

An Exploratory Study on the Gender-Based Differences in Entrepreneurial Intention and Its Antecedents amongst Students of a South African University of Technology

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Abstract

Although the prevailing gender-linked fissures in entrepreneurial activity are shrinking in African economies, a disturbing feature of the contemporary business start-up environment is that women persistently are less willing to engage in entrepreneurship compared to men. In addition, women focus more on low technology and service-oriented business activities, which yield relatively lower financial value than other economic sectors. Given the subtle but entrenched gender vulnerabilities and biases that constantly accompany student career decisions, the primary objective of this research was to establish whether gender influences students' intention to participate in entrepreneurship. Guided by a quantitative approach and survey research design, the study used a self-administered questionnaire to gather data from 130 undergraduate students, randomly selected from an entrepreneurship education class at a South African university of technology. The study applied the Mann-Whitney technique, a non-parametric test, to ascertain the existence of any significant gender-grounded disparities in the mean scores for entrepreneurial intention and its antecedents. The results confirmed the existence of significant differences in entrepreneurial intention, perceived behavioural control and attitude towards entrepreneurship among students, with males scoring higher than females in these constructs. These findings emphasise the need for gender-sensitive approaches to devising and implementing entrepreneurship development and support measures among potential entrepreneurs.

Keywords: attitude; entrepreneurial intention; gender; perceived behavioural control; planned behaviour; subjective norms; South Africa

Introduction

It is problematic to ignore the contribution of women's entrepreneurial activities in both the developed and developing economies given the positive socioeconomic impact that women-owned businesses have. Previous studies (Hermans et al. 2015, 128; Kelley, Brush, Greene and Litovsky 2013, 12; Singer, Amoros and Arreola 2015, 44) reveal that such businesses impact on the society and economy through generating innovative products, employment creation and improving quality of family lives. According to Kelley et al. (2015, 11),



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women possess a quarter of business entities worldwide, with the figure much higher in advanced economies. This corroborates statistics by American Express (2014, 17) which demonstrate that, in the United States of America (USA), an estimated 33 per cent of the existing 28 million businesses are women-owned. This same report states that the women-owned businesses in the USA employ approximately 7.9 million people and generate over \$1.4 trillion in revenues per annum, placing the contribution of women entrepreneurs at the centre of economic activity in the country.

In South Africa, First National Bank's (2011, 9) white paper on the state of entrepreneurship estimates the men:women entrepreneurship ratio at 1.6:1 compared to 1:1 in some South American countries. However, the reality is that women-owned businesses are largely necessity-driven and concentrated in the informal and small business sectors of the economy (SEDA 2017, 11). Hence, Sospeter, Rwelamila, Nchindi and Masoud (2014, 76) contend that the under-representation of the business talents of women entrepreneurs in economic activity denies nations some substantial economic value. The International Labour Organization's (2015, 21) World Economic and Social Outlook (WESO) report corroborates this view by stressing the following: economies with high percentages of female labour force involvement are more robust, female labour force participation is an effective anti-poverty tool, and countries and regions with the largest gaps in female labour participation incur income losses of up to 30 per cent of GDP per capita.

Notwithstanding the substantial body of literature that demonstrates the proliferation and impact of female entrepreneurs worldwide, recent studies reveal a marginal participation of women in developing economies (Knight 2016, 311; Naguib and Jamali 2015, 137; Patrick, Stephens and Weistein 2016, 366; Welsh, Memili and Kaciak 2016, 4). This is a result of a mix of individual and circumstantial reasons. At the individual level, entrepreneurship researchers acknowledge a relatively higher risk-aversion among females as a major restraint to female involvement in entrepreneurship (Dawson and Henley 2015, 502; Marlow and Swail 2015, 81; Rad, Yazdanfar and Ohman 2014, 121–122). In fact, Emami (2017, 168) claims that male entrepreneurs tend to pursue riskier entrepreneurial opportunities compared to their female counterparts. Contextually, the predominant but subjective view of entrepreneurship as a masculine field highlights the continued inequity where societies regard certain occupations as male domains while others as natural habitats for females (Garcia and Welter 2013, 385; Hechavarria and Ingram 2016, 244; Jaafar, Othman and Jalali 2014, 78; Jones 2014, 238). The ensuing discussion underscores the influence of gender, as defined by “biological sex (male or female) or psychological sex (the degree to which a person exhibits masculine or feminine traits)” (Lips 2017, 5), on individuals' willingness to partake in entrepreneurship. This study classifies gender groups based on biological sex given that it is more practical to do so. Whereas varying degrees of masculinity and femininity exist, it is not always convenient to consider gender as a psychological variable.

There is evidence of variation of the gender gaps in entrepreneurial participation in certain African economies. For instance, women's total entrepreneurial activity (TEA) rates in Nigeria and Ghana exceed that of men (Herrington and Kelley 2012, 32). However, while males' TEA rates are relatively higher than those of females

in countries like Angola, Namibia, Botswana and Zambia (Balunywa et al. 2013, 21–22), the gaps are narrower. In line with the situation prevailing in several sub-Saharan African countries, entrepreneurial activity among South African women lags behind that of men, raising robust debate on the continued under-representation of women (Herrington, Kew and Mwangi 2017, 32–33). In addition, where women entrepreneurs are active, they often concentrate in low-technology and service-oriented businesses with sub-optimal value-creating capabilities (Kelley, Singer and Herrington 2016, 24–26).

More disturbing is the reality that fewer younger women in South Africa have entrepreneurial aspirations in the face of a high level of youth unemployment (Turton and Herrington 2012, 12). An associated challenge is perceptible among some higher education students, where prior research demonstrates that there are significant differences between female and male students' willingness to engage in entrepreneurial activities (Fatoki 2014, 297–298; Malebana and Swanepoel 2015a, 628). This disparity persists even in circumstances where students are exposed to the same entrepreneurial education and support from their institutions (Ndofirepi 2016, 216). The preceding assessment builds on Tegtmeier and Mitra's (2015, 255) comment that "Where education has been a spur for independent economic activity, we note that women who are highly qualified and educated often refrain from entrepreneurial activities." The disparities do not only raise misgivings about the efficacy of national interventions to equalise entrepreneurial opportunities but rather raise disturbing questions about whether gender parity can ever be achieved. Given the subtle gender biases and prejudices that continue to permeate student choices in their pursuits of different careers, the primary focus of this study is to establish whether gender affects tertiary education-level students' intention to engage in entrepreneurship in the future. We narrow this knowledge gap by answering the following research questions:

1. Are there any statistically significant differences in students' entrepreneurial intention on the basis of gender?
2. Are there any statistically significant differences in students' attitude towards entrepreneurship on the basis of gender?
3. Are there any statistically significant differences in students' subjective norms on the basis of gender?
4. Are there any statistically significant differences in students' perceived behavioural control on the basis of gender?

Since students' career decisions are largely voluntary and premeditated, the study used entrepreneurial intention theories to build on existing knowledge on the relationship between gender and entrepreneurial intention. In this study, entrepreneurial intention is taken to mean the self-acknowledged beliefs by persons that they aim to launch new business undertakings in the future (Thompson 2009, 672). The extended knowledge has significant implications for scholars, policymakers, and entrepreneurship educators.

The remainder of the article is structured as follows: First is a literature overview on the variables relevant to this study is given; the second section presents the research design and methodology that was used to test the

hypotheses stated for this study. The study's results are then presented; and the article ends with a discussion on the practical and theoretical implications of the findings.

Literature Review

Entrepreneurship Activity in South Africa

Compared to most sub-Sahara Africa countries, the South African economy has experienced an unrelenting downward trend since 2010 (Trading Economics 2017). An examination of economic performance statistics reveals a drop in GDP per capita (USD) from \$8 656 (2011) to \$5 994 (2015) (World Bank 2017). This tendency bothers policymakers and private sector players alike as it symbolises deterioration in the general standard of living in the country (Africa Development Bank 2016). Besides, for a populous country with 54.9 million dwellers (Statistics South Africa 2017), a persistent decline in GDP prolongs the prevalent socioeconomic inequities.

Disconcerting for a country with one of the highest GDP per capita in Africa, the number of poor people continues to rise. According to Statistics South Africa (2017), an estimated 12 million South Africans live below the poverty¹ line. Therefore, poverty remains an irritant to South African society. The preceding factor, together with the high youth unemployment rate² in South Africa, (Ingle and Mlatsheni 2017, 2) demands substantial economic restructuring and policy interventions to generate more economic activity, lessen unemployment, and eliminate poverty.

A key strategy for entrenching socioeconomic change in South African society, like in any other place across the world, is the promotion of entrepreneurship activity and small and medium-sized enterprises (Lepoutre, Justo, Terjesen and Bosma 2013, 694). According to Nani (2011, 78), this can be achieved by eliminating obstacles to entrepreneurship, as well as equipping individuals with the required skills and knowledge to start their own businesses through entrepreneurship education and training. In 2002, the Umsobomvu Youth Fund (an organisation established by the South African government to spearhead job creation, skills development and transfer for South Africa's young people) called for the introduction of entrepreneurship education at all levels of education in South Africa (Umsobomvu Youth Fund 2002). By 2013, 23 of South Africa's public universities offered entrepreneurship courses/modules as part of their degree programmes (Malebana 2013, 191). This demonstrates the relevance of entrepreneurship education to the learning needs of contemporary university students. What is not clear, however, is whether these educational programmes are achieving their key objective of swaying participants towards entrepreneurial careers.

Apart from encouraging entrepreneurship education and training, the South African government has implemented entrepreneurship promotion intervention measures within the country, but with lower than

1 The United Nations Educational, Scientific and Cultural Organization's (2017) classification of people as poor if they fall below prevailing standards of living in a given societal context applies here.

2 52.20 per cent in the third quarter of 2017 (Trading Economics 2017).

expected effect (Cant and Wiid 2013, 708; Masutha and Rogerson 2014, 142). Compared to other emerging economies in Africa and worldwide, South Africa’s annual total entrepreneurial activity (TEA) rate is lower. Moreover, the entrepreneurial intention of the republic’s citizens is lower than most sub-Sahara African countries (Herrington and Kelley 2012, 21). Herrington et al. (2017, 32) proclaim that the desirability, fear of failure and lack of self-belief indices compare unfavourably against those for other sub-Saharan Africa countries. In other words, South Africa’s entrepreneurship statistics are depressed.

Of further interest is the gender disparity in TEA. Like in many areas worldwide, males dominate entrepreneurship activity in the country (Herrington et al. 2017, 32). Table 1 presents the male and female TEA statistics trajectory in South Africa for the period of 2001 to 2016. The figures demonstrate that the gap between males and females’ TEA rates persists. Also, the rates for both males and females are markedly lower than the averages for other African and efficiency-driven economies.

Table 1: TEA rates (%) in South Africa by gender in South Africa, 2001–2016

	2001	2005	2009	2013	2014	2015	2016	African region 2016	Efficiency-driven economies 2016
Male TEA rate	7.3	5.9	7.2	12.3	7.7	11.6	8.0	20.4	16.0
Female TEA rate	5.8	4.5	4.7	9.0	6.3	7.0	5.9	14.9	12.0

Source: *Herrington et al. (2017, 32)*

Given the substantial support that the South African government and other private bodies afford women entrepreneurs, the data presented in Table 1 is disconcerting. Currently, there are seven dedicated funds and financial assistance programmes for women entrepreneurs in South Africa (Crampton 2017). Yet, women’s average TEA in the country lags behind that of the Africa region and other efficiency-driven economies’ averages. While reasons like lower levels of education of African women, an absence of women business linkages in the surrounding area, lack of female role models, restricted access to capital and financial backing explain the inequity (Herrington and Kelley 2012, 31), there are other factors that are unique to the South African context. For instance, English and Hay (2015, 146) suggest the prevalence of subtle side-lining of South African women politically, socially and economically. This partly contributes towards the reduced presence of women entrepreneurs in particular business sectors.

The Theory of Planned Behaviour

Despite the existence of numerous theories that explain the complexity of human behaviour, the current study adopted Ajzen’s (1991, 180) the theory of planned behaviour (TPB) as a guiding framework. Notwithstanding that the theory was originally intended to interpret general human behaviour, it successfully explains individual entrepreneurship tendencies (Choi 2012, 682; Heuer and Kolvereid 2013, 508; Kautonen, Van Gelderen and

Fink 2015, 2; Lortie and Castogiovanni 2015, 936). According to this theory, most human activity, including entrepreneurship behaviour, is calculated and thus preconceived. In this regard, the TPB proposes three antecedents to behavioural intention, namely attitudinal, normative and perceived behavioural control. These three factors collectively influence an individual's willingness to participate in entrepreneurship in the future (Ajzen 1991, 180; Ajzen 2015, 1113–1115; Knabe 2012, 8). Attitudinal beliefs concern one's predilection towards a phenomenon. In a recent South African study, Malebana and Swanepoel (2015b, 103) draw attention to the observation that the sturdiness of one's attitude accounts for 45.8 per cent of the change in one's intent to take part in entrepreneurship.

Normative beliefs, however, embody the effect of people in one's social network (i.e. friends, family and workmates) on the readiness to partake in a specific activity, in this instance entrepreneurship (Ajzen 1991, 188). Yet the power of this influence depends on how one responds to approval or censure from those in one's social network. Nonetheless, some scholars are sceptical of the impact of normative beliefs on intention and behaviour (Fayolle, Gailly and Lassas-Clerc 2006, 708; Liñán, Rodríguez-Cohard and Rueda-Cantuche 2011, 199).

The third factor, perceived behavioural control, relates to self-confidence and conviction about one's capabilities to carry through a specific course of action (Tsai, Chang and Peng 2014, 446). The power of one's perceived behavioural control impacts on whether an individual will engage in particular behaviour or not. Of the three precursors of intention, perceived behavioural control wields the greatest effect. While the TPB posits that only attitude, subjective norms and perceived behavioural control directly influence any intention to partake in certain behaviour, other personal and demographic factors like gender, age, region of residence and past experiences indirectly affect these antecedents of behaviour (Haus, Steinmetz, Isidor and Kabst 2013, 137).

Entrepreneurial Intention and Gender

As explained in the introduction, gender is taken in the context of biological classification of sexes, i.e. male and female, instead of the socially ascribed meanings of masculinity and femininity. In addition, entrepreneurial intention is defined as the percentage of the adult population between 18-years-old and 64-years-old who intend to start a business within the next three years (Herrington et al. 2017, 22). Some previous research confirms a positive association between entrepreneurial intention and actual entrepreneurial activity (Fayolle and Gailly 2015, 77; Fayolle and Liñán 2014, 664; Liñán et al. 2011, 197). Hence, entrenching a greater degree of entrepreneurial intention is essential for the purpose of increasing future entrepreneurship potential.

Yet, there is a marked gender imbalance among potential entrepreneurs as more men than women demonstrate an inclination towards entrepreneurship careers (Rambe and Ndofirepi 2016, 106). Despite some studies suggesting a higher proclivity towards entrepreneurship among male students compared to female students,

the extant literature shows an ambiguous position. For instance, a study by Farrington, Gray and Sharp (2012, 2) based on undergraduate business students at a South African university and small business owners revealed significantly different gender-based perceptions about entrepreneurship between males and females, albeit for different reasons. Because of their household commitments, female respondents perceive entrepreneurship careers as affording them the flexibility and autonomy to balance household and work responsibilities. On the other hand, male respondents attached less value to flexibility and autonomy. Overall, male respondents had higher entrepreneurial intention than females. This corroborates Herrington et al.'s (2017, 32) earlier cited gender gap in TEA in South Africa. A possible explanation for the dissimilarities between men and women is provided by the social role theory, which proclaims that gender disparities affect the decision-making process and behaviour of men and women (Eagly and Koenig 2006, 158). The findings from Farrington, Gray and Sharp's (2012, 19) study are corroborated by Malebana and Swanepoel (2015a, 628) whose survey of students at selected South African universities revealed significant gender-based differences in the following variables: entrepreneurial intention, the attitude towards becoming an entrepreneur, perceived behavioural control, subjective norms, and entrepreneurial self-efficacy. Male respondents had significantly higher mean scores than females.

As opposed to the preceding results, an empirical study by Bhandari (2012, 141) on the effect of gender on the entrepreneurial intention of selected undergraduate students at the Lubin School of Business, Pace University New York, demonstrated no significant differences between male and female respondents. The findings of this study infer the gender neutrality of entrepreneurial intention of students. A separate study by Olomi and Sinyamule (2009, 121) on students' entrepreneurial tendencies among vocational training learners in central Tanzania also revealed no significant effects of gender on the entrepreneurial intention of respondents who had taken part in entrepreneurship training.

In addition, Pruett's (2012, 96) study involving US participants in an entrepreneurship education programme comprising workshops and executive mentoring to establish differences in entrepreneurial intention found no significant differences between male and female respondents. Given the mixed results concerning the direct influence of gender on entrepreneurial intention, further studies on this topic, particularly in Africa where such empirical studies are scarce, will enrich the research on why entrepreneurial intention between men and women is different. Thus, it is hypothesised that:

H₁: There are differences in the entrepreneurial intention between male and female students attending an entrepreneurship course at a university of technology.

Attitude and Gender

Previous studies on the impact of gender on attitude towards entrepreneurship demonstrate varied results (Engle, Schlaegel and Delanoe 2011, 487; Fatoki 2014, 297–298; Santos, Roomi and Liñán 2016, 55–58). However, the main view underscores the dominance of male positive attitude towards entrepreneurial

compared to females. For example, Kickul, Wilson, Marlino and Barbosa (2008, 325–328) note the existence of gender variances in the way in which self-beliefs and attitudes about entrepreneurship are handled and established. Chinomona and Maziriri (2015, 837) argue that South African women entrepreneurs face substantial challenges compared to their male counterparts. As a result, an environment perceived to be more hostile to females than males may lead to the development of negative predispositions towards entrepreneurs among female potential entrepreneurs.

However, findings from other studies do not reveal any gender-based disparities in attitude towards entrepreneurship. Contrary to the common belief, Majumdar and Varadarajan's (2013, 288) study comprising a sample of first-year business students at Dubai Men's College and Dubai Women's College (United Arab Emirates) revealed statistically equivalent levels of entrepreneurial attitudes between male and female students. In fact, female respondents showed higher risk propensity compared to males: a finding which is contrary to the common observation that women are more risk adverse than men. This outcome suggests that perhaps gender plays a minor role in shaping an individual's predisposition towards entrepreneurship when compared to other factors like exposure to entrepreneurship education and social capital.

The preceding findings corroborate those of Packham et al. (2010, 576–579) whose study on entrepreneurial attitudes of students within European higher education institutions (HEIs) in France, Germany and Poland revealed no gender-driven polarities in the entrepreneurial attitudes of students at the country level. At the institutional level, no significant differences were noted between male and female Polish or French students. However, male students at the German institution showed a significantly more positive attitude towards entrepreneurship compared to their female counterparts. Although gender differences impact on attitude towards entrepreneurship significantly, fewer empirical studies have been undertaken on this topic in the South African university of technology system. The strong tradition of universities of technology of training graduates for particular professional occupations makes them a fascinating target population for evaluating gender variations in terms of attitude towards entrepreneurship careers. Against this background, the following hypothesis is formulated:

H₂: There are differences in attitude towards entrepreneurship between male and female students attending an entrepreneurship course at a university of technology.

Subjective Norms and Gender

Several studies have revealed that the views of people in one's social network, i.e. friends, relatives and workmates, can embolden or depress an individual's willingness to engage in entrepreneurship (Ferreira et al. 2012, 433–435; Gerba 2012, 269; Walker, Jeger and Kopecki 2013, 195). As an illustration, it is a widely shared belief in most countries that entrepreneurship is a macho activity and is, therefore, a preserve for men while women focus on peripheral survival activities (Santos, Roomi and Liñán 2016, 558). Therefore, males in the developing world are more predisposed to participate in entrepreneurship. On the other hand, females,

as a result of intensely held social beliefs and values, stay apart and become risk-averse (Byrne and Fayolle 2010, 80–83).

Some findings from studies undertaken in some developed countries, however, suggest that the gap between men and women's participation in entrepreneurship is shrinking. For example, there was an increase in the number of female chief executive officers in Fortune top 500 companies in the USA from one in 1998 to 24 in 2014 (Kelley et al. 2014, 31). Also, women have majority ownership in 33 per cent of 28 million business enterprises in the USA (Kelley et al. 2014, 31). Arguably, this situation is partially explained by the high social value attached to entrepreneurship, and the notable entrepreneurial social capital that women in the US enjoy (Ahl and Nelson 2015, 234). It would be interesting to evaluate if gender-driven variances in entrepreneurship subjective norms exist among male and female university students who are exposed the same entrepreneurship education. Hence, it is hypothesised that:

H₃: There are differences in subjective norms between male and female students attending an entrepreneurship course at a university of technology.

Perceived Behavioural Control and Gender

The expression “perceived behavioural control” is closely interconnected to and used interchangeably with self-efficacy (Krueger, Reilly and Carsrud 2000, 417). Several studies have sought to draw comparisons between the perceived behavioural control of male and female student respondents (Austin and Nauta 2016, 261; Dempsey and Jennings 2014, 29; Mueller and Dato-on 2013, 2; Shinnar, Hsu and Powell 2014, 562), with men predominantly presenting better self-belief. There is a convergence of a body of scholarly opinion that male students demonstrate higher levels of perceived behavioural control compared to female students (Ekpe and Mat 2015, 9; Nowiński et al. 2017, 2–3; Sweida and Reichard 2013, 302–303). This disparity is ascribed to customarily-influenced gender-typecasting of roles grounded on machismo and femininity (Huang 2013, 2–4; Mueller and Dato-on 2013, 2–4; Shinnar, Hsu and Powell 2014, 562–564).

The results from some studies suggest that approval and support from one's family, relatives and friends props the entrepreneurial self-efficacy of both males and females (Hallak, Assaker, and O'Connor 2014, 406–407; Tsai et al. 2014, 450). However, others suggest the gender disparities will persist despite such perceived support. For instance, Dabic et al.'s (2012, 317) survey of 3 420 university students from more than 10 countries (among them Croatia, Austria, Belgium France, Israel, Lithuania, Poland, Slovenia, and India) intended to gauge gender differences in perceived behavioural control discovered that females were not self-assured of their capabilities and were predisposed to participate in entrepreneurship in comparison to males. This outcome was in spite of the female respondents receiving various forms of backing from their families.

Another study by Kickul, Wilson, Marlino and Barbosa (2008, 325–328) on 5 000 middle and high school students in the USA perceived incongruences in self-efficacy and entrepreneurial intention between the

different genders. A key observation made in the study was that boys had greater self-efficacy than girls. This difference was attributed to the fact that the boys in the study also took additional jobs outside school hours which facilitated in nurturing self-belief and confidence in their capacities to take part in entrepreneurial undertakings. Nonetheless, Sweida and Reichard (2013, 307) perceive that such disparities are reflected in the constrained involvement of women in high-growth entrepreneurship. Overall, the evidence presented in this discussion strengthens the view concerning the stark differences in perceived behavioural control among females and males. The weakness of this evidence, however, is that it emerges from studies conducted in the Western context and thus needs to be further explored in the African situation. The significance of such an endeavour lies in its propagation of the need for a gender-sensitive approach when designing policies to promote entrepreneurship. Hence, we hypothesise that:

H₄: There are differences in perceived behavioural control between male and female students attending an entrepreneurship course at a university of technology.

Research Methodology

The current study adopted a quantitative research approach and cross-sectional survey research design. This quantitative approach was chosen in order to collect summarised numeric data for the purpose of drawing precise inferences from the sample data to the target population (Nenty 2009, 26). Apart from that, the cross-sectional survey research design which serves to gather data from a single point in time (Punch 2013, 75–77) was chosen for the purpose of this study because of its possibility of gathering large quantities of data in short time and at low cost.

Target population

The target population for this study consisted of 250 undergraduate students from different study programmes who were about to finish a compulsory course in basic entrepreneurship at a South African university of technology. In this case, the individual student was the unit of analysis. Class registers sourced from group tutors were then used as a sampling frame of the study. Guided by sample size tables from Strydom and Venter (2005) and the need to mitigate the effects of non-response, a sample size of 160 students was chosen. The sample size was randomly selected from the sampling frame using an online random number generator. Self-completion questionnaires were then distributed for completion to the selected sample units during lectures with the assistance of group tutors. A total of 130 respondents completed and returned the allocated questionnaires giving an effective response rate of 81.25 per cent. The sample size was very small, limiting the generalisability of the results to similar problems in other contexts. However, the perceptions derived provide a fundamental base for future research.

Data collection

A self-completion questionnaire consisting of close-ended questions on respondents' demographic attributes, attitude towards entrepreneurship, subjective norms, perceived behavioural control and entrepreneurial intention was used to collect data from respondents. Apart from the demographic aspects which were self-developed, the other questionnaire items were adapted from Liñán and Chen (2009, 612–613) and Forbes (2005, 600). Gender was the independent variable while attitude towards entrepreneurship, subjective norms, perceived behavioural control and entrepreneurial intention were the dependent variables.

The researchers, with the assistance of some group tutors at the data collection centre, gathered data over a three-week period during February and March 2015. The help of the group tutors was solicited given the need to distribute questionnaires during lectures. Before administering the instrument, permission to conduct the study was sought from the university authorities. No incentives were offered to respondents to complete the research instrument.

Measuring Instrument

Demographic Variables

The questionnaire included questions to determine the respondents' age, gender, marital status, field of study occupation/previous employment experience.

Entrepreneurial Intention

Liñán and Chen's (2009, 613) entrepreneurial intention scale was used to measure the entrepreneurial intention of students. This five-item scale was in the form of five-point Likert statements. All the five statements were labelled ranging from 1 (strongly disagree) to 5 (strongly agree). The answers of each respondent were aggregated to give an overall entrepreneurial intention score ranging from 5 to 25. The Cronbach's alpha score for the scale was 0.91, indicating good reliability. The score was 0.94 in Liñán and Chen's (2009, 606) study.

Attitude towards Entrepreneurship

The attitude towards entrepreneurship was assessed using a five-point itemised scale ranging from 1 (strongly disagree) to 5 (strongly agree), adapted from Liñán and Chen (2009, 612). The five items were totalled to give a summed score for attitude; these ranged from 5 to 25. A higher score on these scales indicated a higher level of attitude. The reliability level of the measuring items was good, with a Cronbach's alpha coefficient of 0.78. In Liñán and Chen's (2009, 606) study, the Cronbach's alpha score was 0.9.

Subjective Norms

Ndofirepi's (2016, 159) normative beliefs scale was used to establish the respondents' subjective norms; this consisted of five items based on a five-point Likert scale of statements. All scale points were labelled ranging from 1 (strongly disagree) to 5 (strongly agree). The scores were summed up to derive a composite score which

extended from 5 to 25. The Cronbach's alpha coefficient for the scale was 0.86, indicating good reliability. In Ndofirepi's (2016, 160) study, the measuring scale also had a Cronbach alpha coefficient of 0.86.

Perceived Behavioural Control

A total of 16 items adapted from Forbes (2005, 610) were used to measure the perceived behavioural control of respondents. The measuring scale consisted of Likert-based statements which were on a five-point scale. In Forbes's (2005, 601), the variable had a Cronbach's alpha coefficient of 0.85; in the current study, the Cronbach's alpha coefficient was 0.91.

Validity of the Study

Even though pre-validated measures for the study variables were used, these were retested to ascertain their structural validity in the current study. A principal component analysis (PCA) was conducted on the items measuring each of the four variables (see Table 3 for the factor loadings for each variable). The Kaiser–Meyer–Olkin (KMO) values of greater than 0.7 for each of the variables, which is more than the minimum acceptable limit of 0.5 (Field 2009, 656), confirmed the sampling sufficiency for the analysis. In addition, the result of $p < 0.001$ for Bartlett's test of sphericity showed that correlations between items were satisfactorily large for PCA.

For a sample size of 120 units, a factor loading value of above 0.5 reveals a relationship between variable (factor) items. The structural validity results for each of the variables, and the subsequent factor analyses are reported in Tables 2 and 3. The pattern of items that clustered on the same components suggested that we retain the original questionnaire constructs, i.e. entrepreneurial intention, attitude towards entrepreneurship, subjective norms and perceived behavioural control.

Table 2: Results of the exploratory factor analysis

Dimension	KMO Statistic	Bartlett's p-value	Cumulative % of variance explained
Entrepreneurial intention	0.892	0.000	74
Attitude towards entrepreneurship	0.831	0.000	69.25
Subjective norms	0.773	0.000	57.31
Perceived behavioural control	0.880	0.000	55.82

Table 3: Factor loadings for individual components

Factor	Component items	Factor loadings
Entrepreneurial intention	I am ready to do anything to become an entrepreneur.	0.760
	My professional goal is to become an entrepreneur.	0.877
	I will make every effort to start and run my own business.	0.924
	I am determined to create a business in the future.	0.935
	I have serious thoughts of starting a business.	0.903
	I have a firm intention of starting a business someday.	0.741
Attitude towards entrepreneurship	Entrepreneurship implies more advantages.	0.758
	Entrepreneurship career is very attractive to me.	0.882
	I would start a business if I had resources and opportunity.	0.792
	Entrepreneurship entails more satisfaction.	0.890
	Among many options, I will choose entrepreneurship.	0.830
Subjective norms	Culture supports entrepreneurship	0.598
	Role of entrepreneurship recognised	0.784
	Being an entrepreneur considered acceptable	0.801
	Entrepreneurship considered possible and worthwhile	0.832
	Entrepreneurs viewed positively	0.747
Perceived behavioural control	Believe can identify opportunities	0.653
	Believe can create ways to improve business and products	0.677
	Believe can create products and services that meet needs	0.718
	Believe can successfully develop new business	0.802
	Believe can think creatively	0.793
	Believe can inspire others	0.688
	Believe can conduct market analysis	0.763
	Believe can formulate set of actions	0.728
	Believe can identify financing opportunities for business	0.572
	Believe can identify good management team	0.658
	Believe can build good management team	0.736
	Believe can build business relationships	0.603
	Believe can tolerate unexpected change	0.638
	Believe can persist in the face of setbacks	0.641
Believe can work productively under pressure	0.549	
Believe can successfully start own business	0.469	

Results

Demographic Profile of Respondents

In this study, female respondents constituted the majority of respondents at 58.5 per cent. In addition, most respondents were from the 21 to 30-years age group (44.6%), followed by the 31 to 40-years age group (40%). Furthermore, most respondents (64.6%) were single, while the remainder were married. In terms of educational qualifications, the majority of respondents at least had attained a diploma. Lastly, most (85.4%) of the respondents came from the Business Management Faculty.

Entrepreneurial Intention

Part of the questionnaire used in this study sought to ascertain the respondents' intention to pursue entrepreneurship careers. This was measured using statements which sought the respondents' level of agreement or disagreement on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The results obtained from the preliminary analysis of the responses obtained are shown in Table 4.

It is evident from Table 4 that a greater percentage of male respondents, compared to female respondents, indicated at least some level of agreement (agree/strongly agree) to each of the six statements measuring entrepreneurial intention. The pattern of responses reveals gender-based differences in the entrepreneurial intention of respondents with males showing a stronger proclivity towards entrepreneurship when compared to females. The statistical significance of these differences is examined in the ensuing discussion.

Table 4: Entrepreneurial intention of respondents

Entrepreneurial intention		Frequency Distribution (%)					
		Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree	Agree/Strongly Agree
1. I am ready to do anything to become an entrepreneur.	Male	2	5.9	17.6	31.4	43.1	74.5
	Female	3.9	9.2	35.5	28.9	22.4	51.3
2. I will make every effort to start and run my own business.	Male	-	9.8	13.7	21.6	54.9	76.5
	Female	3.9	9.2	28.9	27.6	28.9	56.5
3. I am determined to create a business in the future.	Male	-	3.9	13.7	23.5	58.8	82.3
	Female	5.3	10.5	14.5	27.6	42.1	69.7
4. I have a serious thought of starting a business.	Male	-	3.9	7.8	25.5	62.7	88.2
	Female	5.4	2.7	13.5	24.3	54.1	78.4
5. I have a firm intention to start a business someday.	Male	-	-	13.7	19.6	66.7	86.3
	Female	5.3	5.3	10.5	31.6	47.4	79
6. My professional goal is becoming an entrepreneur	Male	-	6	18	24	52	76

Entrepreneurial intention		Frequency Distribution (%)					
		Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree	Agree/ Strongly Agree
	Female	8	5.3	13.3	32	41.4	73.4

The measuring instrument used in this study was also designed to measure the respondents' attitude towards entrepreneurship. Table 5 provides the results of the analysis of the results for each of the 5 statements. It is apparent from Table 5 that a greater proportion of male respondents compared to female respondents expressed some form of agreement (agree/strongly agree) to each of the statements measuring attitude towards entrepreneurship. In other words, male respondents had a more positive attitude towards entrepreneurship compared to females.

Table 5: Respondents' attitude towards entrepreneurship

Attitude towards entrepreneurship		Frequency Distribution (%)					
		Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree	Agree/ Strongly Agree
1. Being an entrepreneur implies more advantages than disadvantages to me.	Male	-	9.8	9.8	35.3	45.1	80.4
	Female	1.3	13.3	34.7	28	22.7	50.7
2. A career as entrepreneur is very attractive to me.	Male	-	3.9	11.8	31.4	52.9	84.3
	Female	1.3	6.7	21.3	42.7	28	70.7
3. If I had the opportunity and resources, I would like to start a business.	Male	-	-	9.8	23.5	66.7	90.2
	Female	1.3	2.7	13.3	38.7	44	82.7
4. Being an entrepreneur would provide great satisfactions for me.	Male	-	-	7.8	31.4	60.8	92.2
	Female	2.7	1.3	22.7	33.3	40	73.3
5. Among various options, I would rather be an entrepreneur.	Male	-	7.8	17.6	21.6	52.9	74.5
	Female	2.7	6.8	24.3	37.8	28.4	66.2

Respondents were also requested to indicate the extent of their subjective norms regarding entrepreneurship. The results are presented in Table 6. As can be seen from the table, there are consistent gender-inclined differences in the pattern of responses to the questionnaire items. In contrast to the results presented for the

other variables, a greater proportion of females compared to males expressed some degree of agreement to each of the measuring items for the subjective norms variable.

Table 6: Respondents' subjective norms

Subjective norms		Frequency Distribution (%)					
		Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree	Agree/ Strongly Agree
1. The culture in my country supports entrepreneurial activity.	Male	5.9	3.9	29.4	41.2	19.6	60.8
	Female	1.3	6.6	17.1	35.5	39.5	75
2. The entrepreneur's role in my country's economy is sufficiently recognised.	Male	3.9	5.9	27.5	49	13.7	62.7
	Female	-	3.9	19.7	42.1	34.2	76.3
3. Many people consider it acceptable to be an entrepreneur in my country.	Male	-	9.8	21.6	45.1	23.5	68.6
	Female	-	6.6	14.5	42.1	36.8	78.9
4. In my country, entrepreneurial activity is considered very possible and worthwhile.	Male	2	5.9	21.6	45.1	25.5	70.6
	Female	1.3	4	14.7	45.3	34.7	80
5. In my country, entrepreneurs are viewed positively.	Male	-	4	26	38	32	70
	Female	1.3	-	20	53.3	25.3	78.6

Part of the questionnaire was also designed to measure the perceived behavioural controls of respondents. The respondents' perceptions of the extent of their perceived behavioural control were thus measured on a five-point Likert-scale, where 1 is "Strongly disagree" and 5 is "Strongly agree." In total, 16 statements were used to assess the perceived behavioural control construct. As can be seen in Table 7, responses to 14 of the 16 statements reveal that a greater percentage of males compared to females expressed some form of agreement (agree/strongly agree). Only in response to two statements did a greater proportion of females compared to males express at least some form of agreement. On balance, it appears that a greater proportion of males than females had more perceived behavioural control.

Table 7: Perceived behavioural control

Perceived behavioural control		Frequency Distribution (%)					
		Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree	Agree/ Strongly Agree
1. I believe I can identify new business opportunities.	Male	-	-	17.6	45.1	37.3	82.4
	Female	-	1.3	25.3	54.7	18.7	73.4
2. I believe I can create ways to improve existing products for a new business.	Male	-	2	13.7	45.1	39.2	84.3
	Female	-	2.6	23.7	55.3	18.4	73.7
3. I believe I can create products or services that fulfil customers' unmet needs.	Male	-	3.9	11.8	54.9	29.4	84.3
	Female	-	-	28.9	48.7	22.4	71.1
4. I believe I can successfully develop a new business.	Male	-	3.9	9.8	47.6	39.2	86.8
	Female	-	-	28.9	48.7	22.4	71.1
5. I believe I can think creatively in business.	Male	-	3.9	9.8	47.1	39.2	86.3
	Female	-	-	16	54.7	29.3	84
6. I believe I can inspire those I work with to share my business vision.	Male	-	2	5.9	43.1	49.0	92.1
	Female	-	-	17.1	59.2	23.7	82.9
7. I believe I can conduct market analyses related to starting a new business.	Male	-	-	11.8	52.9	35.3	88.2
	Female	-	2.6	15.8	53.9	27.6	81.5
8. I believe I can formulate a set of actions in pursuit of business opportunities.	Male	-	3.9	15.7	52.9	27.5	80.4
	Female	-	1.3	19.7	53.9	25	78.9
9. I believe I can identify financing opportunities for a new business venture.	Male	-	2	15.7	45.1	37.3	82.4
	Female	-	2.6	19.7	63.2	14.5	77.7
10. I believe I can identify a good management team to develop a business.	Male	-	7.8	31.4	39.2	21.6	60.8
	Female	-	4	25.3	50.7	20	70.7
11. I believe I can build a management team to develop a business.	Male	-	2	23.5	47.1	27.5	74.6
	Female	-	1.3	18.4	55.3	25	80.3

Perceived behavioural control		Frequency Distribution (%)					
		Strongly Disagree	Disagree	Don't know	Agree	Strongly Agree	Agree/Strongly Agree
12. I believe I can develop business relationships with key people.	Male	-	-	17.6	49	33.3	82.3
	Female	-	1.3	31.3	52	25	77
13. I believe I can tolerate unexpected changes in business conditions.	Male	-	2	7.8	54.9	35.3	90.2
	Female	1.3	4	16	57.3	21.3	78.6
14. I believe I can persist in the face of business setbacks.	Male	-	-	23.5	51	25.5	76.5
	Female	1.4	6.8	21.6	54.1	16.2	70.3
15. I believe I can work productively under continuous pressure from work.	Male	-	3.9	15.7	54.9	25.5	80.4
	Female	1.3	6.7	22.7	53.3	16	69.3
16. I believe I could successfully start my own business.	Male	-	-	11.8	54.9	33.3	88.2
	Female	27	1.3	16	56	24	80

Apart from the percentage analyses conducted on the data, the Mann-Whitney U test, a non-parametric test, was also employed to evaluate the existence of any significant differences in the mean scores for the ensuing constructs: entrepreneurial intention, attitude towards entrepreneurship, subjective norms, and perceived behavioural control.

Before choosing the non-parametric technique, a Shapiro-Wilk W test was performed to assess if the assumption of data normality was met. If statistical significance is found in this test, the data is not normally distributed. The results of the Shapiro-Wilk W test were significant for entrepreneurial intention ($W=0.872$, $p=0.000$), attitude towards entrepreneurship ($W=0.931$, $p=0.000$) and subjective norms ($W=0.975$, $p=0.020$), but not significant for perceived behavioural control ($W=0.993$, $p=0.802$). This suggests that three of these four variables were unlikely to have been produced by a normal distribution; thus, normality could not be assumed. Consequently, a Mann-Whitney rank-sum test which does not require normality was used for the purpose of comparing means. Since this statistical technique for comparing groups requires the dependent variable to be continuous scale-based, the researchers constructed composite scores for each of the four variables under study. This explains why only the overall results of each variable, instead of item-by-item outcomes, are reported. The outcomes of the tests are provided in Table 8.

Table 8: Results of the Mann-Whitney U test

	Gender	N	Mean Rank	Sum of Ranks	
Entrepreneurial intention	Male	50	70.91	3545.5	Mann-Whitney U 132.95, $z=-2.47, p=0.13$
	Female	72	54.97	3957.5	
	Missing	8			
	Total	130			
Subjective norms	Male	50	57.27	2863.5	Mann-Whitney U 2210.5, $z=-1.47, p=0.148$
	Female	75	66.82	5011.5	
	Missing	5			
	Total	130			
Perceived behavioural control	Male	51	69.24	3531	Mann-Whitney U 1467, $z=-1.90, p=0.05$
	Female	72	56.88	4095	
	Missing	7			
	Total	130			
Attitude towards behaviour	Male	49	69.61	3411	Mann-Whitney U 1048, $z=-3.23, p=0.001$
	Female	66	49.38	3259	
	Missing	15			
	Total	130			

As can be seen in Table 8, there are significant difference (U 132.95, $z=-2.47, p=0.01$) between the two observed groups (i.e. males and females). This infers that the distribution of entrepreneurial intention variable for “Males” is not the same as the one for “Females.” This means that hypothesis H_1 is accepted.

Also, statistically significant differences can also be noted in the mean scores for attitude towards entrepreneurship (U 1048, $z=-3.23, p=0.001$) between the same gender categories. In fact, the mean score for the “Males” category is greater than the one for “Females” category. This means that hypothesis H_2 is accepted.

As for the subjective norms variable, the results derived (U 2210.5, $z=-1.45, p=0.15$) reveal that there are no statistically significant differences between the mean scores of the two categories of gender. Hence, hypothesis H_3 is rejected.

Nonetheless, significant differences can be observed between mean scores for perceived behavioural control (U 1467, $z=-1.90, p=0.05$) for the two categories of gender. Therefore, alternative hypothesis H_4 is accepted. While not all the results of the hypotheses tests were significant, the general pattern of results shows trends

that could be helpful to learning who is more likely or unlikely to pursue an entrepreneurship career in the future.

Discussion of Results

The main goal of this study was to determine if there were significant differences in the mean scores of entrepreneurial intention and its antecedents between male and female respondents. As noted in Table 8, the findings were diverse with three hypotheses being accepted and one rejected.

It was hypothesised that there were differences in the entrepreneurial intention between male and female students attending a compulsory entrepreneurship courses at a university of technology. The results revealed significant differences between male and female respondents concerning entrepreneurial intention. These findings are well supported by literature and strengthen those findings derived from previous studies conducted using South African university students as respondents, which also noted a similar pattern of results (Farrington, Gray and Sharp 2012; Fatoki 2014, 297–298; Malebana and Swanepoel 2015a, 628). It seems possible that these results are due to the widely held belief of entrepreneurship as a masculine activity (Garcia and Welter 2013, 385; Hechavarria and Ingram 2016, 244; Jaafar et al. 2014, 78; Jones 2014, 238). As a result, more males and fewer females, regardless of the level of education, intend to pursue entrepreneurial careers.

In this study, it was also found that male respondents had significantly higher mean scores than females for the attitude towards entrepreneurship variable. Again, there are similarities in the gender-centred attitude differences expressed in this study and those described by Farrington, Gray and Sharp (2012, 19), and Malebana and Swanepoel (2015a, 628). The pattern of the results is interesting in that the universities concerned are in different geographic contexts (i.e. rural and urban) and have different identities (comprehensive universities and a university of technology). This perhaps demonstrates the pervasiveness of the view on entrepreneurship as a male domain.

Contrary to previous studies (Bhandari 2012, 141; Farrington, Gray and Sharp 2012, 19; Malebana and Swanepoel 2015a, 628), this study did not find a significant difference between male and female respondents on subjective norms. The reasons for such an outcome are not obvious. However, reasons might be related to the reality that successful entrepreneurs are highly regarded in South African society (Herrington et al. 2017, 32). Consequently, both male and female respondents equally perceived strong support and approval from their immediate family, friends and colleagues for any decision to pursue entrepreneurship. This is encouraging, given challenges like the relative dearth of business networks for women in local vicinities, fewer female role models, limited access to capital and financial support for women, and negative gender stereotyping which may contribute towards a poor perception of female entrepreneurship.

Lastly, it was hypothesised that there were differences in perceived behavioural control between male and female students attending entrepreneurship courses at a university of technology. The male respondents were found to have a significantly different mean score for perceived behavioural control compared to female respondents. This result accords with the earlier observations for entrepreneurial intention and attitude towards entrepreneurship, which showed similar differences and corroborates findings by the other scholars who have carried out similar studies in South Africa (Farrington, Gray and Sharp 2012, 19; Malebana and Swanepoel 2015b, 628). The results echo the proposition that women are likely to have lower self-belief in their abilities to establish successful business ventures when equated to men. This explains why fewer women compared to men are inclined to pursue entrepreneurial careers. This study partially evinces these inclinations. The findings, though preliminary, provide support for the need to factor in gender effects when designing entrepreneurship education and support programmes.

Implications of the Study

In terms of theory, this study confirms the importance of the TPB as a tool that can be used to understand and, at the same time, enhance entrepreneurship-related qualities among South Africa tertiary education students of different genders. As revealed in the literature review, there is empirical evidence that demonstrates that TEA among South African youths remains notoriously low despite various support measures from the national government and other stakeholders. In the face of such a development, there is need to understand the factors that influence entrepreneurship, hence the usefulness of the TPB.

In relation to practice, the results of this study demonstrate the complexity of educating potential entrepreneurs and the influence of gender in such a process at a particular South African university of technology. An implication of these results is the need to consider gender-diversity when designing learning content and methods for entrepreneurship education programmes at tertiary education institutions.

Given the significant differences in the degree of entrepreneurial intention between male and female respondents, there is a need for entrepreneurship educators to create a learning environment that portrays the entrepreneurship career as gender neutral. Thus, learning approaches should not only seek to remove participants' perception of entrepreneurship as masculine, however, they should seek to entrench a positive belief in the possibility of female entrepreneurship as well. A typical approach to fulfil this would be to adopt, amongst others, student-centred, action-oriented learning methods and invite established female entrepreneurs as guest lecturers.

As noted in the literature review, entrepreneurial intention and its antecedents, being components of the TPB, can be modified towards particular behaviour through external interventions. Thus, these components (i.e. entrepreneurial intention, attitude, subjective norms, and perceived behavioural control) present

entrepreneurship educators with focal points around which they can centre their curricula, teaching methods and other entrepreneurship development support mechanisms.

Limitations of the Study and Avenues for Future Research

Some limitations of this study need to be noted. Firstly, the study is limited by the inclusion of students from a single South African university of technology only. The generalisability of the findings could be enhanced by encompassing respondents from numerous universities of technology. Secondly, respondents were sampled from students who had participated in a compulsory entrepreneurship education course. The study could be more informative and might yield different results if students from an optional programme are also selected. Lastly, the findings of this study are limited by the use of a cross-sectional design. A longitudinal study could ascertain whether the observed differences in entrepreneurial aspects between men and women are stable and sustained over time.

Conclusions

This study explored the existence of gender-based differences in the mean scores for entrepreneurial intention, attitude towards entrepreneurship, subjective norms, and perceived behavioural control. The evidence from the study revealed significant differences between the gender categories of respondents in the scores for all the stated variables except subjective norms. This outcome implies the need for gender-sensitive approaches when devising and implementing entrepreneurship development and support measures at South African universities of technologies.

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