	2	0
Universiti Malaysia Pahang	8	0	0	0	0	0	0	0
Universiti Malaysia Perlis	3	4	15	6	0	0	1	0
Universiti Sultan Zainal Abidin	47	0	0	0	0	0	0	0
Universiti Malaysia Kelantan	20	0	0	0	0	0	0	0
Universiti Pertahanan National Malaysia	1	0	2	2	0	0	0	0
Total	2059	125	442	251	22	36	38	8

The table clearly shows that there is a need for universities to be more active in commercialization of their research work. Out of total 442 commercially viable projects Malaysian universities have been able to commercialize 125 or 28 percent. There is a gap between R&D activities and their subsequent commercialization as is evident from the table, that there are total of 2059 R&D projects and only 442 (21.4%) have potential to be commercialized. The overall percentage of commercialization of academic research is around 6 percent. Effectively it means the academia is involved in R&D activities that do not have any industry benefit and is purely academic in nature. To change this scenario, there is a dire need to develop the entrepreneurial orientation as well as proactive and entrepreneurially oriented leadership that can help and motivate the academics and researchers to involve them in R&D that is beneficial for the industry as well as for the society for the overall economic development as envisaged in various government policies and initiatives.

3.0 Limitations of Current Research

The existent experiences in the field of employment in a particular nation indicate that one way to overcome the challenge to economic development is to introduce a new definition of job and employment concept and to pass through application towards entrepreneurship and to propagate it by means of education [105]. The authors posit that education has the most significant role in entrepreneurship development. Universities and high education institutes should include necessary instructions for entrepreneurship development in their agenda. Universities as main agents of training society specialized forces, have determinant role in entrepreneurship development in country. For this sake today the attitude is formed that future universities main capital will be provided by entrepreneurship graduates. Previous studies recognize the need for universities to become entrepreneurial, which requires a change in approach to university leadership. The ability of university leaders to be risk takers, innovative and proactive in their approach are the characteristics of entrepreneurial orientation identified in the private sector [53, 40]. Litan and Mitchel [65] point out that the degree of an entrepreneurial orientation in public institutions like universities has not been investigated. Entrepreneurial orientation in universities may be reflected in the way entrepreneurial leadership is viewed within the university, the manner in which risk-taking is considered in performance reviews, or the means by which success is measured [90]. Kenny and Patton [56] argue that universities should develop skills and traits. Hence, universities need to take into account the market in developing a new philosophy for future higher education [64, 56]. However, the internationalization and globalization of university education has resulted in the demand for a new type of administrative leadership with increased accountability as well as to produce commercialized technologies by public research institutions and universities [64, 39]. In response to this, Malaysian government has announced some public universities as research intensive universities that should focus on the need to be flexible and act entrepreneurially [66]. Public sector managers are reported to use entrepreneurship to gradually change their organizations by making staff more flexible, innovative and adaptable. Within the university environment, there is an increasing emphasis on the commercialization of university research to offset the funding gaps. Furthermore, the creation and application of new technology is the primary factor that drives economic growth, calls for the commercialization of university research have become louder [5, 96]. Knowledge transfer has been identified by universities and research institutes as an activity that can help eliminate this gap left by a lowering government funding [78]. However, authors put forward that intellectual property protection in broad meaning is consisting of the rights of intellectual innovations and creations in scientific, industrial, literature and art fields or the innovation of its creator [106]. Furthermore, the purpose of supporting these rights is enticing to create intellectual creations with the aim of economic, social and cultural development and improving human life. Generally, Intellectual Property is consisting of two components as industrial property and literature property or copy right. Certain key initiatives like incubation centers, entrepreneurship centers, subsidy programs, technology transfer offices, incentive structures etc., have been mentioned by researchers, if implemented by universities can enhance their overall commercialization success rates of their research outputs and in creation of spin offs [90, 56, 55]. However, majority of the literature on the subject emanates from advanced countries. For a developing country like Malaysia, it is still emerging in terms of its research capabilities as evidenced by various rankings. The recent entrance of Malaysian universities into the commercialization space is evidenced in the fact that the MOHE's emphasis as regards driving R & D activities among the universities had evolved from establishment of a research culture (2006 - 2008), to driving quality research (2008 – 2010), and most recently to encourage research excellence through the generation of innovation and its commercialization (2011 – 2012). This is enhanced by constant monitoring and evaluation of public sector universities achievements in terms of research commercialization. Aziz et al. [11] also reports the low commercialization and research output by public sector universities in Malaysia and the achievements among the private universities are found to be no better than what was seen from the public universities [51]. It is clear that there is a need to address the situation and drive the universities to better performance standards [93], which can be only done if there is a proactive leadership that has the skills, capabilities and orientation of an entrepreneur.

Leadership ideology of entrepreneurship can help build the vision and then motivates followers to build and achieve the vision [93, 49]. However, the focus on public universities has also affected public perception about universities and research institutions. Universities are now expected to take a leading role in enhancing and aiding commercialization and economic development [3, 18]. This in public expectations has resulted in a similar shift in funding requirements. Funding is not always available or rare, often project-aim, and comes with the expectation that commercialized technology will result [5, 41, 9]. Studies looking at these initiatives have found that universities were able to generate increased revenues from new venture spin-offs, as well as from the patenting and licensing [9]. There is evidence in the university environment that entrepreneurial leaders who recognize the change taking place in higher education succeed in transforming their universities into entrepreneurial universities [23, 35]. In Malaysia, there is dearth of literature that focuses on the degree of entrepreneurial orientation in public research institutions and universities. Entrepreneurial orientation in universities may be reflected in the way entrepreneurial leadership is viewed within the university, the manner in which risk-taking is considered in performance reviews, or the means by which success is measured. Thus, the present study looks at entrepreneurial leadership, entrepreneurial orientation and commercialization.

2.0 Entrepreneurship: Concepts, Definitions and Approaches

Entrepreneurship is a comparatively an evolving area of study that has attracted some level of argument [41]. Critics insist that the idea behind their argument is that the area has not attained the empirical research with similar severity as other subjects. While evaluating the present position of research emerging in this area, Breznitz [20] opine that the subject still lacks a valued and properly articulated viewpoint. D'Estee and Perkmann [29] added that scholars still have some space to cover if advancement of the subject of entrepreneurship could be made to the extent that there can be an identification of the field with certain degree of confidence. The field of entrepreneurship has become multi-disciplinary in nature [41, 27, 1]. Likewise, Zhao et al. [103] observed that usually investigation is carried out in the viewpoint of the researcher's area of specialization, hence, research design and results tend to disregard theoretical and methodological views that are incorporated in another discipline. For that reason, Ireland and Webb [50] also argue that the approach has created a domain of entrepreneurship research that is loosely connected.

A range of definitions of entrepreneurship exist that point out to the fact that entrepreneurship has yet to find a concise and universally accepted definition to make it more sound of theoretical basis [102, 35, 7]. One of the more influential definitions of entrepreneurship comes from Schumpeter, who in his 1911 Theory of Economic Development described a process of "creative destruction" driving capitalism, in which new products and processes displace older ones, and more entrepreneurial firms displace less innovative ones [1]. Another comprehensive definition asserts that entrepreneurship is, "a context-dependent process of creating future goods and services that involves the cycle of exploration and exploitation of opportunities by individuals or groups of individuals who may exit and re-enter this process [37]. Similarly, various researchers are of the view that entrepreneurship is the exploitation of opportunities and resources to create value [10, 52, 66], which is normally the difference between tangible and intangible benefits versus tangible and intangible costs [7] and for which customers are willing to pay [37, 4].

Researchers have studied entrepreneurship from two general perspectives. Each perspective carries with it an implied definition of entrepreneurship. The one perspective views it as inputs and outputs. This perspective is termed as *Content Perspective*. The other perspective views entrepreneurship from processes point of view meaning inputs that produce outputs. This perspective is known as *Process Perspective*. Content models dominate the entrepreneurship literature, though process models offer the possibility of linking content models as well as integrating different theoretical perspectives [81]. Entrepreneurship has been organized based on many criteria like types of activities followed by individuals within the content perspective [40]. There is disagreement among researchers as to the categorization of entrepreneurial activities, but most of them agree on three major categorization that is corporate, social, and independent entrepreneurship [53, 81, 102]. Corporate entrepreneurship is regarded by Jacobsson et al. [53] as a dissimilar of events that exist within organizations, including but not restricted to the creation of new products and businesses. While Rae [81] view social entrepreneurship that has social rewards such as lowering economic hardship or enhancing public health as its primary objective instead of monetary profit. However, the two researchers agree that independent entrepreneurs are frequently perceived as individuals outside of corporations establishing new firms. Yusuf [102] integrates the three category of entrepreneurs within a typology that re-classify entrepreneurship based on the kind of value generated; economic or social, coupled with the existence or non existence of an organizational context in which it is targeted.

Hughes et al. [49] observed that regardless of the effort to evaluate entrepreneurship from an individual, team or operational standpoint, scholars still believe it is not easy to build a theory of entrepreneurship. Although, for the field to be appreciated as an area of research in academics, researchers recommend entrepreneurship must distinguish a unique field and develop a reasonable and integrated body of knowledge [49, 66, 53]. Researchers are of the view that entrepreneurship is the nexus of two philosophies: (a) " the existence of rewarding opportunities and

(b) the existence of enterprising persons" [81, 69]. They further stress the need to integrate both of these philosophies to understand the essentials of the relationship between an opportunity and the identification of such by the person with an entrepreneurial intention.

4.1 Knowledge Spill Over: Existing entrepreneurship theories are based on the argument of discovery, exploitation and opportunities yielded [37, 4]. However, Acs et al. [2] maintain that prior discussions of the theory are weak assumptions because they emphasize in small way to the nature and sources of opportunity itself. Due to this position, they recommend that to study entrepreneurship 'knowledge spillover' theory must be used to fill the gap the entrepreneurship and economic literature. Elenurm and Alas [38] in building the knowledge spillover theory opines that building of new knowledge increases new opportunities that not only include the arbitrage of opportunities but also the utilization of new ideas not discovered by existing companies.

4.2 Economic Perspective: Entrepreneurship has been regarded as the backbone of an economy that brings new technological advances to the market, thus, contributing to the overall growth of the economy [50]. The phenomenon of entrepreneurship and its relation with economic growth has been studied by researchers under the types of entrepreneurship, human capital, investor protection and relation, population growth effects, bounded rationality, new institutional economies [31, 26, 30, 74]. Ireland and Webb [50] are of the view that although the theoretical and methodological implications of entrepreneurship for economics are strong, there exist research opportunities for universities to exploit these two potential streams of revenue to become entrepreneurial in nature.

4.3 Sociological Perspective: Researchers are of the view that entrepreneurship is the creation of new organizations through a social and economic context-dependent process [81]. However, it has been observed that there exists a lack of cross-level communication that has given rise to sub-groups within entrepreneurial literature that has led to a vague picture of what gives rise to entrepreneurship [31, 43]. The sociological perspective as proposed by Drucker [31] combines cross-level communication to better understand the entrepreneurship. According to Drucker [31], sociological perspective combines both supply side and demand side of entrepreneurship, where supply side focuses on the availability of a suitable person to take on the role of entrepreneur and demand side focuses on the availability of number and nature of entrepreneurial roles. In essence, entrepreneurs are viewed as agents of change from supply side perspective. Researchers have used culture, social class, and ethnicity in describing entrepreneurial attitude while considering the sociological supply-side standpoint [31, 98].

4.4 Strategic Perspective: Researchers are of the view that entrepreneurship and strategic management are a single discipline that has been sub categorized [83, 67]. However, according to some researchers both entrepreneurship and strategic management mutually support each other. They are of the view that it is difficult to understand one discipline without understanding the other [45]. Entrepreneurship and strategic management are both related with growth and wealth generation. Several scholars agree that growth and wealth creation are entrepreneurship's most defining goal [75, 26] similar to strategic management that helps companies create wealth in different markets and economies [98] by creating sustainable rival advantage through distinctness of its goods and services or through its cost effective production and marketing techniques [31, 40].

3.0 Entrepreneurial Orientation

The trait and personality approaches to entrepreneurship research believe that the entrepreneur is the reason why entrepreneurial activity occurs. The entrepreneurs' traits and personalities should have explanatory influence over entrepreneurial events. McAdam et al. [70] argue that the trait approach to entrepreneurship has been unsuccessful and does not contribute significantly to the knowledge of the domain. The domain of entrepreneurship research would be better served if a behavioral approach is adopted. Kim [57] investigates academic entrepreneurship through intentions; a behavioral lens is being used where intention may be applied as a proxy for behavior [101, 80]. Entrepreneurial intention is perceived as a central construct that bridges the intricate relationships between entrepreneurial cognition and entrepreneurial behavior [87, 37]. Guena and Muscio [46] describes intentionality as mindset that guides an individual's focus toward a particular objective. This intention concerns establishing a new firm or building new values in existing businesses. Muscio and Orsenigo [76] opine that within the university, an extension of entrepreneurial intention may also include creating new scientific research directions, or academic programs by the entrepreneurial leader. When intentionality exists, a significant promise is presented for the better development of university entrepreneurial behavior and activity [48].

Shepherd and Krueger [89] have highlighted that the social cognition is essential for entrepreneurial activity to take place. Individuals and institutions alike need to identify opportunities beyond existing competencies for their survival [72]. Thus, they need to have an orientation towards seeing and acting upon the opportunities regardless of the existing resources [29, 92]. Dutton [34] is of the opinion that perceiving and acting upon opportunities is based on intentional behaviour. Similarly, the research also finds that the environmental conditions motivate the individuals within an organization to act entrepreneurially [60]. Entrepreneurial orientation is a commonly used

measure of behavioural tendency in the entrepreneurship literature [41, 84]. The concept of entrepreneurial orientation (EO) has its origins in the literature on strategy [99, 54]. The EO concept concerns the presence of organizational level entrepreneurship [99, 85]. Well known for their delineation of the EO construct, Kenny and Patton [56] defined entrepreneurial orientation as a firm's "propensity to act autonomously, innovate, take risks, and act proactively when confronted with market opportunities". They further explained that entrepreneurial orientation is a "process construct and concerns the methods, practices, and decision making styles managers use". Importantly, a large body of literature has suggested that EO encourages a broad range of positive organizational outcomes, such as firm performance, new market entry and new product innovation [83].

Dubrin [32] understanding about entrepreneurship in universities indicates that all the identified attributes from previous authors can be viewed as characteristics of individuals with an entrepreneurial orientation. He speaks of the deepening need for greater managerial capacity at the university, and of the importance of reacting to internal and external demand as the university formulates what he calls "the entrepreneurial response". Responding to external demands requires being willing to enter into competition with external entities, which in turn suggests that being competitive is an important quality for leaders of entrepreneurial institutions [71, 44]. In addition, Dubrin [32] refers to innovation and being a change agent in stating, significant innovation in the character of a university means that some core tasks and some deep structures are altered to the point where the long term course of the organization is changed. He speaks of organizational creativity, which suggests that creativity is a valuable attribute in the entrepreneurial institution and its leader. The prudent course of action for the institution was also mentioned to be out front. This indicates that proactivity is a necessary quality of the entrepreneurial leader of university. Universities concerned about their marginality, even their survivability, were believed not to be dependent on old habits of reputation and political clout for guaranteed resources and competitive status [37].

4.0 Entrepreneurial Leadership and its Characteristics

The concept of entrepreneurial leadership is fairly a new one. Keeping in view the role of leadership and entrepreneurship in the success of organizations, researchers have tried to combine the characteristics of both leadership and entrepreneurship into a new form of leadership known as entrepreneurial leadership [95, 13]. This new leadership model has been used to show both entrepreneurship and leadership behavior Drucker [31] put forward that an entrepreneurial leader is a person who tirelessly and actively transcends good leadership and management practices and personally identifies opportunities, develops a creative and innovative vision, welcomes competition, persuades others to contribute and participate, personally assumes the risks involved to create change, and proactively and enthusiastically undertakes a challenge in a new way. Cohen [26] argues that in the dynamic, complex, and an uncertain competitive environment, a type of entrepreneurial leader who is distinct from the behavioral form of leaders is needed. Roslan et al. [82] has identified specific personality traits, behaviors, competencies, operational monitoring and performance of entrepreneurial leaders. Understanding entrepreneurial leadership is important for theoretical and practical reasons because entrepreneurial leaders are the individuals that would need to lead organizations in today's dynamic and competitive market. To be an entrepreneurial leader an individual must possess skills and attributes of both an entrepreneur and a leader [32] and should consider the opinions and feelings of the follower population [71]. The Figure 1 shows the context and its impact on Leadership/Entrepreneurship. It is clearly seen that there is an overlapping of leadership and entrepreneur. An entrepreneur is a leader in his/her context.

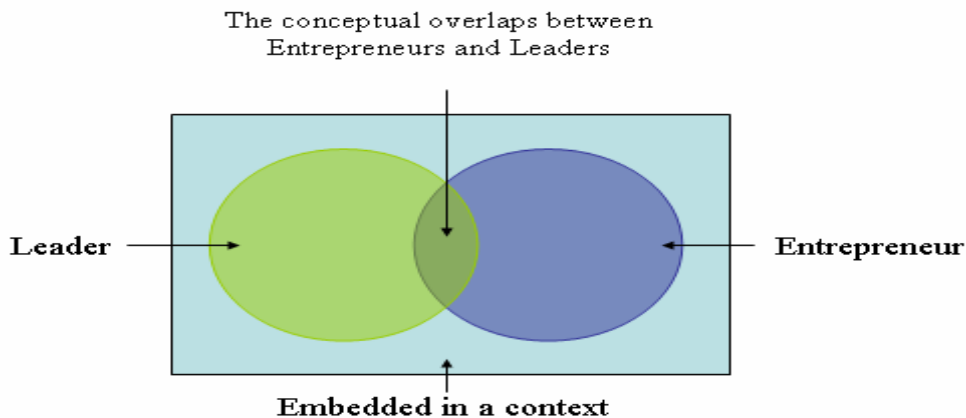


Figure 1 Contexts and its Impact on Leadership/Entrepreneurship
Source: [32]

Bagheri and Pihie [14] have proposed a simple model of entrepreneurial leadership specifically related to university setting. According to Bagheri and Pihie [14] the entrepreneurial leadership development is a dynamic process which encompasses experiential, social, interactive, observational and reflective learning. The model is shown in Figure 2.

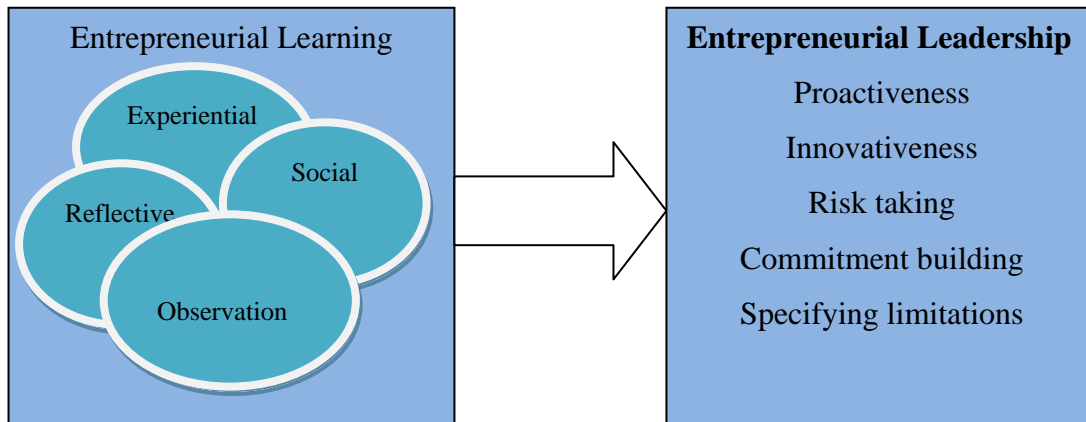


Figure 2 Integrated Model of Entrepreneurial Leadership [14]

These learning are important for entrepreneur as they face two major challenges like envisioning the future and to realize the vision and to influence and inspire the individuals to accomplish their vision. To envision the future, entrepreneurs need to be proactive and innovative in their approach and should be risk takers. To influence others, entrepreneurs need to be able to instill commitment and specify limitations [19].

Researchers like Bass and Bass [13] have also provided a list of characteristics of entrepreneurial leaders. These characteristics include optimism, need to achieve, self-esteem, locus of control, goal orientation, courage, screening for opportunity, tolerance for ambiguity, and strong internal motivation [13]. The authors put forward that an entrepreneurial leader self esteem is valuable to take on tough challenges. This self-esteem gives them a sense of their own self-worth. Secondly, entrepreneurial leaders need to have a sense for achievement. Leaders high on this need to achieve are not only open to feedback but are also goal oriented and strive for accomplishment based on their own efforts. Thirdly, entrepreneurial leaders should possess the intelligence to separate useful information from useless information. Knowledge of environment and experience helps entrepreneurs to make strategic choices that would have a direct bearing on the success or failure of his/her venture [27, 77, 36]. This characteristic helps them to exploit opportunities that others have missed. Fourthly, successful entrepreneurial leaders typically show a high internal locus of control. Individuals with high internal locus of control are more likely to experience success, than individuals who are high on the external locus of control. Fifth, the characteristic of goal orientation is evident when entrepreneurial leaders have a relentless drive to accomplish goals. They understand what the priorities are and continue to work toward their goals daily. Underlying successful entrepreneurial leadership is a boundless optimism that helps them to view a challenge as a new direction. Their positive view serves as the foundation for dealing with the many setbacks they will encounter as they attempt to grow their businesses. Entrepreneurial leaders are also very high on tolerance for ambiguity. As majority of entrepreneurial ventures start up in uncertain environment therefore, this characteristics gives entrepreneurial leaders resilience to many problems and challenges that they face. Lastly, entrepreneurial leaders are driven by strong internal motivation to achieve. Researchers are of the opinion that for an individual to be entrepreneurial leader skills like management, communication, motivating others, vision/direction, self-motivation are necessary ingredients [75]. These entrepreneurial leadership characteristics are consistent with those identified by other researchers [37, 19]. Keeping in view the above discussion it can be concluded that entrepreneurial leadership is context specific and characteristics of entrepreneurial leader depend on the context in which it is embedded.

5.0 Entrepreneurial Leadership and Entrepreneurial Orientation

Parks [79] posits that purposeful entrepreneurship is not attained by dictating what should happen, but by maintaining a shared understanding between an entrepreneurial team and its leader. Thus entrepreneurial leadership should also incorporate influencing tactics such as reason, friendliness, coalition forming, bargaining, assertiveness, appeals to higher authority, and the judicious threat of sanctions [33].

According to Burns [21] who reported that vision is the cornerstone of the entrepreneurial architecture. He further elucidates that entrepreneurial leaders need an ability to define and communicate a shared vision for an

organization. This shared vision in turn creates enthusiasm and motivation, builds confidence, and strengthens connections within a team and throughout an organization by working on people’s emotions [50]. Being able to communicate at an emotional level and engender a sense of common concern through appropriately deployed influencing strategies is an important trait of entrepreneurial leaders, and should therefore be an important objective of entrepreneurial leadership orientation.

Additionally, entrepreneurial leadership orientation should develop particular sorts of interpersonal and team-working skills that emphasize on leading organizations by consensus and agreement, rather than command [21]. Hence, another task of entrepreneurial leadership orientation is to groom faculty members how to build interpersonal skills that win them the trust, credibility, and respect of teams, and the ability to inspire and motivate fantastic performance [44]. Role playing exercises can be very effective methods for exploring interpersonal skills, either through set roles and situations, or improvised contexts that the faculty members select and control themselves, depending on their level of involvement.

Relying on the findings from Roomi and Harrison [86] study, a second motivation in entrepreneurial leadership orientation is to give focused emphasis to the areas of entrepreneurship that are essential to leadership. Previously, authors recommend specific training approaches that are critically reflective, socially interactive, and experiential.

Entrepreneurial leadership orientation are supposed to enlighten faculty members, students and future entrepreneurs methods of exploiting and adopt an entrepreneurial mind-set—their own, as well as those of people working with them. An entrepreneurial mind-set is both an individual and collective phenomenon that is important to entrepreneurs, managers and leaders [24]. It was defined as a way in which individuals think about business, focusing on the benefits occurring with uncertainty. This means that an entrepreneurial mind-set is vital for capturing opportunities and, as a result, can contribute to an organization’s competitive advantage [47]. Methods that emphasize this might include materials and methods designed to increase a) the ability to recognize and analyze entrepreneurial opportunities b) entrepreneurial alertness c) real options logic; d) entrepreneurial framework and e) dominant logic [86].

Kuratko and Hodgetts [59] suggest that areas connected to entrepreneurship must be properly ingrained into entrepreneurial leadership, simply because they allow access to entrepreneurial concepts for faculty members less inclined to entrepreneurial activity themselves but interested in understanding it that is faculty members who intend to be business founders or consultants. Furthermore, it is essential to emphasize that entrepreneurship can be viewed as a set of skills transferrable to any organizational context in which innovation, risk-taking, opportunity recognition, and other similar imperatives take place [22, 13]. Corporate entrepreneurship is the creation of new business in large established organizations through entrepreneurial people being innovative and creative and generating new ideas [37, 88]. Faculty members should learn that entrepreneurship occurs in corporate contexts as well as in start-ups and smaller, younger organizations, and how leadership in such contexts differs from corporate or other traditional forms of leadership.

According to Takahashi and Carraz [94], educational institutions with an entrepreneurial orientation, work to create and develop new ideas for generating revenue and programs. In doing so, they foster new attitudes, direct and inspire individuals and develop interpersonal relationships and teams [99, 28].

This means that an entrepreneurial mind-set is vital for capturing opportunities and, as a result, can contribute to an organization’s competitive advantage. Figure 3 shows the entrepreneurial orientation of an organization as proposed by Spillecke and Brettel [91].

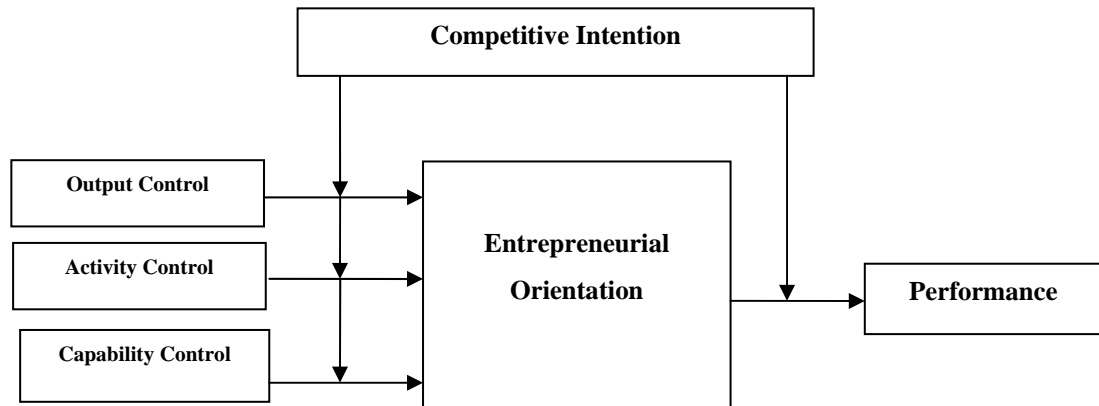


Figure 3 Typical Model for Entrepreneurial Orientation
Source: Spillecke and Brettel [91]

6.0 Commercialization of University Research

Commercialization has been defined differently by different researchers but in simple words commercialization relates to the development and introduction of a new product to market [97, 63]. It has been highlighted that through commercialization, product development and selling costs can be reduced as it would match the needs and wants of the customers [56]. It means commercialization is based on the needs of the customers. Further, commercialization has also been termed as set of actions which convey knowledge to a product [55]. According to researchers commercialization process has four stages namely exploratory and conceptualization; technical developing and product designing; prototyping and commercialization of product [41, 56]. In order to reach a successful implementation of commercialization, researchers suggest that actions like goal-oriented market research, determining target market, providing business plan, tracing potential customers, encouraging potential partners and financing should be undertaken [55]. The national as well as international educational environment has become more competitive and making ends meet in this competitive environment is a matter of survival for many institutions. To survive, universities and research institutions alike need to make substantial changes in the way they operate. These universities and research institutions may for a shorter period of time survive but for long run, they need to adapt their vision and missions according to the changing environment. In view of the changes Juanola-Feliu et al. [55] suggest that entrepreneurial skills and capabilities need to be developed by the universities to enhance their competitive abilities. There is also a need of leadership that would help the new ideology of academic entrepreneurship. Bathelt et al. [15] recognized that the increased pressure for public research universities to be more accountable as well as to produce commercialized technology has resulted to several public universities to currently pay more attention to the need to be dynamic and operate entrepreneurially.

Technology transfer is also seen as a way to raise the rewards of universities to the public. Universities have identified that knowledge transfer is an area that can help fill the short fall in government financing [41, 36]. Prior to this, technology transfer proceeded almost exclusively through the patenting and licensing of university research. Because of this, university patenting and licensing revenue have increased considerably in the last few years. Link et al. [62] recommend that patenting and licensing symbolize one of the few information sources available to be used as performance measurement tools. However, Hughes et al. [49] conclude that patents are reported not to be the most advantageous innovation corridor for every type of invention, even within the same faculty. Collini [27] opine that universities have also involved in operations other than patenting and licensing, as a result that they have taken a more undeviating position in spin off formations. Bathelt et al. [15] suggest that a few research universities have established technology incubators and have motivated university-based consulting as a supplement to academic efforts, leading to academic programs that are more applied than they were in the past. In order for the firms to apply university research they need to have high absorptive capacity [93] which is the ability to assimilate and replicate new knowledge gained from external sources [43] and further, they need to be closely connected for successful knowledge transfer [16].

7.0 Conclusion

This study explored two major constructs that have been found to be most relevant in the commercialization of academic research. By exploring the phenomenon of entrepreneurial leadership and orientation within university context, the study aims to broaden the knowledge regarding the entrepreneurial academic leadership and entrepreneurial orientation towards research commercialization activities in Malaysian Universities. The review presented in the study shed light on the importance of leadership especially the entrepreneurial leadership and the entrepreneurial orientation towards commercialization activities. For Malaysian universities, as the entrepreneurial activities are fairly new and are in their development phase, the adoption of entrepreneurial leadership style would not only help them in their pursuit of commercialization activities but would also help them adjust to the changing global competitive educational environment.

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