

Entrepreneurial Leadership Styles and Academic Commercialization: Investigating the Mediating Role of Entrepreneurial Orientation

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Abstract: - Universities throughout history have been regarded as bastions of teaching and research. However, with entry of university into business activities in form of commercialization has rendered this traditional notion challenged. Modern universities are not only engaged in traditional teaching and research activities but have also entered into entrepreneurial activities through commercialization of research. Commercialization of academic research not only requires support and vision of academic leadership but is dependent on the entrepreneurial orientation of the researchers. Leadership enhances commercialization activities but also helps in motivating researchers towards commercialization. The purpose of the present study was to investigate the mediating influence of entrepreneurial orientation on entrepreneurial leadership styles and commercialization relationship in Malaysian research universities. The sample consisted of academic researchers from two faculties of five research universities. The results indicate that entrepreneurial orientation partially mediates the relationship between entrepreneurial leadership styles and commercialization. The study is significant from academic leadership and commercialization point of view especially in case of Malaysia, where university commercialization is a new phenomenon. The study also provides future research directions.

Key-Words: - Entrepreneurship, Entrepreneurial leadership style, entrepreneurial orientation, academic commercialization, developing country, research university, Malaysia.

1 Introduction

The traditional notion of university dictates that universities engage in teaching and research activities. However, the modern day universities not only follow traditional view point but also engage in activities that were previously the domain of business organizations. Researchers highlight that entrepreneurial activities emerging in major academic institutions have left universities with no choice but to re-invent their operational activities and engage themselves in entrepreneurial activities such as commercialization to remain competitive globally [20].

Raunch et al. [39] highlights that even though the field of entrepreneurship is relatively new to the university environment, commercialisation of academic research depends on the university leadership and their support to encourage academic staff to commercialize their research [13]. Researchers are of the opinion that leadership behaviours are essential in determining the success of organisations, or even a nation as a whole [1] and are of utmost importance in an academic setting [8].

In a competitive environment, organisations are supposed to be entrepreneurially oriented, to compete and survive and entrepreneurial leaders are required to build, inspire, further and uphold entrepreneurial orientation within the organisational setting which eventually enhances the overall performance and efficiency [49][1]. Universities are considered the hub of knowledge activity and are unique as they hold the key to inventions and innovations. These inventions and innovations are due to the skilled knowledge centres that reside in the form of faculty. Thus, faculty is the major source of all technological advancements that are attributed to the universities.

O'Shea et al. [36] have highlighted that the entrepreneurial disposition and individual's abilities are important in shaping the individual's behaviour regarding commercialisation. Audretsch and Erden [3] highlight that limited studies have focused on the cognitive and social-psychological processes associated with scientists reshaping their career paths and pursuing entrepreneurial paths. Similarly, Jain et al. [25] have also highlighted the missing

link that is the university scientist whose disposition towards entrepreneurial activity is the key to emergence of knowledge intensive fields and commercialization.

The present study is conducted in the context of Malaysian research universities. Malaysia is a developing country ranked in the upper middle income group and is looking to join the high income bracket by 2020. The country is striving hard to attain this goal by enacting policies and measures that help in the overall economic development of the country. In this scenario, the role of higher education institutions has been highly emphasized. However, despite government's focus and funding, Malaysian universities are far behind in research and development [4] and only small percentages of the R&D output by the universities in Malaysia do get commercialized [22]. For R&D to get commercialized, it is essential that university leadership support should be there along with a higher degree of entrepreneurial orientation among academic researchers. Kenney and Patton [27] suggest that today's universities need to develop entrepreneurial skills and traits.

Kearney et al. [26] suggest that entrepreneurship is the process that helps an organisation to constantly innovate and effectively face challenges both internal as well as external to the organisation. Universities recognise that engaging in entrepreneurial activities such as commercialisation could help them in generating funds as well as develop linkages with the industry that are much needed for successful transfer of knowledge [36]. Fini et al. [21] points out that entrepreneurship is relatively new to the academic environment in Malaysia and not many researchers have investigated how entrepreneurial leadership in Malaysian universities affects commercialization activities [53][32]. They suggest that if they are to take a more entrepreneurial approach, it will require university leaders who understand and possess entrepreneurial skills. Since it is accepted that successful technology commercialisation begins with visible leadership, therefore, it is pertinent that leadership establishes clear vision and missions for technology commercialization [38][52][37].

The present study is an attempt to investigate the mediating role of entrepreneurial orientation between entrepreneurial leadership styles and commercialization of academic research in Malaysian research universities.

2 Literature Review

In recent decades, the concept of academic entrepreneur has risen and researchers are focusing on the way academicians and universities adopt entrepreneurship. Academic entrepreneurship refers to the variety of ways in which academics go beyond the production of potentially useful knowledge. The essential importance of universities engaging in the concept of the academic entrepreneurship are because it helps in enhancing the attraction of highly attractive and talented to faculty and student members by providing students with the knowledge, skills and capabilities that are required for entrepreneurial activity [45][17][35][32].

Authors suggest that universities can implement a variety of policies and procedures that develop faculty leaders, motivation and opportunity for engaging in the entrepreneurial process [30]. For example, universities can strengthen their climate for entrepreneurship by developing faculty opportunity recognition skills and market knowledge for guidance in refining research direction that would have most impact on society. Shepherd and Krueger [44] 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 [33]. Thus, they need to have an orientation towards seeing and acting upon the opportunities regardless of the existing resources [14][46]. Dutton [16] is of the opinion that perceiving and acting upon opportunities is based on intentional behavior. Similarly, the research also finds that the environmental conditions motivate the individuals within an organisation to act entrepreneurially [29].

Entrepreneurial orientation is a commonly used measure of behavioural tendency in the entrepreneurship literature [21][40]. The concept of entrepreneurial orientation (EO) has its origins in the literature on strategy [50][24] and is majority of the time associated with organisational level entrepreneurship [50]. Kenney and Patton [27] explain that entrepreneurial orientation is a "process construct and concerns the methods, practices, and decision making styles managers use". As such, they posited entrepreneurial orientation was about the intentions and actions of individuals actively involved in dynamic processes.

The role of universities has evolved over a period of time from traditional teaching and research and development towards commercialisation of research in the 21st century. The ideal role for higher education in society was to be a haven for teaching, learning and research and it

was not customary for universities to step out of that role and venture into market place [11][13]. This notion continued for over two decades, the higher education took place in an environment that was mostly protected from outside competition as large amounts of public funds were invested in the universities and there was no need for universities to change their previous academic philosophies [9][10][22]. Over the last two decades, however, many changes have affected the higher education institutions worldwide such as significant curtailments of federal funds, changing demographics, and the entrance of private corporations into the business of higher education [18]. As a result, for many institutions, monetary concerns have become of importance and the commercialisation of research has become one of the avenues for generating resources.

University commercialisation activity is a reflection of institutional behaviour. Universities having entrepreneurial culture support commercialisation activity as against the ones who do not have supporting culture [36]. Roberts [41] also argues that the social norms and expectations of the university are key determinants of commercialization activity. By contrast, university environments that do not encourage entrepreneurship have shown to inhibit commercialization activity [36].

Kuratko [28] 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 organisational context in which innovation, risk-taking, opportunity recognition, and other similar imperatives take place [12][7]. Corporate entrepreneurship is the creation of new business in large established organisations through entrepreneurial people being innovative and creative and generating new ideas [19][43]. Faculty members should learn that entrepreneurship occurs in corporate contexts as well as in start-ups and smaller, younger organisations, and how leadership in such contexts differs from corporate or other traditional forms of leadership.

According to Takahashi and Carraz [48], 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 [50][15].

3 Methodology

The present study seeks to investigate the mediating effect of entrepreneurial orientation between entrepreneurial leadership styles and academic commercialization. For the purpose the study uses survey method. The study focuses on the academic faculty members of science and technology and engineering faculties of five Malaysian research universities. The unit of analysis is individual researcher involved in R&D activities. The sample size of the study was 249 respondents selected through random sampling technique. The lists of all the faculty members of science and technology and engineering faculties of the five research universities were obtained from two sources: the first source was website and the second source was administrative offices of the targeted faculties. Using random table, respondents were selected.

The survey instrument for the study was designed to capture the perceptions of the respondents regarding entrepreneurial leadership styles, entrepreneurial orientation and academic commercialization. The dependent variable of the study academic commercialization was measured using eleven items; mediating variable of entrepreneurial orientation was measured using 23 items adapted from [31]; while entrepreneurial leadership styles were measured using MLQ. Altogether, 70 items were used to measure the variables of the study.

Data collected was analyzed through Pearson correlation and regression analysis. Before applying regression, assumptions of regression were satisfied.

4 Results and Discussion

Pearson correlation was checked to ascertain the relationship between the variables of the study. Results of correlation are shown in Table 1.

Table 1. Correlation Matrix

| | ELS | EO | Comm. |
|------|--------|--------|-------|
| ELS | 1 | | |
| EO | .210** | 1 | |
| Comm | .235** | .481** | 1 |

The correlation analysis shows that there exists significant positive relationship between the ELS and EO ($r = 0.210$, $p < 0.01$) and ELS and Comm. ($r = 0.235$, $p < 0.01$). These relationships are significant yet towards weaker side. The correlation results further show that there exists a significant and positive relationship between EO and Comm. ($r = 0.481$, $p < 0.01$).

To test the mediation between entrepreneurial leadership styles and commercialisation, four step method [6] was used. The results of mediation testing are shown in Table 2. In the first step of the mediation testing, entrepreneurial leadership styles have been taken as independent variable and commercialisation is the dependent variable. The results indicate that there exist a significant relationship and influence of entrepreneurial leadership styles on the commercialisation. The second step of the mediation testing involves checking the relationship between entrepreneurial leadership styles and entrepreneurial orientation. In this relation entrepreneurial leadership styles are taken as independent variable and entrepreneurial orientation as a dependent variable. The results indicate that there exist a significant relationship and influence of ELS on EO. The third step of mediation testing involves ascertaining the relationship between entrepreneurial orientation and commercialisation. In this relation entrepreneurial orientation is acting as independent variable and commercialisation as dependent variable. The results indicate that there exists a strong and influential relationship between the two variables.

Table 2. Test of Mediation

| | <i>R</i> | <i>R</i> ² | Adj. <i>R</i> ² | β | <i>t</i> | <i>p</i> |
|---------|-------------------|-----------------------|----------------------------|---------|----------|----------|
| ELS | .235 ^a | .055 | .051 | .487 | 3.796 | .000 |
| ELS | .210 ^a | .044 | .040 | .272 | 3.378 | .001 |
| EO | .481 ^a | .232 | .229 | .773 | 8.632 | .000 |
| Model 4 | .500 | .250 | .244 | | | |
| ELS | | | | .290 | 2.475 | .014 |
| EO | | | | .726 | 8.006 | .000 |

a. Dependent: Commercialization

The fourth step of mediation testing states that the impact of independent variable should be zero in the presence of mediator or at-least the impact of independent variable should be less than the direct

relationship of independent and dependent variable. The results (model 4) reveal that the beta coefficient (0.290) of entrepreneurial leadership styles is significant at t-statistics (2.475, $p < 0.05$) showing that when entrepreneurial orientation is taken as mediator the impact of entrepreneurial leadership styles is reduced ($\beta = 0.487$). Thus, confirming that entrepreneurial orientation mediates the relationship between entrepreneurial leadership styles and commercialization, however, the mediation is partial in nature.

The results of the present study are in line with the previous studies. Previous research also supports the insertion that leadership is essential in building the innovative capacities of the faculty members [34]. Innovativeness has been ascertained as a key dimension of entrepreneurial orientation which influences knowledge creation and product development in the present study. Previous researches also highlight its importance for organisations competitive advantage, which is essential in this changing environment [51] and requires full utilization of knowledge resources [47] in case of universities, its academic staff.

Mohamad, et al [34] has highlighted that the academic leadership should bring change and should be flexible in order to achieve academic excellence. Furthermore, university leadership can encourage academic researchers to take on risks and can stimulate members to adopt out of box thinking [2]. If university leaders are proactive in their thinking and approach they can also influence the entrepreneurial orientation of the academic staff towards commercialisation. Proactivity encourages the creativity of employees and helps in enhancing the entrepreneurial activities [5][54]. With the changing higher educational landscape, academic leaders need to be more adaptive to the external environment and develop internal institutional culture so that members of the academic community feel motivated to enter into research and development activities leading towards commercialization [42].

Thus, based on the results of the study and the past literature, entrepreneurial orientation is a must for academic researchers if they want to commercialise their research. However, the role leadership plays in enhancing this orientation is also important. Without the proper guidance and motivation, academic researchers would not be able to commercialise their research. University leadership is needed to develop suitable environment for the researchers to feel comfortable and work in. Furthermore, university leadership is needed to provide clear vision what is expected of

the researchers and how university would support them in order to achieve objectives related to commercialisation.

5 Conclusion

The emerging themes of entrepreneurial orientation and commercialisation from the literature reveal the connection between the variables of the study. Literature further points out that leadership styles are important from organizational performance perspectives. In case of academic commercialisation, literature highlights that leadership has an influential role towards commercialisation. Furthermore, literature points out that leadership are also influential in enhancing entrepreneurial orientation of academics. The results of the present study also point out that leadership as a singular variable and also in conjunction with entrepreneurial orientation influences commercialisation efforts of the academics.

The study is limited to five research universities. Furthermore, study is limited to only two faculties: science and technology and engineering. Future researchers could spread the sample to include other faculties and other public and private universities. In addition, future research could focus on comparative study of public and private universities in Malaysia and compare the entrepreneurial leadership styles and their influence on commercialization. The present study used entrepreneurial leadership styles and entrepreneurial orientation as a singular construct, future research can deconstruct both the variables and check the influences of sub-variables on commercialization. Checking influences of deconstructed variables is important especially in case of Malaysia, where commercialization activity is fairly new and little knowledge exists regarding commercialization and what influences it. Literature highlights that without support structures within university organization, commercialization cannot be possible. Literature is abundant in support of technology transfer office as an independent variable; however, the influence of technology transfer office as a moderating variable is not to be found. Therefore, checking technology transfer office as a moderating variable either with the leadership or with entrepreneurial orientation would be interesting. Last but not least, the influence of demographic variables such as gender, ethnicity, education level, research experience etc. can also produce interesting results in relation to entrepreneurial orientation and commercialization.

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