

Empirical Analysis on Relationships between Entrepreneurial Traits and Entrepreneurial Intention

Yohana Jacob Sesabo

Department of Business Management, School of Humanities and Business Studies at Mbeya
University of Science and Technology (MUST)
Email: jacomoni2000@yahoo.co.uk

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Abstract

The significance of entrepreneurial intention in determining business start-up behaviour has increased research interests on its influential factors. Subsequently, entrepreneurial attitudes and traits dominate findings on factors which influence entrepreneurial intention. While the entrepreneurial attitudes are proven to be antecedents of entrepreneurial intention, scholars are divided on how entrepreneurial traits affect entrepreneurial intention. As such the specific role of entrepreneurial traits in the formation of entrepreneurial intention is ambivalent.

Motivated to contribute in clearing the ambiguity, this study empirically analysed various effects of entrepreneurial traits on entrepreneurial intention. To this end, a quantitative case study design involving a sample of 1000 students was used. The sample was reproduced using bootstrap sampling technique from a case in Mwakujonga and Sesabo (2012) that involved 60 final year students who were pursuing bachelors of business administration in marketing and entrepreneurship as their majors. Using regression and contemporary mediation and moderation analysis techniques, this study concludes entrepreneurial traits affect entrepreneurial intention through entrepreneurial attitudes. Furthermore, the study extends previous research findings by originally classifying entrepreneurial attitudes as full complementary mediators of the effect of entrepreneurial traits on entrepreneurial intention and discusses the implications of such findings to both the body of knowledge and practice.

Keywords: Entrepreneurial Traits, Entrepreneurial Attitudes, Entrepreneurial Intention, Relationship Between Entrepreneurial Traits And Intention, Empirical Analysis

1.0 Introduction

Entrepreneurial intention stands out as a major determinant of entrepreneurial behaviour, including starting businesses. Paraphrasing from Ajzen's 1987; Kruger et al. (2000:416) notes "*Intentions explain 30% or more of the variance in behaviour. Explaining 30%*

of the variance in behaviour compares favourably to the 10% typically explained directly by trait measures or attitudes". Since intentions explain much of behaviour, understanding what we can do to foster entrepreneurial intention which in the end entices business start-up amongst behaviour is crucial for both economic and social prosperity. This is because initiation of entrepreneurial businesses as the impact of entrepreneurial intention promises to be part of the solutions to the all-time social and economic predicament of poverty. According to Van Praag and Versloot (2007), entrepreneurial businesses generate more; jobs, productivity growth, and high quality innovations than non-entrepreneurial ones. Surely, these outcomes add positively to income generation and access to goods and services which are keys to poverty reduction.

Previous research identifies psychological or personality traits and antecedents of entrepreneurial intention amongst others, as factors which influence entrepreneurial intention (Palamida 2016; Peng et al. 2012). This study generalizes the former as entrepreneurial traits and the later as entrepreneurial attitudes (Sesabo, 2017). Of these two factors, entrepreneurial attitudes are well proven as predictors of entrepreneurial intention (Kruger et al.2000; Mwasalwiba 2010) and entrepreneurship thereof. Also, entrepreneurial traits having endured intense criticisms as poor predictors of entrepreneurship especially from the 1980s (Gartner 1988; McStay 2008; Mwasalwiba 2010) have in recent meta-analysis been found significant predictors of entrepreneurship, including success and start-up intention (Rauch and Frese 2000; Zhao et al. 2010). Therefore, as from 1990s scholars seem to concert on including entrepreneurial traits as one of the significant determinants of entrepreneurial intention.

Despite increasingly regarding entrepreneurial traits as one of the significant determinants of entrepreneurial intention, the process by which they affect entrepreneurial intention is controversial. Some authors (Akambi 2013; Ertuna and Gurel 2011; Mendoza and Lacap 2015; Mould 2013; Zhao et al. 2010) report a direct effect of entrepreneurial traits on entrepreneurial intention while others (Palamida 2016; Peng et al. 2012; Chen et al. 2012) report an indirect effect of entrepreneurial traits on entrepreneurial intention through entrepreneurial attitudes. Moreover, other scholars especially those investigating the impact of entrepreneurship education on entrepreneurial intention regard the effect of entrepreneurial traits on entrepreneurial intention to be insignificant (Sesabo 2017). Thus, there is evidently an ongoing debate leading to divided opinions among authors about the manner entrepreneurial traits influence entrepreneurial intention.

The lack of consensus among authors concerning how entrepreneurial traits affect entrepreneurial intention impend advancement of entrepreneurial traits or psychological perspective as an approach to explaining entrepreneurial intention. This is essentially true to the growth of entrepreneurship as a field of study as well. According to Mwasalwiba (2010), common knowledge and conceptualizations are essential to the growth of a given field (such as entrepreneurship education) while lack of consensus makes the growth of the field fragmented. Regarding the perception of entrepreneurship from the Psychological approach perspective Pittaway (2000: 90) writes *"the variation of ideas about the phenomenon leads to entrepreneurship considerable diversity of approaches and limited comparative validity"*. Impliedly, the more diverse our ideas are, about the same phenomena (how entrepreneurial traits affect entrepreneurial intention), the lesser comparable validity we have. Therefore, consensus about how the entrepreneurial traits affect entrepreneurial intention is essential for advancing a valid theoretical argument about the entrepreneurial traits being determinants of entrepreneurial intention. The current study contributes to resolving the

ambiguities on how entrepreneurial traits affect entrepreneurial intention by analysing empirically, the various effects of entrepreneurial traits on entrepreneurial intention unfolding in literature. For this purpose, the remaining scholarly work is organized into; literature review, research methodology, research results, discussion on the results, and the study's conclusion and implications in this order.

2.0 Literature Review

2.1 Entrepreneurial traits and intention: Direct relationship

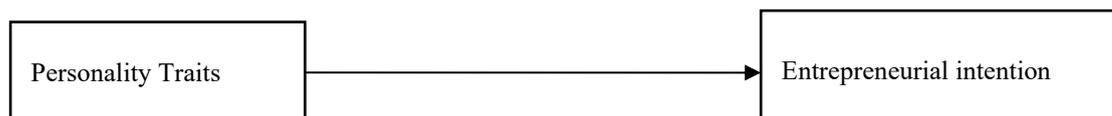
Generally thought of, as relatively stable and enduring characteristics that predict behaviour (Chell 2008), traits associated with entrepreneurship are termed interchangeably as; personality or psychological or entrepreneurial characteristics/traits/qualities (Mwakujonga and Sesabo 2012; Robinson et al. 1991; Sesabo 2017). Since the prefixes psychological or personal are all-encompassing, this study as proposed by Sesabo (2017) adopts the prefix entrepreneurial with the suffix traits as a more specific terminology for personal and psychological traits associated with being an entrepreneur. These entrepreneurial traits are still being uncovered and so their list is endless (Kirby 2004). Researchers only contend on some of them as the most common among entrepreneurs. These are; the need for achievement, innovativeness, the locus of control, tolerance for ambiguity and propensity to risk taking (Robinson et al. 1991; Ferreira et al. 2012). Apart from these entrepreneurial traits which are more specific, there have been attempts to associate entrepreneurship with broader personality traits commonly termed as the Big Five Personality Factors and the results are mixed (Leutner et al. 2014; Mendoza and Lacap 2015).

Although the significance of entrepreneurial traits in predicting entrepreneurship has been criticized (Gartner 1988; Kruger et al. 2000; McStay 2008; Mwasalwiba 2010), recent Meta-analysis by Rauch and Frese (2000) and Zhao et al. (2010) confirm them significant. Further, it is established in Rauch and Frese (2000) and Leutner et al. (2014) that, higher efficacy is achieved in predicting entrepreneurship using specific entrepreneurial traits than the broader Big Five Personality Factors. On the basis of these observations, there is every reason to argue entrepreneurial traits particularly narrow or specific ones, significantly predict entrepreneurial intention. Mould's 2013 conceptualisation confirmed a direct effect of entrepreneurial traits on entrepreneurial intention in which proactive personality had a positive significant effect and self-efficacy a bivariate correlation. Perseverance and control aspiration did not relate to entrepreneurial intention at all. Bux and Honglin (2015) on their side reported a positive significant direct effect of entrepreneurial traits (locus of control, propensity to take risk, self-confidence, innovativeness and tolerance to ambiguity) on entrepreneurial intention except for the need for achievement. More or less similar, Ertuna and Gurel (2011) report a direct positive effect of independence of family, innovations, locus of control, and risk-taking propensity on entrepreneurial intention which is moderated by entrepreneurship education. The direct positive effect of entrepreneurial traits on entrepreneurial intention has also been reported with respect to the Big Five Personality Factors (Akambi 2013; Zhao et al. 2010; Mendoza and Lacap 2015).

From this literature excerpt, there is notably a convincing stance about the existence of a direct positive effect on entrepreneurial traits on entrepreneurial intention. The logical conceptual framework for the direct effect of entrepreneurial traits on entrepreneurial intention is as reflected in figure 1. Therefore, this suggestion emanates as one of the possible relationships between entrepreneurial traits and entrepreneurial intention which is empirically analysed for its validity through the first hypothesis (H_1) below.

H₁: Entrepreneurial traits directly affect entrepreneurial intention positively.

Figure 1: *Conceptual framework on direct effect of entrepreneurial traits on entrepreneurial intention*



Source: Author

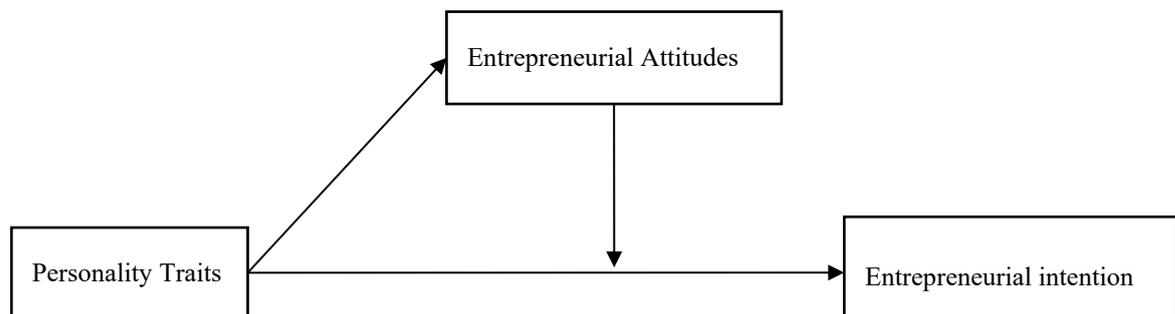
2.2 Entrepreneurial traits and intention: Moderating effect of entrepreneurial traits

One observable weakness about the line of research reported in this paper and perhaps elsewhere suggesting a direct effect of entrepreneurial traits on entrepreneurial intention is over-reliance on simple regression or correlation coefficients. While such coefficients are statistically rigorous in quantifying the magnitude by which changes in one variable attribute to the other, they do not indicate the process. To investigate the process (how and when), Preacher and Hayes (2004) argue, there is a need to conduct mediation and moderation analysis. The same idea unfolds in Rauch and Frese (2000) who, having found a significant but very weak effect of entrepreneurial traits on entrepreneurship, suggested for conduction of mediation analysis in studies involving predicting entrepreneurship using entrepreneurial traits. This is something which is not accounted for in the aforesaid line of research studies.

Closely linked to the failure of conducting process analysis, is moderation analysis. There is a very high inherent possibility for the moderation effect to be confused for a direct relationship between entrepreneurial traits and intention because the two are functionally similar. Writing about the similarity between moderator-criterion and predictor-criterion relationship, Baron and Kenny (1986:1174) notes ‘...moderators and predictors are at the same level in regard to their role as causal variables antecedent or exogenous to certain criterion effects’. Given the similarity in the structural or positional role of moderators and predictors, one has to ensure that another role is not present before affirming the other. In this sense, entrepreneurial traits cannot be conclusively regarded as predictors of entrepreneurial intention (figure 1) without overruling the possibility that, they are just moderators of some other variables especially entrepreneurial attitudes which according to Kruger et al. (2000), McStay (2008) and Mwasalwiba (2010) are well proven to be best predictors of entrepreneurial intention. Therefore, there is a possibility for the first conceptualisation in figure 1 being confused for a moderation of entrepreneurial traits on the effect of entrepreneurial attitudes on entrepreneurial intention. This possibility leads to the second hypothesis (H_2) whose corresponding conceptual framework is as shown in figure 2.

H₂: entrepreneurial traits moderate the effect of entrepreneurial attitudes on entrepreneurial intention

Figure 2: Conceptual framework on moderation of entrepreneurial traits on effect of entrepreneurial attitudes on entrepreneurial intention



Source: Author

2.3 Entrepreneurial traits and intention: Indirect effect of entrepreneurial attitudes on intention

An indirect relationship between entrepreneurial traits and intention is underlined by Ajzen's 1991 Theory of Planned Behaviour (TPB) and Shapero and Sokol's 1982 Theory of Entrepreneurial Event (TEE). According to these theories, the entrepreneurial intention is preceded or determined by personal attitude, behavioural control, and social norms. Vividly, however; researchers are not concurrent with the generic term for antecedents of entrepreneurial intention; and significance of each antecedent of entrepreneurial intention. While most studies simply use the term antecedents of entrepreneurial intention; Rauch and Hulsink (2015) use the term entrepreneurial perceptions as a generic name for antecedents of entrepreneurial intention. But, Sesabo (2017) uses the term entrepreneurial attitudes as the general term for the antecedents of entrepreneurial intention. This study observes that; the term antecedents of intention are not specific to entrepreneurial intention and the term entrepreneurial perceptions is specific but descriptive rather than original. Similar to Sesabo (2017), the current study adopts the term entrepreneurial attitudes as the original and generic but specific name for antecedents of entrepreneurial intention which are perceived; desirability, feasibility, and social norms.

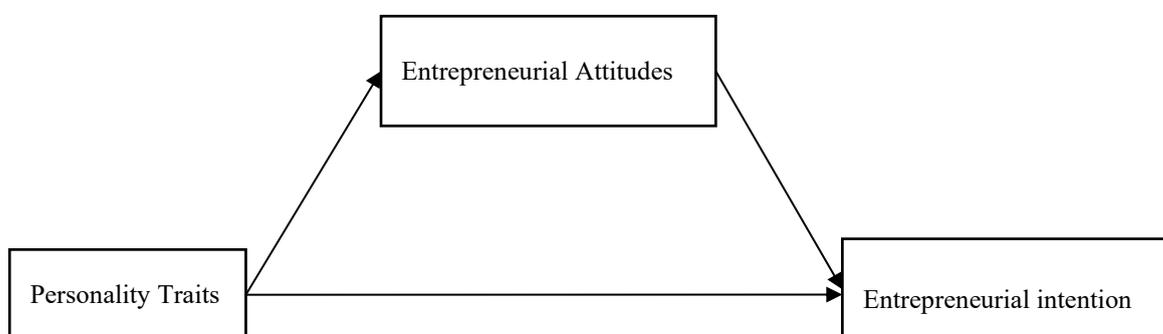
Regarding how this indirect relationship works; Peng et al. (2012) found entrepreneurial traits (entrepreneurial competence and individual control) affect entrepreneurial attitudes positively while risk-taking propensity affects positively only social norms. The entrepreneurial attitudes, in the end, affect entrepreneurial intention positively. Luthje and Franke (2003) in their Structural Model of Entrepreneurial Intent-SMEI, found entrepreneurial traits (risk-taking propensity and internal locus of control) positively affect entrepreneurial attitudes but with risk-taking propensity being more effective. Eventually, the entrepreneurial attitudes affect entrepreneurial intent. Also, there are studies which have used the Big Five Personality Factors (Palamida 2016; Chen et al. 2012) and concluded; entrepreneurial traits affect entrepreneurial intention through entrepreneurial attitudes.

Proponents of the indirect effect of entrepreneurial traits on entrepreneurial intention, however, report differences in the efficacy of various individual entrepreneurial traits in influencing entrepreneurial intention through entrepreneurial attitudes (c.f. Luthje and Franke 2003; Peng et al. 2012; Chen et al. 2012). Moreover, the interrelatedness of constructs of entrepreneurial attitudes seems to be conceptualized differently. In Peng et al. (2012) and Tung (2011), social norms are shown to affect entrepreneurial intention through

other constructs of entrepreneurial attitudes namely perceived desirability and feasibility. In other studies (Ajzen 1991; Kruger et al. 2000) however, each construct of entrepreneurial attitudes affect entrepreneurial intention without relating to its cohort construct. Since the overall persona is determined by the mix and strength of traits (Chell 2008), one’s overall persona in terms of entrepreneurial traits and entrepreneurial attitudes is considered in this study to be the average from scores on constructs of entrepreneurial traits and entrepreneurial attitudes respectively. Presumably, averages reflect a fair magnitude of the outcome of interaction among constructs of each persona even though the process by which they interact may not be fairly represented. Subject to this excerpt of the literature, a third hypothesis (H₃) and its respective conceptual framework, are formed as follows:-

H₃: entrepreneurial traits will positively affect entrepreneurial intention through entrepreneurial attitudes.

Figure 3: Conceptual framework on mediation effect of entrepreneurial attitudes on effect of entrepreneurial traits on entrepreneurial intention



Source: Author

2.4 Typologies of Mediation and Moderation

If either hypothesis 2 or hypothesis 3 is confirmed, it would be important to classify the respective moderation and mediation involved. With regard to moderation, no literature was found to have classified entrepreneurial traits as moderators. But, Sharma et al. (1981) generally gives four types of moderators based on their interaction with the predictor variables (b_3) and relation with the criterion variable (b_2); pure moderator ($b_2 = 0$ and $b_3 \neq 0$), quasi moderator ($b_2 \neq 0$ and $b_3 \neq 0$), homologize/potential ($b_2 = 0$ and $b_3 = 0$) and intervening/exogenous ($b_2 \neq 0$ and $b_3 = 0$). In contemporary literature, however, a variable is considered a moderator only if it interacts with the predictor and assumes a causal effect (Preacher and Hayes, 2004). With this argument, this paper argues that there are ironically only two types of moderators namely; pure moderator, quasi-moderator in which the interaction between the predictor and moderator is not zero ($b_3 \neq 0$) as expressed in table 1.

Table 1:
Types of Moderator

Type of moderator variable	Degree of interaction with predictor and criterion
Pure moderator	$b_2 = 0; b_3 \neq 0$
Quasi moderator	$b_2 \neq 0; b_3 \neq 0$

Source: Synthesized based on Sharma et al. (1981) and Preacher and Hayes (2004)

Concerning typologies of entrepreneurial attitudes as mediators of the effect of entrepreneurial traits on entrepreneurial intention, Chen et al. (2012) reported they partially mediate the effect of openness to experience, consciousness and extraversion on entrepreneurial intention. For Batool et al. (2015), self-efficacy (an attitude construct also called perceived feasibility) fully mediates the effect of innovation (an entrepreneurial trait) on entrepreneurial intention. Therefore, the results are mixed with some constructs of entrepreneurial attitudes being full mediators and others partial mediators of the effect of entrepreneurial traits on entrepreneurial intention. Although there are seems to be two types of mediation namely partial and full mediation (Batool et al., 2015), this study adopts Sesabo's 2017 detailed account of various types of mediators into; partial complementary mediator, full complementary mediator, partial competitive mediator and full competitive mediator as in figure 4.

Signs of the direct and mediation are similar	Full complementary mediation	Partial complementary mediation
	Full competitive mediation	Partial competitive mediation
Signs of the direct and mediation effects are opposite	Controlling for the mediator, the partial effect of the predictor is insignificant	Controlling for the mediator, the partial effect of the predictor is significant

Figure 4: Typologies of Mediation

Source: Sesabo (2017:301)

3. Research methodology

3.1 Research Design

This study used a quantitative case study design by adapting data from Mwakujonga and Sesabo (2012) whose study involved a sample of 60 finalist students of Mzumbe University (Morogoro, Tanzania) on a 1/0.6 female to male and 1/1.2 BBA-Entrepreneurship to BBA-Marketing ratios. Using bootstrap sampling technique, the current study regenerated an equivalent sample of 1000 students whose data were analysed. Being quantitative and case-based, the design enjoys rigour and in-depth statistical analysis respectively (Kothari 2004). Since the sample is comparative both sex and programme wise; the effect of differences between respondents is minimized.

3.2 Variables and Measurements

Entrepreneurial traits included; the need for achievement, the locus of control, innovativeness, and risk-taking propensity. These traits have been found common to entrepreneurs (Ferreira et al. 2012; Bulsara et al. 2010; Robinson et al. 1991). Each trait was measured using 2-3 items screened from Mwakujonga and Sesabo (2012), which assessed

students' feelings of possessing the qualities associated with entrepreneurial traits on a 5 point Likert-scale. Score 1 represents strong disagreement to the feeling of possessing the qualities and 5, a strong agreement. Previous studies had also successfully measured individual's predisposition towards entrepreneurship on the Likert scale (Bulsara et al. 2010). After obtaining the measures for each entrepreneurial trait, an average score was computed and used as an overall measure of entrepreneurial traits predisposition. Entrepreneurial attitudes consisted of perceived desirability and feasibility. Perceived social norm was not included because it has been found insignificant in many cases (Kruger et al. 2000; Rauch and Hulsink 2015). Each construct was measured using 4 items selected from Mwakujonga and Sesabo (2012) which, assessed students' feelings on possession of qualities of entrepreneurial attitudes on a 5 point Likert-scale. An exemplary item on perceived desirability was "being an entrepreneur is very advantageous to me" and on perceived feasibility was "I know the procedures of starting a viable firm". Score 1 represented a strong disagreement to the feeling of possessing the qualities and 5 a strong agreement. Previous studies also used Likert-scale in this case (Fayolle et al. 2006; Luthje and Franke 2003; Shapero and Sokol 1982). Having determined the individual measurement for each construct of attitude, an average of the two constructs was then calculated and used as a measure of entrepreneurial attitude in whole. The entrepreneurial intention was measured using 3 items selected from Mwakujonga & Sesabo (2012) which, assessed students' feelings about their intent to start a business on a 5 point Likert-scale. An exemplary item on perceived desirability was "My personal objective(s) is to become an entrepreneur". Previous studies have also used Likert-scale in this case (Kruger et al. 2000; Rauch and Hulsink 2015).

3.3 Data Collection and Analysis

Data were collected through review of documentation in Mwakujonga and Sesabo (2012). These data are still relevant because the focus of the study is a process of the effect rather than timely intervention. Relevant and adequate secondary data are a cheap source of information (Kothari 2004). Data items were screened using factor analysis with a cut-off loading of 0.5 which is recommended in Hair et al. (2010). As shown in table 2, this was followed by Cronbach's α test with a minimum score of 0.7 which is recommended in Tavakol and Dennick (2011) in order to ensure internal consistency and increased validity of data.

Table 2:

Chronbach's alpha scores for various research constructs

Construct	No. of items	χ^2
Need for achievement	3	0.9
Internal locus of control	2	0.7
Innovativeness	2	0.7
Risk taking propensity	3	0.7
Perceived desirability of entrepreneurship	4	0.8
Perceived feasibility of entrepreneurship	4	0.8
Entrepreneurial intention	3	0.9

Source: Author

Data analysis for the direct effect of entrepreneurial traits on entrepreneurial intention (H_1) was conducted using regression equation (i). Moderation of the effect of

entrepreneurial attitudes on entrepreneurial intention by entrepreneurial traits (H₂) was analysed using a regression equation (ii) as proposed by Judd et al. (2014). Y_i is the entrepreneurial intention (the criterion variable) and X_i is the entrepreneurial traits (the independent variable) in equation (i). But, in equation (ii); X_i is the independent variable (entrepreneurial attitudes); Z_i is the moderator (entrepreneurial traits). A significant α₁ in equation (i) means entrepreneurial traits have a significant direct effect on entrepreneurial intention and a significant b₃ in equation (ii) means entrepreneurial traits moderate the effect of entrepreneurial attitudes on entrepreneurial intention.

$$Y_i = \alpha_0 + \alpha_1 X + \varepsilon \dots \dots \dots (i) \text{ and } Y_i = b_0 + b_1 X + b_2 Z + b_3 XZ + \varepsilon \dots \dots \dots (ii)$$

The analysis on the mediation of entrepreneurial attitudes between entrepreneurial traits and intention (H₃), was conducted using a series of regression equations (iii) to (v) as proposed in Judd et al. (2014). In these equations; (Y_i) is the entrepreneurial intention, (X) is the entrepreneurial traits and (M) is the entrepreneurial attitudes. A significant; c in equation (iii) indicates the presence of an effect to be mediated (Preacher and Hayes 2004) and c' in equation (v) verifies mediation. The significance of c' was tested using 'a' and 'b' joint significance test which is free from type I error (Judd et al. 2014). The bootstrap technique enhances analytical rigour of small samples by increasing their sample size (Preacher and Hayes 2004).

$$Y_i = b_{01} + cX_i + e_{1i} \dots \dots \dots (iii)$$

$$M_i = b_{02} + aX_i + e_{2i} \dots \dots \dots (iv)$$

$$Y_i = b_{03} + c'X_i + bM_i + e_{3i} \dots \dots \dots (v)$$

4.0 Research Results

4.1 Direct effect of entrepreneurial traits on entrepreneurial intention

Table 3 indicates a positive significant effect of entrepreneurial traits on entrepreneurial intention (B ≠ 0 because it lies between 0.117 and 0.616 at 95% confidence interval). So, the first hypothesis (H₁) is supported. That is, *entrepreneurial traits directly affect entrepreneurial intention positively*. But, as shown in table 4 the effect is very weak accounting for only 9.3% (R square = 0.093) of changes in entrepreneurial intention.

Table 3: Bootstrap for coefficients on direct effect of entrepreneurial traits on entrepreneurial intention

Model	B	Bootstrap ^a				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
1 (Constant)	3.709	-.042	.637	.001	2.385	4.890
Entrepreneurial traits	.365	.007	.128	.007	.117	.616

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Source: Author

Table 4: Model Summary on direct effect of entrepreneurial traits on entrepreneurial intention

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
Dimension 1 1	.305 ^a	.093	.078	1.01532

a. Predictors: (Constant), Entrepreneurial traits

Source: Author

4.2 Moderation of entrepreneurial traits on effect of entrepreneurial attitudes on intention

With regard to entrepreneurial traits as moderators, table 5 shows the effect of their product with entrepreneurial attitudes "E.AT" to be equivalent to zero at 95% confidence interval ($b_3 = 0.076 = 0$ because it lies between -0.187 and 0.523 which include zero). Therefore, hypothesis two (H_2) "entrepreneurial traits moderate the effect of entrepreneurial attitudes on entrepreneurial intention" is not supported.

Table 5: Bootstrap for coefficients on moderation of entrepreneurial traits on effect of entrepreneurial attitudes on entrepreneurial intention

Model		B	Bootstrap				
			Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
1	(Constant)	3.340	.346	4.106	.354	-3.323	13.393
	Entrepreneurial traits	-.405	-.100	.948	.631	-2.760	1.028
	Entrepreneurial attitudes	.425	-.064	.803	.549	-1.490	1.714
	E.AT	.076	.018	.179	.635	-.187	.523

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Source: Author

4.3 Mediation of entrepreneurial attitudes between entrepreneurial traits and intention

4.3.1 Presence of an effect to be mediated

As reflected in table 3, entrepreneurial traits have a positive significant effect on entrepreneurial intention at 95% confidence interval ($\alpha_1 = 0.365 \neq 0$ because it lies between 0.117 and 0.616 which does not include zero). Thus, there is an effect to be mediated because the predictor significantly affects the dependent variable as a prior condition for mediation (Baron and Kenny 1986; Preacher and Hayes 2004).

4.3.2 Mediation of entrepreneurial attitudes on effect of entrepreneurial traits on entrepreneurial intention

Table 6 indicates that entrepreneurial traits significantly affect entrepreneurial attitudes positively at 95% confidence interval ($a = 0.543 \neq 0$ because it lies between 0.378 and 0.722 which does not include zero). Moreover, the effect of entrepreneurial attitudes on entrepreneurial intention as indicated in table 7 is significant at 95% confidence interval ($b = 0.743 \neq 0$ as it ranges from 0.465 to 1.015 which does not include zero).

Table 6: Bootstrap for coefficients on effect of entrepreneurial traits on entrepreneurial attitudes

Model		B	Bootstrap				
			Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
1	(Constant)	2.505	-.001	.389	.001	1.666	3.215
	Entrepreneurial traits	.543	-.001	.081	.001	.378	.722

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Source: Author

Table 7: Bootstrap for coefficients on effect of entrepreneurial attitudes on entrepreneurial intention

Model		B	Bootstrap				
			Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
						Lower	Upper
1	(Constant)	1.673	-.028	.764	.043	.153	3.215
	Entrepreneurial attitudes	.743	.005	.138	.001	.465	1.015

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Source: Author

Applying joint independent significance tests for “a” and “b”, a product “a*b” which is equivalent to $0.543 * 0.743 = 0.40$ is obtained. Since each of the coefficients “a” and “b” are significant, their product (0.40) is also significant which means mediation is significant (Judd et al. 2014). Thus, hypothesis three (H3) “*entrepreneurial traits positively affect entrepreneurial intention through entrepreneurial attitudes*” is supported.

4.3.3 Entrepreneurial attitudes’ mediation type between entrepreneurial traits and intention

The signs of both the mediation effect “a*b” = 0.40 and direct effect of predictor /entrepreneurial traits ($\alpha_1 = 0.365$) on entrepreneurial intention are both positive. In addition, when controlling for entrepreneurial attitudes/the mediator, the previously significant direct effect of entrepreneurial traits on intention ($\alpha_1 = 0.365$ in table 3) becomes -0.055 in table 8, which is insignificant at 95% confidence level (as it lies between -0.357 and 0.224 which include zero). When the signs of both the mediation and direct effect are positive, and the previously significant effect becomes significant after controlling for the mediator; there is full complementary mediation (Sesabo 2017). Therefore, entrepreneurial attitudes are full complementary mediators of the effect of entrepreneurial traits on entrepreneurial intention.

Table 8: Bootstrap for coefficients on mediation of entrepreneurial attitudes between entrepreneurial traits and intention

Model	B	Bootstrap					
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval		
					Lower	Upper	
1	(Constant)	1.772	-.042	.839	.044	.097	3.332
	Entrepreneurial traits	-.055	-.004	.146	.711	-.357	.224
	Entrepreneurial attitudes	.773	.011	.175	.002	.433	1.138

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Source: Author

6. Discussion of Research Results

At a glance, the results of this study about the hypothesis on the direct effect of entrepreneurial traits on entrepreneurial intention suggest a positive significant direct effect of entrepreneurial traits on entrepreneurial intention. However, this effect is very weak, accounting for only 9.3% of the variation in entrepreneurial intention. These results conform to those of Rauch and Frese (2000) and Ajzen (1987) as reported in Kruger et al. (2000). Rauch and Frese (2000) reported a significant but very small effect of entrepreneurial traits on entrepreneurship. Ajzen (1987) is quoted in Kruger et al. (2000) to have found personality traits explain hardly 10% of changes in intention. Given this weak direct effect of entrepreneurial traits on entrepreneurial intention, some researchers call for mediation and/or moderation analysis as alternatives when predicting the relationship between entrepreneurial traits and entrepreneurial intention (Henron et al. 1993; Rauch and Frese 2000).

Concerning the possibility of entrepreneurial traits being just moderators of the effect entrepreneurial attitudes on entrepreneurial intention, the results of this study refute this possibility. Since previous studies (Akambi 2013; Ertuna and Gurel 2011; Bux and Honglin 2015; Mendoza and Lacap 2015; Mould 2013; Zhao et al. 2010) did not consider this possibility, the current study helps us to empirically nullify the possibility of the observed weak direct effect of entrepreneurial traits on entrepreneurial intention being structurally a moderation. According to Baron and Kenny (1986), there is a causally similar structural functioning between predictors and moderators. It is perhaps due to this similarity the direct effect of entrepreneurial traits on entrepreneurial intention has not been counter checked for moderation in previous studies.

In contrast to previous studies (Akambi 2013; Ertuna and Gurel 2011; Bux and Honglin 2015; Mendoza and Lacap 2015; Mould 2013; Zhao et al. 2010) which report the direct effect of entrepreneurial traits on entrepreneurial intention, the results of this study suggest; the effect of entrepreneurial traits on entrepreneurial intention is mediated by entrepreneurial attitudes. This means the observed direct effect of entrepreneurial traits on entrepreneurial intention is not the end in itself but a prior condition for mediation. According to Baron and Kenny (1986) and Preacher and Hayes (2004), the predictor must affect the criterion first as a condition for the existence of mediation. Results indicating the effect of entrepreneurial traits on entrepreneurial intention is mediated by entrepreneurial attitudes have also been reported in Luthje and Franke (2003), Chen et al. (2012), Palamida (2016) and Peng et al.

(2012). The contrast between studies reporting the direct effect of the entrepreneurial traits on entrepreneurial intention and those reporting mediation of entrepreneurial attitudes on the effect of entrepreneurial traits on entrepreneurial intention is mainly methodological. The former studies merely assume a direct effect without investigating whether or not the effect is just a precondition for mediation.

The typology of mediation by which entrepreneurial attitudes intervene between entrepreneurial traits and intention is determined in this study to be full complementary mediation. Due to full mediation property, entrepreneurial attitudes when added in the prediction model carry most of the effect of entrepreneurial traits on entrepreneurial intention and the direct effect becomes insignificant. Also, for their complementary mediation property, entrepreneurial attitudes carry the effect of entrepreneurial traits on entrepreneurial intention in a manner directly proportional related to a predisposition in entrepreneurial attitudes and vice versa. These results differ from previous studies which classify entrepreneurial attitudes as just partial mediators of effects of some entrepreneurial traits on entrepreneurial intention and full mediators of effects of others (Peng et al. 2012; Batool et al. 2015). This contrast is probably because each entrepreneurial trait is conceptualized independently in previous studies, leading to differences in results because entrepreneurial traits differ in the strength of their relative indirect effect on entrepreneurial intention. This study, however, averaged the measures of various entrepreneurial traits into a single average measure and those constructs of entrepreneurial attitudes into an average measure of entrepreneurial attitudes. Since the decision to become an entrepreneur is highly dependent on a range of personality characteristics rather than one (Rauch and Frese 2000) and the mix and strength of traits determine the overall persona (Chell 2008), average measures of entrepreneurial traits and attitudes used in this study probably yield best results about the entrepreneurial persona. Also different from previous studies, the current study adopted multi-criteria in classifying mediation as suggested in Sesabo (2017).

7. Conclusion, Implications and Limitations of the Study

Set out to contribute in resolving ambiguities on how entrepreneurial traits affect entrepreneurial intention, this study analysed various effects of entrepreneurial traits which have been suggested in literature, including; the direct effect of entrepreneurial traits on entrepreneurial intention; moderation of entrepreneurial traits on effect of entrepreneurial attitudes on entrepreneurial intention; and mediation of entrepreneurial attitudes on effect of entrepreneurial traits on entrepreneurial intention. Based on its findings, this study concludes entrepreneurial attitudes mediate the effect of entrepreneurial traits on entrepreneurial intention. The type of mediation by which entrepreneurial attitudes mediate the effect of entrepreneurial traits on entrepreneurial intention is fully complementary mediation.

In light of its conclusion, this study affirms the results of previous studies (Chen et al. 2011; Luthje and Franke 2003) where entrepreneurial traits are integrated as antecedents of entrepreneurial attitudes which affect entrepreneurial intention in turn. Similarly, it partly affirms Ajzen's 1991 Theory of Planned Behaviour (TPB) and Shapero and Sokol's 1982 Theory of Entrepreneurial Event (TEE) whereas; entrepreneurial attitudes are conceptualized as antecedents of entrepreneurial intention. However, this study also contributes in filling the holes in the TPB and TEE which have led to exclusion of entrepreneurial traits in entrepreneurial intention models or frameworks (Rauch and Hulsink 2015; Tung 2011) derived from these two theories. Moreover, this study extends our previous understanding

of entrepreneurial attitudes as mediators of the effect of entrepreneurial traits on entrepreneurial intention from simply being full or partial mediation into full complementary mediation. This unique contribution signifies additional insights into the properties of mediators that can be deduced from the use of multiple criteria in classifying mediators as suggested in Sesabo (2017). Whereas previous studies had measured each entrepreneurial trait and construct of entrepreneurial attitude independently resulting into different forms of mediation as there are their differences in relative strengths, there is seemingly synergetic value in using average measures of entrepreneurial traits and intention as applied in this study.

As a general stance derived from the conclusion and practical implications, this study calls for scholarly convergence towards modelling entrepreneurial traits as antecedents of entrepreneurial attitudes in intention models or frameworks. As with all studies, however, this study did not go without limitations. Firstly; the use of one's self-assessment is reported to be prone to amplification of results towards socially desirable answers. However, this technique remains one of the most useful techniques. Necessary steps were taken to remind the respondents on the essence of being impartial (honesty). The second notable limitation of this study is the use of small sample and case study design. Smaller samples dilute quantitative rigour of results while case studies limit the generalizability of findings (Kothari 2004). Nevertheless, a bootstrap technique was applied to improve the efficacy of the small sample (Preacher and Hayes 2004). Lastly; this study did not capture the interrelationships between various entrepreneurial traits and constructs of entrepreneurial attitudes. Therefore, further studies incorporating larger samples, a pool of students from different universities and use of structural equation modelling techniques might help in correcting these limitations and perhaps refine the current findings.

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