

Entrepreneurial Perceptions of Biomedical Sciences Students at the Cape Peninsula University of Technology In Cape Town

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ABSTRACT

South Africa is currently faced with high rates of youth unemployment and in recent years the rate of unemployment amongst graduates is on the rise. As a result of the high levels of education and the scientific nature and applicability of the biomedical sciences course in industry, Biomedical Sciences students serve as reservoir for choosing entrepreneurship as a career option, however, Biomedical Sciences students at the conclusion of their studies shun away from setting up their own private laboratory practices and instead they all find comfort in being employed by both public government laboratories and private sector. The primary objective of this study is to investigate the entrepreneurial perceptions of the Biomedical Sciences students at the Cape Peninsula University of Technology. In order to accomplish this, a quantitative approach was undertaken whereby survey questionnaires that had set of answers were handed out to the respondents. The target population was 185 Biomedical Sciences students and no sampling was done instead the whole population was used. A pilot survey of ten people was performed. Results based on descriptive statistics using SPSS-software were discussed. The study established that participants have a positive view about entrepreneurship and stresses that institutions of higher learning should by all means necessary encourage students to consider entrepreneurship as a viable career option. The limitation of the study is that the study employed a cross-sectional approach to perceptions by focusing on the views as well as expressions of the Biomedical Sciences students at the Cape Peninsula University of Technology.

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1. Introduction

The Biomedical Sciences qualification that students obtain at the end of their studies allows them to register with the Health Professional Council of South Africa (HPCSA) as qualified medical laboratory scientists whose significant role in the broader context is mainly to diagnose, monitor and help treat disease. Here-under is a list of South African public or private medical laboratories where students can be employed:

- Blood transfusion services;
- Forensic laboratories;
- Pharmaceutical companies;
- Private pathology practices;
- Research laboratories at institutions of higher learning;
- The Medical Research Council (MRC); and
- The National Health Laboratory Services (NHLS).

The Biomedical Sciences qualification which arms students with in-depth biomedical laboratory knowledge, critical reasoning skills, and empathy for patients affords the students with an opportunity to apply for a license with HPCSA and to run their own laboratories. The Biomedical Sciences students having gone through rigorous National Board Examination set by the HPCSA in addition to the demanding examinations throughout their studies at the Cape Peninsula University of Technology seem rather unlikely to open their medical laboratory business ventures and thus opt for being employed by the institutions mentioned above.

In a country such as South Africa that is facing a triple challenge of poverty, inequality, and alarming high levels of unemployment one would expect heightened levels of informal sector small businesses that would help cushion the excess labour force more especially of those in the youth bracket. A completely new mindset is needed that would perceive private entrepreneurial ventures as the only means

through which economy could be revived. Both the population of South Africa together with the Healthcare sector are growing and thus going into the 4th Industrial Revolution the need for private medical laboratories cannot be overstated. Studies that seek to investigate entrepreneurial perceptions of students are, therefore, worth taking.

In order to achieve the research objectives, this study aimed to answer the following research questions:

- What are the entrepreneurial perceptions of Biomedical Sciences students at the Cape Peninsula University of Technology?
- What are the reasons why Biomedical Sciences graduates from the Cape Peninsula University of Technology not opening their own medical laboratory practices?
- What new methods of stimulating and encouraging entrepreneurship among Biomedical Sciences students at the Cape Peninsula University of Technology?
- What recommendations can be made to foster entrepreneurial mindset among higher education students?

2. Literature Review

This section begins by illustrating the immense need of entrepreneurship by emerging international, regional, and/or national economies in recent times. The crucial role that involves development of new innovations and new technologies displayed by entrepreneurship together with the important role of entrepreneurship that affords new employment opportunities in prospering economies are heightened in this section. The section continues by exploring various classical definitions of entrepreneurship and classical definitions of what an entrepreneur is whilst at the same time crafting the definition of entrepreneurship for this study. The section proceeds by giving a clear account of the development of entrepreneurship as a concept over the years and concludes by examining entrepreneurial characteristics.

Need for entrepreneurship in recent times

Entrepreneurship in recent economic times gained a lot of recognition and as a consequence of that it emerges from this premise that governments as well as those who are tasked with drafting policies all over the world perceive entrepreneurship as a yardstick that could be used to monitor both economic development and economic success of a country (Al-Harrasi et al., 2014; Smith & Chimucheka, 2014). It is from this light that if the country seeks to ignite its economic growth and development agenda it is imperative for the country to sensitise and tickle its graduates with respect to entrepreneurship whilst contemporaneously encouraging a new way of thinking concerning entrepreneurship amongst its graduates (Al-

Harrasi et al., 2014; Sharma & Kulshreshtha, 2014; Hamilton & de Klerk, 2016).

Need for entrepreneurship in South Africa

The considerably high rate of unemployment in South Africa which currently sits at 25.2% accompanied by the exceedingly above normal levels of poverty and high levels of unequal income distribution necessitates the establishment of Small and Medium Enterprises (SMEs) that would act as necessary catalysts that will tackle head-on the impediments that the process of job creation experiences, impediments due to soaring levels of economic growth that emanate as a consequence of unfair distribution of income and thus by so doing completely re-engineer and re-configure the currently uninspiring picture of economic development in South Africa (Fatoki, 2014). Chimucheka (2014) concurs with the fact that South Africa is befallen by elevated rates of unemployment that are coupled with sluggish and snail-paced economic growth and goes on to add the disturbingly low total entrepreneurial activity and stresses the need for the country to stimulate entrepreneurship as it remains the only mechanism by which both the government and private enterprises can begin to avert this threat to the national economy. Chinomona and Maziriri (2015) also support the view that in the case of South Africa, entrepreneurship continues to remain the pressing driver of economic growth that is responsible for leading to new jobs and that those entrusted with the duty of crafting economic policies in South Africa continue to bestow a significantly high prize on entrepreneurship.

It is the youth between the ages of 15-34 who bear the countenance of this high unemployment rate in South Africa, that is, regardless of the amelioration in the level of education between the 2008-2015 period one out of every two young people (55%) were out of employment (Statistics South Africa, 2015: 3 and 16). In recent years, civil protest due to youth unemployment the world over took centre-stage in the news headlines including South Africa in 2011 and thus the government of South Africa embraced youth entrepreneurship as one of its developmental linchpin and this led the South African government to establish quite a number of small business agencies such as the Small Enterprise Development Agency (SEDA) and the National Youth Development Agency (NYDA) (Shambare, 2013). In supplementing the Small Enterprise Development Agency and the National Youth Development Agency, numerous other enterprises and agencies whose role is to offer support to SMMEs that have also been put into practice by the South African government and these are: the Industrial Development Corporation (IDC), the Micro-Agricultural Financial Institute of South Africa, the National Empowerment, the Centre for Small Business Development, the Land Bank, and many more (Mago & Toro, 2013).

It is an undisputed fact that in the case of South Africa, SMMEs contribute immensely with respect to

entrepreneurial activity and constitute about 97 percent of all businesses in the entire country and, in fact, can be rounded up to 35 percent of the country's Gross Domestic Product (GDP) (Chimucheka, 2013). Strictly speaking, the SMMEs in South Africa are perceived as the only means by which new jobs can be created, economic success could be attained, and the historical legacy of apartheid could be addressed by levelling the playing field with reference to political-socio-economic dynamics in the country (Malebane, 2014).

Youth unemployment in South Africa

The total number of working age people between 15-64 years of age in the period 2008-2015 is 31.5 million and those between the age category of 15-34 years make up the majority proportion of the population with 18.2 million and those in the age category of 35-64 years are 13.3 million (Statistics of South Africa, 2015:3). However, 55 percent of the youth between 15-34 years is without jobs and this is the case regardless of whether educated or not (Statistics South Africa, 2015: 16). Statistics South Africa (2012) illustrates another point of concern that, in recent years the unemployment rate for graduates has gone up from 4.4 percent in 2008 to 6.3 percent in 2011. Fatoki (2014) concedes that the absence of jobs especially for the youth who possess a tertiary qualification should drive them and re-skill themselves by turning to entrepreneurship which will enable them to assume self-created employment whilst also creating employment opportunities for others.

Definition of entrepreneur and entrepreneurship

Definitions of entrepreneurship and/or entrepreneur are so many and diverse, ranging from the classical school of thought to the neo-classical dimension, the sociological premise of reasoning to the psychological way of thinking, and all the way to the management perspective, that is, it is not befitting to classify and reduce entrepreneurship into a single confined box (Bula, 2012a). In the mid-18th Century, Cantillon one of the economists of that era described the role played by the entrepreneur as being that of an axletree pin to the economy (Bula, 2012).

In the early 20th Century, Schumpeter perceived entrepreneurship as a process that radically averts known patterns and/or structures generating completely novel combinations that will in the same vein also afford novel systems and commodities (Maalu, 2012). A rather contradictory definition to all of the above was given by Marshall who saw the entrepreneur as one who would go for the tasks which were generally perceived as being impossible to take-on just for the mere fact that they were ascribed a highly illustrious status and by so doing, entrepreneurs would assume greater risks as they were now trading in untested waters. Trading in unfamiliar grounds offered entrepreneurs an opportunity to showcase their insightful economic innate knowledge and foresightedness. In other words, entrepreneurs needed to be able to juggle up

and balance scales between circumscribed estimations for the needed investment versus the amount of labour required (Boutillier&Uzunidis, 2014).

In the immediate past, entrepreneurship has been viewed as being responsible for identifying opportunities in the market, commissioning actions and resources, and exploiting such opportunities. In this study, entrepreneurship is defined as the process of setting up of small, medium, and large businesses with the sole aim of furnishing profits whereby the process of establishing these businesses will entail proper management of the business venture and innovation even though innovation is not the major ingredient.

Entrepreneurial characteristics

Given the fact that up until this day there exists no conclusive agreement on what the job of entrepreneur actually entails, the following six categories upon which entrepreneurship can be classified therefore serve as proof of such reality and these are: psychological, management, great person, leader-ship, classical, and intrapreneurship. Psychological category views an entrepreneur as someone characterized by a very deep intrinsic internal drive. As a matter of fact, the psychological category focuses mainly on the personality/psychological characteristics that are directly related to entrepreneurship which have been the subject of attentiveness of numerous practitioners throughout the world, and these include: locus of control, need for achievement, tolerance for ambiguity, self-confidence, propensity to risk-taking, and innovativeness as a way by which a distinction could be made between “entrepreneurs” from small business owners and corporate managers (Zaman, 2013).

The management category describes entrepreneur as someone within a business who is responsible for organizing business ventures and as such all manner of risks squarely lie on him. Such an approach affirms that entrepreneurship is a skill that can be developed through active learning (Oyeki et al., 2014). The great person category is of the view that an entrepreneur is someone who is armed with certain specific characteristics that enable him/her to have significant influence at the planning phase of the business and actual strategies and actions necessary at the foundation phase of the enterprise. These specific characteristics, actual strategies, and actions will all drive the success of the entrepreneur (Oyeki et al., 2014).

The leader-ship category, on the other hand, contends that entrepreneurs as leaders have thorough understanding and sense of what their subordinates need and thus they are able to adapt and change their leadership style to be in line with the needs of the people (Zaman, 2013). In other words, as leaders, entrepreneurs can rally people around their vision and as such convert that vision into something tangible (Oyeku et al., 2014).

The classical category reiterates the fact that innovation should stand-out when defining an entrepreneur. The

intrapreneurship category asserts that entrepreneurial skills, expertise and attributes can be of value within the arm pits of an organization where it ropes in new ideas, yielding new units and products, and as such by so doing grows the business (Zaman, 2013).

Entrepreneurial activity and state of entrepreneurship in South Africa

The 2015/16 Global Competitive Report places South Africa at the 42nd position with respect to entrepreneurial activity thus putting a firm stop from its early downward trajectory that occurred over a period of 4 years where South Africa dipped into 49th position. In terms of innovation, the 2015/16 Global Competitive Report saw South Africa reaching for the 38th position with respect to innovativeness and this enabled South Africa to move up 5 places. Such strides were attributable to increased ICT uptake, more especially increased internet bandwidth. Moreover, experts were given the opportunity to help identify the three main factors that thwart entrepreneurship and were also asked to offer three recommendations that would turn things around in South Africa's entrepreneurial landscape. Experts all agreed to the following factors: government policy (61%), access to finance (44%), and education and training (42%) (Herrington & Kew, 2016: 46).

Government policies and initiatives

The attention that has mostly been geared toward fully-fledged developed economies has to an extent severely diminished interest in developing economies when it comes to entrepreneurship, thus, limiting entrepreneurship research outputs in these developing economies. The dwindling and scarcity amount of entrepreneurship research in these developing economies has led to so many assumptions being made about these developing economies that perhaps the entrepreneurial spirit as well as entrepreneurial culture is substandard in these developing economies and assumptions that perhaps such below par entrepreneurial spirit and entrepreneurial culture is as a result of socio-political doing. It is, therefore, imperative for governments in developing economies to be mindful that by stimulating and shaping the business environment in a certain trajectory could yield positive or negative spin-offs in terms of entrepreneurial activity. In short, the government determines if the developing economy will evolve and eventually convert to a developed country (Ratten, 2014).

Some scholars do acknowledge that even though since the new dispensation, the South African government upon putting its policies in place to support the SME enterprises has seen new jobs, new business markets being created and an overall improved economy in general, this is not enough at all because it leaves out survivalist entrepreneurs who have no adequate skills and training (Choto&Tengeh, 2014). Rogerson (2016) agrees to the fact that the South African policy for SMMEs continues to circumvent the informal survivalist economy and goes a step further to contend that

the SMME economy in South Africa is a disgrace that necessitated to be revamped by completely crafting a new policy framework that would ensure the inclusion of the informal sector under the banner of the Integrated Small Enterprise Development Strategy that is driven by the Department of Trade and Industry (DTI). In other words, in order for the South African government to become aware of the immense contribution that the SMEs can make, the whole SME sector would need to be relooked with a new set of eyes whose vision and focus would strictly be aligned with the actual barriers that the SME sector experiences, that is, the current spectrum employed that includes whether the collateral is available or not, whether viability assessment has been made or not, or whether the entrepreneur is able or not would need to be rendered obsolete and instead each business would need to be looked at as a unique entity with its corresponding unique needs and each entrepreneur would need to be armed with requisite skills that will make his or her business successful (Ramukumba, 2014).

Access to funding

Funding continues to remain the major stumbling block to the development of a viable SMME sector in South Africa. The lack of access to funding is a reason why many business ideas fail to come to fruition in South Africa. On the other hand, the financial institutions continue to be adamant in asking for collateral security before giving out loans to would-be entrepreneurs (Khosa, 2014). In the past few years, for example, the world has seen a rise in the number of female entrepreneurs that constitutes about a quarter to a third of all formal enterprises in the main stream economy (Nxopo, 2014). However, the picture in South Africa continues to remain gloomy registering 4.83 percent of female entrepreneurs between the ages of 18 and 64 that are part-taking in establishing their businesses and this figure is staggeringly small compared to the global average of 7.72 percent and one of the challenges put forward is limited or no access to finance at all (Chinomona&Maziriri, 2015). The case of female entrepreneurs in South Africa is exacerbated by the fact that due to lack of suffice financial resources and insufficient start-up capital it is extremely difficult for women entrepreneurs to access bank loans as majority often do not have collateral security as required by the funding institutions (Phillips et al., 2014).

Scholars in general in South Africa and this includes those whose work involves immigrant entrepreneurs all concur that money lending institutions in South Africa tend to be scared to offer loans to new business ventures mainly due to the very low success rates they have displayed over the years and thus, budding entrepreneurs are greatly encouraged through joining business incubators to collaborate with founding partners who would offer mentorship and assist with funding (Lose et al., 2017).

Education and training

Entrepreneurship education is the type of education that is responsible for imparting entrepreneurial skills as well as attitudes and is intrinsically linked to entrepreneurial intentions which are defined as the urge to own one's business venture or start one's business (Bae et al., 2014). Many countries all over the world have begun producing policy frameworks whose duty is to offer support to entrepreneurship education and training, doing so with the sole purpose of encouraging entrepreneurial activity. Entrepreneurship education encompasses a broad spectrum of a variety of programmes that include awareness programmes on issues such as funding opportunities and career choices, informal interviews of entrepreneurs as well as field trips, experimental programmes such as meeting up with budding entrepreneurs and computer simulation, and programmes driven by institutions of higher learning such as the provision of skill building modules as well as theoretical modules (Farashah, 2013).

The current system of education in South Africa fails to meet the country's main economic objectives which are price stability, favourable balance of payment, fair distribution of resources, full employment, and economic growth and the reason for such failure is that in order for the country to grow in the desired direction economically and be acknowledged as possessing entrepreneurial activity, the country needs people who are armed with productive entrepreneurship education of which that is not the case in South Africa at the moment (Gamede&Uleanya, 2017). Some scholars in South Africa point the finger at the institutions of higher learning that the country cannot solve the challenge of job creation that seems to be affecting young graduates and young people in general (Odora& Naong, 2014).

Entrepreneurial perceptions

Many scholars are of the view that entrepreneurial opportunities remain hidden under the surface of the general populace and can only be brought to surface by those who have an entrepreneurial eye, that is, this is the case because such entrepreneurs possess quite an array of exclusive set of distinctions that capacitate them to recognise and hence exploit on a gap that has gone unnoticed to a normal eye and thus such entrepreneurs will begin to put in place all steps necessary to drive their ideas to fruition and examples of such exclusive entrepreneurial characteristics or perceptions that furnish these entrepreneurs are: propensity to take risk, innovativeness, and provocativeness. It must, however, be mentioned be mentioned that according to this school of thought such entrepreneurial opportunities do not occur in vacuum but exist in the immediate environment and thus their discovery is a function of objective reality (Suddaby et al., 2014). Suddabay and co-workers (2014) do warn though that there is an alternative view, which is the creation view, that argues that entrepreneurial opportunities are created by

the environment in an endogenous manner and this occurs as a result of creative machinations accompanied by inherent social skill possessed by the entrepreneur. Another alternative that seeks to accommodate both alternatives exists and it maintains that the two theories actually complement each other (Hmielski et al., 2015).

Stimulating and encouraging entrepreneurship

In first and second world countries it is the responsibility of universities to bring into existence fertile ground upon which entrepreneurship can spring up and it is also incumbent on universities to bring to pass novel inventions and new forms of knowledge that can be taken advantage of by new business ventures. Universities such as the Stanford University and MIT in the United States of America are pure examples. Such an effort is referred to as the second revolution and the first revolution involved addition of a pillar of research in the education of university students as its sole imperative and the third revolution, on the other hand, adds as its directive entrepreneurship where universities are strongly and actively encouraged to birth entrepreneurship programmes whose role would be to foment and foster entrepreneurship, add to the survival and consequential growth of new business ventures (Jansen et al., 2015).

Fostering entrepreneurial mindset through entrepreneurship education

Entrepreneurship education encompasses the provision of students with a conveyance of concepts, knowledge, and skills that equip students with the ability to identify, recognise, and exploit entrepreneurial opportunities that others have not been able to see or perhaps have missed altogether and while, on the other hand, afford them with the discernment together with self-esteem to actively exploit such entrepreneurial opportunities that were otherwise unnoticed by others. Entrepreneurship education is, therefore, a compelling and convincing precursory that has a direct influence on entrepreneurial intentions as well as activities (Zhang et al., 2014).

It cannot, therefore, be overstated that entrepreneurship education at tertiary institutions is a mechanism that can be employed to impart entrepreneurial mindsets amongst graduate students that will eventually lead to an increase in the number of start-up companies by graduate students. In fact, entrepreneurial mindsets are responsible for driving innovation in already existing companies and also responsible for transforming organisations that are led by students (Solesvki et al., 2013). Tengeh and co-workers (2015) also concede that entrepreneurship education is the only means by which entrepreneurial activity and mindset could be raised and fostered and thus, South Africa, being a country with countless economic drawbacks need entrepreneurship education in order to meet its vast economic challenges.

Need for Private Medical Laboratories in South Africa

National governments through their respective National Health Laboratories in sub-Saharan Africa are doing quite a disservice by rendering a disintegrated support diagnosis service that is characterised by untimely, unreliable, and inaccurate results. The below par support diagnosis service by these National Health Laboratories comes as a result of very poor functioning quality management systems, exceedingly increased laboratory error, and eventual lack of accreditation. Thus, national governments will from time to time be called to account and thus be forced to avert the status quo by having to come up with better laboratory policies and strategic plans, by having to enhance training and development of laboratory workforce, by having to draw better retention strategies, by having to craft carrier paths for laboratory professionals, and by having to establish solid public-private collaborations (Alemnji et al., 2014).

Such limitations become entrepreneurial avenues that Biomedical Sciences Students can exploit and start their new business ventures.

3. Research Methodology

Upon completion of a pilot study of ten participants, the research study proceeded with handing out questionnaires. The research design followed in this study was an explanatory research design. Sampling was not done at all in this study instead the whole population was used because the Biomedical Sciences Department had a total of 185 students and so in order to get a good response rate it was suggested that the whole population be used. In other words, the target population of interest was drawn from the Biomedical Sciences students at the Cape Peninsula University of Technology due to easy accessibility accompanied by their availability at any chosen time, and their willingness to part-take in the study. The target population was 185 Biomedical Sciences students. In this study, self-administered questionnaires were used to collect data.

4. Data Analysis

There were basically two types of parametric statistical data analysis tests or techniques, namely,

- Descriptive statistics, which was nothing else but numerical summaries of samples that were observed, and
- Inferential statistics, which referred to what was it that was observed or could have been observed from respective sample of populations (MacDonalds&Headlam, 2011).

This study used descriptive statistics since quantitative variables were measured on a ratio scale, that is, where a variable was any measured characteristic or attribute that was different for different subjects. SPSS as a software package was used in this study (MacDonalds&Headlam, 2011).

Other methods of analysis are referred to as non-parametric statistical tests and are mainly employed when the size of the sample is small; when relatively minimal amount of assumptions can be afforded about the data; when the data is said to be ranked nominal or ordered; and lastly when samples emanate from diverse populations (Walliman, 2011:126).

The elements in the analysis which showed entrepreneurial inclination (risk taking propensity, need for achievement, innovativeness, tolerance for ambiguity, locus of control, and self-confidence) were converted into sub-scales. The standard deviation, mean, reliability values, and correlation were measured.

5. Results and Discussion

Questions B1 to B17 that appear in Section B of the survey questionnaire given in the Appendix describe the attitudes of participants towards entrepreneurship. The results to these questions will be employed to establish whether participants will view entrepreneurship as a career of choice.

Attitudes towards entrepreneurship

The mean scores together with standard deviations of the 17 items that assess attitudes of participants towards entrepreneurship as a career choice are provided in Table 1 below. The attitudes of participants towards entrepreneurship are presented from the highest mean score to the lowest mean score.

Table 1: Attitudes towards entrepreneurship

	N	Minimum	Maximum	Mean	Std. Deviation
B9 Academic institutions should encourage students to consider entrepreneurship	173	1	5	4.05	.904
B14 Entrepreneurship is a good way to make lots of money	173	1	5	3.83	.924
B6 Entrepreneurs are largely responsible for new innovations, technologies and products	171	1	5	3.82	1.016
B7 I can NOT earn more money working for somebody else	172	1	5	3.81	1.022
B15 Entrepreneurship is a honourable profession	171	1	5	3.78	.878

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B11 My parents are NOT entrepreneurs	170	1	5	3.71	1.386
B1 Want to start own business?	173	1	5	3.67	1.206
B2 Entrepreneurs are almost always investors	172	1	5	3.63	.911
B10 I am too busy with classes to consider starting my own business	171	1	5	3.57	1.207
B13 I am a risk taker	172	1	5	3.55	1.110
B17 I prefer to work for a large company, for better career prospects	172	1	5	3.51	1.079
B16 A tertiary education is not necessary to be an entrepreneur	173	1	5	3.43	1.326
B5 Entrepreneurship will do anything for profit	171	1	5	3.43	1.063
B8 I seriously consider entrepreneurship as career option	172	1	5	3.34	1.177
B12 It is too risky to start own business	171	1	5	3.11	1.112
B3 Buying a business is not entrepreneurship	169	1	5	2.75	1.194
B4 Owning a franchise is not entrepreneurship	171	1	5	2.26	1.103
Valid N (list wise)	156			3.49	1.095

A high mean of 4.05 was obtained for the statement: Academic institutions should encourage students to consider entrepreneurship. Participants also agreed to the following statements, respectively: Entrepreneurship is a good way to make lots of money with a mean of 3.83; Entrepreneurs are largely responsible for new innovations, technologies, and products with a mean of 3.82; I can earn more money working for somebody else with a mean of 3.81; Entrepreneurship is an honourable profession with a mean of 3.78; My parents are entrepreneurs with a mean of 3.71; Want to start own business with a mean of 3.67; Entrepreneurs are almost always inventors with a mean of 3.63; I am too busy with classes to consider starting my own business with a mean of 3.57; I am risk taker with a mean of 3.55; and I prefer to work for a large company for better career prospects with a mean of 3.51.

Odora and Naong (2014) alluded to the fact that for as long as academic institutions in South Africa do not arm their students with entrepreneurship education the country will never be able to solve the challenge of job creation that greatly affects the youth. There are many scholars that are also of the view that institutions of higher learning should take it upon themselves to provide entrepreneurial skills to their students, that is, skills that will enable them to set-up their entrepreneurial businesses (Duval-Couetil, 2013).

Jellilov and Onder (2016) mentioned that an entrepreneur uses the factors of production to make money for the company. Salamzadeh et al. (2014) also concur with the notion that entrepreneurs are responsible for making money be it at macro level or be it at an individual level. Mupfasoni and Kessler (2017) viewed entrepreneurs as being innovative and always in search of new technologies and products. Jain and Ali (2012) also agree that innovativeness is one of the characteristics that depict entrepreneurs.

The past 25 years has seen an upsurge of entrepreneurship modules offered by many institutions of higher learning all over the world as they now see the need to recognise entrepreneurship as a viable career option that is honourable (Israel, 2014). In this era characterised by a fluid labour market, entrepreneurship as a viable career option continues to get attention (Perez-Lopez, 2015).

Participants had neutral reservations when it comes to the following statements: A tertiary education is not necessary to be an entrepreneur with a mean of 3.43; Entrepreneurs will do anything for profit with a mean of 3.43; I seriously consider entrepreneurship as a career option with a mean of 3.43; It is too risky to start own business with a mean of 3.11; and Buying a business is not entrepreneurship with a mean of 2.75.

Participants scored the statement very low: Owning a franchise is not entrepreneurship with a mean of 2.26 which indicated that they disagreed with the statement.

Entrepreneurial Opportunities

Questions C1 to C9 that appear in Section C of the survey questionnaire given in the Appendix. The results to these questions will be employed to establish whether participants will be able to identify entrepreneurial opportunities. The mean scores together with standard deviations of the 9 items that assess whether participants will be able to see entrepreneurial opportunities are provided in Table 2 below. The ability of participants to see entrepreneurial opportunities are presented from the highest mean score to the lowest mean score. Likert-type scale questions of 1 to 5, where 1 indicates strongly “disagree” and 5 indicates “strongly agree” are asked, where low numbers suggest that participants disagree with the statement, while high numbers suggest that participants agree with the statement. In other words, high numbers indicate that participants viewed the statement as true and vice versa.

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Table 2: Entrepreneurial Opportunities

	N	Minimum	Maximum	Mean	Std. Deviation
C2 It is too expensive to start own business	171	1	5	3.58	1.033
C1 I have many ideas for business ventures	173	1	5	3.05	1.185
C4 Entrepreneurial ventures are mainly limited to business ideas	172	1	5	2.89	.933
C5 I have a good understanding of intellectual property	172	1	5	2.84	1.047
C3 There are many entrepreneurial opportunities in my specific area of study	173	1	5	2.77	1.102
C7 I am constantly alert to business opportunities	170	1	5	2.66	1.038
C6 I understand what is equity finance	172	1	5	2.59	1.091
C9 I DO NOT need connections to start a business	173	1	5	2.56	1.143
C8 All the good ideas have been taken	172	1	5	2.35	1.121
Valid N (listwise)	165			2.81	1.077

A high mean of 3.58 was calculated for the statement: It is too expensive to start own business. This result indicates that participants agree with the statement.

There is a general feeling in South Africa that access to funding continues to remain a major stumbling block to the development of a solid SMME sector and that the major financial institutions seem to be unwilling to offer loans to would-be entrepreneurs (Khosa, 2014). Lose et al. (2017) also agree that access to funding poses the greatest impediment to would-be entrepreneurs in South Africa.

Participants were neutral about the following statements: I have many ideas for business ventures with a mean of 3.05; Entrepreneurial ventures are mainly limited to business ideas with a mean of 2.89; I have a good understanding of intellectual property with a mean of 2.84; There are many entrepreneurial opportunities in their specific area of study with a mean of 2.77; I am constantly alert to business opportunities with a mean of 2.66; I understand equity finance with a mean of 2.59; and Need connections to start a business with a mean of 2.56.

The statement that: All the good ideas have been taken was scored the lowest with a mean of 2.38 which indicates that participants do not agree with the statement.

Entrepreneurial environment within university

Questions D1 to D9 that appear in Section D of the survey questionnaire given in the Appendix. The results to these questions will be employed to establish whether there is favourable entrepreneurial environment within the university for participants. The mean scores together with standard deviations of the 9 items that assess whether entrepreneurial environment within the university is favourable for participants are provided in Table 3 below. The responses by participants to establish entrepreneurial environment are presented from the highest mean score to the lowest mean score. Likert-type scale questions of 1 to 5, where 1 indicates strongly “disagree” and 5 indicates “strongly agree” are asked, where low numbers suggest that participants disagree with the statement, while high numbers suggest that participants agree with the statement. In other words, high numbers indicate that participants viewed the statement as true and vice versa.

Table 3: Entrepreneurial environment within university

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
D6 A small seed grant or (start-up fund) would encourage entrepreneurship	173	1	5	4.13	.862
D5 Having a mentor will help	172	1	5	4.10	.903
D7 More business sector interaction would encourage entrepreneurship	173	2	5	3.99	.811
D9 A programme exempting student loan repayments for student entrepreneurs would encourage more students to pursue a business venture after graduation	171	1	5	3.84	1.002
D8 Private sector support for student entrepreneurs would result in more university business start-ups	172	1	5	3.73	.904

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D3 Examples of how science and technology are key to business are included in classes	172	1	5	3.11	1.126
D2 My high school councillor mention entrepreneurship as career option	173	1	5	2.88	1.302
D4 Entrepreneurial or business related examples are included in classes	171	1	5	2.78	1.121
D1 Students are encouraged to pursue entrepreneurship ventures	173	1	5	2.69	1.134
Valid N (listwise)	168			3.47	1.018

A high mean of 4.3 was calculated for the statement: A small seed grant or start-up fund would encourage entrepreneurship. Participants also agreed to the following statement, respectively: Having a mentor will help with a mean value of 4.10; More business sector interaction would encourage entrepreneurship with a mean value of 3.99; A programme exempting student loan repayment for student entrepreneur with a mean value of 3.84; and Private sector support for student entrepreneur would result in more university business start-ups with a mean score of 3.73.

Participants were neutral about the following statements: Examples of how science and technology are key to business are included in class with a mean score value of 3.11; My high school councillor mentioned entrepreneurship as career option with a mean of 2.88; Entrepreneurial or business related examples are included in classes with a mean of 2.78; and Students are encouraged to pursue entrepreneurship ventures with a mean of 2.69.

Entrepreneurial environment in South Africa

Questions E1 to E5 that appear in Section E of the survey questionnaire given in the Appendix. The results to these questions will be employed to establish whether there is favourable entrepreneurial environment within the university for participants. The mean scores together with standard deviations of the 9 items that assess whether entrepreneurial environment within the university is favourable for participants are provided in Table 4 below. The responses by participants to establish entrepreneurial environment are presented from the highest mean score to the lowest mean score. Likert-type scale questions of 1 to 5, where 1 indicates strongly “disagree” and 5 indicates “strongly agree” are asked, where low numbers suggest that participants disagree with the statement, while high numbers suggest that participants agree with the statement. In other words, high numbers indicate that participants viewed the statement as true and vice versa.

Table 4: Entrepreneurial environment in South Africa

	N	Minimum	Maximum	Mean	Std. Deviation
E3 It would be very difficult to raise the money needed to start a new business	170	1	5	3.43	1.081
E2 My local community supports entrepreneurs	169	1	5	3.18	1.054
E1 South Africa is an excellent country to start a business	171	1	5	3.11	1.117
E5 I am aware of programmes the state provides to help people start businesses	168	1	5	2.72	1.168
E4 I know how to have access to the assistance I would need to start a new business	170	1	5	2.66	1.082
Valid N (listwise)	164			3.02	1.100

Although all the statements were rated neutral, the following three statements were rated higher than the average mean of 3.02 as presented in Table 4.24: It would be very difficult to raise money to start a new business with a mean of 3.43; My local community supports entrepreneurs with a mean of 3.18; and South Africa is an excellent country to start a new business with a mean of 3.11. The remaining statements were rated neutral far lower than the average mean of 3.02: I am aware of programmes the state provides to help start businesses with a mean of 2.72; and I know how to have

access to the assistance I would need to start a new business with mean of 2.66.

Herrington and Kew (2016:46) mentioned that government policy (61%), access to finance (44%) and education and training (42%) are the three main factors that hamper entrepreneurial activity in South Africa.

6. Conclusion

The conclusion is that Biomedical Sciences students at the Cape Peninsula University of Technology should desist from the seemingly attractive claws and nest of larger

companies that entrap them to become perpetual employees instead they should rather be willing to take risks and wear an entrepreneurial mindset that will drive them to become employers rather than employees more so given the unemployment challenge that South Africa faces.

Institutions of higher learning such as the Cape Peninsula University of Technology should radically encourage entrepreneurship and foster an entrepreneurial mindset and spirit amongst its students given the fact that the students in this study seem to generally hold a positive inclination towards entrepreneurship.

7. Recommendations

I. Education

Institutions of higher learning such as universities need to be held accountable for the type of students they produce. In this new economic era of globalisation, institutions of higher learning need to design holistic curricula that will include and hence embrace entrepreneurship education in all their offerings in terms of courses irrespective of field of study. Institutions of higher learning need to be able to close the gap between knowledge production and application and delivery of the created knowledge in real business settings. By so doing institutions of higher learning would have started to set their feet on producing the desired work-ready graduates who possess an entrepreneurial spirit. The skills that are sought after in these economic times are: communication skills; decision making skills; critical thinking skills; resilience and perseverance skills; teamwork; problem solving skills; management skills; innovation skills; initiative and enterprise self-management skills; learning through technology skills; financial skills; etc. It therefore goes without saying that opportunity identifying and opportunity recognition skills will enhance students' employability and will greatly encourage them to start their own enterprises. South Africa which has very low levels of entrepreneurial activity should therefore focus on entrepreneurship education.

II. Support, funding and financing student entrepreneurs

South Africa should be mindful of the fact that institutions of higher learning are nothing else but a hub of unbelievably very brilliant mixture of students, lecturers, researchers, academics, and workers in general. This, in actual fact, is nothing else but a reservoir of entrepreneurial latent talent that is largely untapped and unexplored. As a result with the nudge in the right direction by business incubators, a new and a very unique start-up culture that can be born in South Africa with the help of these smart people who could be used as mentors to inspire student entrepreneurs who could drive change in the country.

Institutions of higher learning, local entrepreneurs, academics, students, government, and private sector should all come up with innovative ways of bridging the gap

between knowledge gathering, research and business product development. They should establish programmes that will provide students with the opportunity to apply for start-up business venture capital. They should build teams or groups that are complimentary with each other. They should inspire and encourage students to come up with novel business ideas and as such they should provide full support of such ideas to move off the ground. Institutions of higher learning should establish commercialization initiatives which could be funded by either government or private development corporations. Such funds could be discipline specific. Local entrepreneurs, government and the private sector would need to be fully involved from business inception stage right through to student entrepreneurs becoming established entrepreneurs. Business talks, events, pitch events, and so on would need to be established. Student entrepreneurs would need to be allocated to mentors, investors, and experts throughout Cape Town. Competitions, exhibitions, business challenges would need to be run which would include some form of incentives. This will require sound administrative and student support goals that are patient and long-term oriented.

III. Government

The government of South Africa should increase funding for entrepreneurship education and should also encourage the teaching of entrepreneurial skills that entail venture creation and leadership. The government of South Africa should see to it that in the next 5 years the number of student entrepreneurs increases by 50%. The South African government should remove bureaucratic barriers for those who seek to start their businesses. The South African government should support SMEs not only when they are still in the start-up phase but also as they grow and creating jobs. The government should realise that cash flow is very crucial for SMEs.

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