



College of Science & Engineering

Research into Early-Stage Identification of Entrepreneurs and Innovators with Development of an Identification Guidance Framework.

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Doctor of Philosophy 2023

DoS:

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STATEMENT OF ORIGINALITY

The work contained in this thesis is original and it has not and shall not be submitted for the award of any degree or diploma to any other institution of higher learning.

Signature

Stephen Robert Pearson

ABSTRACT

Key words: Entrepreneurship, Youth Entrepreneurship, Traits, Trait Analysis, Artificial Intelligence, Virtual Reality, Augmented Reality.

In recent years, young entrepreneurs have attracted considerable interest from Government policy makers and the media and the evidence and general consensus of opinion is that the numbers of young people aspiring to start their own businesses is increasing. Courses are being created for further and higher education as well as modules developed at schools to introduce young people to business studies, however not everyone is suited to the courses, and those who undertake them may never go on to realise their aspirations of having a successful business.

Entrepreneurs and innovators are crucial for society in order to develop new businesses, products and services, thus creating job prospects and wealth for the country and society as a whole. Many entrepreneurs don't become entrepreneurs until later in life, or their skills and attributes never materialise and lie dormant due to factors such as financial insecurity, lack of confidence or guidance as to how they can control their destiny. It is believed that entrepreneurship can be, to a certain extent taught, but only successfully, to individuals who have entrepreneurial traits and who have been identified as being entrepreneurial.

Previous studies have mainly focused on existing entrepreneurs and those with failed businesses. By contrast this thesis seeks to identify the traits and characteristics that make individuals entrepreneurs, with a view to devising a framework of identifiable indicators for the tertiary education age group of 16 - 18 years old, leading potentially to early-stage identification of entrepreneurs. Leading on from the validated identification framework, online software tools have been developed as a user age-appropriate interface that will be suitable for providing the necessary identification of entrepreneurs in the 16-18 age groups. This study provides a further opportunity for additional research into the development of entrepreneur mentoring and training guidelines that can assist in preparing the potential entrepreneurs for their future by giving them tutorial programmes to develop their businesses successfully. This research programme seeks to establish a paradigm as to what it is that makes someone entrepreneurial, primarily focussed on positively identifying traits exhibited by existing entrepreneurs which can be used to assist in that identification process.

As part of the research work completed so far, these traits have now been identified and have expanded upon the limited number of traits previously recognised as being entrepreneurial. A new derivation for an Entrepreneurial Trait has been created which shall be known as an 'Entrephonotypic Trait' which is a grouping of specifically recognised traits which have been found to be common to entrepreneurs.

In addition to the research new technologies such as Artificial Intelligence, Virtual Reality and Augmented Reality have been evaluated for integration and use in training programs to assist the development of young entrepreneurs who have the potential to become successful in their business ventures. This thesis makes a significant contribution to knowledge which can be further expanded upon and utilised in future studies and research.

Acknowledgements

First, I would like to thank my supervisor Professor Mahmoud Shafik for his direction, assistance guidance and feedback whose recommendations and feedback have been invaluable in my research.

Particular thanks go to Professor Shafik who throughout this process was able to see the vision and potential of the research undertaken.

I would also like to thank all those participants without whose assistance this research would not have been possible, as they are the real focus of my work.

Finally, I'd like to thank my wife Julie, who is my rock and has been extremely supportive of me throughout this journey. Never complaining about the long hours I've put into the pursuit of my goal, always encouraging me with her patience and understanding.

List of my Publications (with the dates of publication)

- (2018) Global Youth Unemployment – Is early identification of entrepreneurs the solution for reducing unemployment and the burden on the welfare state?
- (2019) A new conceptual model to identify Potential Youth Entrepreneurs based upon academic research and Entrepreneurial Insight
- (2021) Research into Early-Stage Identification of Entrepreneurs and Innovators with Development of an Identification Guidance Framework.
- (2021) Development of a New Research Methodology Tool, 'Pearsons Visual Relationship Framework'.
- (2022) Research into Early-Stage Identification of Entrepreneurs and Artificial Intelligence: Towards Self-Sustained Tools to Identify Young Entrepreneurs.
- (2022) Research into Early-Stage Identification of Entrepreneurs: Education Tools using Virtual and Augmented Reality.

Abbreviations:

AR – Augmented Reality

DDoS – Distributed Denial of Service

E-Factor – Entrepreneur Factor

IP – Intellectual Property

IT&C – Information Technology & Computer

ML – Machine Learning

NLP – Natural Language Processing

OECD – Organisation for Economic Co-operation and Development

VR – Virtual Reality

AI – Artificial Intelligence

Nomenclature

Adaptable - *Definition:* able or willing to change in order to suit different conditions

Ambitious - *Definition:* having a strong wish to be successful, powerful, or rich

Amiable - *Definition:* pleasant and friendly

Articulate - *Definition:* able to express thoughts and feelings easily and clearly, or showing this quality

Aspiring - *Definition:* wishing to become successful in a particular type of job

Assertive - *Definition:* Someone who is assertive behaves confidently and is not frightened to say what they want or believe

Balanced - *Definition:* considering all sides or opinions equally

Challenging - *Definition:* difficult to deal with or achieve, especially in a way that forces you to prove your skill or determination to succeed

Communication Skill - *Definition:* The ability to convey or share ideas and feelings effectively

Competitive - *Definition:* wanting very much to win or be more successful than other people

Confident - *Definition:* having confidence: the quality of being certain of your abilities or of having trust in people, plans, or the future

Continual improvement - *Definition:* also often called a continuous improvement process (abbreviated as CIP or CI), is an ongoing effort to improve products, services, processes or self-ability

Creative - *Definition:* producing or using original and unusual ideas

Decisive - *Definition:* able to make decisions quickly and confidently, or showing this quality

Determined - *Definition:* wanting to do something very much and not allowing anyone or any difficulties to stop you

Dynamic - *Definition:* having a lot of ideas and enthusiasm

Efficient - *Definition:* working or operating quickly and effectively in an organized way

Enthusiastic - *Definition:* showing enthusiasm: a feeling of energetic interest in a particular subject or activity and an eagerness to be involved in it

Focused - *Definition:* giving a lot of attention to one particular thing

Hardworking - *Definition:* always putting a lot of effort and care into your work

Imaginative - *Definition:* good at thinking of new, original, and clever ideas

Innovative - *Definition:* using new methods or ideas

Intelligent - *Definition:* showing intelligence, or able to learn and understand things easily

Intuitive - *Definition:* able to know or understand something because of feelings rather than facts or proof

Multi-levelled - *Definition:* having different levels or planes

Objective - *Definition:* based on real facts and not influenced by personal beliefs or feelings

Observant - *Definition:* quick at noticing things

Optimistic - *Definition:* hoping or believing that good things will happen in the future

Passionate - *Definition:* having very strong feelings or emotions

Personable - *Definition:* having a pleasant appearance and character

Positive - *Definition:* full of hope and confidence, or giving cause for hope and confidence

Practical - *Definition:* relating to experience, real situations, or actions rather than ideas or imagination

Questioning - *Definition:* Questioning is a major form of human thought and interpersonal communication. It involves employing a series of questions to explore an issue, or idea.

Rational - *Definition:* based on clear thought and reason

Realistic - *Definition:* accepting things as they are in fact and not making decisions based on unlikely hopes for the future

Relaxed - *Definition:* feeling happy and comfortable because nothing is worrying you

Reliable - *Definition:* deserving trust; dependable

Resourceful - *Definition:* skilled at solving problems and making decisions on your own

Risk-taker - *Definition:* a person who is willing to do things that involve danger or risk in order to achieve a goal

Skilful - *Definition:* good at doing something, especially because you have practised doing it

Spontaneous - *Definition:* Taking action, often sudden way, without any planning or without being forced

Systematic - *Definition:* using an organized method that is often detailed

Trusting - *Definition:* always believing that other people are good or honest and will not harm or deceive you

Venturesome - *Definition:* used to describe a person who is willing to take risks, or an action or behaviour that involves risks

Winning - *Definition:* that is successful in achieving or getting something that others also wanted

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CHAPTER 1: INTRODUCTION

1.1 General Introduction

There exists a limited amount of extant literature covering studies and research undertaken on young entrepreneurs, and at the time of writing this thesis there was little literature that could be found covering the identification of young people as entrepreneurs, and the studies that were found centred mainly on third world countries and their entrepreneurship programmes and achievements. Entrepreneurship training is becoming increasingly more important to improve the skills and abilities of aspiring entrepreneurs to develop better and more effective businesses (Cueto et al., 2022). The limited amount of research that appears to have been undertaken primarily focuses on young entrepreneurs' and their venture creation activities. The main focus of said research is on those whose ventures have achieved poor performances with significant rates of business failure. Widjaja et al. (2022), Investigated the role of e-learning in determining entrepreneurship education and entrepreneurial self-efficacy, and students' intention on entrepreneurship. The findings indicated that students' entrepreneurship education and self-efficacy can be performed using e-learning, and it is closely linked with lecturer competence, performance expectancy, and facilitating condition. The results also showed a linkage between entrepreneurship education and entrepreneurial intention. Education at an early stage of a young persons' academic development has been deemed to be important in a number of countries. In a number of countries, including Indonesia, entrepreneurship education has become an essential component of the curriculum (Sarooghi et al., 2019). Entrepreneurship education is provided at the senior secondary and tertiary levels of education in Indonesia. The objective of entrepreneurship education is to enhance the skills and abilities of aspiring business owners in the areas of business development, resource management, and innovation. In addition, the goal of entrepreneurship education is to help aspiring business owners comprehend various crucial aspects of the business world, including marketing strategy, financial management, production management, and risk management. The issue of deciding who should undertake entrepreneurial training at that early stage of their development should therefore be focused on those who would benefit most from the training. This research, 'Early-stage identification of young entrepreneurs' will, for the first time, focus on the study of young entrepreneurship, to understand how potential entrepreneurs can be positively identified in an effort to assist them in acquiring and understanding the requisite knowledge, information, and skillsets that would facilitate them building a sustainable and successful business. This study will create and develop an original and significant contribution to young entrepreneurship literature both theoretically (analysing those factors, traits and characteristics that provide the potential to become successful entrepreneurs) and empirically (by focusing on a group of existing successful entrepreneurs who were entrepreneurial from a young age). Despite the apparent negative conclusions from the limited amount of research undertaken relating to young entrepreneurs, there are convincing reasons to recognise the successes of some of the young entrepreneurs in relation to their business ventures and activities as being economically significant in terms of the contribution and impact they have had on the economy. A mind map showing the early-stage identification of Young Entrepreneurs can be found at Appendix A. Entrepreneurship courses in schools can help students to develop the skills and knowledge necessary to start and manage their own businesses (Jena, 2020). In addition, entrepreneurship learning also provides knowledge on how to make money, independently, understand the market, identify business opportunities, and manage finances well. Timmons and Spinelli (2009) clearly demonstrated that young entrepreneurship should be taken seriously as forming a significant part of the development

process of some of the world’s leading entrepreneurs, who they term ‘mega-entrepreneurs’. They point out that the development process to become a mega entrepreneur takes many years and often involves the inception of an entrepreneurial career before the age of 30. Timmons and Spinelli argue that invariably such entrepreneurs do not build their most significant venture the first time round, but develop one or two smaller ventures first (each which may take seven years or more to build), before building their most significant and successful venture. (Hickie, 2011)

A list of highly successful entrepreneurs who formed their business ventures in their late teens and early twenties are shown in table 1-1. There is also evidence that young entrepreneurs are creating significant businesses in areas important to economic growth, in particular e-commerce (Carrier et al, 2004)

Table 1-1: Successful entrepreneurs under 30 years old

Company	Founder(s)
Paypal	Elon Musk and Peter Thiel
Facebook	Mark Zuckerberg
YouTube	Chad Hurley
Virgin	Richard Branson
Amstrad	Alan Sugar
SnapChat	Evan Spiegel
Pimco	Bill Gross
SubWay	Fred De Luca
Microsoft Corporation	Bill Gates and Paul Allen
Oculus VR	Palmer Luckey
Air BnB	Nathan Blecharczyk
Yahoo!	David Filo and Jerry Yang
Theranos	Elizabeth Holmes
Skype	Janus Friis
Mozilla Firefox	Blake Ross
Dropbox	Drew Houston

Entrepreneurship learning is the process of acquiring knowledge and skills related to entrepreneurship, including the ability to recognise and develop new business opportunities, effectively manage resources, and take calculated risks in order to achieve success in business ventures (Ratten & Jones, 2021).

1.2 Youth Unemployment

The world is facing several global crises, viral epidemics, religious persecution, civil wars, National unrest to name but a few, but one of the less known crises yet potentially devastating is ‘Youth Unemployment’. I suspect several people will be thinking, well that’s not a big deal, a few kids out of work, it isn’t really that serious. Yes, but it could be. As of April, 2022 the global youth unemployment rate was estimated to be 13.2% which equates to 73 million young people not in employment and that figure is rising (Source: *International Labour Organisation - ILO*). This figure has risen year on year from 12.9% in 2009 to 13.2% in 2019. To put that figure into perspective the total population of United Kingdom is 67.8 million, France 65.2 million, Italy 60.4 million, Thailand 69.8 million (source: *United Nations in the 2019 revision of world population prospects*) In fact there are only 19 Countries that have larger populations, with 214 countries having smaller populations than the amount of young

people who are unemployed. This as can be seen is a global issue and statistics show that this rate is three times higher than for adults which is 4.3% In the westernised European countries, the percentage rate is lower with 3.222 million young people unemployed. This is only a small percentage of the total figure globally but still a significant number with the percentages in double figures per capita in most of the EU28 countries with 23 of the 28 countries above 10% unemployment. It was mentioned earlier that this is a global crisis and it is. Unemployment whether youth or adult has a significant knock-on effect in those countries affected as can be seen in the visual example below. Youth unemployment affects not only those people who are unemployed, but their family, wider community and nation as a whole.

I have categorised the effects associated with youth unemployment into four main effects which are linked to issues affecting unemployed young people.

- A) Societal Effects
- B) Employment Prospect Effects
- C) Mental Health Effects
- D) Individual Effects

Linked to these are the primary issues relating to youth unemployment listed below.

1. Lack of self- esteem
2. Crime
3. Homelessness
4. Alienation
5. Atrophy of working skills
6. Erosion of confidence
7. Boredom
8. Family Tensions
9. Social Division
10. Low Income
11. Ill Health

Some of these primary issues listed above have secondary related issues as shown below using their item number from the above list.

2. Crime
 - a. Violence
 - b. Drug dealing
 - c. Drug misuse
 - d. Fraud
 - e. Theft
 - f. Custodial sentences
 - i. Probation services
 - g. Vehicular Theft
 - i. Driving without a licence
 - ii. Uninsured
 - iii. Untaxed

10. Low Income

- a. Poverty
- b. Severe financial hardship
- c. Debt
- d. Welfare State burden

11. Ill Health

- a. NHS Treatment
- b. Death

As can be seen from the above, youth unemployment can act like a cancer on society which can spread like a virus to other young people by association, making it particularly dangerous with potentially lethal consequences such as the death of the individual due to ill health or as a result of a crime, or the death of a third party whilst in the commission of a crime.

The old adage 'prevention is better than cure' is particularly relevant in this case whereby if we can ensure a young person doesn't become unemployed, we can potentially prevent the downward spiral towards many of the issues associated with unemployment that have been identified in the previous paragraphs. 'You don't live when you are unemployed – you exist' (Jackson & Crooks 1993). The effects of unemployment as stated can have a profound effect on a young persons' life and are shown visually as a 'mind map' in figure 1-1.

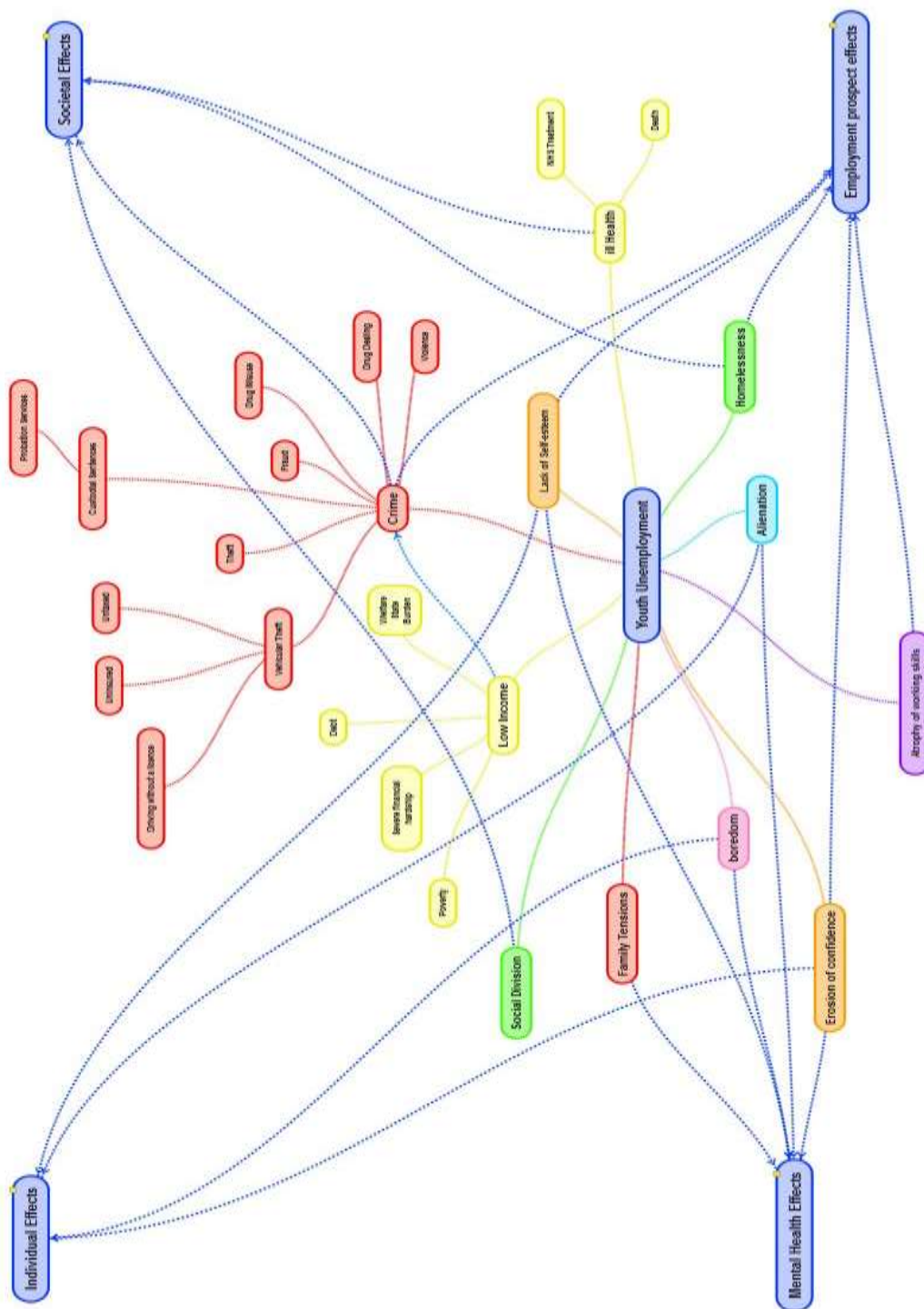


Figure 1-1: The effects of unemployment

1.3 Prevention and Cure

How do we prevent this viral cancer called Youth Unemployment?

If it were possible to wave a magic wand one could simply say 'give every young person a job'. This however isn't realistic nor is it achievable therefore realistic and achievable solutions need to be found.

Solution 1: Create jobs working in the community that young people can do which they would be paid for by the Government.

Solution 2: Introduce a form of mandatory National Service as adopted by some European countries whereby the young people have to serve a period of 18 months either in the armed forces, in the health service or in social services. This would apply to all young people who are NEETS, (Not in Education, Employment or Training).

Solution 3: Allow existing business employers to employ young people on a lower than minimum wage which is topped up to minimum wage levels by government funding.

Solution 4: Create Private Sector jobs with new businesses which will employ young people on a lower than minimum wage which is topped up to minimum wage levels by government funding.

Solutions 1-3 could be adopted by the government and should be seriously considered as potential solutions, especially as the level of crime committed by young people is on the increase and therefore the cost in terms of policing, court hearings, custodial sentences, NHS costs attributable to crime also increases.

Solution 4 however is the one that this research is focussing on. The creation of private sector businesses.

Who is it that creates new businesses? That responsibility falls upon entrepreneurs. Entrepreneurs create new businesses, new markets and new technologies, therefore it is paramount to tap into this resource ie. entrepreneurs to facilitate it. Entrepreneurship involving young people more recently has interested policy makers and the media. In the 2012 Budget, George Osborne, the previous United Kingdom (UK) Chancellor of the Exchequer, announced the piloting of a government loan scheme to encourage young people to set up their own businesses. Television programmes such as 'The Apprentice' and 'Dragons' Den' have also regularly presented the idea of young people aspiring to set up a business as a positive and aspirational economic activity, and actively encouraging them to consider entrepreneurial careers. Despite this public policy and media attention, youth entrepreneurship has received little research attention, and in particular high performing youth entrepreneurship has benefited from even less academic investigation. Bygrave (2007) points out that many entrepreneurship studies have in fact been primarily about self-employment. (Hickie, 2011). The population of the world is expanding at an exponential rate and the jobs market is shrinking. With the potential introduction of robotic replacements for the labour workforce and the ever-increasing supply of those completing their education entering the jobs market supply is outstripping demand. The resultant outcome being that youth unemployment is increasing. Some countries are exhibiting unprecedented levels of youth unemployment and according to research from Price Waterhouse Cooper (PwC), UK figures for 2022 show that reducing high youth unemployment would give a potential boost to the British economy amounting to £38bn. This is not isolated to UK, it is a worldwide

issue and one that is being experienced by most European countries supported by the graph shown in fig1-2. This is a problem that isn't going to go away, therefore something must be done to try and slow down and restrict its growth. Unemployment exists because jobs don't, therefore one way to act to reduce it is to create jobs. It isn't the governments remit to create jobs, not in the private sector therefore this responsibility is falling more and more on entrepreneurs. They can be the lifeblood of an economy, creating wealth and job security from little more than an idea. So, where are these entrepreneurs it can be asked? They are already out there, in society, possibly unemployed or employed as a member of a workforce, they are in colleges and universities, they are in schools and they are yet to be born. The problem is that many of them don't know that they're entrepreneurs. They either aren't aware that they are potential entrepreneurs or they haven't been identified as potential entrepreneurs because they're still in the education system and haven't been put into a position of having an opportunity to be entrepreneurial. It's this latter group, those potential entrepreneurs still in education that are going to be the focus of this study.

The main aim of this research is to provide a framework that can be used to positively identify young people who have the potential to become successful entrepreneurs. Once identified they could be encouraged to undertake entrepreneurial training courses in order to enable them to fulfil the potential that they have been shown to exhibit.

Why should we try to identify young people who have the potential to become successful entrepreneurs?

There are several reasons why it's important to identify young people who have the potential to become successful entrepreneurs:

- Economic growth: Entrepreneurs are the backbone of the economy, and their innovations and businesses are responsible for creating jobs, driving economic growth, and improving the overall standard of living.
- Innovation and creativity: Entrepreneurs are known for their innovative and creative ideas, and identifying young people with these qualities can help to nurture and develop their potential for creating new products, services, and business models that can have a positive impact on society.
- Role models: Successful young entrepreneurs can serve as role models and inspire other young people to pursue their own entrepreneurial dreams, leading to a cycle of innovation and growth.
- Social impact: Entrepreneurship can also have a positive impact on society, as entrepreneurs often create businesses that address social and environmental challenges and contribute to the greater good.

Overall, identifying and supporting young people with the potential to become successful entrepreneurs can have significant benefits for both the individuals themselves and society as a whole. Based upon the extant literature and lack of research into identifying young entrepreneurs, the research problem, and important arguments arising from it are therefore justified.

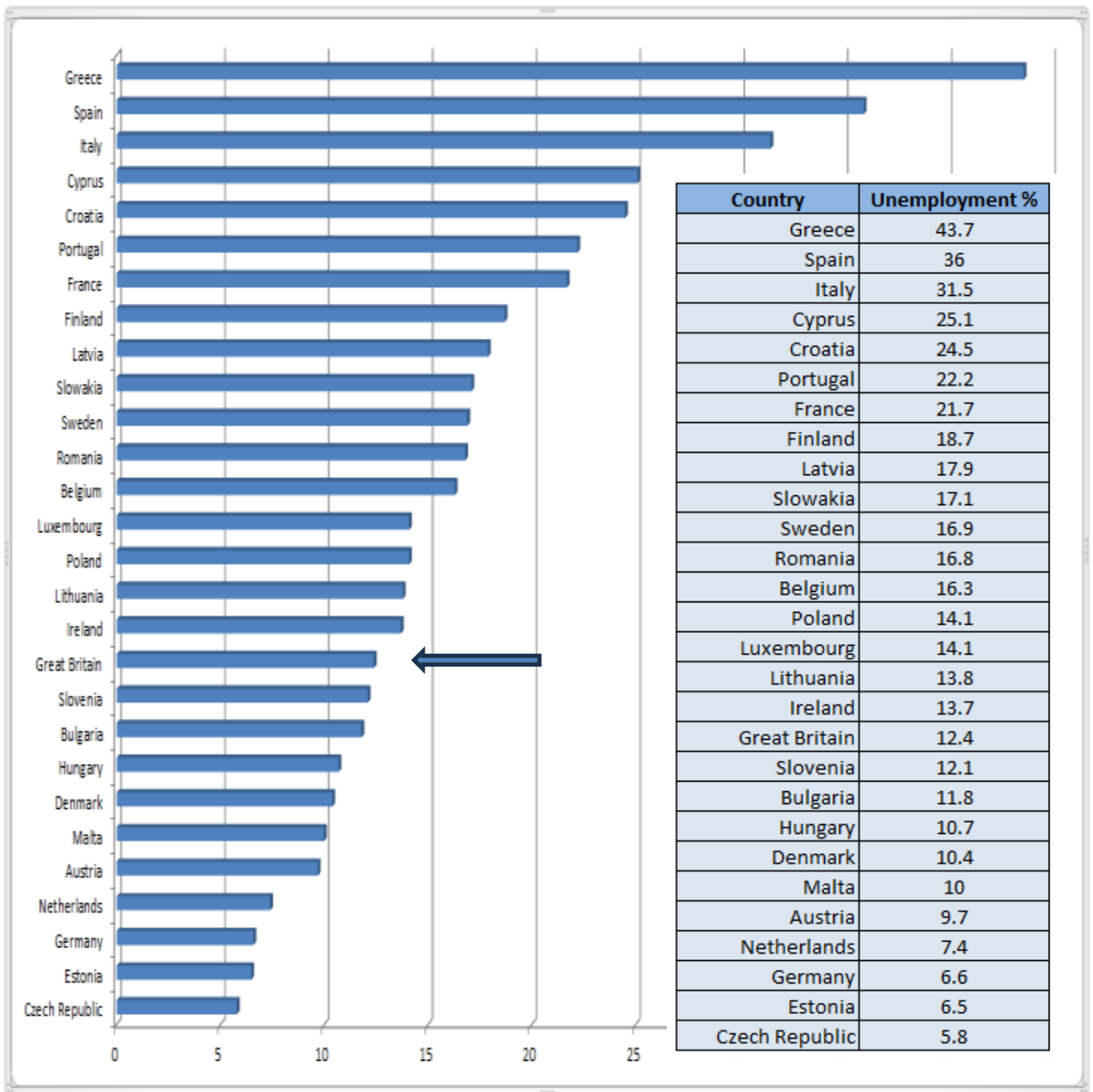


Figure 1-2: Graph of EU youth unemployment
(Source Eurostat 2018)

The statistic shows the seasonally adjusted youth unemployment rate in EU member states as of January 2018. The source defines youth unemployment as unemployment of those younger than 25 years.

1.5 Policy and Practice

Researching how young entrepreneurs can be positively identified is of particular relevance to policy direction and focus. A group of successful and experienced entrepreneurs, led by Sir Richard Branson, have been lobbying the government to facilitate incentives to inspire and assist young people to set up their own business ventures. Lord Young in response to this published a report on Enterprise and said "Many young people already have the drive and ambition to create a business, yet don't know how to put this into action. My report will connect them to the support they need and the new Start-Up Loan will mean that thousands of young people can now get access to advice and funding". The loan he spoke about was a new scheme whereby any 18-24 year old is able to get access to finance, support and training to start a business. Start-up loans of up to £2,500 were made available with a repayment period of up to five years. The Start-Up scheme was aimed at giving the next generation of entrepreneurs the necessary finance and support to potentially start over 30 thousand new businesses in order to boost enterprise and economic growth. Lord Young further went on to say that had the UK achieved the same rates of entrepreneurship as has been achieved in the United States then the UK would have produced some 900,000 more businesses. He set out the strength, diversity and growth of small businesses in recent years which was in clear contrast to the report produced in 1971 entitled the Bolton Report (Bolton, J.E. (1971) which predicted that small businesses were in long-term decline. In a statement by Lord Young, he said "Thirty years ago small businesses were in decline, now we have record numbers, with many tens of thousands starting each year, they are the engine room of our economy and critical to future economic growth. But we cannot be complacent, now more than ever we have got to get behind our small businesses and encourage even more people to seize the opportunities and support that there is to start up on their own. Many young people already have the drive and ambition to create a business, yet don't know how to put this into action. My report will connect them to the support they need and the new Start-Up Loan will mean that thousands of young people can now get access to advice and funding. Start-Up Loans will transform the enterprise potential of a new generation, just as the Enterprise Allowance Scheme transformed a generation in the 1980s." The then Prime Minister David Cameron said of Lord Young's report "I would like to thank Lord Young for his thorough report into the SME sector. His enthusiasm, drive and tenacity to make sure we are doing everything we can to support business and promote enterprise is a credit to us all. There can be no better inspiration of the 'can do' spirit that is needed in business than Lord Young; and his report is a must read for anyone thinking of starting up." Business and Enterprise Minister Mark Prisk said "It is great news that we have so many young people in the UK looking to get into business and start their own enterprise. Giving young entrepreneurs the tools they need to start and grow a business is an essential part of boosting the UK economy. By investing in young people now, we have a great chance of creating the entrepreneurs who can become tomorrow's success stories. However, it is not just about money. It is about creating the whole package for young entrepreneurs, training, mentoring, business planning and help to access finance. Start-Up Loans will help young people achieve all of these goals and give them an early and exciting chance to realise their personal and business potential". This highlights the acceptance and identification that investment in young people as creators of business and wealth is paramount. Support from the Government in East London for Tech City aimed at encouraging online technology start-ups amongst others has involved numerous young entrepreneurs, the like of who are particularly inclined to set up online technology businesses rather than conventional entrepreneurial type businesses as the technological age is the period that they are growing up in. Investment in London's Technology Sector or Silicon Roundabout, the name proposed as a tongue-in-cheek joke by Matt Biddulph was around \$2.28 billion in 2015, with London based technology companies raising \$5.2 billion collectively of venture capital funding. Companies such as Amazon, DueDil, Facebook, GoCardless, Intel, Last.fm, Google, Microsoft are amongst many others that have a presence in the sector. On a practical level, policy development and business interest has been growing in relation to youth entrepreneurship across Europe. David Blanchflower, previously a member of the Bank of England's Monetary Policy Committee and a renowned economist has stated that encouragement should be given to young people to create their own businesses citing it as potential way of tackling youth unemployment in

Europe as a whole. This creates the possibility of a knock-on effect globally, which can go some way to combating the unemployment issue faced by all developed and emerging economies. Blanchflower and Oswald (2009) suggest that youth entrepreneurship not only facilitates a way of providing jobs for the entrepreneurs themselves, but that they are more likely to employ other young people as employees as opposed to older employers who tend to opt for more mature employees. Entrepreneurship is now believed to be a driving force in job creation as it creates opportunities for employment of self-employed youths and other young people who may be employed by the new start-up companies. It also has the potential to raise competition and create innovation, which are seen as the two drivers of economic growth, as young entrepreneurs may be particularly responsive to new economic opportunities and new trends in globalised society (Chigunta, 2002; Green, 2013). Programmes and competitions in both the public and private sectors have emerged and seen substantial growth specifically aimed in UK at young entrepreneurs. In universities, public sector programmes aimed at encouraging young entrepreneurship have been run by the National Centre for Entrepreneurship in Education and the SPEED Programme (RAE, 2009). There has also been an increase in the development of business incubators aimed specifically at graduates and students at establishments such as St. John's Innovation Centre (funded by St. Johns College, University of Cambridge), Manchester Metropolitan University, Nottingham and Trent University and Teesside University, with others considering their introduction also. Public funding has been provided to The Prince's Trust in order to encourage and assist young people from disadvantaged backgrounds to set up their own businesses (Greene, 2005; Rouse, 2004). Experienced fund managers and Venture Capitalists are taking a particular interest in identifying successful young entrepreneurs looking for opportunities for investment following on from the success of particular young business founders who have established globally significant companies for example Google, Facebook and YouTube (Financial Times, 5 May 2012). One of the most noteworthy programmes in the UK and Europe specifically aimed at youth entrepreneurship is called Seedcamp, which was established by, Saul Klein, and Reshma Sohoni, Venture Capitalists in 2007 to promote the advancement of technology start-ups (see Klein, 2009). In November 2017 Seedcamp announced the first close of a £41 million seed fund to invest in 100 new start-ups across Europe. Most of those who enter the annual competition are under 30 years old, with the winner's gaining investment in exchange for equity and also the opportunity for considerable mentoring from experienced investors and entrepreneurs. There has been an expansion of the growth of entrepreneurship education in both schools and universities, but it is debatable whether many of the programmes run, are really business education programmes packaged under a different name to attract greater participation by students, rather than entrepreneurship education programmes aimed at a high level for the development of the best and brightest with the highest potential of success. The Federation of Small Businesses and Young Enterprise have been involved in expanding the amount of entrepreneurship education taught in schools and in universities there are a diverse range of approaches to entrepreneurship education, both including it within other disciplines and teaching it as a discipline in its own right (Gibb, 2002; NESTA, 2008).

1.5 Research Gap, Motivation and Scope

Having left the Army in 1994 as a Sandhurst Officer, I knew that I couldn't see myself working for anyone, and being answerable to anyone, so I made the decision to become self-employed and form my own business. I did so, and started to develop my business acumen, which enabled me to grow the business and be awarded with Lancashires 'Small Business of the Year' Awards in both 1995 and 1996. I was then invited to take part in the only real business competition on television at the time, which was Granada TV's 'Flying Start' competition. This served to be a real boost for the business with the publicity received from appearing on the show. As my business acumen grew, so did my confidence in developing other businesses which led to me being awarded 'Lancashires Entrepreneur of the Year Award' in 2014 in the highly prestigious Be Inspired Business Awards run by the Central and West Lancashire Chamber of Commerce attracting the biggest and best businesses from in and around the Lancashire area.

I have been involved as a Keynote Speaker at several conferences and work closely with ‘Prestons College’ providing inspiration business talks and organising technology competitions within the ‘istem’ department of the college. I believe that the development of young entrepreneurs is paramount to improving the economy and also self-esteem of young people and that every effort should be made to facilitate its growth. Identifying young entrepreneurs is an important first stage in the process that appears to have been overlooked, therefore this research is of significant importance and one that I aspire to pioneer as a legacy to development and sustainable growth of young people.

The scope of this research identifies entrepreneurial traits in successful entrepreneurs and seeks to identify the same traits in young entrepreneurs through a series of online questions and scenarios. Training of the successful applicants will involve the use of Virtual Reality and Augmented reality to provide tangible results in terms of the outcomes achieved, as it has been shown that the use of VR and AR for training, is more effective than classroom teaching alone.

Fig 1-3 shows a conceptual model of outcomes from the identification of Young Entrepreneurs and highlights the short, intermediate and long-term outcomes of the identification and subsequent training of the Young Entrepreneurs.

Conceptual Model of Outcomes for Identification of Young Entrepreneurs

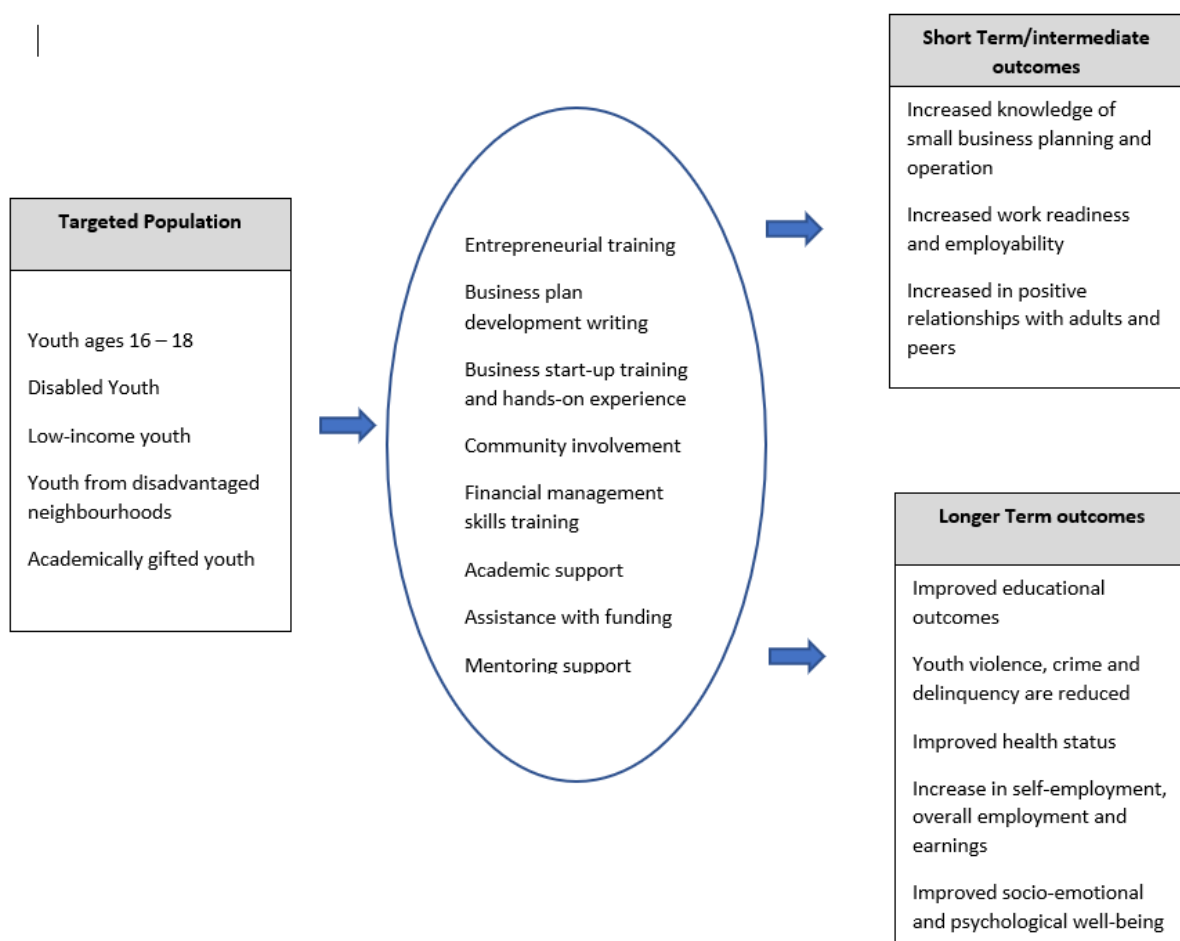


Figure 1-3: Conceptual Model of Outcomes for Identification of Young Entrepreneurs

1.6 Research Programme Aim and Objectives

The aim of this PhD programme is to develop an effective framework to accurately identify potential young entrepreneurs of the future at an early stage of their educational development. This is a particularly challenging research project as little work has been done in the field of youth entrepreneurship and of that which has been done the main focus has been very limited in terms of scope, thus producing inaccurate and misleading data and information. The concept of this research is to produce a paradigm derived framework and online tools that are able to identify young entrepreneurs facilitating a more accurate evaluation of a young persons' potential to become a successful entrepreneur than has previously been developed. New theories and concepts will be explored in order to supplement and enhance existing theories and create new methods and a framework for early-stage identification of entrepreneurs and innovators in the 16-18 years old age group.

The objectives are to be measurable and quantifiable based upon the SMART methodology, meaning they are to be Specific, Measurable, Actionable, Realistic and Timed. (Doran, G. T. (1981)).

Each of the objectives outlined below are structured in a clear, concise and succinct format that aims to be measurable based upon the above criteria, thus setting expectations for what can be achieved.

1. Investigate and identify the traits, characteristics, behavioural and environmental factors which have a positive effect on becoming a young entrepreneur: Publication reviews will be carried out to ascertain which previous methodologies have been identified as effective in the identification of adult and youth entrepreneurs and a list of identifiable traits produced which identify those traits that are responsible for making a person entrepreneurial.
2. Develop a framework for identifying a young persons' ability to become an entrepreneur derived from a combination of identification methods: Based upon the outcomes of objective 1, a theoretical framework derived from a combination of existing and proposed methodologies will be developed to support the hypothesis that no one methodology is 100% accurate in providing identification of a young persons' potential to become entrepreneurial and that it is a combination of existing methodologies aligned to provide a high degree of accuracy that has the most potential to be effective.
3. Develop user age-appropriate web-based interface tools of the framework that will engage and stimulate the effective extraction of information from the potential young entrepreneurs: An online web portal will be developed that will use a combination of questions and challenges based upon the framework developed in objective 2 to positively identify whether or not a young person has the ability and potential to become an entrepreneur.
4. Provide validation and verification of the traits that entrepreneurs exhibit, and that Young Entrepreneurs also exhibit the same traits as their adult counterparts.

1.7 Research Findings and Key Contribution to Knowledge

The methodology used in this thesis is a cross-sectional research design to assist with the development of a framework to identify young people with the potential to become successful entrepreneurs. According to Bryman (2008: 44) "A cross-sectional design entails the collection of data on more than one case and at a single point in time in order to collect a body of data". He stipulates that this form of research design is often used for both qualitative and quantitative research studies. In this study trait analysis has been carried out on over 30 entrepreneurs with 20 being interviewed to find out what it was that made them entrepreneurial at an early age. The research takes a qualitative approach

to studying existing entrepreneurs' traits and characteristics and uses semi-structured interviewing, and considers the understanding and interpretation as to what makes entrepreneurs who they are in their own words. Some of the themes explored are derived partly from existing research, however new themes and understandings emerge by asking the interviewees open ended questions about their experiences, both positive and negative as well as the influences they had in their lives that made them the successful entrepreneurs they became. The overarching aim of this research is to establish what it is that makes successful entrepreneurs the people that they are, and if the answer can be utilised and developed in such a way as to provide positive identification of young people who also have the same ability, albeit possibly dormant waiting to manifest.

This leads to the following research questions:

- Research Question 1:** Do a common set of traits and characteristics exist amongst entrepreneurs?
- Research Question 2:** Do young entrepreneurs exhibit the same traits and characteristics that older entrepreneurs do?
- Research Question 3:** Can the traits if they exist be positively identified with the use of an online framework?

1.8 My Contribution to knowledge

The critical significance of my research, at this time, is imperative. In order to be able to identify those young people with the potential to become successful entrepreneurs it is important to understand what it is that makes an entrepreneur who they are. I have, in this study been able to positively identify a significant number of traits that make a person entrepreneurial and my research in this study has enabled me to characterise and define the group of traits common to most entrepreneurs into a single defined trait in a unique and distinctive way, using a variety of methods, which has been named an Entrepheotypic Trait.

This is the first time that such an in-depth study has been undertaken on entrepreneurial traits that has produced a method for the identification of potential young entrepreneurs. Trait analysis in the past has focused on a small number of traits that were first theorised in 1930's by Schumpeter and hardly expanded upon since then. Schumpeter, Timmons & Spinelli and a few other notable scholars seem to be cited regularly in research involving entrepreneurship without challenge or expansion. In my study I have challenged not only the theories in terms of traits stated by the notable scholars, which seemed adequate for the context in which they were used, at the time, but also the resolution of such traits when required to provide identification of young and older entrepreneurs. Research into entrepreneurship has evolved, as have the types of businesses created by entrepreneurs, but their definable features have never been delineated in the way that I have done, and to such depth. The ability to be able to identify entrepreneurs through such a comprehensive grouping of traits as their distinguishing features will be crucial in the future. Through my research I have identified and categorised a group of personality traits that distinguish entrepreneurs from their contemporaries, which is imperative if we are to identify and develop entrepreneurs of the future.

1.9 Definition of an Entrepreneur

There are numerous definitions as to what an entrepreneur is

- **Merriam-Webster** - “one who organizes, manages and assumes the risks of a business or enterprise.”
- **Dictionary.com** - “a person who organizes and manages any enterprise, especially a business, usually with considerable initiative and risk.”
- **Wikipedia** - An entrepreneur is an individual who creates and/or invests in one or more businesses, bearing most of the risks and enjoying most of the rewards
- **Oberlo** - An entrepreneur is a person who sets up a business with the aim to make a profit.
- **Richard Cantillon (1755)** - Cantillon describes an entrepreneur as an ‘adventurer’, who invests in the purchase of goods and materials with the incentive of selling these in the future.
- **Joseph Schumpeter (1930)** - entrepreneurs are innovative heroes. They are the elementary source of induction of innovation into business cycles, without which businesses may suffer from stagnancy and monotony.

My definition is:-

An Entrepreneur is someone who has the ability to see beyond what is there, and imagine a thing that’s not there yet, and is prepared to take calculated risks in the pursuit of success in order to own their destiny and not let it own them.

(Pearson, SR. 2022)

1.10 Summary

This chapter provided an insight as to why the study was undertaken, the motivation and scope of study. It also outlined my contribution to knowledge which is expanded upon in more detail in chapter 6.8. The next step in this research is to identify what research has previously been undertaken to determine the current state of the art in this field, and is the reason for the literature reviews in chapter 2.

1.11 Organisation of the Thesis

Following **Chapter 1** (the Introduction), the report will take the following format.

Chapter 2 (Literature Review) provides a review of the literature and current state of the art on the subject of entrepreneurs and young entrepreneurship. It includes sections on: defining the concept of entrepreneurship; the disciplinary context of the thesis (economics, sociology, psychology); young entrepreneurs.

Chapter 3 (Proposed System Platform to identify Young Entrepreneurs with the focus on Research Ethics & Methodology) Looks at the platform used to carry out the research, the data processing and decision making along with expert system feedback and inclusion of AI. It also explains and justifies the research design and the methodological choices made in preparing the thesis. It examines the reasons why ethics are important when undertaking research and what ethical considerations have been applied to this study. It includes sections on: the research questions; the research philosophy; sample selection; data collection; and, data analysis.

Chapter 4 (Validation of the Systems and Trait Analysis) This chapter gives an introduction to Trait Analysis, the derivation of an Entrepreneurotypic Trait and validation of the trait analysis.

Chapter 5 (Education and training of Entrepreneurs). This chapter looks at various forms of education and explores the opportunities for the use of Virtual & Augmented Realities as training aids. It includes interviews with successful Entrepreneurs and reasons why they have been successful.

Chapter 6 (Conclusions, Major Findings & Future Work) Concludes the study, looks at the contributions made and proposes future work to be undertaken.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The literature review provides a theoretical underpinning of this thesis. Literature on adult entrepreneurs, trait analysis, young entrepreneurs and entrepreneur identification have been examined. Statements like 'Entrepreneurs are made not born' have been given and are in part true, but not wholly accurate. Maths geniuses aren't made, nor are top scientists otherwise anyone could be taken and made into a top mathematician or scientist. The same can be said for entrepreneurs, successful ones that is. Whilst it's true that the knowledge required to be acquired by the potential entrepreneurs is imparted from those who have gone before them, the requisite level of intelligence and ability to assimilate information and formulate new ideas and concepts is believed to some degree to be innate and genetically inherited. To understand how to identify an entrepreneur we need to establish what an entrepreneur is. The word has its derivation from the French 'Entreprendre' meaning (undertake) and English 'Enterprise' meaning (business) giving the meaning to 'undertake business'. An Entrepreneur is stated in the Cambridge English Dictionary as '*a person who sets up a business or businesses taking on financial risks in the hope of profit*'. (Anon, 2018). One of the earliest known characterisations of an entrepreneur was that of Cantillon (c1700 AD) who described the individual as a rational decision maker who assumed the risk and provided management for the firm (Kilby, 1971). Schumpeter (1934) credited Mill (1848) with bringing the term into general use among economists. Mill, also believed that the key factor in distinguishing a manager from an entrepreneur was the propensity for risk bearing. Schumpeter, however, countered that risk bearing was inherent in ownership and that entrepreneurs, the combiners, were not necessarily owners; therefore, the risk bearing propensity would not be a trait. The expressions entrepreneur and entrepreneurship are rarely used with consistency in entrepreneurship research or the wider-ranging business community and environment. As Chell et al (1991:1) have described, "the problem of identification of an entrepreneur has been confounded by the fact that there is still no standard, universally accepted definition of entrepreneurs". Baum et al have stated "There are hundreds of definitions of entrepreneur, entrepreneurship, and entrepreneurial" The study of entrepreneurship is often defined in relation to new business opportunities. "Entrepreneurship is an activity that involves the discovery, and, exploitation of opportunities to introduce new goods and services, that previously have not existed". (Shane, 2003:4). Defining Entrepreneurship, Rae states "the process of identifying and exploiting opportunities through bringing together resources to form Ventures which create or release value" (Rae, 1999: 16). Gartner (1989) describes entrepreneurship as the "creation of organisations", in support of his approach to understanding entrepreneurship as a set of behaviours and processes rather than innate set of traits or characteristics with which the entrepreneur is born. I disagree with this assumption and hypothesis and claim that only people with the necessary traits and innate characteristics have the ability to adopt the set of behaviours and processes and use them in an entrepreneurial way otherwise anyone could follow a prescribed set of behaviours and processes to achieve the same result. This creation of organisations suggests that the entrepreneur employs people and is not simply self-employed. However a broader definition of the entrepreneur has been identified by Katz and Green "anyone who owns a business is an entrepreneur" (Hickie, 2011) In defining an entrepreneur as merely anyone who owns a business, this does not give true just to the term entrepreneur, whilst some self-employed business owners may be entrepreneurial, many of them are

merely self-employed sole traders and tradespeople simply working for themselves in a role they have chosen as a profession.

Weber states, "Entrepreneurship means the taking over and organisation of some part of an economy in which people's needs are satisfied through exchange, for the sake of making a profit and at one's own economic risk" (quoted in Swedberg, 2006: 26). Weber (2002) also presents an understanding of how Commerce came to be valued in modern societies in the protestant ethic and the spirit of capitalism. For Weber, entrepreneurs were the main check and balance upon the power of bureaucrats in Society (Swedberg, 2000). Casson et al (2006: 3) submitted, "Popular notions of Entrepreneurship are based on the heroic vision put forward by Joseph A Schumpeter (1934) and developed during the 20th century. (Hickie, 2011) An entrepreneur is stipulated by Joseph Schumpeter as someone who is an innovator, introducing new products and processes in particular as a result of technological advancement. The resultant effects being revolutionary, thus creating permanent influential variations to the economy and wider society as a whole. As capitalism expanded, entrepreneurship was seen by Schumpeter as becoming increasingly conducted in large firms rather than by smaller firms and individuals (Schumpeter, 1942: 133). Schumpeter's interpretation of someone who is entrepreneurial is thought to be more individualist than Weber's, however both reflect the influence that entrepreneurs have upon the wider societal culture. The popularity and increasing propensity to favour entrepreneurship by many of the economists, decision makers and policy creators can be attributed in part to the economic catastrophes that occurred in the 1970s in both UK and USA where Corporations, and Businesses we considered by many to be failing. (Jones and Spicer, 2005). Carland et al (1984: 358) proposed a differentiation between business owners and those people who were entrepreneurs. They stipulate that, "an entrepreneur is an individual who establishes and manages a business for the principal purposes of profit and growth. The entrepreneur is characterised by innovative behaviour and will employ Strategic Management practices in the business" (Carland et al, 1984: 358) My interpretation is 'An Entrepreneur is someone who has the ability to see beyond what is there, and imagine a thing that's not there yet, and is prepared to take calculated risks in the pursuit of success in order to own their destiny and not let it own them'. Individuals who are not business people may exhibit entrepreneurial and innovative traits, but are not actually entrepreneurs as they are not engaged in wealth creation. Entrepreneurs are calculated risk-takers whose minds are constantly active, looking for new opportunities in everything they see. They have a multi-faceted mindset which is in part innate, but has been honed throughout their lives by their experiences and observations. Often visionary, innovative and self-aware, they operate in many areas but have certain key traits in common'.

2.2 Young Entrepreneurs

A limited amount of research has been carried out aiming to determine the age that someone would most probably seek to establish a business venture. The research also sought to forecast the likely performance of their business based upon their age. The studies focused upon young entrepreneurs as a specific group are very limited with only a few investigations in this field having been undertaken (Lewis and Massey, 2003) most of the research focused on the identities of young entrepreneurs (eg. Lewis and Harris, 2006; Rouse, 2004) and/or policies to support them (e.g. Greene, 2002; Greene 2005; Rouse, 2004; MacDonald and Coffield, 1991), rather than attempting to identify those young people with the potential to become entrepreneurs. According to Maleki et al, family support of young entrepreneurs acts as a substitution mechanism facilitating entrepreneurial behaviour in young people (Maleki, A., Moghaddam, K., Cloninger, P., & Cullen, J. (2023). A range of studies investigating

business ownership in relation to age, whilst not specifically in relation to young entrepreneurs was undertaken by Lewis (2009), which drew conclusions of common ground in the research that stated it was unlikely that self-employment would be a young person's first form of work (Feldman and Bolino, 2000; Shane, 1996); the young person's work experience prior to becoming self-employed is most probable to be in the same field/industry as the business venture they embark upon. Start-up assistance from the young person's family would provide the most useful foundation of assistance, including advice, support and finance. Having parents who are self-employed will have positively influenced a young person's decision to become self-employed (Blanchflower and Oswald, 2007; Scott and Twomey, 1998). It is this authors belief however, that merely starting up a business is not evidence of entrepreneurship, merely a wish or desire for someone to have their own business and that an entrepreneur is a business person+ (with the + being the additional thing that makes them an entrepreneur. Blanchflower and Oswald, in a study of 32 European countries, found that, "there is a large latent demand for a kind of entrepreneurial behaviour – self-employment. People find self-employment intrinsically attractive" (2009: 290). In particular they found that 49% of under 25 year olds in the UK would prefer to be self-employed to being an employee. By contrast, only 6.8% of under 25 year olds were self-employed at the time the data they used was collected (2000-06). In identifying the human capital stocks of those young entrepreneurs who do successfully establish a business as opposed to simply consider the option, this study helps to identify what human capital development may be necessary to encourage others to actually set up a business. The ability of young entrepreneurs to achieve business survival and growth has been considered to varying degrees in a number of studies, finding variable outcomes, often relating to the sample considered (Rosa, 2003; Rouse, 2004; McLarty, 2005; Lewis and Harris, 2006). Henry, Hill and Leitch have contended that, "While one might justifiably hypothesise that a more mature entrepreneur will have significantly more experience and thus may be more likely to succeed, it has also been suggested that younger entrepreneurs are possibly more likely to take more risks in an attempt to grow their business" (2003: 53). Van Praag (2003) found that young people were less likely to achieve business survival than older entrepreneurs, suggesting the best age to start a business was 32. Nevertheless, the study said that having industry specific work experience could improve a young person's chance of business survival (Hickie, 2011). It is this authors belief however, that merely the wish to be an entrepreneur does not make someone an entrepreneur. In order to become an entrepreneur the individual must have the propensity, ability and training to become an entrepreneur, therefore the previous studies carried out above are only indicative of someone wanting to be self-employed and have their own business, possibly motivated by the fact that most people who are actual successful entrepreneurs, are in fact self-employed and to some degree in control of their own destiny and have in most cases made a substantial amount of money (the successful ones that is). It may also be true that those young people who state that they want to be entrepreneurs may have only been exposed to the celebrity-like status of some of the successful role models that they've seen in the media such as Elon Musk, Sir Richard Branson, Lord Alan Sugar, Sir James Dyson etc. and have little or no knowledge of the thousands of wanna-be entrepreneurs that have never made a success of their ventures for one reason or another. Similarly with the many thousands of people who audition to be on shows such as X-Factor, Pop Idol, The Voice, Britain's got Talent. Most of them feel that they have what it takes to be a success and that they can ultimately win the show, when in reality, they haven't got what it takes and lack talent, charisma, ambition, ability and all the other attributes that it may take to become successful in that field. They all have aspirations, but aspirations don't mean that they have the attributes required only the desire and false belief in themselves. What the shows like this do provide, is the opportunity to positively identify those people who do have the requisite attributes to be a success, which when nurtured,

guided and trained, can become a success. The same can be said of entrepreneurs; they need to be positively identified, nurtured, guided and trained to become successful. This still doesn't guarantee them success, but provides them with the tools necessary to have a chance of making it. The rest is up to them.

2.3 Current Entrepreneur Identification Methods

Empirically, personality characteristics are related to individuals' propensity to become and experience success as an entrepreneur (e.g., Brandstätter, 2011). Given this evidence, it is interesting to examine whether such a personality-based propensity towards entrepreneurship can be identified early in life, i.e., before labour market entry. Only a few studies address this important question (Blanchflower and Oswald, 1998; Schmitt-Rodermund, 2004). Successful entrepreneurs have been characterised as individuals who detect and exploit opportunities; make rapid decisions under uncertainty; are hard-working, goal striving, willing to take risks, and "jacks-of-all-trades" who perform a broad range of job tasks (Brandstätter, 2011; Rauch and Frese, 2007; Lazear, 2005). Previous research has further identified personality characteristics that are associated with the probability of becoming and finding success as an entrepreneur. Such characteristics include a need for achievement and autonomy, innovativeness, a proactive personality, stress tolerance and an internal locus of control (Rauch and Frese, 2007; Brandstätter, 2011; Shane and Nicolaou, 2015) and, in the context of the Big Five, higher Conscientiousness, Openness, and Extraversion and lower Neuroticism. Since the start of the 21st century and with the notable rise of public and intellectual fascination with start-up culture, the entrepreneurial personality literature has enjoyed a resurgence and convergence toward an increasingly consistent set of theoretical frameworks, with meaningful insights toward innovation policy and business education. The bulk of recent literature seeks to answer two main questions: (1) Do certain traits predict an individual's likelihood of becoming an entrepreneur, and (2) Do certain traits predict an entrepreneur's likelihood of achieving "successful" outcomes? These answers are pursued by investigating the prevalence of personality characteristics in entrepreneurs versus other populations, as well as by analysing the correlation of these characteristics with entrepreneurial performance factors such as business survival and growth (e.g., Baron, 2004). While personality theory remains rife with its own set of contentions, researchers have primarily gravitated over the last few decades to the Big-5 factor personality model. Several additional traits have been fused into the Big-5 for entrepreneurial work, including self-efficacy, innovativeness, locus of control, and risk attitudes. Researchers often mix and match these traits to describe a multi-dimensional "entrepreneurial orientation." However, it is my belief that such a small number of traits cannot seek to identify the complex nature as to what it is that makes the multi-faceted person that is an entrepreneur.

There are currently little, or no tangible ways to evaluate a person's propensity to become a successful entrepreneur. Ojeda-Beltrán et al (2023) undertook a study using AI that centred around five profiles of entrepreneurs in Columbia, in order to detect information that might otherwise go unnoticed. It was determined that entrepreneurship education and government interventions are required to help young entrepreneurs overcome the barriers that they face, in order to achieve successful entrepreneurship. Research undertaken to establish if there are any definitive ways to test if someone can be positively identified as an entrepreneur, either finds websites with self-testing using multi-choice questions with a commercial spin on them requesting payment in return for a report, which would have little or no value, or utilises data gathering to harvest a persons' personal information in return for the production of the test results, The companies offering the service would most likely to

be using the data harvested in a marketing perspective, selling the data to businesses for marketing purposes. Most of the websites, rather than looking to establish if a person is entrepreneurial, merely want the entrepreneurial idea to be submitted online for evaluation as to its potential for success. This would seem to be a rather dubious practice in that it provides no protection in terms of IP for the disclosing party, which could result in a genuinely good idea with commercial potential, being taken and exploited by the owners or associates of the owners of the website. (See Appendix J). Youth Entrepreneurship has been identified as a key driver in overcoming the economic crisis spurred by youth unemployment (Nungsari, M., Ngu, K., Chin, J.W. and Flanders, S. 2023), it is therefore of significant importance to promote, identify and provide training and funding of young entrepreneurs. Youth entrepreneurship is an increasingly prominent aspect of entrepreneurship support policies, but there is surprisingly little relevant research-based empirical evidence. This research gap is particularly noticeable when it comes to the personal and contextual factors that steer young people's decision to start a business (Sternberg, Rolf, and David Breitenbach. 2023). There is little available data regarding characteristics of young European entrepreneurs. Concerning age, numerous studies suggest that people starting a business often do so at a later stage in life and after having acquired valuable professional experience. For this reason, older people are more likely to become entrepreneurs, and men are more likely than women (Greene, 2005; OECD, 2012; Storey and Greene, 2010). This result is confirmed by Eurostat data which show that the relative presence of self-employed among young people increases with age. Various studies point out that just 4.2% of youths aged 15–24 are self-employed, while this figure increases to 8.3% among those aged 25–29 and to 11.8% among those aged 30–34. This percentage goes up to 20.4% for those aged 55–64 and must be added to an average of 15.0% for the whole EU working population over 15 years of age.

Youth entrepreneurship clearly offers a lot of potential for young people, however if compared to other regions – for instance North America - people in Europe are less likely to engage in entrepreneurial activities and the levels of entrepreneurship among young people are the lowest. Youths appear to be facing barriers preventing some from turning ideas into business. These challenges arise in the areas of social attitudes, lack of skills, inadequate entrepreneurship education, lack of work experience, lack of capital, lack of networks and market barriers. Many of them are inter-related, which implies the need for a package of policy tools, rather than a single general solution (OECD, 2012). These lead to a number of points in relation to young people as entrepreneurs.

1. Young people are affected by their families, teachers and society as a whole. Important role models, such as parents and teachers, are often not very aware of the requirements and opportunities of entrepreneurship. This lack of awareness results in a lack of encouragement for entrepreneurial activities, or even negative social attitudes that act as an obstacle to youth entrepreneurship.
2. It is generally argued that education and training programmes do not do enough to nurture entrepreneurial attitudes and skills, but rather prepare students for paid employment, despite some recent improvements in this area (Soto et al, 2008).
3. Prior work and entrepreneurship experience is a major determinant of business start-up and entrepreneurship performance. Young people typically lack human, financial and social capital necessary both to set up and successfully run a new business. Relative to older individuals, younger people are less likely to have sectoral, managerial or prior business experience and are more likely to be unemployed. They may, therefore, lack the skills needed to set up or run their business.

4. Entrepreneurs with greater initial financial resources are more likely to succeed. Young people are in a disadvantaged position because not only will they have low personal savings, but they will also find it more difficult than adults to obtain external finance, including debt finance. Banks apply a set of parameters in the assessment of loan proposals, which include credit history, past business performance and collateral, which are all likely to be lower in youth-owned firms.

5. Young people likely have limited business networks and business-related social capital. This may have consequences for setting up and running their businesses and building legitimacy amongst key stakeholders (eg. financiers, customers, suppliers).

6. Market barriers also affect youth entrepreneurship. Financial markets may be biased away from supporting youth businesses. Youth-owned businesses may also face discrimination in product markets, with customers who can be sceptics about the reliability of their products or services. Similarly, due to limited resources, youth-owned firms are more likely to enter industries with low entry barriers where competition is fierce.

Entrepreneurial education is crucial in supporting youths to develop entrepreneurial abilities, attributes and skills as well as to acquire entrepreneurial competences (Schoof, 2006). Thus, entrepreneurial education is not only a way to develop youth entrepreneurship but also to equip young people with skills necessary to deal with the uncertainty of work environment situation of our days. Young people can no longer expect to find the traditional long-time jobs but rather portfolio careers (contract employment, freelancing, periods of self-employment, etc.) (The Dearing Report UK, 1997). Entrepreneurial education is therefore a valuable preparation for the changing job market and economy in which young people have to operate. In the last decade, entrepreneurship education has grown dramatically throughout the world. This growth is reflected in the development of numerous new entrepreneurship curricula, study programmes and initiatives, as well as increasing research activities on enterprise education in general, and on its various effects and best practices in particular (Schoof, 2006). Teaching of entrepreneurial skills is often inappropriately integrated into formal educational curricula or not adequately taught to youths. Most education systems are still hard to adapt to entrepreneurial values as independent thinking, risk-taking and self-confidence. Moreover, academic programmes focus on skills more suitable for working in large organizations or public sector rather SMEs. In most education systems, there is still a lack of practical and experiential learning. Experiential learning is very rarely used as an effective way of gaining knowledge, yet it is one of the most effective way of learning entrepreneurship (Schoof, 2006). In this respect, academic staff should cooperate with real entrepreneurs and should include practical examples from real SMEs, case studies, networking. Academic staff often have only limited experience in entrepreneurship and small business management. They are not adequately trained or educated to teach entrepreneurial skills to young people. Relationships between educational institutions and the business community do not exist or are poorly developed. This hinders educational process in terms of coaching, mentoring and effective idea feedback from real life entrepreneurs. The lack of adequate finance is one of the most prominent barrier for young people seeking to create their own business (Ceptureanu, (2015). According to the Eurobarometer Survey (2004) European Union young people (aged 15-24) agree to the perception that the lack of available financial support is an obstacle to setting up a business. About 78 per cent of the respondents (aged 15-24), compared to 73 per cent of all other age cohorts, agreed to this affirmation. The lack of finance was also considered to be a more severe barrier than administrative procedures/burdens or an unfavourable economic climate. Other studies corroborate these findings (Schoof, 2006).

There is consistent evidence of positive advantages of stimulating youth entrepreneurship (Eurofound, 2020): which is shown as follows:-

- young entrepreneurs are more likely to hire fellow youths (Meager, 2003);
- young entrepreneurs are more responsive to new opportunities and trends;
- young entrepreneurs possess better IT&C related skills;
- young people are more present and interested in high growth sectors;
- young people with entrepreneurial skills are better employees (Meager, 2003).

Based upon the above findings from reviewing the extant literature in this field it has shown that there is a gap in current knowledge as to the identification of young people as entrepreneurs, and the need to ensure that one identified it is imperative that effective training, mentoring, nurturing and access to financial support is provided.

Entry into entrepreneurship is often defined as the act of starting a new business venture. The correlation between personality traits and probability of successful entry into entrepreneurship is typically measured in two ways. First, taking advantage of university settings, many researchers analyse student personalities in correlation with their current entrepreneurial intent, their perceived learning, perceived ability, and personal investment. Second, studies use national longitudinal panel datasets like the PSED or the German Socioeconomic Panel (GSOEP) to track whether measured personality traits in those large-scale surveys predicted later business founding. Most researchers and policymakers are interested in not only what traits predict entry into entrepreneurship, but what traits contribute to successful venture performance measures such as growth, investment, long-term survival, and self-reported success. The literature becomes rather sparse and idiosyncratic over these various metrics, so we cycle quickly across them and provide some sample findings. (In addition, it is worth recalling that some studies would consider the innovativeness discussed above as a personality trait as a possible outcome metric.) The topic of personality/psychological traits of entrepreneurs is of great importance for the study of entrepreneurship in a multitude of contexts, including the examination of the determinants of occupational choice (entrepreneurship vs. paid employment), the predictors of entrepreneurial success, the evaluation of the effects of entrepreneurship policies, and the design and assessment of different approaches to entrepreneurship education. While many theories and empirical analyses have approached the concept, the literature remains arguably underdeveloped due to the conceptual and empirical challenges faced by researchers.

2.4 Key Publications supporting the need for this study.

Table 2-1 provides a review of the literature reviews undertaken on the 8 publications that have a high impact on this study. Although some of the publications were produced several years ago, they are still of relevance today when justifying the need for this study. For each article reviewed, the abstract and conclusions have been shown. Areas of text highlighted in **BOLD** are areas that confirm, support or apply to this study and the show the relevance of this research to the extant literature on the topic.

Table 2-1: Key Publications supporting the need for this study.

Article 1:	
Title	The identification and measurement of innovative characteristics of young people – Development of the youth innovation skills measurement tool
Author(s)	Professor Elizabeth Chell and Rosemary Athayde – Kingston University
Date	2009
Forward	<p>The challenges of the future - globalisation, climate, technological and demographic change – require a different response from our education system. We need to equip future generations not only with strong basic skills and specialist technical knowledge, but with the attitudes and wider skills to generate radical new solutions and adapt to our rapidly changing world.</p> <p>We need to provide future generation with the skills for innovation to a greater degree than ever before: the confidence and insight to generate a novel idea or new approach; the motivation, commitment and resilience to pursue that idea; the leadership, energy and dynamism to communicate their vision to others and drive it forward from concept to reality.</p> <p>For these skills to have currency in education we need to be able to identify and measure them. We are delighted to have supported this pioneering work from Kingston University, which combines theoretical knowledge on measuring skills with practical understanding about how it can be done.</p> <p>In partnership with Kingston University, we intend to take this work forward with the development of an online tool that will be freely available to young people, so that they can assess their capacity for innovation and appreciate how they can develop it further.</p>
Conclusions	<p>The vast majority of young people have the potential to develop the five innovative characteristics, but they need opportunities, encouragement and support to do so. The Tool therefore should be used as a personal development tool, rather than a test, that will enable young people to identify ways in which they can improve their skills. Innovative skills may be applied socially, environmentally and economically: with such breadth, young people should discover where their personal interests lie. This means crucially that they should receive appropriate, relevant and personally meaningful feedback, with high expectations and an absence of labelling. Moreover, the social and heuristic learning behind the Tool assumes that through carefully tailored support, individuals can improve their achievement. The Tool can be used diagnostically to help young people see what skills they might want to strengthen and how to strengthen them. This makes it an enabling device in a wider programme of personal development which could form part of personal, learning and thinking skills (PLTS) activities, careers guidance or other tutorial and advice sessions on subject and education choices. Such self-awareness is in itself a skill valued by employers as it encourages self-reflection and a focus on self-development that can help to improve workplace performance. The Tool assumes standard psychometric properties of reliability and validity that enable different individuals to consider their performance against the average performances of cohorts of young people. Such cohorts may be defined by their age or some other suitable criterion. For example, eighteen year old potential innovators can not only look at their 'spiky profile' on the measure of the five innovative skills, but compare their performance against the average for their age group. Doing this on a personal basis rather than as a part of the formal curriculum enables young people to become more self-aware and take responsibility for the further development of their skill profile. It is a choice open to everyone; it may also be included in extracurricular activities and supported by the personal tutorial system. Alternatively, it may be adopted by a youth organisation, especially one keen</p>

	to promote the development of skills. Such avenues would give young people the opportunity to talk through just how they might go about strengthening one of more of their skills.
Article 2:	
Title	Influence of Entrepreneur Traits on SME's Financial Performance: Case Study of GCC Entrepreneurs who survived during COVID-19
Author(s)	Dr Mohammed Abdul Imran Khan, Dr Sayed Azharuddin, Dr Shahabaz Sarfaraz Khan, Mr Meer Mazhar Ali
Date	2021
Abstract	<p>The study aims to identify the influence of entrepreneur traits on SMEs performance during COVID-19. The Gulf Cooperation Council (GCC) countries had increasingly seen entrepreneurship as a tool for empowering people and the key to job creation. SME's are now the driving force in providing people with new job opportunities and eradicating unemployment. This study is based on the primary data collected from the sample of entrepreneurs in GCC countries through self-managed questionnaires sent through Gmail/google forms. The data is collected from the entrepreneurs of Gulf Cooperation Council countries using a simple random sampling technique. It was difficult to contact and conduct interviewees to collect data from them, especially during this pandemic and COVID-19 lockdown; therefore, the sample is small and limited. The analysis was done using correlation and regression and some valuable conclusions were drawn which can be beneficial to the entrepreneur, HEIs and governments while making policies. The study reveals that the entrepreneur possesses specific traits that influence the process of procuring resources and improving SMEs performance during crisis/pandemic. The SME age, entrepreneur education level and ranked Higher Education Institutions influences the performance of SMEs during the COVID-19.</p> <p>Keywords: Entrepreneurs, Traits, SMEs, Firm performance, COVID-19, GCC.</p>
Conclusions	<p>The model I tested summarizes that the information used in this research is irregular, so it uses theory to link the traits of entrepreneurs with resource procurement and SME performance. The first research question is, what traits of an entrepreneur help to obtain certain types of resources? The answer is that first the well-educated entrepreneurs especially from ranked HEI's are actively planning and acquiring sufficient financial resource during COVID-19, they have very effective marketing expertise, but the traits they possess has nothing to do with their effective leadership which is common with other entrepreneurs. Second, the education of entrepreneurs has a significant influence on the procurement of financial resources but has nothing to do with effective leadership and market assistance. Third, entrepreneurs educated by top universities have a positive influence on the procurement of financial and market resources, but they have nothing to do with effective leadership. The second research question is which types of resources can mediate the correlation between the traits of an entrepreneur and SME performance. As a result, among the GCC member states, entrepreneur educated from HEI's which are ranked influences the performance of SMEs, but in case the entrepreneur education level is low then it may affect the decision making and in return will influence the performance of SME's. These traits of entrepreneurs are contrary to the expectations as they are capable of influencing the performance of SMEs. The governments of the Gulf Cooperation Council countries have promoted relevant policies to assist entrepreneurs, who can eradicate unemployment. As long as certain</p>

conditions are met, the governments of the Gulf Cooperation Council countries will support entrepreneurs and SMEs depending on their business viability. In this case, despite the lack of the ability to create value and good performance, many entrepreneurs have obtained certification; to establish SMEs in the short term and the governments of all the Gulf Cooperation Council countries have directly or indirectly assisted. But a few entrepreneurs have survived who are exceptional and possess different traits that guides and helps them in keeping their SMEs survive during the COVID-19. Although effective leadership does not help the SME's short-term performance, they are of strategic importance in creating value. Therefore, little effective leadership is the key issue, and these challenges challenge the SME ecology of the Gulf Cooperation Council countries. In the future, we will study how SMEs in the form of semi-market research or case studies can cooperate with other organizations to overcome these challenges. This research is based on the conceptual model of (Khan M. A., 2019)[1], in which a resource-based perspective is systematically applied to entrepreneurs to clarify the correlation between entrepreneur traits, resource conditions, and competitive advantage. Considering that for profit companies and SMEs have different focuses, we hope these correlations will be different. This research is based on the conceptual model of (Khan M. A., 2019)[1], in which a resource-based perspective is systematically applied to entrepreneurs to clarify the correlation between entrepreneur traits, resource conditions, and competitive advantage. Considering that for-profit companies and SMEs have different priorities, we hope these correlations will be different. **(Khan, Mohammed Aref, & Farooque, 2020)[19] validates the results of this study which shows that the traits and resource types of entrepreneurs are important for creating value.** Most of the existing management research on the traits of entrepreneurs is under exploration. The role of strategic alliances in international business includes large companies whose main purpose is to improve the bottom line of the economy (Khan M. A., 2014)[15]. Previous studies on entrepreneurs that create value usually focus on non-profit entrepreneurs and their partnerships with individual companies or government entities, or three-sector partnerships through case studies or narratives. Entrepreneurship research in this area has studied entire networks and how they affect entrepreneurs. In this study, the influence of the influence and resource procurement by entrepreneurs of SME was studied. Therefore, this research can better understand the trait framework of entrepreneurs, including many traits of entrepreneurs and various resources operated by SME. Finally, this research attempts to apply the resource-based view model to the new SME. This suggests that in this case, future research should use resource-based view models and other mainstream theories. The findings of this study also have important implications for decision-makers or practitioners. Among the many support from the Gulf Cooperation Council countries, effective leadership helps foster the value of new SMEs. However, despite the contributions of this research, it still has some limitations. First, the sample size is low. To conduct an empirical analysis of this research, we contacted many entrepreneurs from Gulf Cooperation Council countries via email. However, despite our best efforts to obtain sample data, we did not obtain enough data. However, until recently, SME research in the field of effective leadership focused on defining the concept of entrepreneurs and evaluating SME through narratives and case studies. This research has contributed to the growing quantitative empirical research in this field and demonstrated that it is feasible to conduct a large-scale analysis of SME.

	<p>Second, this study did not cover the performance of economic companies. The economic performance is as important as the SME's performance. However, the Gulf Cooperation Council countries have promoted related policies to create job opportunities and an SME merger system. Finally, (Khan & Alam, 2019)[18] confirmed the close relationship between subjective performance and objective performance of an SME. However, since the measurement of perception is controversial, future research needs to develop variables to obtain objective data.</p>
Article 3:	
Title	Developing a new measure of Entrepreneurial Mindset: Reliability, Validity, and Implications for Practitioners
Author(s)	Mark H. Davis, Jennifer A. Hall, Pamela S. Mayer
Date	2015
Abstract	<p>There has long been interest in the personality traits, motivations, attitudes, and behaviours that contribute to entrepreneurial status and success. To date, however, efforts to measure these constructs have typically proceeded in a piecemeal fashion. This article describes the development of a new measure of entrepreneurial mindset—the Entrepreneurial Mindset Profile (EMP)—which seeks to measure them in a more comprehensive way. In a series of 3 studies, we describe the development of the instrument and provide evidence for its psychometric adequacy and construct validity. As expected, entrepreneurs and corporate managers differed significantly from one another on each of the EMP's 14 scales. Relationships between the EMP scales and measures of the Five Factor Model patterned largely as expected, with Openness to Experience displaying the broadest and strongest associations with EMP scales. Finally, the EMP dimension that explicitly assesses the ability to think creatively (Idea Generation) was associated with 2 different performance measures of divergent thinking. Thus, evidence to date supports the view that the EMP is a valid and reliable measure of entrepreneurial mindset. In addition to being a useful tool for research, the EMP can also be a valuable resource for consulting psychologists.</p> <p><i>Keywords:</i> assessment, coaching, entrepreneurial mindset, entrepreneurial personality, entrepreneurship</p>
Conclusions	<p>There are a variety of possible directions for future research involving the EMP; however, there are three which seem especially important. The first is research explicitly comparing the EMP's trait and skill dimensions. At the conceptual level this distinction makes sense. There is considerable evidence for the success of interventions designed to increase creativity (Rose & Lin, 1984; Gist, 1989), optimism (Luthans et al., 2008), persistence (Eisenberger, 1992; Duckworth et al., 2011), self-confidence (Carney et al., 2010), execution (Burke & Day, 1986; Thach, 2002), future focus (Fujita et al., 2006; Liberman & Trope, 2008), and interpersonal skills (Blanchard et al., 2009; Hawkins et al., 2008); thus it seems defensible to consider these dimensions—at least to some degree—to be skills. To date, of course, none of this research has specifically examined the effect of interventions on EMP scale scores, and evidence for such effects will be of considerable value. Other related questions will also be worth exploring. For example, do the skill and trait dimensions differ in their temporal stability? Although skill measures should display some stability, it might be predicted that such stability would be at least somewhat lower than for the trait measures. Another question has to do with the predictive power of the skill and trait domains. In this</p>

	<p>investigation we found, as expected, that trait dimensions predicted entrepreneurial status more strongly than did skills. Research examining entrepreneurial success (capital raised, revenues and profits, number of companies started, number of successful exits, longevity) would be valuable and would allow a similar evaluation of the hypothesis that success is more strongly associated with skills than traits. It will also be useful to identify the individual dimensions that have the most predictive power. In this investigation, we found that Independence, Nonconformity, Risk Acceptance, and Idea Generation were the dimensions most associated with entrepreneurial status. Which dimensions will prove most important in predicting success? One interesting possibility is that Interpersonal Sensitivity might be a potent predictor of entrepreneurial success despite— or perhaps because—it is the one dimension of the EMP on which entrepreneurs fall short of managers. Consistent with this possibility, there is some evidence that measures of emotional intelligence are associated with some measures of entrepreneurial success (Zampetakis, Beldekos, & Moustakis, 2009; Ahmetoglu et al., 2011). A second avenue for future research is to examine entrepreneurial mindset with different types of entrepreneurs. For example, would we see different patterns of scores for high- versus low-growth entrepreneurs? For tech versus non-tech entrepreneurs? For entrepreneurs by choice versus by necessity? Would different EMP dimensions be important for predicting success in these different entrepreneurial environments? In addition, it will be informative to examine the relations between EMP dimensions and indicators of job success for managers. It is widely believed by business executives that all companies can behave in entrepreneurial ways (Deloitte Growth Enterprise Services, 2012). Which aspects of an entrepreneurial mindset will be most useful within corporate settings? It may well prove to be that corporate culture (supportive of entrepreneurial activities or not) will be an important moderator of such associations. Finally, future research should explore the specific mechanisms through which EM dimensions influence entrepreneurial choices and behaviours. Such an effort would be in keeping with the Baum et al. (2001) model linking personality traits to entrepreneurial outcomes via their impact on mediating variables such as goal-setting and self-efficacy. In fact, self-efficacy might be an especially likely conduit through which some of the EMP dimensions may operate. Self-Confidence, Optimism, and Persistence all seem like dimensions that would contribute to higher levels of self-efficacy; importantly, self-efficacy perceptions have been linked to entrepreneurial intentions (McGee, Peterson, Mueller, & Sequeira, 2009) and behaviors such as goal-setting (Gist, 1987). Regardless of the specific mechanism in question, however, there would appear to be much value in efforts to identify exactly how EM comes to have its effects.</p>
Article 4	
Title	Born entrepreneurs? Adolescents’ personality characteristics and entrepreneurship in adulthood
Author(s)	Jutta Viinikainen, Guido Heineck, Petri Böckerman, Mirka Hintsanen, Olli Raitakari, Jaakko Pehkonen
Date	2017
Abstract	Is there an entrepreneurial personality, and does it appear early in life? We provide a new answer to this important question by examining traits related to Type A behaviour (Aggression, Leadership, Responsibility, and Eagerness-Energy) measured during adolescence and their relationship to

	<p>entrepreneurship propensity in adulthood. The results indicate that the early life Leadership dimension is significantly associated with a higher likelihood of 1) becoming an entrepreneur and 2) being more successful as an entrepreneur, as approximated by sales. Entrepreneurs exploit technological breakthroughs (Holmes and Schmitz, 1990), commercialize innovations (Braunerhjelm et al., 2010), drive technological change (Schumpeter, 1934), and therefore promote economic growth. Thus, it is crucial to understand who becomes a successful entrepreneur to develop policy measures that support individuals who pursue entrepreneurial careers. Entrepreneurship requires financial, social and human capital, which constitute the stock of entrepreneurial capital (Blumberg and Pfann, 2015). Because people differ in terms of their stock of entrepreneurial capital, the probability of becoming and achieving success as an entrepreneur varies among individuals. As part of human capital, personality characteristics affect individuals' productivity and therefore their entrepreneurial ability. Personality characteristics may further affect individuals' entrepreneurial intentions and success through motivation (Barrick, Mount and Li, 2013). Empirically, personality characteristics are related to individuals' propensity to become and experience success as an entrepreneur (e.g., Brandstätter, 2011). Given this evidence, it is interesting to examine whether such a personality-based propensity towards entrepreneurship can be identified early in life, i.e., before labour market entry. Only a few studies address this important question (Blanchflower and Oswald, 1998; Schmitt-Rodermund, 2004). We contribute to this literature by examining whether adolescent personality characteristics associated with so-called Type A behaviour are related to the propensity to become and to succeed as an entrepreneur. Type A behaviour is an interesting construct in the context of entrepreneurship because many of the characteristics associated with successful entrepreneurs are very similar to the behaviours that constitute the Type A behavioural pattern. Another contribution is that we exploit longitudinal register data to examine entrepreneurial probability and success over a 20-year period. This approach implicitly addresses concerns that the relationship between personality and entrepreneurial performance may depend on, for example, macroeconomic conditions (Hmieleski and Baron, 2008) or the phase of firm development (Vecchio, 2003).</p>
<p>Conclusions</p>	<p>Using a longitudinal research design (personality characteristics measured during adolescence in 1986 and outcomes measured from 1990 to 2010), we find that adolescents' Leadership is relevant to entrepreneurial propensity and success, as approximated by reported sales, in later life. This is plausible as the Leadership construct aims to capture, for example, an individual's desire to win or to take charge. These qualities are arguably needed to succeed as an entrepreneur. Thus, entrepreneurial characteristics that predict entrepreneurial careers appear early in life. Whether traits related to Type A behaviour are the best for predictive purposes is unclear. High Leadership is associated with entrepreneurial interest and growth, but whether individuals with this trait can also make their businesses profitable in the long term remains an open question.</p>
<p>Article 5</p>	
<p>Title</p>	<p>Challenges and Barriers of European Young Entrepreneurs</p>
<p>Author(s)</p>	<p>Sebastian Ion CEPTUREANU and Eduard Gabriel CEPTUREANU</p>
<p>Date</p>	<p>2015</p>

<p>Abstract</p>	<p>Difficulties faced by young entrepreneurs across European Union – such as youth unemployment - remains important, and there is increased awareness for European Union policy makers about the economic and social consequences associated with them. Considering the high potential of entrepreneurs to create jobs and sustainable development, promoting youth entrepreneurship and making Europe more entrepreneurial has become in the last years a priority on the EU policy agenda. Entrepreneurship is not a miracle solution for solving the youth unemployment crisis, as only a minority of young people have the right skills, ideas and personality traits. However, making Europe more business-friendly and helping young people transform their creative ideas into successful business plans by removing the barriers to entrepreneurship has many potential benefits, including direct and indirect job creation and the development of human capital and new skills. Until recently, there were no congruent policy actions focused on youth entrepreneurship. Most initiatives to support youth creativity and to promote entrepreneurial spirit among young people emerged from education policies. Historically, one of the first actual policy action focused on transferring entrepreneurial knowledge across European Union was the Bologna process. Several years later, in 2003, Green Paper on Entrepreneurship in Europe’ emphasize the importance of entrepreneurship for competitiveness but lacking any recognition of youth entrepreneurship. This document come as a recognition that the level of entrepreneurship in EU is less intense than US (European Commission, 2003).</p> <p>There is little available data regarding characteristics of young European entrepreneurs. Concerning age, numerous studies suggest that people starting a business often do so at a later stage in life and after having acquired valuable professional experience. For this reason, older people are more likely to become entrepreneurs, and men are more likely than women</p>
<p>Conclusions</p>	<p>There is consistent evidence of positive advantages of stimulating youth entrepreneurship (Eurofound, 2015):</p> <ul style="list-style-type: none"> • young entrepreneurs are more likely to hire fellow youths (Meager, 2003); • young entrepreneurs are more responsive to new opportunities and trends; • young entrepreneurs possess better IT&C related skills; • young people are more present and interested in high growth sectors; • young people with entrepreneurial skills are better employees (Meager, 2003). <p>Despite all the efforts and initiatives implemented and promoted by the European authorities since 1999, it is clear that across EU few young people actually start their own businesses and most of them are small in scale, usually with no employees. While the level of youth unemployment is still very high, just 6.5% of young Europeans aged 15–29 years are self-employed and just one-sixth of them hire other people. One point of concern come from an OECD study stating that while young people were more likely to have positive attitudes to entrepreneurship, they were less likely to be self-employed in practice. So, the youths are more entrepreneurial friendly on paper while actually the situation is the other way around. However, the same study found that those who became entrepreneurs have higher life satisfaction than youth in the same age group, and young men were more likely to be self-employed than young women (Blanchflower and Oswald, 1999).</p>

	<p>Another point of concern is that age is one important factor in the decision to transform into entrepreneur. Solid evidence demonstrates that share of young self-employed people increases with age. This is understandable as people’s levels of professional experience increase with age, but the situation throughout Europe is worse than is other region like North America. Another source of concern is the gender bias observed, indicating that just one-third of the self-employed are female. However, as a positive sign of a slowly reversing trend, it is worth mentioning that the share of young self-employed females appears to be higher than in the general population. For policy makers, it must be understood that youth entrepreneurship is not a universal solution in solving youth problems like unemployment, lack of concern for education or lack of social involvement. Only some of the young people have the abilities, knowledge and attitudes to become entrepreneurs. Unfortunately, only a small share of youths have the right skills and attitudes to become entrepreneurs (Curtain, 2000, Chigunta, 2002). However, there is no doubt that allowing young people to better exploit their talents and supporting them in transforming their creative ideas into business plans has a wide number of potential benefits. Least but not last, we should consider the positive impact of youth entrepreneurship on so many levels. First, youth entrepreneurship has a direct impact on job creation as it creates employment opportunities for both self-employed youth and other young people who may be hired by the newly created companies. Moreover, it may also increase innovation and raise competition, two of the drivers of economic growth (Green, 2013). Youth entrepreneurship also promotes resilience among young people, encouraging them to find new, alternative solutions (Chigunta, 2002). This also includes new and innovative models for work organisation and new perspectives on making business. Young entrepreneurs may be particularly responsive to new economic opportunities and trends. This is especially important in a globalised society (OECD, 2001; White and Kenyon, 2000). Furthermore, a young person setting up a new business may have a positive effect by itself, showing by example that with hard work it is possible to be successful. This may be of particular importance in poor communities with marginalised youth, where setting up a new business may be a mechanism for helping disadvantaged people to escape the vicious circle of social exclusion (Green, 2013).</p> <p>Finally, the experience gained in setting up a business and becoming an entrepreneur helps young people to accumulate human capital by developing new skills that can be applied in other challenges in life.</p> <p>Supporting entrepreneurship is considered solution to the problem of youth unemployment. Recent studies have shown that businesses run by entrepreneurs will generate more jobs than large corporations in the next decades. For all these reasons, we consider that supporting youth entrepreneurship must be a European priority. The importance of stimulating the entrepreneurial spirit, values and attitudes of young people and encouraging innovative business start-ups while fostering a more entrepreneur-friendly culture must be translated in actual and effective policy actions in every EU country and on the European level.</p>
Article 6	
Title	A Study of Human Capital Development in Young Entrepreneurs
Author(s)	James Hickie
Date	2012

<p>Abstract</p>	<p>In recent years young entrepreneurs have attracted considerable attention from policy makers and the media, and there is evidence that increasingly many young people aspire to start their own business. However, there has been little research into how young entrepreneurs actually build their businesses, and the limited existing research about young entrepreneurs has tended to focus on participants who have struggled to achieve business survival and growth. By contrast, this thesis investigates how young entrepreneurs are able to build high performing businesses. All participants have built a business with a turnover between £1 million and £90 million or otherwise raised at least £1 million in external investment. It takes a qualitative approach, based primarily on semi-structured interviewing, to understanding the knowledge and skills 21 young entrepreneurs used to build their businesses. It uses a human capital theory framework to analyse how the young entrepreneurs developed relevant knowledge and skills prior to start-up in order to build a business. It then considers what additional human and social capital the young entrepreneurs acquired during the venture creation process itself. The findings identify three different pathways, each of which typifies the human capital used by particular young entrepreneurs, according to their educational background and the precise age at which they started their business. The study also establishes the necessary human capital which all of the young entrepreneurs developed prior to start-up or during the early stages of starting their ventures, which was important to their success in growing a business. The study finally contributes to the debate about whether general human capital or venture specific human capital is most important to entrepreneurs, finding that for young entrepreneurs developing pre-start-up general human capital is particularly significant.</p>
<p>Conclusions</p>	<p>Young entrepreneurship has only received a limited amount of research attention (Lewis and Massey, 2003; Rouse, 2004; Lewis, 2009) despite the recent media and popular interest in the topic. This study has researched a group of young entrepreneurs who have received very little academic focus previously: young high performing business founders. In particular it has investigated the human capital they have used to start and build their businesses. This study has investigated how the young entrepreneurs used their pre-start-up human capital as they approached the following areas of their first main venture: opportunity identification; working with co-founders; marketing; finance; people management; business planning; and, building social capital. The key findings in each of these areas are, summarised below. Seventeen out of 21 of the young entrepreneurs identified the business opportunity for their first main venture through pursuing their personal interests (most commonly a hobby in computing). Pursuing personal interests provided a form of alternative venture-specific human capital, giving participants a knowledge of their hobby sector from a consumer’s perspective since they did not have work experience in the sector. Only four out of 21 participants identified their business opportunity from previous work experience. Pathway 1 participants were most likely to identify their opportunity by chance while pursuing their personal interests and gradually realise they might be able to set up a business using the idea. By contrast, Pathway 2 and 3 participants (being generally older and more aware that they wanted to set up their own business) were much more likely to be actively looking out for a business opportunity that they could create.</p>
<p>Article 7</p>	

Title	PERSONALITY TRAITS OF ENTREPRENEURS: A REVIEW OF RECENT LITERATURE
Author(s)	Sari Pekkala Kerr, William R. Kerr, Tina Xu
Date	2017
Abstract	<p>We review the extensive literature since 2000 on the personality traits of entrepreneurs. We first consider baseline personality traits like the Big-5 model, self-efficacy and innovativeness, locus of control, and the need for achievement. We then consider risk attitudes and goals and aspirations of entrepreneurs. Within each area, we separate studies by the type of entrepreneurial behaviour considered: entry into entrepreneurship, performance outcomes, and exit from entrepreneurship. This literature shows common results and many points of disagreement, reflective of the heterogeneous nature of entrepreneurship. We label studies by the type of entrepreneurial population studied (e.g., Main Street vs. those backed by venture capital) to identify interesting and irreducible parts of this heterogeneity, while also identifying places where we anticipate future large-scale research and the growing depth of the field are likely to clarify matters. There are many areas, like how firm performance connects to entrepreneurial personality, that are woefully understudied and ripe for major advances if the appropriate cross- disciplinary ingredients are assembled.</p> <p>Many studies consider the “traits of entrepreneurs” or the “traits that make entrepreneurs successful.” As Åstebro et al. (2014) highlight, the publication in 1921 of Frank Knight’s book <i>Risk, Uncertainty and Profit</i> marked a key launching point into rigorous and careful research on the personalities of entrepreneurs that set them apart from general business managers. In the decades that followed, research has continued to investigate specific individual traits that prompt people to become entrepreneurs, as well as personal motivations and preferences that keep entrepreneurs on their chosen path. These studies have often focused on high-growth settings or firms financed by venture capital (VC), where entrepreneurs face a high probability of their business failing, a very small probability of extremely positive outcomes, and a possibly low average return to the monetary and time investments made into their businesses. Standard economic theory must be augmented to explain such a pursuit, and many scholars have tried to understand the “homo entrepreneurus” (a moniker introduced by Uusitalo, 2001). Yet, the term “entrepreneur” is also applied in academic research to many groups beyond the founders of Silicon Valley startups. The studies that we document in this review range in terms of their definitions of entrepreneurship to also include creators of “Main Street” small businesses or even young college students attending an entrepreneurship class. While these groups are all connected to entrepreneurial activity, recent work shows the remarkable degree to which these subpopulations behave differently (e.g., Hurst and Pugsley, 2011, Levine and Rubenstein, 2017), and the typical personality traits of individuals will vary greatly by form of entrepreneurial activity. In our review, we attempt to pay close attention to the group under the microscope of each study and note where subpopulations are generating different results.</p>
Conclusions	The topic of personality/psychological traits of entrepreneurs is of great importance for the study of entrepreneurship in a multitude of contexts, including the examination of the determinants of occupational choice (entrepreneurship vs. paid employment), the predictors of entrepreneurial success, the evaluation of the effects of entrepreneurship policies, and the

design and assessment of different approaches to entrepreneurship education. While many theories and empirical analyses have approached the concept, the literature remains arguably underdeveloped due to the conceptual and empirical challenges faced by researchers. Our review and assessment of recent work is built with an eye to catching up on the recent literature and the outline of future opportunities for applied researchers. Entrepreneurs are a very heterogeneous bunch, and so it is not surprising that studies of their personalities are mixed. This review highlights places where empirical findings are consistent, while also embracing the heterogeneity where it is evident. Some of this variance appears due to small sample sizes and selected subgroups, and so bigger studies and meta-analyses will likely yield a clearer picture in the long-term. The multi-disciplinary nature of the entrepreneurial characteristics and personality literature also means that the terminology is not well standardized, and the research dialogue does not easily lend itself to learning from past research and making incremental progress as a field. The sheer number of journals publishing research related to entrepreneurial characteristics, as well as the large differences across them in terms of academic field and quality, also complicates the ability to have a linear, chronologically progressive research dialogue. This challenge too is likely to diminish with time, as the greater depth and specialization of the emerging field begins to provide returns to scale.

Other heterogeneity will be irreducible as it pertains to the type of venture created, and we have no reason to think the geeky personality of a 20-something tech founder will be tightly aligned with that of a 50-something immigrant founder that is opening a Main Street convenience store with her family members. We should, however, start to build the necessary language and taxonomy to better label these studies and their subpopulations, using the heterogeneity to our advantage. Accurate portraits of this heterogeneity will, in the long-term, prove truly valuable to understanding entrepreneurship: the differences between our two hypothetical founders above and their businesses can be every bit as informative as the comparison of them to people engaged in wage work. Our opinion is that future work in this regard is likely to be more productive than a one-size-fits-all portrait of the entrepreneur. We believe a productive path forward exists utilizing universal administrative datasets that characterize new firm creation and identify the founders of ventures. These data allow researchers to model directly the heterogeneous types of firms created, ranging from self-employed nannies to VC-backed start-ups, and to measure performance and venture success in objective ways. Moreover, the data provide insight into the careers that founders have before starting their companies, ranging from past business success/failure to the peers who they work with, and they describe the founding team that comes together. Powerful tools are also capturing digital signals about the growth intentions of founders when they set out (e.g., Guzman and Stern, 2017). These data are already being matched with additional personal-level information ranging from stock portfolios to personality assessments. It has been 30 years since the critique of Gartner (1988), and perhaps the next 30 years will also be unkind to progress on personality traits for entrepreneurship. Yet, the economics literature holds such a deep focus on the creation of ventures—the “doing” in Gartner’s critique—that it may miss fruitful opportunities to learn from personality studies and contribute to them. Administrative data already afford much potential in terms of empirical assessment, and more data are continually coming online. Studies can combine these high-quality employer-employee

	<p>filings with insight on personality traits that are measured before entrepreneurial spells commence, which would be an important first step for observing which traits are exogenous predictors versus endogenous outcomes. In more specialized settings, it may even be possible to build time-varying measures of personality traits by looking before and after interventions like enrolment in an entrepreneurial training program. It is hard to envision a setting where one will obtain widespread and exogenous variation in personality, but substantial progress can be made with pre-determined traits only. This survey has repeatedly surfaced gaps between the theory of personality traits and how we can measure them, with our empirical tools frequently falling short of being able to disentangle complex and overlapping psychological traits to assign causal roles. Significant opportunities and challenges for research on entrepreneurial traits lie in developing theoretical approaches and constructs that can be empirically measured in a way that allows for the determination of causality between psychological traits and entrepreneurial outcomes. The literature is often unclear as to whether individuals with a given set of personality traits selected into entrepreneurship, or whether individuals developed the traits endogenously after becoming entrepreneurs. The increasing availability of detailed longitudinal information on demographic characteristics of entrepreneurs, including their human and financial capital endowments, as well as on entrepreneurial environments (regions and ecosystems) provides an opportunity to reduce both heterogeneity and endogeneity in studies of entrepreneurial traits. This requires the development of theoretical constructs and measurement procedures that align with detailed longitudinal coverage of people, but this task seems promising.</p>
Article 8	
Title	Fostering Youth Entrepreneurship: Preliminary Findings From the Young Entrepreneurs Study
Author(s)	G. John Geldhof, Tenelle Porter, Michelle B. Weiner, Heather Malin Kendall C. Bronk, Jennifer P. Agans and Megan Mueller, William Damon Richard M. Lerner
Date	2013
Abstract	<p>Entrepreneurship offers a viable and proven pathway to economic growth and personal fulfilment. However, the number of individuals engaged in entrepreneurial behaviours remains low. This discrepancy between entrepreneurial attitudes and action underscores the need for programs that foster the development of entrepreneurship in today's youth. We argue that a relational developmental systems approach can help researchers understand and facilitate the development of entrepreneurship. In this study, we triangulate across quantitative and qualitative data from the Young Entrepreneurs Study, showing that self-regulation skills, financial risk tolerance, innovation orientation, and the presence of entrepreneurial adults may be especially important for promoting entrepreneurial intent in older adolescents and young adults. We discuss limitations of the present data set and future directions for research.</p>
Conclusions	<p>Entrepreneurship is vital for economic growth (Clifton, 2011), and enhancing the development of a cadre of young entrepreneurs can be a key contributor to such progress. Yet, despite the creative use of extant longitudinal data sets to predict later-life entrepreneurial activities from early-life personal and social relational characteristics (e.g., Schmitt-Rodermund, 2004, 2007; Schroder & Schmitt-Rodermund, 2007), there have</p>

	<p>been no longitudinal studies explicitly designed to understand the development of (i.e., intraindividual change in) entrepreneurship among late adolescents or young adults (Damon & Lerner, 2008). That is, previous research has instead conducted predictive analyses or relied on the retrospective analysis of data collected for other purposes (e.g., Schmitt-Rodermund, 2007; Schoon & Duckworth, 2012). There has been little elucidation of how, within the relational developmental system (Overton, 2013), attributes of individuals and contexts combine to shape the trajectories of entrepreneurs. This article presents preliminary results from the first wave of the YES Project, which will eventually allow for such longitudinal analyses. Our article used mixed-methods triangulation of the intraindividual and contextual factors that may foster the development of youth entrepreneurship, providing key information about future, longitudinal analyses. More specifically, we used information from our qualitative interviews to provide idiographic descriptions of our nomothetic quantitative results. Although we generally found agreement among our quantitative results and qualitative examples, the level of agreement differed across predictors. We found the most consistent agreement for the importance of self-regulation as a predictor of entrepreneurial intent and found the least consistent agreement for the role of financial risk tolerance. Given the small subsample of interview data, we did not find sufficient material to differentiate between innovation orientation and the components of self-regulation that also deal with innovation (e.g., novel goal selection). Concerning intentional self-regulation, our initial quantitative results indicated that all aspects of self-regulation significantly and positively correlated with our measure of entrepreneurial intent, supporting the importance of self-regulation for entrepreneurship discussed by Damon (2008). These results also generally held in our multilevel regression analyses, with the selection of novel goals and the optimization of goals using novel means positively predicting entrepreneurial intent. The optimization of goals through persistence negatively predicted entrepreneur intent after controlling for all other predictors. Future research is needed to determine whether this finding represents a sample-specific phenomenon or whether a suppression effect exists in the population. For example, it is possible that persistence may interfere with entrepreneurial inclinations after controlling for goal optimization through novel means by stifling innovation.</p>

2.5 Artificial Intelligence (AI) and the potential to identify Young Entrepreneurs

Artificial intelligence (AI), particularly, *machine learning* (ML) has grown rapidly in recent years in the context of data analysis and computing that typically allows the applications to function in an intelligent manner. ML usually provides systems with the ability to learn and enhance from experience automatically without being specifically programmed and is generally referred to as the most popular latest technologies in the fourth industrial revolution (4IR or Industry 4.0). It can therefore be concluded that based upon the developments of AI, the use of conversational AI in the identification of potential entrepreneurs could be a useful enhancement to aid in a successful identification process. As we are dealing with young people who are used to social media, interaction via chat type apps with their peers, then the use of 'Chatbots' and associated media would serve to extract the relevant information from them, putting them at ease with the process in what would be a familiar

environment to them. As AI improves and advancements are made, the survey process could become almost like an interview with a fellow human, with the AI being able to assess and determine what the next question should be, based upon the previous answers, and try to create a seamless identification process. This paper is part of ongoing research programme, and the future findings will be reported as soon as the data is available and fully analysed. It is expected that the outcomes of this studies will be combined with the VR tools to develop educational tools for potential young entrepreneurs. Since the original writing of this study, a new AI system which has the functionality mentioned above has been released called ChatGPT. It is an artificial intelligence chatbot developed by OpenAI and launched in November 2022. It is built on top of OpenAI's GPT-3 family of large language models and has been fine-tuned using both supervised and reinforcement learning techniques. quickly garnered attention for its detailed responses and articulate answers across many domains of knowledge. Check Point Research and others noted that ChatGPT was capable of writing phishing emails and malware, especially when combined with OpenAI Codex. OpenAI CEO Sam Altman wrote that advancing software could pose "(for example) a huge cybersecurity risk" and also continued to predict "we could get to real AGI (artificial general intelligence) in the next decade, so we have to take the risk of that extremely seriously".

As can be seen from the latest tech update, this mirrors what was proposed in this study, which has shown itself to towards the 'Possible' and filling the current gap in knowledge.

AI can be used in the identification of Young Entrepreneurs in various ways including:

1. Data analysis: AI-powered tools can analyse data from various sources to identify young people with entrepreneurial potential. For example, social media activity, academic performance, and extracurricular activities can provide insights into a young person's interests and capabilities.
2. Natural language processing: AI can analyse written and spoken language to identify specific traits associated with successful entrepreneurs, such as risk-taking, creativity, and leadership.
3. Cognitive ability testing: AI can be used to assess cognitive abilities such as problem-solving, critical thinking, and decision-making, which are important for successful entrepreneurship.
4. Digital profiling: AI-powered tools can analyse a person's online behaviour, such as search history and social media activity, to identify patterns that may suggest an entrepreneurial mindset.
5. Predictive analytics: AI can use past data to make predictions about future performance, which can be used to identify young people with high potential for entrepreneurship.

There are several forms of AI that can aid in the identification of young entrepreneurs, including:

- Natural language processing (NLP): NLP can be used to analyse written and spoken language to identify specific traits associated with successful entrepreneurs, such as risk-taking, creativity, and leadership. NLP can also be used to analyse social media activity and identify patterns that suggest an entrepreneurial mindset.
- Machine learning: Machine learning algorithms can analyse vast amounts of data to identify patterns that indicate a young person's potential for entrepreneurship. For example, machine learning can analyse academic performance data, extracurricular activities, and other indicators to identify individuals with entrepreneurial potential.

- Cognitive ability testing: AI can be used to assess cognitive abilities such as problem-solving, critical thinking, and decision-making, which are important for successful entrepreneurship. Cognitive ability tests can be administered through online platforms or mobile apps, making it easy to identify young people with high potential.
- Predictive analytics: AI can use past data to make predictions about future performance, which can be used to identify young people with high potential for entrepreneurship. Predictive analytics can be applied to academic performance data, social media activity, and other indicators.
- Digital profiling: AI-powered tools can analyse a person's online behaviour, such as search history and social media activity, to identify patterns that may suggest an entrepreneurial mindset. Digital profiling can help identify young people with a particular interest in business or entrepreneurship.

2.6 Conversational AI

Conversational Artificial Intelligence refers to technologies, like chatbots or virtual agents, which users can talk to and communicate with in a way that simulates a real person in a conversation. They use large volumes of data, machine learning, and natural language processing to help imitate human interactions, recognizing speech and text inputs and translating their meanings across various languages. Conversational AI combines natural language processing (NLP) with machine learning. These NLP processes flow into a constant feedback loop with machine learning processes to continuously improve the AI algorithms. Conversational AI has principal components that allow it to process, understand, and generate response in a natural way. Machine Learning (ML) is a sub-field of artificial intelligence, made up of a set of algorithms, features, and data sets that continuously improve themselves with experience. As the input grows, the AI platform machine gets better at recognizing patterns and uses it to make predictions. Natural language processing is the current method of analysing language with the help of machine learning used in conversational AI. Before machine learning, the evolution of language processing methodologies went from linguistics to computational linguistics to statistical natural language processing. In the future, deep learning will advance the natural language processing capabilities of conversational AI even further. NLP consists of four steps: Input generation, input analysis, output generation, and reinforcement learning. Unstructured data transformed into a format that can be read by a computer, which is then analysed to generate an appropriate response. Underlying ML algorithms improve response quality over time as it learns. These four NLP steps can be broken down further below: (Mitchel, 2019)

2.7 Chatbot use for the identification of Young Entrepreneurs

By selecting the right questions as part of the selection process, coupled with a comprehensive range of effective answers, the use of chatbots to engage with the potential entrepreneurs to help extract information and responses from them that may otherwise not have been readily accessible by use of simple Yes/No or Likert Scale responses. Chatbots coupled with a level of AI that would enable them to interact with respondents has the potential not only to engage with them in a stimulated way, but also ask pertinent questions, the answers to which can be immediately analysed and further utilised to ask more questions and create new ones relevant to the responses given. This sort of technology is the way forward for interactive extraction of information in an evaluation of a candidates' suitability for selection as a potential entrepreneur and should be further explored in studies following this one.

2.8 Summary

Looking at the paragraphs in **BOLD** in the table above it is quite clear that the research in this Thesis is crucial. The paragraphs have been extracted and grouped together at Appendix K.

The key facts that can be determined are that little research has been carried out in respect of positively identifying young entrepreneurs, and the limited amount of research that has been undertaken has focussed around looking at the successes and failures of young entrepreneurs rather than identification. Considerable work has been carried out in respect of adult entrepreneurs, however most of the studies focussed around a small number of traits (5 or 6) when undertaking identification of the entrepreneurs. Also there appears to be a lack of clarity in defining what an entrepreneur is, and the distinctions between business owners and entrepreneurs can be quite blurred, when there quite clearly are distinctions between the two. The three research questions identified below have not been answered in previous studies and form a fundamental understanding as to what makes an entrepreneur, entrepreneurial.

1: Do a common set of traits and characteristics exist amongst entrepreneurs?

2: Do young entrepreneurs exhibit the same traits and characteristics that older entrepreneurs do?

3: Can the traits if they exist be positively identified with the use of an online framework?

The above highlights that there is a genuine gap in the current knowledge surrounding Young Entrepreneurs and their Identification and therefore confirms the importance of this research being undertaken.

AI can be used to augment the traditional methods of identifying young entrepreneurs and help identify hidden potential in individuals who may not have been identified using conventional means. This study confirms the potential benefits from the use of AI in the identification of Young Entrepreneurs, and the need to use it as a tool for effective identification, something that hasn't previously been discussed in other studies in this field.

The next stage of this research is to create a system platform in order to identify Young Entrepreneurs, which is the subject of chapter 3.

CHAPTER 3: PROPOSED SYSTEM PLATFORM TO IDENTIFY YOUNG ENTREPRENEURS WITH THE FOCUS ON RESEARCH ETHICS & METHODOLOGY

3.1 Introduction

The extant literature, or lack of extant literature relating to the positive identification of young entrepreneurs as previously stated shows that there is a real need to fill the gap. Young people are the lifeblood to an economy. They are the next generation of a workforce, and we cannot afford to lose that generation through lack of job opportunities, experience and knowledge. It is therefore imperative that this doesn't happen. Steps must be taken towards reversing the downward spiral of unemployment, lack of skilled employment and entrepreneurial opportunities. This study is therefore a vital contribution towards stemming this downward spiral and offers a valuable contribution to knowledge. Identification of young entrepreneurs has already been acknowledged as a fundamental requisite towards creating a new generation of entrepreneurial companies. These companies could develop organically, however, if we can accelerate that growth, the systemic downward flow can be reversed at a faster rate and create positive growth in new emerging industries and markets. The basis for the identification, is having an understanding of what it is that we are looking for in a person that makes them entrepreneurial. It is a process that can only be achieved by looking at real-life case studies, people who have proven themselves to be entrepreneurial, people who continue their journey towards success, despite setbacks and failure, phoenix's who grow from the ashes of despair to become high achievers. It was therefore decided to see if it could identify in those people, what it is that makes them entrepreneurial and if they all have a common 'E-Factor' of traits and characteristics. After all, we are the sum of our traits, characteristics and life experiences that make us who we are. This study should also be viewed as a business opportunity, which with government or other funding could create a significant tool as an aid to identification and development of young entrepreneurs. It has the potential to make a significant difference to the economy and peoples lives and should be viewed not only as the significant contribution to knowledge that it offers, but a significant and viable business opportunity for the provision of entrepreneurial training.

3.2 Proposed Identification Platform for Young Entrepreneurs architecture and mind mapping

The proposed Identification platform for young entrepreneurs is web based via a website designed specifically for this study known as *www.youngentrepreneurs.education* and also an app called *Young Entrepreneurs Education*. The website will have an Entrepreneur Evaluation Test section which will give aspiring entrepreneurs the opportunity to see if they have the necessary traits and characteristics that show them as having the potential to become successful entrepreneurs. More details on the website can be found at chapter 3.16. The proposed Identification Platform for Young Entrepreneurs and Framework Architecture is shown at Appendix H. This includes the evaluation test which consists of the traits and trait analysis questions including ChatGPT generated ones that are used to extract whether a young person has the propensity to become a successful entrepreneur. Once successfully identified, the intention is that should a person wish to continue along the path to becoming a successful Young Entrepreneur, they will be selected for an Interview, either via a video call or in-person, after which they will be given the opportunity to sign up for the Young Entrepreneur Training Academy, where they will be given a structured training programme that includes but not limited to:-

1. The Entrepreneurial Journey from inception to success.
2. Business Training Course
3. Dealing with failure and success

4. Innovation a Winning Formula
5. Funding Streams
6. Future Aspirations

A flowchart of the component elements of the Structured training programme is shown in figure 3-1.

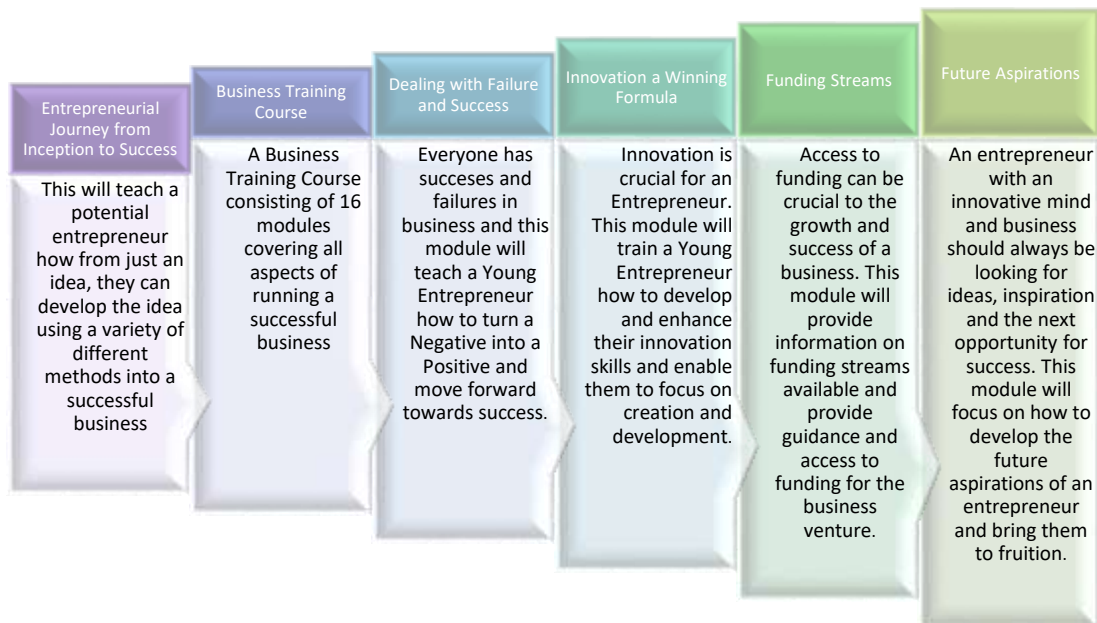


Figure 3-1: Structured Training Programme

Focus specific Mind maps are shown with figure 3-6 on page 80, which gives the Mind Map of Identified Entrepreneurial Traits, and Appendices A and B giving an Early-Stage Identification mind map and an Entrepreneurial Framework from Identification to Success flow chart.

3.3 Data processing and decision making

Data processing and decision making are two closely related concepts that are essential for effective problem-solving and decision-making in today's data-driven world. Data processing refers to the process of collecting, organising, analysing, and interpreting data to extract insights and information that can be used to support decision making. This involves transforming raw data into meaningful information that can be used to identify patterns, trends, and relationships. Decision making, on the other hand, refers to the process of making a choice or selecting a course of action from among several options. This involves evaluating the available information and assessing the potential risks and benefits of each option to determine the best course of action. Effective decision making requires access to accurate, timely, and relevant information. Data processing plays a crucial role in this by providing decision-makers with the necessary information to evaluate the potential outcomes of different options and make informed decisions. With the increasing availability of data and the advancements in data processing technologies such as artificial intelligence and machine learning, decision making is becoming more data-driven. This involves using data to identify patterns, trends, and insights that can be used to inform decisions and improve outcomes. In summary, data processing and decision making are interdependent processes that play a critical role in problem-solving and decision-making in today's data-driven world. Effective data processing can provide decision-makers with the necessary information to make informed decisions, while data-driven decision making can improve outcomes by leveraging the insights and information extracted from data. The added value from the use of technology in data-driven decision making is becoming increasingly clear. It is my

contention that such tools can be enabling devices for good practice. They have the potential to support data mining that is not possible without technology. But as with many innovations, there is always the “depends” clause when it comes to answering the question about “does technology work” or “what is the impact of the technology”. I posit that there are complex interactions at play here, recognising that we function in a multivariate world. Just as there are data by information by needs by value interactions, there also are person by data by tool by context interactions. One of the biggest reasons why we need to use analytics to make better decisions is due to the risk being posed by the sheer amount of data being gathered. There is so much unstructured data being delivered that it’s easy to make the wrong decisions unless it’s properly analysed. With that said, having the right data analytics strategy in place will predict risk and help make better decisions moving forward. It’s also possible to interact with the information so that it can be used to create an actionable plan. It is proposed that the data processing and decision element of the identification of young entrepreneurs be implemented with the use of AI and data processing tools. One method to adopt in response to the answers given is the use of Segmentation, which uses information about respondents to split them into separate categories based on demographics, behaviour, and attitudes. Then specific questions relating to the traits and trait analysis are targeted to these segments. Algorithms coupled with AI, Deep Learning and Edge Technology are beyond the scope of this study and would be the subject of future research for the automated identification tool.

3.4 Expert system feedback and identification alignment

Expert system feedback and identification alignment refers to the process of ensuring that an expert system is providing accurate feedback and aligning with the goals of the organisation or user. Expert systems are computer-based systems that use artificial intelligence (AI) to emulate the decision-making ability of a human expert in a specific field. They are designed to provide accurate advice and recommendations to users, based on the data and rules that have been programmed into the system. However, to ensure that an expert system is providing accurate feedback, it is essential to continually monitor and evaluate its performance. This can be done by collecting feedback from users, analysing the system's output, and comparing it with the expected outcomes. If the system is not performing as expected, adjustments can be made to the rules, data, or algorithms to improve its accuracy. In summary, expert system feedback and identification alignment are critical processes for ensuring that an expert system is accurate, reliable, and aligned with the goals of the organisation or user, making the data useful, meaningful, and of high quality. Scope and accuracy are important factors here. The data must have the depth and breadth to be useful, all the while being vetted as accurate. It is therefore vital to have concise and targeted summaries of information that then can be transformed into usable knowledge, the final stage along the continuum. To turn information into knowledge, the system must synthesise the available information. The final step is to prioritise the knowledge. Setting priorities often requires imparting a value judgment on the accumulated information and knowledge. It necessitates a determination of the relative importance of the information and possible actionable solutions. The traditional approach to information analyses relies on independent task-specific services and applications, using different input and output formats, often idiosyncratic, and frequently not designed to inter-operate. In general, such analyses were performed by experts who manually verified the results obtained at each step in the process. Today, the amount of information continuously being produced means that handling the various applications used to study this information presents a major data management and analysis challenge to researchers. It is now impossible to manually analyse all this information and new approaches are needed that are capable of processing the large-scale heterogeneous data in order to extract the pertinent

information. Human expert knowledge is a combination of a theoretical understanding in a given domain and a collection of heuristic problem-solving rules that experience has shown to be effective. Computer-based expert systems (also known as knowledge-based systems) can be constructed by obtaining this knowledge from a human expert and transforming it into a form that a computer may use to solve similar problems. The 'expert' programme does not know what it knows through the raw volume of facts in the computer's memory, but by virtue of a reasoning-like process of applying a set of rules to the knowledge. It chooses among alternatives, not through brute-force calculation, but by using some of the same rules-of-thumb that human experts use. Thus, an expert system can be described as a computer programme that simulates the judgement and behaviour of experts in a particular field and uses their knowledge to provide problem analysis to users of the software. (Aniba MR et al, 2009). There are several forms of expert systems that have been classified according to the methodology used including:

- *rule-based systems* use a set of rules to analyse information about a specific class of problems and recommend one or more possible solutions;
- *case-based reasoning systems* adapt solutions that were used to solve previous problems and use them to solve new problems;
- *neural networks* implement software simulations of massively parallel processes involving the processing of elements that are interconnected in a network architecture; and
- *fuzzy expert systems* use the method of fuzzy logic, which deals with uncertainty and is used in areas where the results are not always binary (true or false), but involve grey areas and the term 'may be'.

In this context, we can define an expert system as a framework that manages information dynamically by the integration of dedicated analysis tools. The tools to be used in any particular situation are chosen by special modules that reason about the best algorithms to use according to the information type and features. The reasoning part may be created using current Artificial Intelligence concepts and subsequently incorporated in the expert system which may also include workflows as an elementary module. For this study a combination of Rule-based, Case-based and Fuzzy expert systems would be used to analyse the questions asked of the respondents and provide alignment.

3.5 Inclusion of AI to support future self-development of Young Entrepreneurs

The use of AI is an emerging tool that can facilitate accelerated development of Young Entrepreneurs. Heutagogy as outlined in Chapter 5.8 is an important element in the self-development entrepreneurs both young and old and is critical for business preparation and knowledge. The introduction of AI such as ChatGPT can only serve to increase the level of knowledge and self-awareness of potential entrepreneurs on their path to success.

Including AI in self-development programs for young entrepreneurs can provide several benefits, such as:

1. **Personalised learning:** AI can analyse the learning habits and progress of individual learners and provide personalised recommendations for their development. This can enable young entrepreneurs to focus on their specific areas of weakness, and accelerate their progress towards their goals.
2. **Data-driven insights:** AI can process large volumes of data and provide insights and trends that can help young entrepreneurs make informed decisions. This can enable them to identify new opportunities, predict market trends, and make strategic business decisions.

3. Continuous learning: AI can provide learning opportunities beyond the traditional classroom setting, through mobile apps, social media, and other online platforms. This can enable young entrepreneurs to access relevant and up-to-date information at their convenience, and continuously improve their skills and knowledge.
4. Collaboration: AI can facilitate collaboration among young entrepreneurs, by providing platforms for networking, idea sharing, and teamwork. This can enable them to learn from each other, build new partnerships, and develop innovative solutions.

Overall, including AI in self-development programs for young entrepreneurs can enhance their skills, knowledge, and entrepreneurial mindset, and equip them with the tools they need to succeed in a rapidly changing business landscape. To demonstrate the capabilities of AI such as ChatGPT as a way that AI can support future self-development, I asked it the question ‘How do I start as an Entrepreneur?’ which is the type of question a young entrepreneur may ask. The reply that can back from ChatGPT AI is shown below. (Source: *Openai.com URL chat.openai.com Accessed 15 March 2023*)

Starting as an entrepreneur can be an exciting and rewarding journey, but it can also be challenging. Here are some steps you can take to get started:

1. Identify a problem or need: Successful businesses are built on solving a problem or meeting a need. Identify a problem or need in your community, industry, or personal life that you are passionate about solving.
2. Conduct market research: Once you have identified a problem or need, conduct market research to determine if there is a demand for your solution. Talk to potential customers, analyze competitors, and assess market trends to determine if your idea is viable.
3. Develop a business plan: A business plan is a roadmap that outlines your business idea, target market, marketing strategies, financial projections, and more. A well-written business plan will help you attract investors, secure funding, and guide your decision-making.
4. Choose a business structure: Determine what legal structure your business will take. Will you operate as a sole proprietor, partnership, LLC, or corporation? Each has its own advantages and disadvantages, so do your research and choose the best option for your business.
5. Secure funding: Starting a business requires capital. You can fund your business with personal savings, loans, or investments from family and friends. Alternatively, you can pitch your business idea to angel investors, venture capitalists, or crowdfunding platforms.
6. Build your team: Identify the key roles and responsibilities needed for your business to succeed. Hire employees or contractors, and build a team that is passionate about your mission and vision.
7. Launch your business: With your plan in place, funding secured, and team assembled, it's time to launch your business. Implement your marketing strategies, refine your product or service, and adjust your plan as needed to achieve success.

Remember that starting a business is a journey, and success often comes with persistence and hard work. Keep learning, adapt to changes in the market, and stay true to your vision.

As can be seen from the above response, it gave a succinct set of steps to get the young entrepreneur started. I then asked it a relevant question in response to the steps outlined which was

What if I can't secure funding?

The AI remembered my previous question and the steps that it gave as a response and came back with an intelligent answer to my question as follows.

If you can't secure funding, don't worry. There are still many ways to start a business without outside investment. Here are some options to consider:

1. **Bootstrap your business:** Bootstrapping means starting and running your business with your own resources, such as personal savings, credit cards, or loans from family and friends. This approach can be challenging, but it allows you to maintain control over your business and avoid giving up equity.
2. **Start small:** Instead of trying to launch a full-scale business right away, start small and test your idea with a minimal viable product (MVP). This approach allows you to validate your idea and generate revenue without investing a lot of money.
3. **Look for grants:** There are many organizations that offer grants to help entrepreneurs start and grow their businesses. These grants typically have specific eligibility criteria, so do your research and apply for those that align with your business.
4. **Consider crowdfunding:** Crowdfunding platforms allow you to raise money from a large group of people who believe in your idea. You can offer rewards or equity in your business in exchange for their support.
5. **Seek out a business incubator or accelerator:** Business incubators and accelerators provide resources, mentorship, and networking opportunities to help startups grow. They may also offer funding or connections to investors.

Remember, funding is just one piece of the puzzle when it comes to starting a successful business. With hard work, determination, and creativity, you can find ways to overcome financial obstacles and build a successful business.

To test whether it was able to continue the intelligent conversation I then asked

Where would I go to start Crowdfunding? Below is the response.

There are several crowdfunding platforms available where you can start a crowdfunding campaign for your business. Here are some popular options:

1. **Kickstarter:** Kickstarter is one of the most well-known crowdfunding platforms, and it allows creators to raise funds for creative projects, including art, design, technology, and more. Kickstarter operates on an all-or-nothing funding model, meaning you must meet your funding goal to receive any money.
2. **Indiegogo:** Indiegogo is another popular crowdfunding platform that allows creators to raise funds for a variety of projects, including tech, film, music, and more. Indiegogo offers flexible funding options, meaning you can keep the funds you raise even if you don't meet your funding goal.
3. **GoFundMe:** GoFundMe is a crowdfunding platform primarily used for personal causes, such as medical expenses, education, and emergencies. However, it can also be used to raise funds for small businesses.
4. **Crowdfunder:** Crowdfunder is a crowdfunding platform that caters specifically to businesses and startups. It allows entrepreneurs to raise funds through equity crowdfunding, debt crowdfunding, and revenue-sharing models.
5. **Patreon:** Patreon is a crowdfunding platform that allows creators to receive ongoing support from their fans or supporters. It's particularly useful for artists, writers, musicians, and other creatives.

When choosing a crowdfunding platform, consider the type of project you're launching, the fees associated with the platform, and the platform's policies and requirements. Be sure to read the terms and conditions carefully and create a compelling campaign that will resonate with potential supporters.

The above few steps that I took actually offered valuable advice to a young entrepreneur in an interactive informative way, ending each section with additional advice and suggestions above what would normally be given as a pure answer in a google search or other information search.

Identifying entrepreneurs can be challenging, as there is no single definitive set of characteristics that all entrepreneurs share. However, there are some key indicators that can help in identifying individuals with an entrepreneurial mindset and potential:

- **Innovation and creativity:** Entrepreneurs are often creative problem-solvers who are able to identify new opportunities and solutions where others see challenges. Look for individuals who are constantly exploring new ideas and are not afraid to take risks.
- **Passion and drive:** Entrepreneurs are typically highly motivated and driven by a sense of purpose and passion for their work. Look for individuals who are deeply committed to their goals and are willing to work hard to achieve them.
- **Business acumen:** Entrepreneurs need to have a strong understanding of business fundamentals, including marketing, finance, and operations. Look for individuals who have a good grasp of these concepts and are able to apply them in a practical way.
- **Resilience and adaptability:** Entrepreneurship can be a challenging and unpredictable journey, so successful entrepreneurs need to be resilient and adaptable in the face of setbacks and failures. Look for individuals who are able to bounce back from adversity and learn from their mistakes.
- **Networking and collaboration:** Entrepreneurs often rely on their networks and partnerships to succeed, so look for individuals who are able to build strong relationships and work collaboratively with others.

Overall, identifying entrepreneurs requires a holistic approach that takes into account a range of personal and professional characteristics and experiences. By looking for these key indicators, you can start to identify individuals who may have the potential to become successful young entrepreneurs.

3.6 Research Ethics principles

Ethics in research are extremely important and taken seriously by all academic institutions. When most people think of ethics (or morals), they think of rules for distinguishing between right and wrong, such as the Golden Rule ("Do unto others as you would have them do unto you"), a code of professional conduct like the Hippocratic Oath ("First of all, do no harm"), a religious creed like the Ten Commandments ("Thou Shalt not kill..."), or a wise aphorisms like the sayings of Confucius. This is the most common way of defining "ethics": norms for conduct that distinguish between acceptable and unacceptable behaviour. Most people learn ethical norms at home, at school, in church, or in other social settings. Although most people acquire their sense of right and wrong during childhood, moral development occurs throughout life and human beings pass through different stages of growth as they mature. Ethical norms are so ubiquitous that one might be tempted to regard them as simple common sense. On the other hand, if morality were nothing more than common sense, then why are there so many ethical disputes and issues in our society? One plausible explanation of these disagreements is that all people recognize some common ethical norms but interpret, apply, and balance them in different ways in light of their own values and life experiences. For example, two people could agree that murder is wrong but disagree about the morality of abortion because they have different understandings of what it means to be a human being. Most societies also have legal rules that govern behaviour, but ethical norms tend to be broader and more informal than laws. Although most societies use laws to enforce widely accepted moral standards and ethical and legal rules use similar concepts, ethics and law are not the same. An action may be legal but unethical or

illegal but ethical. We can also use ethical concepts and principles to criticise, evaluate, propose, or interpret laws. Indeed, in the last century, many social reformers have urged citizens to disobey laws they regarded as immoral or unjust laws. Peaceful civil disobedience is an ethical way of protesting laws or expressing political viewpoints. Another way of defining 'ethics' focuses on the disciplines that study standards of conduct, such as philosophy, theology, law, psychology, or sociology. For example, a "medical ethicist" is someone who studies ethical standards in medicine. One may also define ethics as a method, procedure, or perspective for deciding how to act and for analysing complex problems and issues. For instance, in considering a complex issue like global warming, one may take an economic, ecological, political, or ethical perspective on the problem. While an economist might examine the cost and benefits of various policies related to global warming, an environmental ethicist could examine the ethical values and principles at stake. Many different disciplines, institutions, and professions have standards for behaviour that suit their particular aims and goals. These standards also help members of the discipline to coordinate their actions or activities and to establish the public's trust of the discipline. For instance, ethical standards govern conduct in medicine, law, engineering, and business. Ethical norms also serve the aims or goals of research and apply to people who conduct scientific research or other scholarly or creative activities. There is even a specialized discipline, research ethics, which studies these norms. There are several reasons why it is important to adhere to ethical norms in research. First, norms promote the aims of research, such as knowledge, truth, and avoidance of error. For example, prohibitions against fabricating, falsifying, or misrepresenting research data promote the truth and minimise error. Second, since research often involves a great deal of cooperation and coordination among many different people in different disciplines and institutions, ethical standards promote the values that are essential to collaborative work, such as trust, accountability, mutual respect, and fairness. For example, many ethical norms in research, such as guidelines for authorship, copyright and patenting policies, data sharing policies, and confidentiality rules in peer review, are designed to protect intellectual property interests while encouraging collaboration. Most researchers want to receive credit for their contributions and do not want to have their ideas stolen or disclosed prematurely. Third, many of the ethical norms help to ensure that researchers can be held accountable to the public. For instance, federal policies on research misconduct, conflicts of interest, the human subjects protections, and animal care and use are necessary in order to make sure that researchers who are funded by public money can be held accountable to the public. Fourth, ethical norms in research also help to build public support for research. People are more likely to fund a research project if they can trust the quality and integrity of research. Finally, many of the norms of research promote a variety of other important moral and social values, such as social responsibility, human rights, animal welfare, compliance with the law, and public health and safety. Ethical lapses in research can significantly harm human and animal subjects, students, and the public. For example, a researcher who fabricates data in a clinical trial may harm or even kill patients, and a researcher who fails to abide by regulations and guidelines relating to radiation or biological safety may jeopardize his health and safety or the health and safety of staff and students. (Resnik DB. et al, 2020)

3.7 Why do research ethics matter?

Research ethics matter for scientific integrity, human rights and dignity, and collaboration between science and society. These principles make sure that participation in studies is voluntary, informed, and safe for research subjects. The researcher balances pursuing important research aims with using ethical research methods and procedures. It's always necessary to prevent permanent or excessive harm to participants, whether inadvertent or not. Defying research ethics will also lower the credibility of the research because it's hard for others to trust the data if the research methods are morally questionable. Even if a research idea is valuable to society, it doesn't justify violating the human rights and dignity of the study participants.

3.8 Introduction to the Research Methodology

Findings from the literature reviews indicate that research into youth entrepreneurship is at an early stage and that research into identifying those young people with the potential to become entrepreneurs does not appear to have been undertaken leaving scope for extensive exploratory research into this area. The research undertaken in this study utilises qualitative, quantitative and empirical approach to provide analysis of the identification of entrepreneurial traits in young people.

Hickie, 2011 states Positivist and Interpretivist research can complement each other (Neergaard and Ulhoi,2007). Neergaard and Ulhoi suggest that a valuable approach is to, “embrace the scope and richness of qualitative research while at the same time acknowledging the qualities of the more established, traditional or well-accepted approaches, both qualitative and quantitative. Various forms of quantitative approaches are indeed useful when there is a need to provide generalisable representative description as well as statistical analyses” (2007: 5). This study draws on concepts and empirical frameworks in both adult entrepreneurship research as well as that undertaken in the field of youth entrepreneurship. This is however an exploratory study about early-stage identification of young entrepreneurs for the first time undertaken as research in this group.

3.9 The difference between Research Methodology and Research Methods

Methodology refers to the overarching strategy and rationale of your research project. It involves studying the methods used in your field and the theories or principles behind them, in order to develop an approach that matches your objectives.

Methods are the specific tools and procedures you use to collect and analyse data (for example, experiments, surveys, and statistical tests).

In shorter scientific papers, where the aim is to report the findings of a specific study, you might simply describe what you did in a methods section. In a longer or more complex research project, such as a thesis or dissertation, this will probably include a methodology section, where you explain your approach to answering the research questions and cite relevant sources to support your choice of methods.

3.10 Research Programme Questions

Early identification of young entrepreneurs with the potential to become successful adult entrepreneurs seems a particularly interesting area of research given the potential benefit it has to the individual young person and the wider society as a whole. This has led to the following research questions.

Research Question 1: Do a common set of traits and characteristics exist amongst entrepreneurs?

Research Question 2: Do young entrepreneurs exhibit the same traits and characteristics that older entrepreneurs do?

Research Question 3: Can the traits if they exist be positively identified with the use of an online framework?

Question 1, investigates and expands upon the current known traits that exist in entrepreneurs to provide a greater understanding as to what makes a person entrepreneurial. Question 2, investigates whether or not young entrepreneurs exhibit the same traits as older entrepreneurs and proposes the question for further research, 'if young entrepreneurs don't exhibit the same traits as older ones, do they develop these further into their adult life'? Finally Question 3, asks for an assessment of whether entrepreneurial traits in young people can be positively identified with the use of an online framework.

3.11 Research Philosophy

As Jennings et al (2005: 145) describe, "Either explicitly or implicitly, researchers base their work on a series of philosophical assumptions regarding ontology, epistemology, and human nature, which have methodological consequences". 'Quantitative methods can be appropriate to investigate correlative relationships when there are a number of variables involved. However, qualitative research can be more appropriate to study the nature of phenomena in detail (Senyard J. Baker T. and Davidsson p., 2009).

The aim of this research is to understand what traits and characteristics entrepreneurs exhibit and whether or not these traits exist in young people and if they can be positively identified by the use of an online framework. The study adopts the use of online surveys and semi-structured interviews, which can lead the qualitative researcher into "novel and unexpected areas" raised by the interviewees (Bergland, 2001: 83). Utilising semi-structured interviews allows the interviewer the opportunity to extract information pertinent to the research that otherwise may not have become apparent with the use of online surveys, which call for specific responses to the questions asked, without any scope for latitude and alternative explanation. Whilst the survey method provides specific uniformity in terms of the responses given to the questions it doesn't open up the potential opportunity for alternate responses and divergence into other pertinent areas, giving an understanding from the participants own viewpoints, wherein the semi-structured interviews do allow for this.

3.12 Potential research methods

Potential research methods that could be used are shown in table 3-1 below, with the reasons for and against using them in this study.

Table 3-1: Potential Research Methods for collecting data

Research method	Primary or secondary?	Qualitative or quantitative?	When to use
Experiment	Primary	Quantitative	To test cause-and-effect relationships.
Survey	Primary	Quantitative	To understand general characteristics of a population.
Interview/focus group	Primary	Qualitative	To gain more in-depth understanding of a topic.
Observation	Primary	Either	To understand how something occurs in its natural setting.
Literature review	Secondary	Either	To situate your research in an existing body of work, or to evaluate trends within a research topic.

Research method	Primary or secondary?	Qualitative or quantitative?	When to use
Case study	Either	Either	To gain an in-depth understanding of a specific group or context, or when you don't have the resources for a large study.

3.12.1 Qualitative vs. Quantitative

The Pros and Cons of both methodologies are shown in table 5 below.

This study primarily uses qualitative data collection, however areas where required use quantitative data collection.

A comparison of both methods is shown below.

Table 3-2: Qualitative v Quantitative Pros and Cons

	PROS	CONS
Qualitative	<ul style="list-style-type: none"> • Flexible – you can often adjust your methods as you go to develop new knowledge. • Can be conducted with small samples. 	<ul style="list-style-type: none"> • Can't be analysed statistically or generalized to broader populations. • Difficult to standardise research.
Quantitative	<ul style="list-style-type: none"> • Can be used to systematically describe large collections of things. • Generates reproducible knowledge. 	<ul style="list-style-type: none"> • Requires statistical training to analyse data. • Requires larger samples.

3.12.2 Primary vs. Secondary data

Primary data is any original information that you collect for the purposes of answering your research question (e.g. through surveys, observations and experiments). Secondary data is information that has already been collected by other researchers (eg. in a government census or previous scientific studies).

This study uses both primary and secondary data. Primary data is used in the survey questions and some of the interviews with entrepreneurs, and Secondary data is used for additional interviews with entrepreneurs previously undertaken.

A comparison of both methods is shown below.

Table 3-3: Primary vs. Secondary data Pros and Cons

	PROS	CONS
Primary	<ul style="list-style-type: none"> • Can be collected to answer your specific research question. • You have control over the sampling and measurement methods. 	<ul style="list-style-type: none"> • More expensive and time-consuming to collect. • Requires training in data collection methods.
Secondary	<ul style="list-style-type: none"> • Easier and faster to access. • You can collect data that spans longer timescales and broader geographical locations. 	<ul style="list-style-type: none"> • No control over how data was generated. • Requires extra processing to make sure it works for your analysis.

3.12.3 Cross-sectional study

A cross-sectional study is a type of research design in which you collect data from many different individuals at a single point in time. In cross-sectional research, you observe variables without influencing them.

Researchers in economics, psychology, medicine, epidemiology, and the other social sciences all make use of cross-sectional studies in their work. For example, epidemiologists who are interested in the current prevalence of a disease in a certain subset of the population might use a cross-sectional design to gather and analyse the relevant data. This type of study is ideally suited to this research due to the potential long timescales for observation.

Like any research design, cross-sectional studies have various benefits and drawbacks.

Advantages

- Because you only collect data at a single point in time, cross-sectional studies are relatively cheap and less time-consuming than other types of research.
- Cross-sectional studies allow you to collect data from a large pool of subjects and compare differences between groups.
- Cross-sectional studies capture a specific moment in time. National censuses, for instance, provide a snapshot of conditions in that country at that time.

Disadvantages

- It is difficult to establish cause-and-effect relationships using cross-sectional studies, since they only represent a one-time measurement of both the alleged cause and effect.
- Since cross-sectional studies only study a single moment in time, they cannot be used to analyse behaviour over a period of time or establish long-term trends.
- The timing of the cross-sectional snapshot may be unrepresentative of behaviour of the group as a whole. For instance, imagine you are looking at the impact of psychotherapy on an illness like depression. If the depressed individuals in your sample began therapy shortly before the data collection, then it might appear that therapy causes depression even if it is effective in the long term.

3.13 Research Design

Bryman (2008) makes an important distinction between the research design chosen and the research method adopted. According to Bryman (2008: 31), “A research design provides a framework for the collection and analysis of data”, involving the selection between an experimental design, a cross-sectional design, a longitudinal design, a case study design or a comparative design. Bryman describes how this is different to the research method, which “is simply a technique for collecting data. It can involve a specific instrument, such as a self-completion questionnaire or a structured interview schedule, or participant observation whereby the researcher listens to and watches others” (Hickie, 2011). This study adopts and utilises a cross-sectional research design, collecting qualitative data at one point in time about each case. For studying early-stage identification of young people who are innovative entrepreneurs or exhibit the characteristics necessary to become successful entrepreneurs this cross-sectional research design is necessary as the traits required to become entrepreneurial is hypothesised to exist from childhood and develop throughout the formative years, through education at school, family influences and environmental factors, leading to some traits being developed to a greater extent than others. Due to the fact that entrepreneurial traits develop from childhood to adulthood and beyond, it would be impossible to directly observe a particular case during the development of their entrepreneurial traits and characteristics longitudinally as the timeframe required to collect the empirical data would be impractically long, therefore this study will adopt a cross-sectional research design as previously mentioned.

3.13.1 Research methods used in this study

A selection of research methods were used to undertake this research.

- Quantitative
- Qualitative
- Empirical
- Semi-structured interviews

A cross-sectional study design was utilised as a method of research which allowed for the collection of data from a group of people at a specific point in time. The methods of collection used included surveys, interviews and observations, with purposive sampling that selected entrepreneurs as a specific focus of study. This study method allowed me to make generalisations about entrepreneurs as it used a representative sample of the entrepreneur community, the results of which were then generalised to the wider population of entrepreneurs, making inferences that are relevant to the entrepreneur community as a whole.

3.13.2 Methods used for analysis of the results

The analysis used to validate and interpret the results was

- Statistical Analysis
- Thematic Analysis
- Content Analysis

Details of the above analysis types can be found in chapter 3.19.1 – 3.19.4

A flowchart of the research methodology to determine and identify the traits exhibited by entrepreneurs is shown in figure 3-2. The flowchart shows the sample size for each survey, what they were used for, and the appendices providing more detail on each survey.

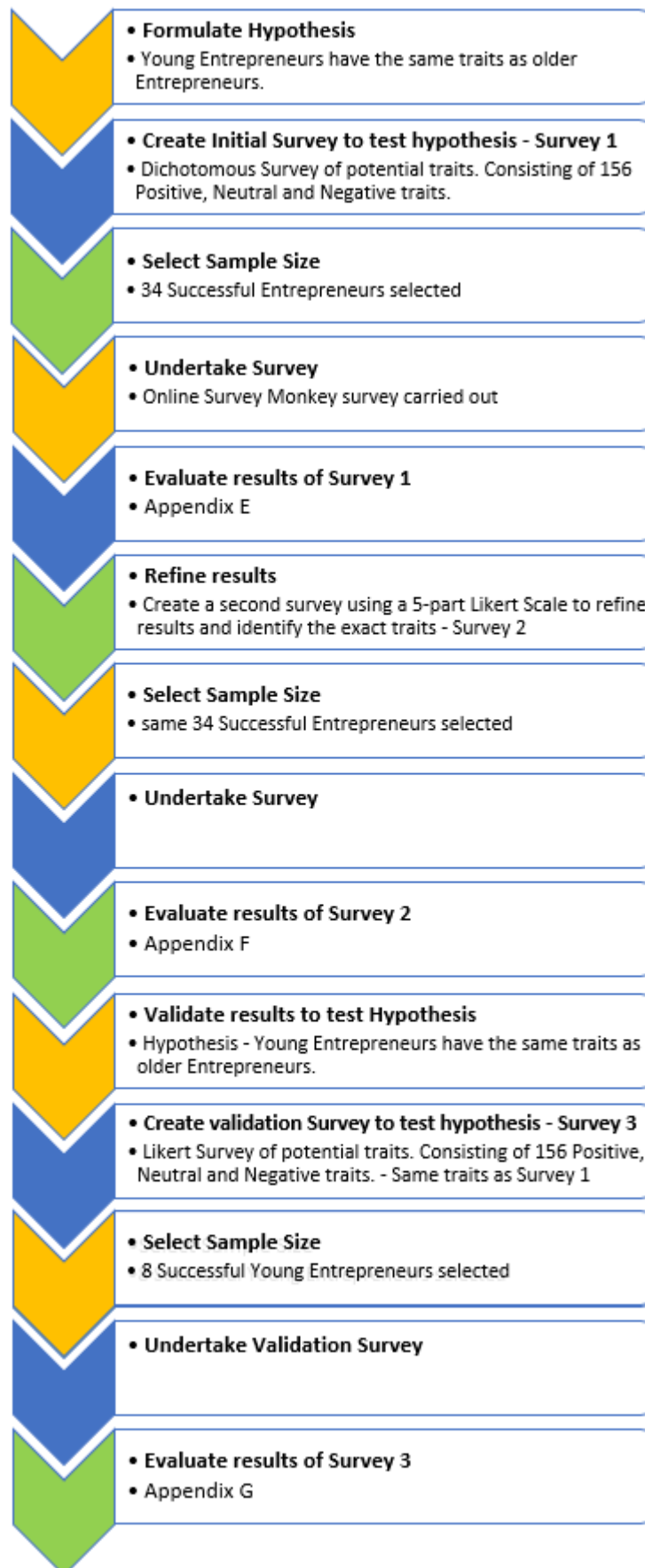


Figure 3-2: Flowchart of the research methodology used to determine the traits of young and older entrepreneurs

3.14 Identifying Sample Criteria

In this section the parameters of the sample are the traits exhibited initially from a list of 156 positive, neutral and negative traits that if 80% or more of the respondents self-identified that they exhibit, would be classified as positively identifiable traits. From this initial sample the traits positively identified as being exhibited by entrepreneurs would further be refined by asking the question as to how strong a trait the person believed that it was for them. Again the 80% level was utilised such that only those traits which 80% of the respondents stated were 'a strong trait for me' or 'one of my strongest traits' would be selected as a positively identifiable trait that is exhibited by an entrepreneur. The refined list of traits would then be tested against the traits of known young entrepreneurs to see if there was a correlation and confirmation that the adult traits also exist in young entrepreneurs. This would provide validation of the trait analysis in relation to young people and proof that the model works.

3.15 Finding the Participants

There is no feasible way of identifying all adult entrepreneurs and all young entrepreneurs from which a random sample can be drawn, and the experience of researchers of young entrepreneurs has been that it is not easy to identify participants. This makes the sample groups difficult to identify and select and for this reason it was decided that purposive sampling was the most appropriate way to choose a sample for both the adult entrepreneurial group and the young persons entrepreneurial group, as it allows the researcher to identify an appropriate sample to address their research questions. (Hickie, 2011) For this reason it was decided that purposive sampling would be adopted for this study. Finding and the recruitment of participants for the study proved extremely time consuming and initially not particularly fruitful. A website was set up as shown in 3.5.1 and research questionnaires created and uploaded to the website. The difficulty was in driving people to the website and engaging with them to contribute and give up their time to assist with the surveys, which were approximately 10 minutes in duration to complete. After several fruitless months it was decided to adopt a different approach and a more proactive approach was taken. Several Chambers of Commerce were contacted as they generally have comprehensive databases of business owners many of whom are entrepreneurial. The Chambers of Commerce agreed to promote a survey to their members and stated that they utilise an online survey platform called 'Survey Monkey' to undertake their member surveys that they run themselves. A subscription was taken out to 'Survey Monkey' and the initial survey created for the website was created using the Survey Monkey online templates and online wizards to assist with their creation. This proved to be a more useful method of creating and running the surveys than the laborious work undertaken on the website as it had a more professional feel to it, with the survey being presented in a professional format easily recognised and used by participants, with the added feature of providing the statistical, graphical representations of the results. It also provided additional features such as one-time participation, meaning that the same person couldn't complete several surveys giving differing results, possibly having changed their minds upon completion of the surveys and seeing the results. The surveys were anonymous with consent to participate given by the respondents prior to commencing the surveys. Assistance provided by the Chambers of Commerce proved valuable in engaging with adult entrepreneurs, and a sample of thirty-four entrepreneurs was used from which the traits were able to be identified. Interviews with entrepreneurs were fewer, mainly in part due to the geographic locations of the entrepreneurs making it difficult to carry out face-to-face interviews. In some cases, interviews were carried out online with the use of video conferencing software. This proved to be quite effective, although only a small number of the original survey participants were prepared to participate.

3.16 Introduction to 'youngentrepreneurs.education' website

Collection and collation of data can be difficult therefore it was decided that this would be done with the aid of a website. A domain name was purchased which is '*www.youngentrepreneurs.education*' and the website was created.

The homepage of the website is shown at figure 3-3

The website consists of a number of pages listed as follows.

Homepage: Providing an introduction to the website and giving an explanation as to what 'Young Entrepreneurs' is all about. It also links to a TED Talk Video giving an insightful view on raising children as entrepreneurs.

Research Surveys Page: This links to surveys initially undertaken

Registration page: Used to register for the site in order to take part in surveys and access other areas.

Login Page: For existing registered users to log in to the site.

News Page: Providing news articles about youth entrepreneurship.

Contact Us page: This allows users to contact us with any queries or questions they may have.

Links Footer: This gives links to key pages, instant access to the news section and a series of interesting video links for relevant videos on youth entrepreneurship.

The website is used for two purposes. The initial use is for information gathering and generating interest in the research. The second use is a web portal to be used for the online framework, used to positively identify those young people with the potential to become successful entrepreneurs. Phase one use of the website is now completed and it is awaiting updating to the online framework tool.

There are currently a number of online websites that offer to check if a person is entrepreneurial, however these appear to have no grounding in traits or other tangible identifiers of a persons' entrepreneurial potential. An example of one of the websites is shown at Appendix J. Many of these sites are simply used as a money-making venture as they often ask for payment to receive the results.

Welcome to Young Entrepreneurs

Are you an entrepreneur? If so, we would greatly appreciate your assistance in completing the surveys that will help us to identify young entrepreneurs of the future.

TAKE THE SURVEY

Welcome to Young Entrepreneurs

Statements like 'Entrepreneurs are made not born' have been given and are in part true, but not wholly accurate. Maths geniuses aren't made, nor are top scientists otherwise anyone could be taken and made into a top mathematician or scientist. The same can be said for entrepreneurs, successful ones that is. Whilst it's true that the knowledge required to be acquired by the individuals is imparted from those who have gone before them, the requisite level of intelligence and ability to assimilate information and formulate new ideas and concepts is believed to some degree innate and genetically inherited.

It is therefore important to identify this innate genetic ability at an early stage and begin the nurturing process towards becoming successful entrepreneurs. A genetically gifted athlete who isn't given the opportunity to train and be coached in the right techniques to make them the best that they can be, would probably never realise the potential that exists within them, a) because it hasn't been identified and b) because they haven't been coached how to make the most of their abilities. Top athletes don't just appear on the world stage without training, they spend many hours, weeks and months refining their skills and even then may not make it to the top level. The same is true of entrepreneurs, they don't become an immediate success overnight, they learn their trade, hone their skills and surround themselves with the right people and resources.

Young Entrepreneurs aims to firstly identify young people who have the innate ability to become entrepreneurs and then nurture them to become successful ones.

We are currently developing the framework that will enable us to positively identify young entrepreneurs and need the help of existing successful entrepreneurs to do so.

We are creating a series of surveys that will examine traits and characteristics of entrepreneurs to see how they relate to each other to ascertain if there is a common set of traits and characteristics attributable to all entrepreneurs that make them who they are. Your assistance with the surveys is greatly appreciated and could help to identify future generations of entrepreneurs.

We welcome any feedback and suggestions you may have and request that you use the contact us page to send it through.

Contents removed due to copyright restrictions

Key Pages

Home
Register
Contact Us

© Copyright - Young Entrepreneurs
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Young Entrepreneur News

 [Youth Unemployment & Entrepreneurism](#)
23rd February 2018 - 2:58 pm

 [Child Entrepreneurs](#)
23rd February 2018 - 2:53 pm

Interesting Links

[Cameron Herold - Raise Kids to be Entrepreneurs](#)
[Ken Robson - Schools Kill Creativity](#)
[Julie Lythcott - Successful Kids Without Over Parenting](#)
[Adora Svitak - What Adults Can Learn From Kids](#)
[Sai Kahn - Teach For Mastery, Not Test Scores](#)
[Salman Kahn - Let's Use Video to Reinvent Education](#)

Figure 3-3: Young Entrepreneurs website homepage

3.17 Interviewing

Interviews were conducted both in person and online using Skype. The results of the interview are to be correlated and analysed as part of the next phase of this study.

3.18 Documentary Materials

The surveys were carried out online using Survey Monkey and the results printed in graphical form.

Two surveys were undertaken, the first being based upon the full set of 156 traits used to determine which of the positive, neutral and negative traits were self-identified by the entrepreneurs. It consisted of 186 questions which were completed and then statistically analysed.

The second survey was based upon the outcome results from survey one and consisted of 45 traits in the form of a Likert Scale and were to be self-identified as either:-

- a) I do not have this trait
- b) A weak trait for me
- c) An average trait for me
- d) A strong trait for me
- e) One of my strongest traits

The survey consisted of 51 questions which were completed and then statistically analysed.

3.18.1 Character Traits Survey 2 - Results and Conclusions

The result from Survey 2 are shown at Appendix F with a definition of each of the traits shown in the Nomenclature before the index on page 5. The graphical representations for each question have been compiled into a tabular form, showing the number of respondents answering each question, followed by the percentage relating to that number. This is followed by the conclusion as to whether the number passes the 80% rule and is therefore deemed to be an entrepreneur trait.

The questions are shown starting at Q5 as this is the start of the trait questions. Q1 – Q4 are questions relating to gender, education, County and business ownership.

Other socio-economic factors are examined and conclusions made separately for those.

Figure 3-4 is a screenshot from the online Survey Monkey survey 2, which was utilised to determine which of the identified traits entrepreneurs exhibit the most.

9. Aspiring				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆
10. Assertive				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆
11. Balanced				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆
12. Challenging				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆
13. Communication Skills				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆
14. Competitive				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆
15. Confident				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆
16. Continual Improvement				
I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆

3

Figure 3-4: Survey Monkey Survey Likert Scale

Figure 3-5 is the graphical representation of the results from the Likert Survey for question 9 above, with a conclusion after each question as to the strength of the trait.

It shows that a total of 33 people responded to this survey question and gives the numbers of respondents selecting each of the five responses. The conclusion is given below it as to whether it is deemed and entrepreneurial trait or not, based upon an 80% rule whereby it is classed as an entrepreneurial trait if over 80% of respondents state that they have it as a 'Strong', or 'One of my strongest Traits'.

Due to the number of pages with the graphical representations for each question in both Surveys One and Two exceeding 200 pages, they were compiled into tabular form and presented in the report in the appendices E and F.

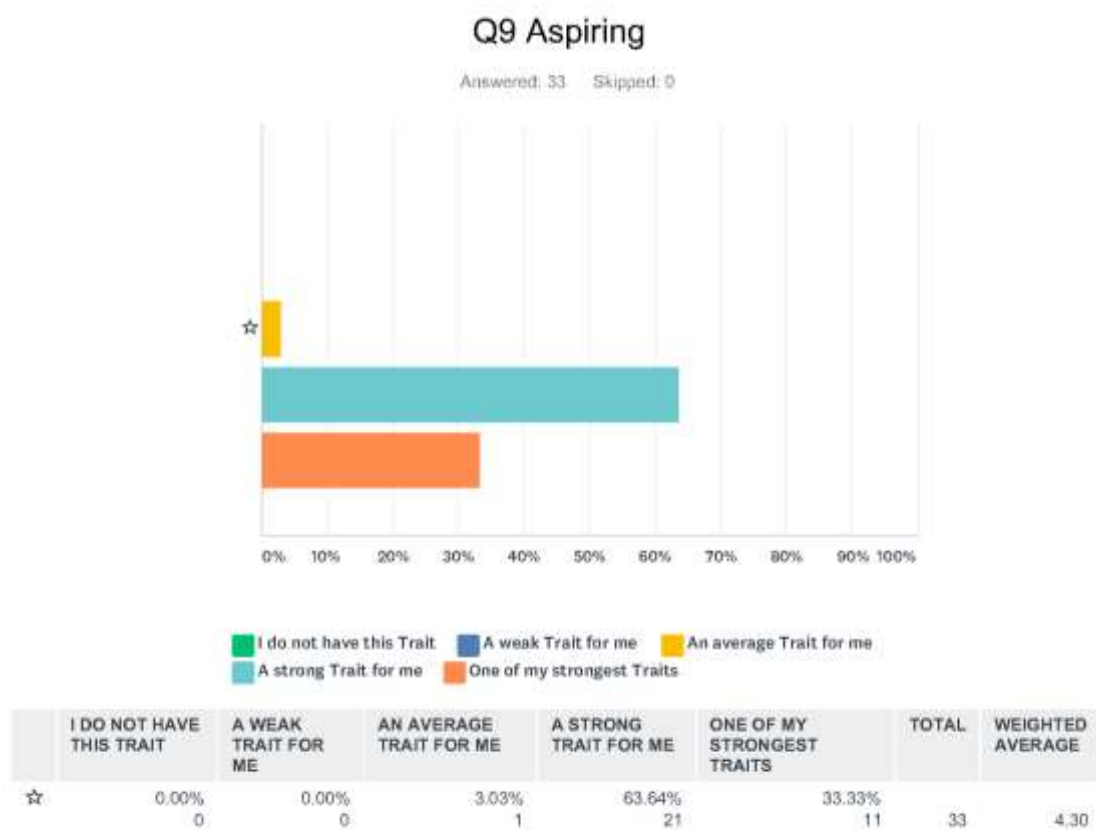


Figure 3-5: Trait Survey Graphical Results

Conclusions:

It can be concluded from the results of this survey question that the percentage of respondents answering it as a 'Strong Trait for Me' or 'One of my Strongest Traits' amounts to over 80% and is therefore deemed to be an Entrepreneurial Trait.

3.19 Research methods used for analysing data

Different methods for analysing data are shown in the table below.

Table 3-4: Research methods for data analysis

Research method	Qualitative or quantitative?	When to use
Statistical analysis	Quantitative	To analyse data collected in a statistically valid manner (eg. from experiments, surveys, and observations).
Meta-analysis	Quantitative	To statistically analyse the results of a large collection of studies. Can only be applied to studies that collected data in a statistically valid manner.
Thematic analysis	Qualitative	To analyse data collected from interviews, focus groups or textual sources. To understand general themes in the data and how they are communicated.
Content analysis	Either	To analyse large volumes of textual or visual data collected from surveys, literature reviews, or other sources. Can be quantitative (ie. frequencies of words) or qualitative (i.e. meanings of words).

3.19.1 Statistical analysis

Statistical tests are used in hypothesis testing. They can be used to:

- determine whether a predictor variable has a statistically significant relationship with an outcome variable.
- estimate the difference between two or more groups.

Statistical tests assume a null hypothesis of no relationship or no difference between groups. Then they determine whether the observed data fall outside of the range of values predicted by the null hypothesis. After developing your initial research hypothesis (the prediction that you want to investigate), it is important to restate it as a null (H_0) and alternate (H_a) hypothesis so that you can test it mathematically. The alternate hypothesis is usually your initial hypothesis that predicts a relationship between variables. The null hypothesis is a prediction of no relationship between the variables you are interested in.

3.19.2 Meta analysis

A meta-analysis is a statistical analysis that combines the results of multiple scientific studies. Meta-analyses can be performed when there are multiple scientific studies addressing the same question, with each individual study reporting measurements that are expected to have some degree of error. The aim then is to use approaches from statistics to derive a pooled estimate closest to the unknown common truth based on how this error is perceived.

3.19.3 Thematic analysis

Thematic analysis is a method of analysing qualitative data. It is usually applied to a set of texts, such as interview transcripts. The researcher closely examines the data to identify common themes – topics, ideas and patterns of meaning that come up repeatedly.

Thematic analysis is a good approach to research where you're trying to find out something about people's views, opinions, knowledge, experiences or values from a set of qualitative data – for example, interview transcripts, social media profiles, or survey responses.

Thematic analysis allows you a lot of flexibility in interpreting the data, and allows you to approach large data sets more easily by sorting them into broad themes. However, it also involves the risk of missing nuances in the data. Thematic analysis is often quite subjective and relies on the researcher's judgement, so you have to reflect carefully on your own choices and interpretations.

3.19.4 Content analysis

Content analysis is a research method used to identify patterns in recorded communication. To conduct content analysis, you systematically collect data from a set of texts, which can be written, oral, or visual:

- Books, newspapers and magazines
- Speeches and interviews
- Web content and social media posts
- Photographs and films

Content analysis can be both quantitative (focused on counting and measuring) and qualitative (focused on interpreting and understanding). In both types, you categorise or "code" words, themes, and concepts within the texts and then analyse the results.

For this study, Statistical, Thematic and Content analysis was adopted in order to analyse the results and confirm them against the research questions identified.

3.20 Surveys undertaken

Two surveys were developed and administered. Survey 1 was a simple binary variable 'Categorical' Yes/No survey, in order to ascertain from a list of 156 positive, neutral and negative traits the ones that entrepreneurs believed that they exhibit. using a variation on the 'Pareto Principle' as a Power Law distribution, I applied an 80% rule, whereby if 80% of respondents selected a particular trait it was deemed to be an identifiable trait. This enabled the initial trait listing of 156 traits to be reduced to 45 identifiable traits. The survey has one dependant variable that was dichotomous, therefore it gives a clear binary answer, however dichotomous scales don't allow for nuance in the respondents answers. A second survey was therefore compiled which used a 5-point Likert Scale, which allows for more variance in the answers. Providing a verbal description for each element of the scale gives better dispersion in terms of the responses and adds clarity to the survey.

Survey 2 was a 5-point Likert Scale that was used to see which of the identifiable traits were strongly exhibited by entrepreneurs. The traits that were deemed to be 'a strong trait for me' or 'one of my strongest traits' were classified as strong entrepreneurial traits. The 80% rule was applied to the results of this survey to create a subset of the 45 identifiable traits which consisted of 24

entrepreneurial traits. A third survey was undertaken for validation of the results using know young entrepreneur finalists from the Federation of Small Business Awards. Statistical analysis of Survey 2 was undertaken using Cronbach’s Alpha to determine the reliability of the survey.

3.21 Cronbachs Alpha for validation of Survey 2

Cronbach’s alpha tests to see if multiple-question Likert scale surveys are reliable. These questions measure latent variables—hidden or unobservable variables like: a person’s conscientiousness, neurosis or openness. These are very difficult to measure in real life. Cronbach’s alpha will tell you how closely related a set of test items are as a group.

The data in our data set represents the results of Survey 2 which consisted of a 5-item Likert scale questionnaire designed to measure Entrepreneur Traits. Participants were asked to indicate their level of agreement or disagreement with each item on a 5-point scale ranging from “I do not have this trait” to “One of my strongest traits.” In order to ensure that the survey is a valid and reliable survey, we want to calculate Cronbach’s alpha to measure the degree of consistency between participants’ responses to the items on the questionnaire. In other words, to what extent does a particular response to one item correlate with a similar response to other items?

The formula for Cronbach’s Alpha is:-

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

Figure 3-6: Cronbachs Alpha Formula

Where:

- N = the number of items.
- \bar{c} = average covariance between item-pairs.
- \bar{v} = average variance.

3.21.1 Interpreting the results:

Results obtained from using Cronbach’s Alpha are classified as shown in Table 3-5 below.

Table 3-5: Cronbach’s Alpha scoring criteria

Cronbach’s Alpha	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$\alpha > 0.5$	Unacceptable

The Cronbach’s Alpha score for Survey 2 was **0.98823502** which is deemed to be an excellent score.

Calculations for the reliability test are as follows:-

Table 3-6: Cronbach's Alpha calculations for Survey 2

SUMMARY	Count	Sum	Average	Variance
Row 1	45	129	2.866666667	0.345454545
Row 2	45	140	3.111111111	0.191919192
Row 3	45	142	3.155555556	0.17979798
Row 4	45	142	3.155555556	0.17979798
Row 5	45	146	3.244444444	0.234343434
Row 6	45	151	3.355555556	0.27979798
Row 7	45	161	3.577777778	0.249494949
Row 8	45	162	3.6	0.245454545
Row 9	45	165	3.666666667	0.227272727
Row 10	45	165	3.666666667	0.227272727
Row 11	45	168	3.733333333	0.2
Row 12	45	170	3.777777778	0.176767677
Row 13	45	170	3.777777778	0.176767677
Row 14	45	170	3.777777778	0.176767677
Row 15	45	171	3.8	0.163636364
Row 16	45	172	3.822222222	0.149494949
Row 17	45	172	3.822222222	0.149494949
Row 18	45	172	3.822222222	0.149494949
Row 19	45	173	3.844444444	0.134343434
Row 20	45	175	3.888888889	0.101010101
Row 21	45	176	3.911111111	0.082828283
Row 22	45	176	3.911111111	0.082828283
Row 23	45	176	3.911111111	0.082828283
Row 24	45	178	3.955555556	0.088888889
Row 25	45	178	3.955555556	0.088888889
Row 26	45	180	4	0.136363636
Row 27	45	183	4.066666667	0.154545455
Row 28	45	186	4.133333333	0.209090909
Row 29	45	193	4.288888889	0.21010101
Row 30	45	195	4.333333333	0.227272727
Row 31	45	198	4.4	0.245454545
Row 32	45	204	4.533333333	0.254545455
Row 33	45	208	4.622222222	0.24040404
Row 34	45	214	4.755555556	0.188888889
Column 1	34	127	3.735294118	0.26114082
Column 2	34	138	4.058823529	0.299465241
Column 3	34	125	3.676470588	0.467914439
Column 4	34	134	3.941176471	0.299465241
Column 5	34	146	4.294117647	0.274509804
Column 6	34	103	3.029411765	0.51426025
Column 7	34	112	3.294117647	0.274509804
Column 8	34	116	3.411764706	0.310160428

Column 9	34	135	3.970588235	0.211229947
Column 10	34	136	4	0.363636364
Column 11	34	136	4	0.424242424
Column 12	34	134	3.941176471	0.23885918
Column 13	34	137	4.029411765	0.51426025
Column 14	34	135	3.970588235	0.332442068
Column 15	34	142	4.176470588	0.270944742
Column 16	34	132	3.882352941	0.228163993
Column 17	34	136	4	0.363636364
Column 18	34	143	4.205882353	0.168449198
Column 19	34	132	3.882352941	0.228163993
Column 20	34	141	4.147058824	0.129233512
Column 21	34	131	3.852941176	0.311051693
Column 22	34	136	4	0.484848485
Column 23	34	130	3.823529412	0.270944742
Column 24	34	126	3.705882353	0.213903743
Column 25	34	108	3.176470588	0.14973262
Column 26	34	116	3.411764706	0.310160428
Column 27	34	132	3.882352941	0.167557932
Column 28	34	134	3.941176471	0.23885918
Column 29	34	128	3.764705882	0.367201426
Column 30	34	120	3.529411765	0.499108734
Column 31	34	139	4.088235294	0.082887701
Column 32	34	136	4	0.424242424
Column 33	34	122	3.588235294	0.249554367
Column 34	34	133	3.911764706	0.143493761
Column 35	34	131	3.852941176	0.129233512
Column 36	34	141	4.147058824	0.189839572
Column 37	34	137	4.029411765	0.029411765
Column 38	34	139	4.088235294	0.446524064
Column 39	34	124	3.647058824	0.417112299
Column 40	34	119	3.5	0.318181818
Column 41	34	107	3.147058824	0.189839572
Column 42	34	132	3.882352941	0.106951872
Column 43	34	144	4.235294118	0.245989305
Column 44	34	126	3.705882353	0.213903743
Column 45	34	130	3.823529412	0.270944742

The results of the calculations shown below confirm that Survey 2 has an 'Excellent' level of reliability

Cronbach's Alpha score = **0.98823502**

3.22 Findings of the surveys

It has been confirmed from the above survey score that the Likert-Scale survey 'Survey 2' is an accurate and reliable survey that was undertaken. By using a simple Yes/No survey for Survey 1, this left no possible ambiguity or errors. This is the simplest form of survey and extremely effective for its use. 'Do you have this trait? – Yes? or No? there is no ambiguity to the answer either you have it or you don't. In reality this should reduce any error rates to zero, however as with all questions it is subjective and conditional upon the respondents' own self-belief as to how they see themselves. Believing that a person has a particular trait, and them actually having the trait can be far from reality and therefore open to error. This type of error will always exist when correlating and analysing empirical data. However, self-belief and self-analysis is quite a powerful indicator of accuracy in most cases, with the exception of delusion. 'Some aspects of science, taken at the broadest level, are universal in empirical research. These include collecting, analysing, and reporting data. In each of these aspects, errors can and do occur.' (Brown, Kaiser, and Allison, 2018)

3.23 Analysing the empirical data

Thematic analysis has been used to analyse the empirical data that was collected. Ryan and Bernard suggest that thematic analysis involves, "(1) discovering themes and subthemes; (2) winnowing themes to a manageable few (ie. deciding which themes are important in any project); (3) building hierarchies of themes code books; and (4) linking themes to theoretical models" (2003: 85). Ritchie, Spencer and O'Connor (2003) outline advice on how to identify themes. They suggest that, "A thorough review of the range and depth of the data is an essential starting point to analysis. Such a review is likely to yield a long list of what appear to be important themes and concepts within the data" (Ritchie, Spencer and O'Connor, 2003: 222). Braun and Clarke (2006) outline a practical approach to thematic analysis in qualitative psychology, but with some useful lessons for qualitative sociology as well. They suggest that thematic analysis involves a number of decisions which should be taken at various stages of the research process, some before data collection occurs. Importantly for a study with a relatively small qualitative sample, they assert that while often themes will be reported a number of times in the data, the more times a theme is reported does not in itself necessarily make it more important than less repeated themes. The 'keyness' of a theme is dependent on its significance to answering the research question rather than simple quantifiable indicators (Braun and Clark, 2006). Somewhat contrastingly, however, Ryan and Bernard (2003) suggest that one way of identifying themes involves looking for such features in the text as "repetitions: topics that recur again and again". (Hickie, 2011)

3.24 Traits with over 80% of respondents having Strong or Strongest

Based upon the results of surveys 1 and 2, the list below shows the traits that 80% or more of entrepreneurs state they exhibit. The trait is shown with the percentage score of those respondents having the trait.

The numbers shown before each trait is the number that each trait appears numerically in order of the 45 identified traits from Survey 2.

- 2. Ambitious - 87.88%
- 4. Articulate - 81.82%
- 5. Aspiring - 96.97%
- 9. Communication Skill - 87.88%
- 10. Competitive - 81.82%
- 11. Confident - 84.85%
- 12. Continual improvement - 84.85%
- 13. Creative - 81.82%
- 14. Decisive - 81.82%
- 15. Determined - 93.94%
- 16. Dynamic - 81.82%
- 17. Efficient - 81.82%
- 18. Enthusiastic - 100%
- 19. Focused - 81.82%
- 20. Hardworking - 100%
- 22. Innovative - 81.82%
- 27. Observant - 84.85%
- 28. Optimistic - 84.85%
- 31. Positive - 100%
- 34. Rational - 87.88%
- 35. Realistic - 84.85%
- 37. Reliable - 100%
- 38. Resourceful - 81.82%
- 42. Systematic - 87.88%

Total 24 Traits proven to exist and identifiable in Entrepreneurs.

3.25 Overall Summary of the surveys

From an initial starting number of 156 'Positive', 'Neutral' and 'Negative' traits, I was able to identify 24 Entrepreneurial traits using a number of surveys in order to progress the hypothesis that entrepreneurs do in fact have a common set of traits that make them entrepreneurial. This is a part of my contribution to knowledge and is shown visually as a 'mind map' in figure 3.7.

3.26 Summary

The empirical analysis of my research undertaken to date confirms that there are more identifiable traits associated with a persons' propensity to be entrepreneurial than had previously been identified. Previous studies centred primarily around

- a) Internal locus of control
- b) Risk taking propensity
- c) Need for achievement
- d) Creativity
- e) Problem solving orientation
- f) Tolerance of ambiguity

These traits have been proven in numerous studies to be significant factors in an entrepreneurs' personality and characteristics, however for identification of a persons' potential to become a successful entrepreneur a more detailed analysis of their personality traits needs to be made. This research undertook to provide positive identification of additional traits in order to give a better resolution of the person being examined to see if they have the potential to be entrepreneurial and succeeded in terms of its outcome.

The platform selected for the identification of Young Entrepreneurs is web based using a website specifically set up for the initial and identification of traits and then subsequent identification and training of potential candidates. Effective data processing and decision making coupled with expert system feedback and identification alignment is paramount to making the process effective and successful.

The inclusion of AI in not only the identification process, but also the self-development of Young Entrepreneurs is without doubt the way forward. Advances in AI technology will enhance significantly the identification process, enabling accurate focused questioning, specifically designed to identify the traits and characteristics of candidates.

The outcome of this section of the research confirms the need for this research and has provided a contribution to knowledge and increased the understanding as to how young entrepreneurs can be positively identified. The benefits of this study, moving forward, will enable a thorough analysis of an applicant's traits and characteristics that could be used as part of a National Entrepreneur Recruitment and Training Programme that could create new businesses and employment prospects across the UK and other countries.

Having identified the traits exhibited by entrepreneurs, validation of the hypothesis that the traits identified in older entrepreneurs also exist in Young Entrepreneurs needs to be undertaken. This will be undertaken in chapter 4.

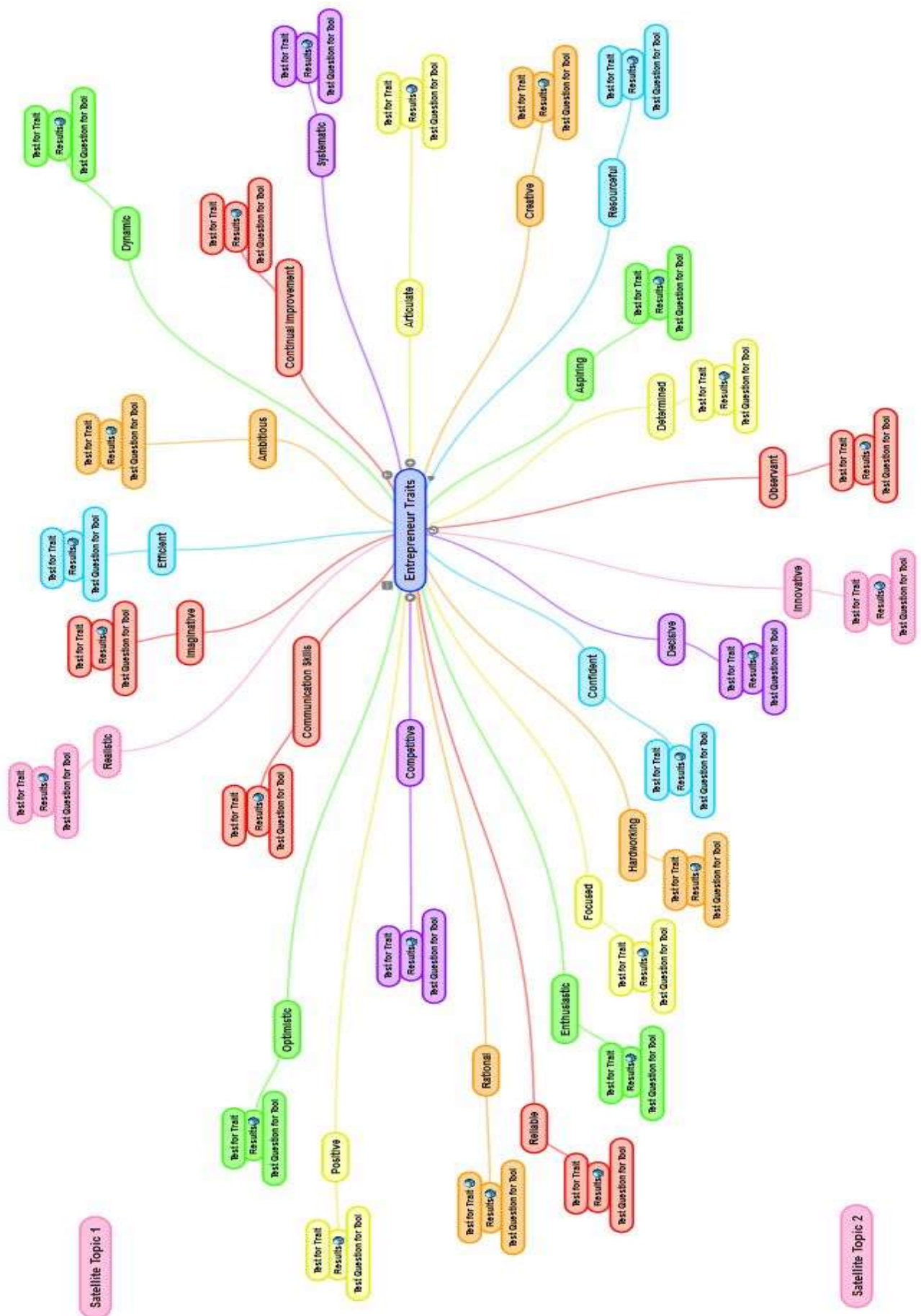


Figure 3-7: Mind Map of Trait Survey Results

Chapter 4: Data Collection and Validation of the Proposed Entrepreneur Traits

4.1 Introduction to Trait Analysis

According to Diener and Lucas (2019), Personality traits reflect people's characteristic patterns of thoughts, feelings, and behaviours. Personality traits imply consistency and stability—someone who scores high on a specific trait like Extraversion is expected to be sociable in different situations and over time. Thus, trait psychology rests on the idea that people differ from one another in terms of where they stand on a set of basic trait dimensions that persist over time and across situations. The most widely used system of traits is called the Five-Factor Model. This system includes five broad traits that can be remembered with the acronym OCEAN: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (Goldberg, 1990; McCrae & John, 1992; McCrae & Costa, 1987). Each of the major traits from the Big Five can be divided into facets to give a more fine-grained analysis of someone's personality. In addition, some trait theorists argue that there are other traits that cannot be completely captured by the Five-Factor Model. Critics of the trait concept argue that people do not act consistently from one situation to the next and that people are very influenced by situational forces. Thus, one major debate in the field concerns the relative power of people's traits versus the situations in which they find themselves as predictors of their behaviour. When we observe people around us, one of the first things that strikes us is how different people are from one another. Some people are very talkative while others are very quiet. Some are active whereas others are couch potatoes. Some worry a lot, others almost never seem anxious. Each time we use one of these words, words like "talkative," "quiet," "active," or "anxious," to describe those around us, we are talking about a person's personality—the characteristic ways that people differ from one another. Personality psychologists try to describe and understand these differences. "Are you an introvert"? In popular culture it's common to talk about people being introverts or extroverts as if these were precise descriptions that meant the same thing for everyone. But research shows that these traits and others are quite variable within individuals. Although there are many ways to think about the personalities that people have, Gordon Allport and other "personologists" claimed that we can best understand the differences between individuals by understanding their personality traits. Personality traits reflect basic dimensions on which people differ (Matthews, Deary, & Whiteman, 2003). According to trait psychologists, there are a limited number of these dimensions (dimensions like Extraversion, Conscientiousness, or Agreeableness), and each individual falls somewhere on each dimension, meaning that they could be low, medium, or high on any specific trait. An important feature of personality traits is that they reflect continuous distributions rather than distinct personality types. This means that when personality psychologists talk about Introverts and Extraverts, they are not really talking about two distinct types of people who are completely and qualitatively different from one another. Instead, they are talking about people who score relatively low or relatively high along a continuous distribution. In fact, when personality psychologists measure traits like Extraversion, they typically find that most people score somewhere in the middle, with smaller numbers showing more extreme levels. The figure below shows the distribution of Extraversion scores from a survey of thousands of people. As you can see, most people report being moderately, but not extremely, extraverted, with fewer people reporting very high or very low scores. A challenge of the trait approach was to discover the major traits on which all people differ. Scientists for many decades generated hundreds of new traits, so that it was soon difficult to keep track and make sense of them. For instance, one psychologist might focus on individual differences in "friendliness," whereas another might focus on the highly related concept of "sociability." Scientists began seeking ways to reduce the

number of traits in some systematic way and to discover the basic traits that describe most of the differences between people. The way that Gordon Allport and his colleague Henry Odbert approached this was to search the dictionary for all descriptors of personality (Allport & Odbert, 1936). Their approach was guided by the lexical hypothesis, which states that all important personality characteristics should be reflected in the language that we use to describe other people. Therefore, if we want to understand the fundamental ways in which people differ from one another, we can turn to the words that people use to describe one another. So, if we want to know what words people use to describe one another, where should we look? Allport and Odbert looked in the most obvious place - the dictionary. Specifically, they took all the personality descriptors that they could find in the dictionary (they started with almost 18,000 words but quickly reduced that list to a more manageable number) and then used statistical techniques to determine which words “went together.” In other words, if everyone who said that they were “friendly” also said that they were “sociable,” then this might mean that personality psychologists would only need a single trait to capture individual differences in these characteristics. Statistical techniques were used to determine whether a small number of dimensions might underlie all of the thousands of words we use to describe people. Research that used the lexical approach showed that many of the personality descriptors found in the dictionary do indeed overlap. In other words, many of the words that we use to describe people are synonyms. Thus, if we want to know what a person is like, we do not necessarily need to ask how sociable they are, how friendly they are, and how gregarious they are. Instead, because sociable people tend to be friendly and gregarious, we can summarize this personality dimension with a single term. Someone who is sociable, friendly, and gregarious would typically be described as an “Extravert.” Once we know she is an extravert, we can assume that she is sociable, friendly, and gregarious. Statistical methods (specifically, a technique called factor analysis) helped to determine whether a small number of dimensions underlie the diversity of words that people like Allport and Odbert identified. The most widely accepted system to emerge from this approach was “The Big Five” or “Five-Factor Model” (Goldberg, 1990; McCrae & John, 1992; McCrae & Costa, 1987). The Big Five comprises five major traits and a way to remember these five is with the acronym OCEAN (O is for Openness; C is for Conscientiousness; E is for Extraversion; A is for Agreeableness; N is for Neuroticism).

Traits are important and interesting because they describe stable patterns of behaviour that persist for long periods of time (Caspi, Roberts, & Shiner, 2005). Importantly, these stable patterns can have broad-ranging consequences for many areas of our life (Roberts, Kuncel, Shiner, Caspi, & Goldberg, 2007). For instance, think about the factors that determine success in college. If you were asked to guess what factors predict good grades in college, you might guess something like intelligence. This guess would be correct, but we know much more about who is likely to do well. Specifically, personality researchers have also found the personality traits like Conscientiousness play an important role in college and beyond, probably because highly conscientious individuals study hard, get their work done on time, and are less distracted by nonessential activities that take time away from school work. In addition, highly conscientious people are often healthier than people low in conscientiousness because they are more likely to maintain healthy diets, to exercise, and to follow basic safety procedures like wearing seat belts or bicycle helmets. Over the long term, this consistent pattern of behaviours can add up to meaningful differences in health and longevity. Thus, personality traits are not just a useful way to describe people you know; they actually help psychologists predict how good a worker someone will be, how long he or she will live, and the types of jobs and activities the person will enjoy. Thus, there is growing interest in personality psychology among psychologists who work in applied settings, such as health psychology or organizational psychology.

The trait approach to personality was pioneered by early psychologists, including Gordon Allport (1897-1967), Raymond Cattell (1905-1998), and Hans Eysenck (1916-1997). Each of these psychologists believed in the idea of the trait as the stable unit of personality, and each attempted to provide a list or taxonomy of the most important trait dimensions. Their approach was to provide people with a self-report measure and then to use statistical analyses to look for the underlying factors or clusters of traits, according to the frequency and the co-occurrence of traits in the respondents. Personality traits are qualities or characteristics that distinguish a person and are the embodiment of an individual. They are habitual patterns of temperament, behaviour and emotion that like a person's DNA make them who they are, yet can, I believe provide an opportunity to group people with similar characteristics and qualities into specific categories. Skills on the other hand are the learned capacity to undertake and carry out specific tasks. They are the ability or competences to do things, which includes critical thinking, manual, presentation, negotiation, or technological proficiencies. Typically, skills are special abilities that are acquired through training and experience and not necessarily related to personality traits. Entrepreneurs are not all produced from the same mould and can be found in a diversification of geographical locations, backgrounds, income groups and sociological classes, as well as a variety of educational achievement. It is believed however, that irrespective of external socio-economic influences entrepreneurs all possess similar key traits to a high degree. According to Myers-Briggs® theory, your personality type is inborn, and it doesn't change. However, the way you exhibit your type WILL change (and should) as you go through life. ... As you age and mature you develop different facets of your personality type. Personality traits reflect people's characteristic patterns of thoughts, feelings, and behaviours. Personality traits imply consistency and stability and someone who scores high on a specific trait like Extraversion is expected to be sociable in different situations and over time. Thus, trait psychology rests on the idea that people differ from one another in terms of where they stand on a set of basic trait dimensions that persist over time and across situations. The most widely used system of traits is called the Five-Factor Model. This system includes five broad traits that can be remembered with the acronym OCEAN: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Each of the major traits from the Big Five can be divided into facets to give a more fine-grained analysis of someone's personality. In addition, some trait theorists argue that there are other traits that cannot be completely captured by the Five-Factor Model. Critics of the trait concept argue that people do not act consistently from one situation to the next and that people are very influenced by situational forces. Thus, one major debate in the field concerns the relative power of people's traits versus the situations in which they find themselves as predictors of their behaviour. The purpose of this section of the study is to identify what research has been carried out in this field, determine if the research is accurate and proves the assumptions that personality traits are a significant aspect of an entrepreneur's genetic make-up which we shall call their 'entrephenotypic traits' and look to see if we can create an 'entrephenotypic profile' of an entrepreneur.

4.2 Derivation of an Entrephenotypic Trait

A phenotypic trait is an obvious, observable, and measurable trait; it is the expression of genes in an observable way. An example of a phenotypic trait is hair colour. Underlying genes, which make up the genotype, determine the hair colour, but the hair colour observed is the phenotype. The phenotype is dependent on the genetic make-up of the organism, and also influenced by the environmental conditions to which the organism is subjected across its ontogenetic development, including various epigenetic processes. Regardless of the degree of influence of genotype versus environment, the phenotype encompasses all of the characteristics of an organism, including traits at multiple levels of

biological organization, ranging from behaviour and evolutionary history of life traits (e.g., litter size), through morphology (e.g., body height and composition), physiology (e.g., blood pressure), cellular characteristics (e.g., membrane lipid composition, mitochondrial densities), components of biochemical pathways, and even messenger RNA.

The word ‘phenotypic’ has been combined with ‘entre’ derived from the word entrepreneur to create ‘entrephenotypic’ which is an expression of entrepreneurship in an observable way which make the individual entrepreneurial composition of an entrepreneur, based upon a number of factors including traits, characteristics, socio-economic influences, environmental influences and education. It is my belief that entrepreneurs are a combination of Genotypes, Phenotypes and environmental influences.

4.3 Composition of an Entrephenotypic Trait

An Entrephenotypic Traits is a cluster of traits positively identified as defining a person who is entrepreneurial. The traits identified and clustered are shown in the table below. They have been classified in terms of necessary requirements to being entrepreneurial. Cardinal and Primary traits as identified are deemed to be essential, with secondary traits deemed to be desirable but not essential. Based upon the percentage scores for each of the traits from Survey 2, the traits were then classified into the three classifications of Cardinal, Central and Secondary as shown in tables 4-1 to 4-4 and colour coded for ease of identification. The highest scoring traits were classified as Cardinal, with the lower ones Central and Secondary. As some of the lower scoring traits had very close scores, they were categorised based upon my own experience as an entrepreneur and observations I have made on other entrepreneurs.

Table 4-1: Traits grouped to form an Entrephenotypic Trait

	TRAIT	Classification
1	Ambitious	Cardinal
2	Articulate	Secondary
3	Aspiring	Cardinal
4	Communication Skills	Secondary
5	Competitive	Secondary
6	Confident	Central
7	Continual Improvement	Central
8	Creative	Secondary
9	Decisive	Central
10	Determined	Cardinal
11	Dynamic	Secondary
12	Efficient	Secondary
13	Enthusiastic	Cardinal
14	Focused	Central
15	Hardworking	Cardinal
16	Innovative	Central
17	Observant	Central
18	Optimistic	Central
19	Positive	Cardinal
20	Rational	Cardinal
21	Realistic	Central
22	Reliable	Central
23	Resourceful	Secondary
24	Systematic	Cardinal

4.3.1 Cardinal Traits

These traits are the fundamental requirements and dominate and shape a person to be entrepreneurial.

Table 4-2: Cardinal Traits

	TRAIT
1	Ambitious
2	Aspiring
3	Determined
4	Hardworking
5	Enthusiastic
6	Rational
7	Positive
8	Systematic

4.3.2 Central Traits

These traits are the fundamental characteristics found in a high degree for a person to be entrepreneurial.

Table 4-3: Central Traits

	TRAIT
1	Continual Improvement
2	Observant
3	Optimistic
4	Confident
5	Decisive
6	Focused
7	Innovative
8	Realistic
9	Reliable

4.3.3 Secondary Traits

These traits are the desirable but not essential requirements for a person to be entrepreneurial.

Table 4-4: Secondary Traits

	TRAIT
1	Articulate
2	Communication Skills
3	Creative
4	Dynamic
5	Efficient
6	Competitive
7	Resourceful

4.4 Personality Traits that predict behaviour

Personalities are characterized in terms of **traits**, which are *relatively enduring characteristics that influence our behaviour across many situations*. Personality traits such as introversion, friendliness, conscientiousness, honesty, and helpfulness are important because they help explain consistencies in behaviour. The most popular way of measuring traits is by administering personality tests on which people self-report about their own characteristics. Psychologists have investigated hundreds of traits using the self-report approach, and this research has found many personality traits that have important implications for behaviour. You can see some examples of the personality dimensions that have been studied by psychologists and their implications for behaviour in Table 4-5 “Some Personality Traits That Predict Behaviour”.

Table 4-5: Examples of Traits that predict behaviour

Trait	Description	Examples of behaviours exhibited by people who have the trait
Entrephenotypic (Pearson, 2020)	A cluster of traits including ambition, competitive, confident, creative, determined, innovative, resourceful	People who exhibit the Cardinal and Central elements of an Entrephenotypic trait are more likely to be Entrepreneurial

Authoritarianism (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950)	A cluster of traits including conventionalism, superstition, toughness, and exaggerated concerns with sexuality	Authoritarians are more likely to be prejudiced, to conform to leaders, and to display rigid behaviours.
Individualism-collectivism (Triandis, 1989)	Individualism is the tendency to focus on oneself and one’s personal goals; collectivism is the tendency to focus on one’s relations with others.	Individualists prefer to engage in behaviours that make them stand out from others, whereas collectivists prefer to engage in behaviours that emphasize their similarity to others.
Internal versus external locus of control (Rotter, 1966)	In comparison to those with an external locus of control, people with an internal locus of control are more likely to believe that life events are due largely to their own efforts and personal characteristics.	People with higher internal locus of control are happier, less depressed, and healthier in comparison to those with an external locus of control.
Need for achievement (McClelland, 1958)	The desire to make significant accomplishments by mastering skills or meeting high standards	Those high in need for achievement select tasks that are not too difficult to be sure they will succeed in them.
Need for cognition (Cacioppo & Petty, 1982)	The extent to which people engage in and enjoy effortful cognitive activities	People high in the need for cognition pay more attention to arguments in ads.

Regulatory focus (Shah, Higgins, & Friedman, 1998)	Refers to differences in the motivations that energize behaviour, varying from a promotion orientation (seeking out new opportunities) to a prevention orientation (avoiding negative outcomes)	People with a promotion orientation are more motivated by goals of gaining money, whereas those with prevention orientation are more concerned about losing money.
Self-consciousness (Fenigstein, Sheier, & Buss, 1975)	The tendency to introspect and examine one's inner self and feelings	People high in self-consciousness spend more time preparing their hair and makeup before they leave the house.
Self-esteem (Rosenberg, 1965)	High self-esteem means having a positive attitude toward oneself and one's capabilities.	High self-esteem is associated with a variety of positive psychological and health outcomes.
Sensation seeking (Zuckerman, 2007)	The motivation to engage in extreme and risky behaviours	Sensation seekers are more likely to engage in risky behaviours such as extreme and risky sports, substance abuse, unsafe sex, and crime.

4.5 Testing a hypothesis

There are 5 main steps in hypothesis testing:

1. State your research hypothesis as a null hypothesis and alternate hypothesis (H_0) and (H_a or H_1).
2. Collect data in a way designed to test the hypothesis.
3. Perform an appropriate statistical test.
4. Decide whether to reject or fail to reject your null hypothesis.
5. Present the findings in your results and discussion section.

4.6 My Hypothesis

It was hypothesised that 'Young Entrepreneurs exhibit the same traits as their adult counterparts', and in order to prove the hypothesis a final validation survey was undertaken. This survey was known as 'Survey 3' and was the topic of research question 2 below.

Research Question 2: Do young entrepreneurs exhibit the same traits and characteristics that older entrepreneurs do?

4.7 Hypothesis Testing

H₀: Young Entrepreneurs do not exhibit the same traits that older entrepreneurs do

H_a: Young Entrepreneurs exhibit the same traits that older entrepreneurs do

The above 'Null Hypothesis' and 'Alternate Hypothesis' were proposed, and the data collected in Survey 3 and analysed in comparison with the data collected in Survey 2, as shown in Appendix I. The data collected extended to over 200 pages and was excluded from the appendices due to its size and tabulated in summary instead.

4.8 Validation of the Entrophenotypic Trait (Survey 3)

Validation of the Entrophenotypic Trait was achieved by utilising an online survey number 3, with 171 questions, 156 of which were the original traits from survey 1 created with a 5-point Likert Scale. The survey was conducted on successful young entrepreneurs who had been finalists in the Federation of Small Business National awards for the 'Young Entrepreneur of the Year' for the years 2018–2020. The responses to the twenty-four traits that comprise the Entrophenotypic Trait were assessed and tabulated for validation against the hypothesis that entrepreneurs exhibit a high proportion of the twenty-four traits of the Entrophenotypic Trait. The statistical analysis of the results was extremely positive and supported the alternative hypothesis H_a with all respondents exhibiting at least 21 of the 24 traits, with all exhibiting the Cardinal and Central traits. The results of Survey 3 are shown at Appendix G and I.

4.9 Statistical analysis of the data

Based upon the data collected, a one-tailed t-test was performed to test whether Young Entrepreneurs did in fact have the same traits as older Entrepreneurs. The results were subject to a 'level of significance of 0.01 and in my analysis the *p-value* was found to be 0.002 which is below the cut off of 0.01, therefore the null hypothesis is rejected. As the null hypothesis was rejected, the results support the alternative hypothesis, and lends support to my hypothesis.

4.10 Findings of the Validation and problems encountered

The traits of which the Entrophenotypic Trait comprised, were validated and shown to exist in known successful entrepreneurs of all ages. Whilst other traits were also strong in some of the respondents, the main focus was on the identified entrepreneurial traits that were deemed to comprise the Entrophenotypic Trait as being common to all entrepreneurs, and this was proven to be so. Misreading of the results from Survey Monkey online survey caused the identified traits to be inaccurate when recorded, which initially showed low scores and were disappointing and gave the impression that the hypothesis and traits identified were wrong.

As a result of human error however, the answer to the preceding question for each of the survey answers was recorded and compiled in the results analysis table due to what appeared to be a dividing line being in the wrong place. This resulted in an extremely low correlation of the traits forming the Entrophenotypic Trait and the traits of the known young entrepreneurs.

The error was identified, as a result of several negative traits being highlighted as some of the strongest traits from respondents, and some traits deemed to be essential answered with 'I don't have this trait' which did not make sense and in two instances respondents with an Entrophenotypic score count of 7 out of 24 both went to 21 out of 24 when re-checked.

Had the error not been identified it would have completely skewed the results causing significant confusion.

4.11 Summary

This chapter shows the progression from the previous chapter where a broad set of traits were used for identification of those existing in entrepreneurs, which have now been further refined and filtered down to a specific set of positively identified traits present in entrepreneurial people, which I have grouped and classified under one category labelled an Entrephenotypic trait.

An Entrephenotypic Trait as a term for the group of traits exhibited by entrepreneurs is an apt and appropriate choice of phrase to be used when describing what it is that makes an entrepreneur entrepreneurial.

Statistical analysis supported the hypothesis that Young Entrepreneurs exhibit the same traits that older entrepreneurs do, therefore the validation of the proposed Entrepreneurial Traits was proven.

It has been confirmed through this research that there are a greater number of traits that entrepreneurs exhibit than previous research had assumed. Having the propensity towards being entrepreneurial is more complex than a simple set of traits and characteristics and are enduring characteristics that influence an entrepreneurs' behaviour over a period of time and across many situations.

Despite an entrepreneur having the requisite traits to make them entrepreneurial, entrepreneurs' businesses don't always succeed the first time. It may take several businesses and several iterations of the business model to achieve success in a given venture. Learning from mistakes and the need to succeed play a part, as does having the right idea at the right time.

The findings of this chapter confirm the need for this study and has proven that this research fills the gap in the current knowledge relating to the identification of young entrepreneurs. It shows that previous studies, predominantly in the field of entrepreneurship do not identify what this study has found, which is a comprehensive group of traits associated with entrepreneurial activities. The reasons for the failure previously in making the identification of additional traits is potentially as a result of the type of studies undertaken, which didn't focus specifically on identification, but other areas of entrepreneurship.

Having now identified the entrepreneurial traits, validated them with Young Entrepreneurs as a means of identifying those young people who have the ability to become successful entrepreneurs, we now need to look at how the Young Entrepreneurs can be trained, in order to give them the ability to become successful as entrepreneurs in business. The proposed education and training of Young Entrepreneurs is outlined in chapter 5.

Chapter 5: Education and Training of Entrepreneurs

5.1 Introduction

Education, in terms of pedagogy and andragogy are considered to be an important aspect in relation to Human Capital Theory which is associated with the knowledge and experiences of small business owners. The general assumptions made are that the human capital of the founder/owner greatly enhances the potential for the business to be successful and have a propensity towards survival (Bruederl et al, 1992). The hypothesis from human capital theory is that investing in education adds to the entrepreneur's overall human capital facilitating enhanced knowledge, key skills (eg. numeracy) and problem-solving capabilities, as well as key personal attributes such as self-confidence, self-discipline and motivation which leads to economic growth through increased productivity as well as social stabilisation. (Cooper et al, 1994). Furthermore, economic studies have shown that higher education levels are associated with higher levels of earnings (Becker, 1993).

5.2 Andragogy

The term was originally coined by German educator Alexander Kapp in 1833. Andragogy was developed into a theory of adult education by Eugen Rosenstock-Huessy. It later became very popular in the US by the American educator Malcolm Knowles. Knowles asserted that andragogy (Greek: "man-leading") should be distinguished from the more commonly used term *pedagogy* (Greek: "child-leading"). Knowles collected ideas about a theory of adult education from the end of World War II until he was introduced to the term "andragogy". In 1966, Knowles met Dusan Savicevic in Boston. Savicevic was the one who shared the term andragogy with Knowles and explained how it was used in the European context. In 1967, Knowles made use of the term "androgogy" to explain his theory of adult education. Then after consulting with Merriam-Webster, he corrected the spelling of the term to "andragogy" and continued to make use of the term to explain his multiple ideas about adult learning.

Knowles' theory can be stated with six assumptions related to the motivation of adult learning:

1. **Need to know:** Adults need to know the reason for learning something.
2. **Foundation:** Experience (including error) provides the basis for learning activities.
3. **Self-concept:** Adults need to be responsible for their decisions on education; involvement in the planning and evaluation of their instruction.
4. **Readiness:** Adults are most interested in learning subjects having immediate relevance to their work and/or personal lives.
5. **Orientation:** Adult learning is problem-centred rather than content-oriented.
6. **Motivation:** Adults respond better to internal versus external motivators.

In most European countries, the Knowles discussion played at best, a marginal role. "Andragogy" was, from 1970 on, connected with emerging academic and professional institutions, publications, or programs, triggered by a similar growth of adult education in practice and theory as in the United States. "Andragogy" functioned here as a header for (places of) systematic reflections, parallel to other academic headers like "biology", "medicine", and "physics". Examples of this use of andragogy are the Yugoslavian (scholarly) journal for adult education, named *Andragogija* in 1969, and the Yugoslavian Society for Andragogy; at Palacky University in Olomouc (Czech republic) the *Katedra sociologie a andragogiky* (Sociology and Andragogy Department) was established in 1990. Also, Prague University has a *Katedra Andragogiky* (Andragogical Department); in 1993, Slovenia's *Andragoski Center Republike Slovenije* (Slovenian Republic Andragogy Centre) was founded with the journal *Andragoska Spoznanja*; in 1995, Bamberg University (Germany) named a *Lehrstuhl Andragogik* (Androgogy Chair).

On this formal level "above practice" and specific approaches, the term "andragogy" could be used relating to all types of theories, for reflection, analysis, training, in person-oriented programs, or human resource development.

Adult learning is based upon comprehension, organization and synthesis of knowledge rather than rote memory. There are seven Principles of Adult Learning:

- **Adults must want to learn** – They learn effectively only when they are free to direct their own learning and have a strong inner and excited motivation to develop a new skill or acquire a particular type of knowledge, this sustains learning.
- **Adults will learn only what they feel they need to learn** – Adults are practical in their approach to learning; they want to know, "How is this going to help me right now? – Is it relevant (Content, Connection and Application) and does it meet my targeted goals."
- **Adults learn by doing** – Adolescents learn by doing, but adults do through an active practice and participation, this helps in integrating component skills into a coherent whole.
- **Adult learning focuses on problem solving** – Adolescents tend to learn skills sequentially. Adults tend to start with a problem and then work to find a solution. A meaningful engagement, such as posing and answering realistic questions and problems is necessary for deeper learning. This leads to more elaborate, longer lasting, and stronger representations of the knowledge (Craik & Lockhart, 1972).
- **Experience affects adult learning** – Adults have more experience than adolescents. This can be an asset and a liability, if prior knowledge is inaccurate, incomplete, or naive, it can interfere with or distort the integration of incoming information (Clement, 1982; National Research Council, 2000).
- **Adults learn best in an informal situation** – Adolescents have to follow a curriculum. Often, adults learn by taking responsibility by the value and need of content they have to understand and the particular goals it will achieve. Being in an inviting, collaborative and networking environment as an active participant in the learning process makes it efficient.
- **Adults want guidance and consideration as equal partners in the process** – Adults want information that will help them improve their situation. They do not want to be told what to do and they evaluate what helps and what doesn't. They want to choose options based on their individual needs and the meaningful impact a learning engagement could provide. Socialisation is more important among adults.

Knowles himself changed his position on whether andragogy really applied only to adults and came to believe that "pedagogy-andragogy represents a continuum ranging from teacher-directed to student-directed learning and that both approaches are appropriate with children and adults, depending on the situation." Hanson (1996) argues that the difference in learning is not related to the age and stage of one's life, but instead related to individual characteristics and the differences in "context, culture and power" within different educational settings. In another critique of Knowles' work, Knowles was not able to use one of his principles (Self-concept) with adult learners to the extent that he describes in his practices. In one course, Knowles appears to allow "near total freedom in learner determination of objectives" but still "intended" the students to choose from a list of 18 objectives on the syllabus. Self-concept can be critiqued not just from the instructor's point of view, but also from the student's

point of view. Not all adult learners will know exactly what they want to learn in a course and may seek a more structured outline from an instructor. An instructor cannot assume that an adult will desire self-directed learning in every situation. J.R. Kidd goes further by claiming that principles of learning have to be applied to lifelong development. He suggested that building a theory on adult learning would be meaningless, as there is no real basis for it. P. Jarvis even implies that andragogy would be more the result of an ideology than a scientific contribution to the comprehension of the learning processes. Knowles himself mentions that andragogy is a "model of assumptions about learning or a conceptual framework that serves as a basis for an emergent theory." There appears to be a lack of research on whether this framework of teaching and learning principles is more relevant to adult learners or if it is just a set of good practices that could be used for both children and adult learners. Learning styles are referred and made by how certain people learn, categorize, and process new content they are descriptors of common behaviour patterns. Each person may have multiple preferred learning styles and these are preferences that have mild-strong inclinations. Keefe formally defines learning styles as "characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how learners perceive, interacts with, and respond to the learning environment".

The three primary learning styles are visual, auditory, and kinaesthetic.

kinaesthetic learning (British English), or **tactile learning** is a learning style in which learning takes place by the students carrying out physical activities, rather than listening to a lecture or watching demonstrations. As cited by Favre (2009), Dunn and Dunn define kinaesthetic learners as students who require whole-body movement to process new and difficult information.

5.2.1 The VARK model

Neil Fleming, a New Zealand teacher and educational theorist, designed the VARK model (visual, aural or auditory, read/write and kinaesthetic). According to Fleming's model, kinaesthetic learners are similar to tactile learners in that they like hands-on experiential learning.

The Fleming VAK/VARK model (one of the most common and widely used categorizations of the various types of learning styles) categorized learning styles as follows:

- Hands-on learning
- Visual learning
- Auditory learning
- Read/write learning
- Kinaesthetic learning

Skill memory also fits into the category of kinaesthetic learning, as it is what happens when somebody is learning kinaesthetically. Skill memories are difficult to convey except by direct demonstration, may be acquired without awareness, and require several repetitions. Kolb suggests to educate adult learners around the experiential cycle that reaches all types of learners.

5.3 Pedagogy

Is most commonly understood as the approach to teaching and refers more broadly to the theory and practice of education, and how this influences the growth of learners. Pedagogy, taken as an academic discipline, is the study of how knowledge and skills are imparted in an educational context, and it considers the interactions that take place during learning.

Pedagogies vary greatly, as they reflect the different social, political, cultural contexts from which they emerge. Pedagogy is the act of teaching. Theories of pedagogy increasingly identify the student as an agent, and the teacher as a facilitator. Conventional western pedagogies, however, view the teacher as knowledge holder and student as the recipient of knowledge (described by Paulo Freire as "banking methods¹¹"). The pedagogy adopted by teachers shape their actions, judgments, and other teaching strategies by taking into consideration theories of learning, understandings of students and their needs, and the backgrounds and interests of individual students. Its aims may include furthering liberal education (the general development of human potential) to the narrower specifics of vocational education (the imparting and acquisition of specific skills). Instructive strategies are governed by the pupil's background knowledge and experience, situation, and environment, as well as learning goals set by the student and teacher. One example would be the Socratic method which is also known as method of Elenchus, elenctic method, or Socratic debate and is a form of cooperative argumentative dialogue between individuals, based on asking and answering questions to stimulate critical thinking and to draw out ideas and underlying presuppositions. It is a dialectical method, involving a discussion in which the defence of one point of view is questioned; one participant may lead another to contradict themselves in some way, thus weakening the defender's point. This method is named after the Classical Greek philosopher Socrates and is introduced by him in Plato's *Theaetetus* as midwifery (*maieutics*) because it is employed to bring out definitions implicit in the interlocutors' beliefs, or to help them further their understanding. The Socratic method is a method of hypothesis elimination, in that better hypotheses are found by steadily identifying and eliminating those that lead to contradictions. The Socratic method searches for general, commonly held truths that shape beliefs and scrutinizes them to determine their consistency with other beliefs. The basic form is a series of questions formulated as tests of logic and fact intended to help a person or group discover their beliefs about some topic, exploring definitions or *logoi* (singular *logos*) and seeking to characterize general characteristics shared by various particular instances. The teaching of adults, as a specific group, is referred to as andragogy.

5.4 Herbartianism

The educational philosophy and pedagogy of Johann Friedrich Herbart (4 May 1776 – 14 August 1841) highlighted the correlation between personal development and the resulting benefits to society. In other words, Herbart proposed that humans become fulfilled once they establish themselves as productive citizens. Herbartianism refers to the movement underpinned by Herbart's theoretical perspectives. Referring to the teaching process, Herbart suggested five steps as crucial components. Specifically, these five steps include: preparation, presentation, association, generalisation, and application. Herbart suggests that pedagogy relates to having assumptions as an educator and a specific set of abilities with a deliberate end goal in mind.

5.5 Critical Pedagogy

Critical pedagogy is both a pedagogical approach and a broader social movement. Critical pedagogy acknowledges that educational practices are contested and shaped by history, schools are not politically neutral spaces and teaching is political. Decisions regarding the curriculum, disciplinary practices, student testing, text book selection, the language used by the teacher, and more can empower or disempower students. It recognises that educational practices favour some students over others and some practices harm all students. It also recognises that educational practices often favour some voices and perspectives while marginalising or ignoring others. Another aspect examined is the power the teacher holds over students and the implications of this. Its aims include empowering students to become active and engaged citizens, who are able to actively improve their own lives and their communities. Critical pedagogical practices may include, listening to and including students' knowledge and perspectives in class, making connections between school and the broader community, and posing problems to students that encourage them to question assumed knowledge and understandings. The goal of problem posing to students is to enable them to begin to pose their

own problems. Teachers acknowledge their position of authority and exhibit this authority through their actions that support students.

5.6 Dialogic learning

Dialogic learning is learning that takes place through dialogue. It is typically the result of egalitarian dialogue; in other words, the consequence of a dialogue in which different people provide arguments based on validity claims and not on power claims.

5.7 Student-centred learning

Student-centred learning, also known as learner-centred education, broadly encompasses methods of teaching that shift the focus of instruction from the teacher to the student. In original usage, student-centred learning aims to develop learner autonomy and independence by putting responsibility for the learning path in the hands of students. Student-centred instruction focuses on skills and practices that enable lifelong learning and independent problem-solving. It is this style of learning that will be utilised for the development of Young Entrepreneurs as it is crucial for their development and problem solving that they research and learn the skills and knowledge required themselves.

5.8 Modern Pedagogy

An article from Kathmandu Post published on June 3, 2018 described the usual first day of school in an academic calendar. Teachers meet their students with distinct traits. Attributional diversity among these children or teens exceeds similarities. Educators have to teach students with different cultural, social, and religious backgrounds. This situation entails a differentiated strategy in pedagogy and not the traditional approach for teachers to accomplish goals efficiently. American author and educator Carol Ann Tomlinson defined Differentiated Instruction as "teachers' efforts in responding to inconsistencies among students in the classroom." Differentiation refers to methods of teaching. She explained that Differentiated Instruction gives learners a variety of alternatives for acquiring information. Primary principles comprising the structure of Differentiated Instruction include formative and ongoing assessment, group collaboration, recognition of students' diverse levels of knowledge, problem-solving, and choice in reading and writing experiences.

5.8.1 Differences between Pedagogy and Andragogy

Table 5-1 outlines some of the main differences between pedagogy and andragogy:

Table 5-1: Differences between Pedagogy and Andragogy

	PEDAGOGY	ANDRAGOGY
Learner	<ul style="list-style-type: none"> —The learner is dependent on the instructor, the teacher schedules all the activities; determining how, when and where they should take place —Teacher is the one who is responsible for what is taught and how it is taught —Teacher evaluates the learning 	<ul style="list-style-type: none"> —Learner is self-directed and moves towards independence —Learner is responsible for the learning —Self-evaluation is seen

Learner's experience	<ul style="list-style-type: none"> —There is little experience which could be gained from this kind of learning —Method is didactic 	<ul style="list-style-type: none"> —There is large quantity of experience gained — Method used is problem solving, discussion, service-learning
Readiness to learn	—Standardized curriculum set which will be based on societal needs	—Curriculum is more application based and it revolves around life
Orientation to learning	—Here, it is a process of acquiring subject matter	—Here learning is for performing tasks and solving problems
Motivation	—Motivation is by external pressure, and there is lot of competition for grades	—It is driven by internal motivation. Includes self-actualisation, self-confidence etc.

5.9 Heutagogy (Autodidacticism)

Autodidacticism is sometimes a complement of modern education. As a complement to education, students would be encouraged to do more independent work. The Industrial Revolution created a new situation for self-directed learners.

Before the twentieth century, only a small minority of people received an advanced academic education. As stated by Joseph Whitworth in his influential report on industry dated from 1853, literacy rates were higher in the United States. However, even in the U.S., most children were not completing high school. High school education was necessary to become a teacher. In modern times, a larger percentage of those completing high school also attended college, usually to pursue a professional degree, such as law or medicine, or a divinity degree. For many professions or for personal knowledge, however, formal education is not so necessary today due to the easier availability of free information on the Internet. Whereas in the past, one of the main benefits of going to college was to gain access to their superior libraries, today access to facts and books is available online. Financial analyst and author Peter Schiff, for one, says, "Never before in history has it been so easy to be self-educated". Collegiate teaching was based on the classics (Latin, philosophy, ancient history, theology) until the early nineteenth century. There were few if any institutions of higher learning offering studies in engineering or science before 1800. Institutions such as the Royal Society did much to promote scientific learning, including public lectures. In England, there were also itinerant lecturers offering their service, typically for a fee. Prior to the nineteenth century, there were many important inventors working as millwrights or mechanics who had typically received an elementary education and served an apprenticeship. Mechanics, instrument makers and surveyors had various mathematics training. James Watt was a surveyor and instrument maker and is described as being "largely self-educated". Watt, like some other autodidacts of the time, became a Fellow of the Royal Society and a member of the Lunar Society. In the eighteenth century these societies often gave public lectures and were instrumental in teaching chemistry and other sciences with industrial applications which were neglected by traditional universities. Academies also arose to provide scientific and technical training. One of the most recent trends in education is that the classroom environment should cater towards students' individual needs, goals, and interests. This model adopts the idea of inquiry-based learning where students are presented with scenarios to identify their own research, questions and knowledge regarding the area. As a form of discovery learning, students in today's classrooms are

being provided with more opportunity to "experience and interact" with knowledge, which has its roots in autodidacticism. Successful self-teaching requires self-discipline and reflective capability. Some research suggests that being able to regulate one's own learning is something that must be modelled to students, for it is not a natural human tendency in the population at large. To interact with the environment, a framework has been identified to determine the components of any learning system: a reward function, incremental action value functions and action selection methods. Rewards work best in motivating learning when they are specifically chosen on an individual student basis. New knowledge must be incorporated into previously existing information as its value is to be assessed. Ultimately, these scaffolding techniques, as described by Vygotsky (1978) and problem solving methods are a result of dynamic decision making. The secular and modern societies gave foundations for a new system of education and a new kind of autodidacts. While the number of schools and students increased from one century to the other, so did the number of autodidacts. The industrial revolution produced new educational tools used in schools, universities and outside academic circles to create a post-modern era that gave birth to the World Wide Web and encyclopaedic data banks such as Wikipedia. As this concept becomes more widespread and popular, web locations like Udacity and Khan Academy are developed as learning centres for many people to actively and freely learn together.

5.10 Virtual Reality (VR) and Augmented Reality (AR) as Training Tools

The development of modern society leads to rapid changes in the conditions of its existence, contributing to the processes of evolution and transformation, which, in turn, becomes a source of creation and implementation of innovations in education and training. The growing digitalisation cannot bypass the education sector; the study of the impact and prospects of using digital technologies both in higher and secondary schools is actualising. The didactic capabilities of modern technologies and their application in education is one of the topical areas of pedagogy. Today, the use of augmented and virtual reality technologies in educational practices seems promising. The introduction of new technologies into the pedagogical process is an integral part of improving the quality of education. The issues of forming the educational environment of a general secondary education institution using virtual and augmented reality have just begun by scientists and have not been fully investigated. One of the promising areas is the use of virtual and mixed reality environments based on educational platforms and specialised equipment. AR uses a real-world setting, while VR is completely virtual. AR users can control their presence in the real world whereas VR users are controlled by the system. VR requires a headset, but AR can be accessed with a Smartphone. AR enhances both the virtual and real world, while VR only enhances a fictional reality. AR technologies in education are at an early stage of their formation. Today, there is a need to build new strategies for the training of teachers, whose activities in the future will certainly be implemented in completely different conditions, but the lack of a unified methodology is also a significant problem. Augmented reality technologies are developing so rapidly that research in the field of education and pedagogy simply does not have time to provide theoretical understanding or develop a systemic methodology. Further research is required on the methodology for the optimal combination of classical forms of teaching and learning using virtual systems.

5.10.1 VR for Entrepreneurial Training

Contemporary entrepreneurship draws individuals to engage their capacity, efforts and abilities in the creation of new services and products that compete with market demand (Bellotti et al., 2012). Starting a new business venture is an uncertain undertaking and unstable process that necessitates a developed mental model, allowing the entrepreneur to go through a sensemaking and decision-making processes. Entrepreneurship education provides individuals with the required skills and knowledge and gives them the ability to recognise relevant opportunities and potential pitfalls (Jones & English, 2004), but it frequently struggles with finding effective learning tools. Taking a look at virtual reality as a technological and complementary tool that enables the user to learn and evolve their skills by immersing themselves into virtual environments is a necessary step in inspecting functional teaching approaches. Contemporary entrepreneurship draws individuals to engage their capacity, efforts, and abilities in the creation of new services and products that compete for market demand and attention (Bellotti et al., 2012). Klein & Bullock (2006) found that there is little connection between the leading approaches to entrepreneurship education and economists' understanding of the entrepreneurial function. As starting a new business is commonly an uncertain undertaking and precarious process, the entrepreneur must develop a mental model through the sensemaking procedure on how the environment where the newly developed business will operate. Moreover, it is a demanding and challenging obstacle on how to prepare entrepreneurs to be able to communicate their entrepreneurial undertakings to others and gain their support through sense giving process (Hill & Levenhagen, 1995). Entrepreneurship education is the process of providing individuals not only with the required skills and knowledge, but also the ability to recognise commercial opportunities (Jones & English, 2004). According to Raposo & Do Paço (2011), entrepreneurship education seeks to link knowledge with the abilities to recognise and pursue opportunities by generating new ideas and allocating needed resources, and the abilities to create and operate a business venture through creative and critical manner. The ultimate goal of processing entrepreneurial knowledge onto individuals is for them to master aspects that are derived from open and constant communication with the environment, sharing, and evaluating the challenging goals, and finally form the ability to adapt to unforeseen conditions (Neck & Greene, 2010). However, the transfer of increased responsibility that comes along with managing businesses is considered a challenging process (Jones & English, 2004). Karlsson & Moberg (2013) relatedly estimate that trait-based view of entrepreneurship, where only some individuals are born with the necessary competencies to become entrepreneurs, is still prevalent in modern societies. It does not come without surprise that the debate wherever entrepreneurship can be taught with enabling supportive and stimulating learning processes is now ongoing for several decades (Ronstadt, 1985; Kantor, 1988; Hynes, 1996; Jack & Anderson, 1999; Kirby, 2004; Henry et al., 2005; Taatila, 2010). Yet, at both the theoretical and ontological levels, no firm consensus regarding entrepreneurship education has been achieved due to the ever-changing landscape of contemporary entrepreneurship as a concept (Huq & Gilbert, 2017). Similarly, Nabi & Holden (2008) conclude that there is no universal approach to entrepreneurship that works for all contexts – different contexts require tailored and customised approaches to best suit individual needs. There is a substantial diversity of target groups included in the educational process. Learning entrepreneurial methods and approaches facilitates the formation of a way of thinking and acting, built on assumptions using a portfolio of techniques to motivate individuals towards creating (Neck & Greene, 2010). While these methods and approaches can be taught within the selected entrepreneurial teaching course on a primary and secondary education or graduate and postgraduate levels, individuals can gain the relevant knowledge by involving themselves into self-taught processes (Katz, 2014). The shaping of individuals' entrepreneurial intentions does not solely depend on their

personalities, and personal aims, goals and tendencies, but rather are directly linked to the level of engagement and priority entrepreneurial objectives they hold (Top et al., 2012). The potential uses of virtual reality as an educational tool have been the subject of several discussions and studies in the past (eg. Wickens, 1992; Hedberg & Alexander, 1994; Psotka, 1995; Winn & Jackson, 1999; Kaufmann et al., 2000; Virvou & Katsionis, 2008; Merchant et al., 2014; Martín-Gutiérrez et al., 2017). Yet, the potential of virtual reality that would allow future entrepreneurs to gain necessary skills helping them tackle everyday obstacles on their entrepreneurial pathways appear as a virtually unresearched subject. Recent research suggests that individuals can retain more information, and can effectively use learned skills and obtained knowledge after participating in virtual reality simulation (Krokos et al., 2019), making virtual reality a vital learning tool. There are a handful of existing and freely accessible virtual reality environments that deal with the STEM domain, and generic courses on entrepreneurship. These environments are designed to boost the individuals' active learning as well as the teachers' lecture conduct by interacting with various virtual objects and other peers. Perikos et al. (2018) explored a particular virtual reality world, the 3D Virtual World, and investigated the potential for entrepreneurship education. The 3D Virtual World is a cloud-based software component that is implemented in OpenSim, an open-source multi-user virtual environment where individuals can interact with a various object, devices and other users, represented by avatars that are delegated into the roles of students or tutors. Students take an active role in virtual classes that involve interactive quizzes and exercises, while tutors provide them with simultaneous feedback on their performance. Additionally, individuals can actively participate in different activities in order to visualise procedures that are relevant for obtaining entrepreneurial knowledge of specific work field according to Marko Orel (2019).

5.11 VR vs. e-learning and classroom training

In 2019 Price Waterhouse Cooper undertook a study, in the use of VR and found that using virtual reality to train employees on various skills, was more effective than classroom and e-learn training modalities at teaching soft-skills concepts. The v-learners were up to 275% more confident to act on what they learned after training—a 40% improvement over classroom and 35% improvement over e-learn. V-learners were up to four times more focused than e-learners. They completed training on average four times faster than classroom training and 1.5 times faster than e-learn. V-learners were 3.75 times more emotionally connected to the content than classroom learners and 2.3 times more connected than e-learners. On top of those benefits, v-learn was estimated to be more cost-effective than classroom or e-learning modalities when delivered at scale. They determined that while VR training would not replace classroom or e-learn modalities anytime soon, it should be considered as part of a blended learning curriculum when training specific types of skills. When you combine classroom, e-learn and v-learn together, you provide your employees with an industry leading approach. V-learning will likely be an accelerator that helps drive a new age of enterprise training and education by delivering a cost-effective, immersive, and efficient experience to train employees on soft skills. In September 2018 at an Emerging Technology conference in Boston, the team experienced a VR demonstration that used a virtual human avatar to train a human resource professional on how to legally and empathically terminate a worker's job. The "Barry Demo," created by Talespin Reality Labs, provided an immersive, engaging and emotional experience in which a trainee, using his or her own voice, would interact with a virtual human. In the Talespin VR demonstration, learners play the role of a manager required to fire Barry, a fellow employee. The demo includes the dialog, heavy emotions and stress normally found in this type of situation. Even in a digitally created room with a computer-generated character, users feel emotional and physical responses while communicating to

Barry that he is fired. When interacting with Barry, the user must choose from a number of effective and ineffective conversations, with different termination pitfalls, in addition to Barry’s verbal and physical reactions. The resulting experience feels genuine, and the training is not only about what is said, but also how the user responds to Barry’s reactions. A VR screenshot of Barry is shown at Figure 5-1 below.

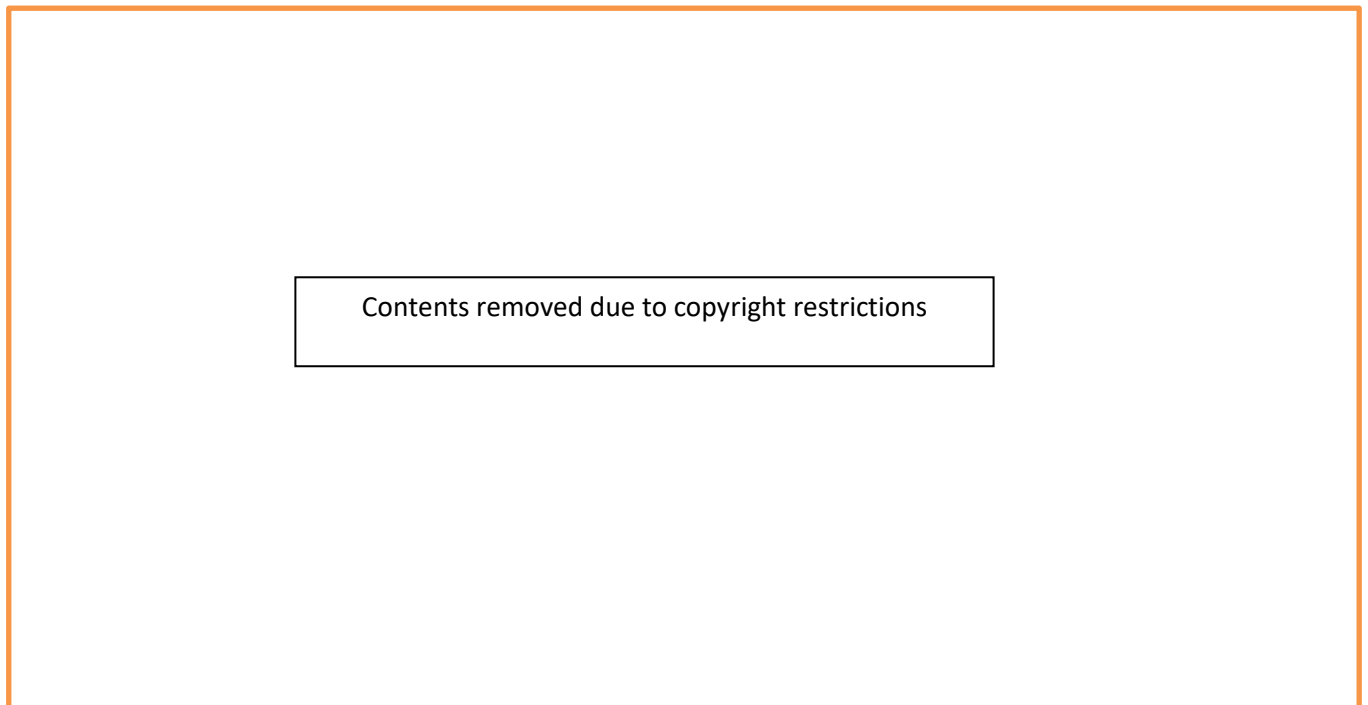


Figure 5-1: VR Simulation Character - Barry

This VR training experience felt like a game changer, but they needed quantifiable data. The PwC Emerging Technology team knew the technology, but didn’t have the knowledge or experience to understand the psychology and science behind it. They reached out to PwC’s Learning and Development group and were introduced to a team of learning scientists who were looking at VR as a potential training tool. They understood the science behind what learners were feeling, but didn’t understand the complexities of the technology. It was a perfect match. Both teams worked together for more than 10 months to socialise the use case, secure the additional funding necessary, and then design, build, deploy and analyse the results of the study. PwC collaborated with Talespin to use their software platform. They also provided guidance and support on how to build an effective soft-skills training course in VR. Oculus for Business provided hardware support, as PwC was one of only a few companies that had access to early versions of their hardware and software management platform. Collaboratively, they worked as a single team to build a solution that would likely improve a user’s VR learning experience.

5.11.1 The study needed to answer two specific questions:

1. Is VR soft-skills training more effective than traditional training methods?
2. Is VR soft-skills training more cost-effective to deploy than traditional training methods?

For PwC, this would mean comparing VR training, what they called “v-learn,” to their two most common training methods: classroom and e-learn.

5.11.2 Results of their findings:

- Employees trained using VR completed training faster
- Employees trained using VR were more confident
- Employees trained using VR had a stronger emotional connection to the content
- Employees trained using VR were more focused
- VR can be more cost-effective at scale

5.11.3 Employees trained using VR completed training faster

They were able to train employees up to four times faster in VR than in the classroom and 1.5 times faster than e-learn, and were surprised when their digital natives initially struggled with the VR headsets, but, once they were comfortable, most found them easy to use. Even when they accounted for the additional time needed to onboard new users in VR headsets for the first time (on average 10 extra minutes), they found it is still three times faster than classroom and 1.15x faster than e-learn.

5.11.4 Employees trained using VR were more confident

Users trained with VR were up to 275% more confident to act on what they learned after training—a 40% improvement over classroom and 35% improvement over e-learn. They were almost two and a half times more confident in discussing diversity and inclusion issues after taking the training in virtual reality and nearly three times more confident in acting on diversity and inclusion issues after the VR training. That's significant because, when it comes to soft skills, confidence is a key driver of success. Believing in themselves and having confidence helps learners connect better with others, while also feeling more satisfied with the time spent training.

5.11.5 Employees trained using VR had a stronger emotional connection to the content

V-learners felt 3.75 times more emotionally connected to the content than classroom learners and 2.3 times more connected than e-learners. People connect, understand and remember things more deeply when their emotions are involved. Consider the emotional impact of viewing a photo of a wildfire, compared with reading a fact-filled analysis of climate change and the wildfire crisis, and it's easier to understand how strong emotional connections could lead to more positive outcomes.

5.11.6 Employees trained using VR were more focused

When you think about how VR works, it's easy to understand why users would be less distracted with this technology: The simulations and immersive experience command their vision and attention. In their study, VR-trained learners were up to 4 times more focused during training than their e-learning peers and 1.5 times more focused than their classroom peers. When learners are immersed in a VR experience, they tend to get more out of the training and will likely have better outcomes

5.11.7 VR can be more cost-effective at scale

When PwC decided to study the efficacy of VR training, they also chose to compare the cost of developing each of the learning modalities. The most effective way to do that was to design and build a course that could be replicated on each of the three training modalities. They found that, while VR requires more upfront investment to build and deploy than classroom or e-learn training, when delivered to enough learners, VR training can be more cost-effective at scale. When They evaluated the price differences between building a VR course versus a classroom or e-learning course, they discovered that the VR custom course cost 47% more than the classroom course and 48% more than the e-learning course. This makes sense when you account for the cost of creating the content, but also the cost of developing the VR experience. That may require 3D artists and software developers,

which you don't need when creating traditional classroom or e-learning content. However, when you consider the return on investment (ROI), a new picture emerges. VR training takes less time than classroom and e-learning courses. So, if you take into account the cost of the employees' time, VR becomes a better investment at some point. And that factor just considers the time saved.

5.12 Conclusions from the study

A combined team from PwC's Learning and Development Innovation team, PwC's Emerging Technology Group, Oculus for Business, and Talespin worked together to launch a 10-month pilot to understand if VR can be used to train enterprise employee soft skills. This pilot answered specific questions: Is VR soft skills training more effective than traditional training methods, and is VR soft skills training more cost-effective to deploy than traditional training methods? The answer to both questions is "yes." V-learn, the ability to use virtual reality to train skills, is more effective at training soft skills concepts than classroom and e-learn training modalities. Learners are more confident, less distracted, have a stronger emotional connection, and when deployed to enough learners, v-learn for soft skills training can be more cost-effective than classroom or e-learning modalities. VR training is not the answer to everything and will not replace classroom or e-learn training modalities anytime soon. It is not an appropriate platform to host every type of training, and so PwC do not believe that it will completely replace other modalities. VR is a new modality that should be considered when training specific types of skills. Companies should consider a multimodal approach in the future, as VR can be ideal for practicing what you learn in a safe and dynamic way. When you combine classroom, e-learn, and v-learn together, employers are helping provide their employees with an industry leading approach. This new modality will likely help transform this new age of training and education in the enterprise.

5.13 Cybersecurity and Information integrity of VR Tools

Since the first head-mounted AR display in the 1960s, Virtual Reality (VR) and Augmented Reality (AR) have become increasingly more prominent and given way to the metaverse, a massive virtual shared world created by the convergence of the internet, VR, and AR. While this has become most noticeable in the video gaming industry, the metaverse is set to revolutionize eCommerce, healthcare, entertainment, and the automotive industries as well. Soon these immersive technologies will become indispensable. Now is the time both organizations and individuals start looking at cybersecurity in the VR-AR world from a different perspective to avert any potential cybersecurity breaches. However, as these technologies continue to improve, so do the cybersecurity risks involved. Cyber threat actors evolve their modus operandi to infiltrate the end-users privacy for their nefarious purposes.

5.13.1 A Minefield of Information — Readily Available

When you use a VR headset, you share crucial information about your facial features, eyes, speech data, and even your retina patterns. These biometric identification characteristics are critical as any malicious actor can replicate them and cause use for illegitimate purposes such as identity theft and other cybersecurity breaches.

5.13.2 Data Security Issues — Lack of Encryption

There is currently data encryption in online communication tools such as instant messaging apps, readily available for end-users. However, several VR/AR systems have not yet implemented

encryption for network connections. Besides, these systems rely on third-party apps for collaborations, which often do not adopt sufficient protective measures.

5.13.3 Rise in DDoS Attack — Can Affect Business Continuity

Generally, business organizations include a well-compiled incident response strategy in their cybersecurity policy for the traditional environment. As VR/AR technology is still in its nascent stages and not appropriately monitored, these environments are at risk from several cyberattacks, such as DDoS (Distributed Denial of Service) attacks.

5.13.4 Mitigating Cybersecurity Risks In VR/AR Environments

As AR and VR technologies mature into mainstream technologies, users must be ready to tackle the cybersecurity threats that may arise due to any reasons whatsoever. Securing device-to-device communication between such devices and the centralized servers that manage communications in the VR/AR environment is essential. It is better to encrypt outbound and inbound connections from and to VR/AR devices for maintaining data privacy. One should ensure force authentication of all communication between VR/AR devices. Using proper identity and authentication mechanisms between VR/AR applications and the centralized ecosystem help secure communications with the primary server. It is advisable to use data masking for securing data. All VR/AR applications and firmware residing on such devices must be additionally protected using robust anti-virus and anti-malware tools. Users must look out for any abnormal behaviour of the VR/AR devices, applications, and the ecosystem. Validating the integrity and relevance of VR/AR content is also crucial. There should be continuous assessment of VR/AR devices, applications, and the overall ecosystem.

5.14 Summary: Why we should use VR and AR to train future Entrepreneurs

It has been shown from the above research and studies that the use of VR and AR training has significant benefits in terms of engagement, assimilation and understanding of the training provided. It would therefore make sense to utilise the most up-to-date training methods to facilitate the entrepreneurs of the future. Virtual Reality has significant potential and is ready for both classroom and personal use. There is a required seismic shift in education that will push the use of virtual reality tools forward in teaching curriculums of entrepreneurship education. Besides, new, more profiled and fully supported platforms and the content will need to be developed in order to expand learners' engagement into virtual environments. Finally, an ongoing research effort will need to be expanded with empirical studies in order to support the effectiveness of incorporating virtual reality in the classroom. Learning possibilities in virtual reality environments are practically endless, and certainly, entrepreneurship education could stand to benefit. The development of tools to facilitate this are outside the scope of this research. It is this Author's belief that Entrepreneur development should consist of a mixture of Andragogy using VR and AR as outlined above, but also Heutagogy as outlined earlier in this Chapter. Heutagogy is an important part of Entrepreneurial development and ongoing life and can be used as a method for effective problem solving and knowledge banking. A big part of the entrepreneurial development should be learning to be an entrepreneur rather than being taught how to be one. At the risk of causing controversy, this isn't something that the majority of academics can do effectively, as some of them do not have the experience of being entrepreneurs

themselves, some have the experience of being able to teach from a syllabus but not from the perspective of an entrepreneurial journey to success which is not often a smooth transition but one fraught with highs and lows with failures and successes. The Framework for Entrepreneur training from Identification to Success is shown in at Appendix B. I purchased a VR headset which is the Vive Cosmos and was blown away with its capabilities and the VR environment as a whole. I was able to visit different virtual environments as an avatar and chat with people from various parts of the country. The environment isn't limited by geographical location in a virtual world, which allows for international collaboration with other students, entrepreneurs and academics. One of the apps I particularly like and feel would be ideal for the Young Entrepreneur training is 'Engage' which allows private rooms for meeting and presentations as well as the opportunity to attend live presentations or ones that have already taken place and been recorded. The monthly fee for the use of this platform is negligible at around £5 per month for up to 20 users and then scaled up accordingly for larger numbers. The use of this app allows almost instant implementation for the training course, with only content and presentation to be created. It also allows for objects to be picked up, looked at in detail and assembled as part of a project for prototyping and development and is therefore an extremely powerful tool.

This proposal for the use of VR and AR is paramount to the future of entrepreneurial identification and training and provides additional suggestions for future research thus filling the gap in current knowledge and meeting the objectives of this study.

5.15: ENTREPRENEUR INTERVIEWS - Introduction

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5.39 Summary of the Interviews

There are entrepreneurs in all areas of business, with diverse markets, all of whom have key traits to their personalities. None are risk averse and all of them speculated in one way or another in order to achieve success. Many made mistakes along the way, but took the opportunity to learn from their mistakes and persevere. All are innovative and have created businesses, many with differentiators in terms their business offerings above that which is provided by their competitors. Many have seen the value of having a good mentor to guide them through their business journey, which is what this study and subsequent training programme also seeks to do.

The benefits of the above interviews were that they highlighted the need for a good structured training programme for entrepreneurs that covers all the potential pitfalls and help & advice that will assist entrepreneurs when starting their entrepreneurial journey to success. This assisted in putting together the training program show in figure 3-1, the 'Structured Training Programme.'

Having identified the young person as someone with entrepreneurial potential, it is important to provide them with the tools to create a successful business. This can be achieved by the following:-

- A comprehensive training course covering all the major elements and skills required for a business person.
- Mentoring by a successful entrepreneur in order to pass on the benefit of their skills and experience.
- Access to funding.
- A good Support Network.

The comprehensive training course that is proposed was originally highlighted as a series of modules in a book that I wrote and published in 2012 titled 'Success Breeds Success', with a re-print titled 'An Entrepreneurs Guide to Business Success' figure 5-2 below.

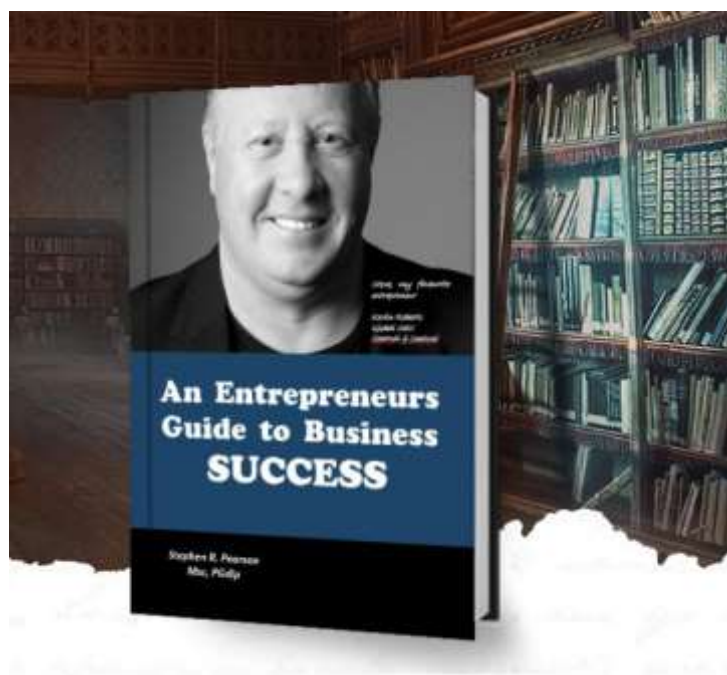


Figure 5-2: Entrepreneurs Guide to Business Success front cover

It is intended that the training of these modules will be delivered online utilising the latest technology in Virtual Reality and Augmented Reality to provide a better learning environment and experience. The development of the VR and AR training course is outside the scope of this study.

The modules to be covered as part of the initial training course are listed below and are intended to give a brief outline of the content of the full training module to be implemented. They will need to be reviewed and redeveloped to cope with today's digital era, promoting the usage of VR and AR.

- Module 1:** Starting a business – Explains how to start a business.
- Module 2:** Developing a USP – How to develop a Unique Selling Proposition
- Module 3:** Niche Markets – Talks about Niche markets and how to exploit them
- Module 4:** Be good at what you do – Outlines how you can excel in your business
- Module 5:** Perception – You are what people perceive you to be, explanations
- Module 6:** Sales – The key to everything in business
- Module 7:** Marketing – Different marketing strategies and ROIs
- Module 8:** Building Customer Relations – Developing relationships in business
- Module 9:** Profile & Image – Creating a profile and image for your company
- Module 10:** Recruiting the right staff – How to recruit the right people
- Module 11:** Profit – Why profit isn't a 'dirty word' and is important to a business
- Module 12:** Quality & Service – Creating the right business environment
- Module 13:** Cashflow – Managing finances
- Module 14:** Accountancy – What to look for in an accountant
- Module 15:** Business Networking – Leveraging the power of business networks
- Module 16:** Embracing Technology – The use of modern technology to enhance a business

CHAPTER 6: CONCLUSIONS, MAJOR FINDINGS, RECOMMENDATIONS AND FUTURE WORK

6.1 Introduction

It has been stated that studies in the field of youth entrepreneurship are limited and little or no studies have been undertaken into identifying young people who have the potential to become entrepreneurs. This is therefore a compelling reason as to why this research should be undertaken, in order to expand the current knowledge of the subject in furtherance of providing positive identification of young people in order to potentially reduce youth unemployment. The effects of youth unemployment can have catastrophic effects on the lives of young people, including mental health problems, homelessness and crime. Youth unemployment is a global epidemic that has significant socio-economic implications. Government policy is actively working towards providing training and assistance to entrepreneurs in order that they can develop their businesses and realise their full potential, with anticipated payback in terms of the contributions to the economy and employment. It is therefore imperative that a way to positively identify and then provide effective, structured, development pathways be developed. The empirical analysis of the research undertaken to date confirms that there are more identifiable traits associated with a persons' propensity to be entrepreneurial than had previously been identified. Previous studies centred primarily around a) Internal locus of control, b) Risk taking propensity, c) Need for achievement, d) Creativity, e) Problem solving orientation, and f) Tolerance of ambiguity. These traits have been proven in numerous studies to be significant factors in an entrepreneurs' personality and characteristics, however for identification of a persons' potential to become a successful entrepreneur a more detailed analysis of their personality traits needs to be made. This research undertook to provide positive identification of additional traits in order to give a better resolution of the person being examined to see if they have the potential to be entrepreneurial and succeeded in terms of its outcome.

6.2 Key Findings

1. This research enabled the identification of a substantial number of additional traits to be identified to those normally stated in previous studies. The identifiable traits were grouped into a new classification of trait to be known as an entrephenotypic trait under which the identifiable traits sit. This trait classification has been found to be common in the majority of entrepreneurs who were subjects of the trait analysis study.
2. The derivation of a new trait cluster to be known as an Entrephenotypic Trait was defined as a word to describe the composition of an entrepreneur. It consists of twenty-four identified traits which were further sub-categorised as Cardinal, Central and Secondary Traits.
3. The hypothesis that Young Entrepreneurs exhibit the same traits as older entrepreneurs was proven to be true.

6.3 Pathways

Entrepreneurs are both born and made, however for an entrepreneur one would not normally exist without the other and the two are mutually dependant. To clarify that statement, it isn't good enough to merely be born entrepreneurial as someone growing up with entrepreneurial traits would probably in all but exceptional cases not go on to achieve fully successful entrepreneur status. They need identifying, training, nurturing, support and assistance. Equally someone given training, nurturing, support and assistance alone in the absence of entrepreneurial traits would not go on to achieve fully successful entrepreneur status either. They might go on to own their own business, and make a comfortable living out of it, but that would probably be the pinnacle of their achievement.

Having a structured pathway for someone who has the potential to become a successful entrepreneur is therefore of paramount importance and pathways should exist to facilitate this. One of the key components of the pathway is 'Identification'. It is imperative that potential entrepreneurs are identified, and preferably at an early age so that they can begin a journey on a pathway to success.

6.4 Facilitation

It is important to facilitate the identification of young entrepreneurs in order that they may be given the opportunity to develop into successful entrepreneurs with the potential to make a significant difference to the economy and national/global employment. The online framework being developed as part of this research will therefore make a significant contribution to the facilitation of the identification process after which a variety of structured pathways to achieve the end goal can be considered and taken.

6.5 Methodological Reflections

This study utilised a qualitative approach and adapted a theory that is normally associated with quantitative investigations in entrepreneurship. A qualitative approach to entrepreneurial identification can be seen in some ways to complement a quantitative approach, and previous studies that centred around entrepreneurial traits and characteristics were limited to a small number of identifiable traits. This study further advances the understanding of precisely what traits make someone entrepreneurial after starting with over one hundred and fifty initial traits, which were selectively reduced to twenty-four identifiable traits of which sixteen were deemed to be essential entrepreneurial traits. This qualitative study has been able to more comprehensively and thoroughly study entrepreneurs, their traits and also their own views as to what makes them entrepreneurial in order to assist with the development of an identification tool to be used to positively identify young people with entrepreneurial potential. Using existing studies in mainly adult entrepreneurs was helpful in determining an understanding to supplement the limited amount of research previously undertaken into the positive identification of entrepreneurial young people. Previous research focussed on those young people who were already entrepreneurs, rather than identifying those yet to become entrepreneurs, hence there is a significant gap in the knowledge surrounding this area, which this research seeks to fill in. Previous research has not offered any insights into how to go about positively identifying young people with the necessary abilities to become entrepreneurs and positivist studies on young people as entrepreneurs are often focussed on business performance outcomes of formed business ventures rather than what is was that enabled them to be entrepreneurial and create the ideas for the business ventures in the first place.

6.6 Limitations

Bryman (2008:391) states "It is often suggested that the scope of the findings of qualitative investigations is restricted", hence the generalisability of a qualitative study is weaker than that of quantitative studies. The sample size used in this study (34 participants) is considerably smaller than could be achieved in quantitative studies carried out in entrepreneurship, although by the nature of the subject matter, those people who are generally entrepreneurial are significantly small percentages per capita and are often geographically spread out and therefore difficult to gather for sampling purposes. Also, they are often extremely busy people and therefore the propensity to engage in studies can be quite low as their priorities are often significantly higher in a great number of other areas. To this end purposive sampling was used for the interviewing of entrepreneurs, to try and identify a range of entrepreneurs with different backgrounds, business interests and experience, however this sample provides less variety than a purely random sample.

6.7 Future Research Work

This initial exploratory study into positive identification of young entrepreneurs has shown that using a qualitative approach offers extremely useful and also complementary results to that used in the

more conventional quantitative studies on entrepreneurship. It is able to identify in a more precise manner what traits have a significant impact on a person's propensity to be entrepreneurial and has highlighted areas of potential questioning for research candidates to further confirm the route to positive identification questions for the online framework being developed. This framework will offer a distinct advantage over other identification methods currently being used for adult entrepreneurs which are, on the whole quite ineffective and generalised in terms of their approach to identification. Future studies should further explore the use of AI, VR and AR in identifying and training young entrepreneurs as these are outside the scope of this study. In addition to these Cybersecurity of training candidates should also be investigated and further developed. Many young people are considering entrepreneurial careers with encouragement coming from government, but also the need to do something to financially secure their futures. New trends and technologies are emerging and young people with the propensity of entrepreneurship are seeing the opportunities available to them in areas not previously explored. By identifying, training and mentoring them, there is a real opportunity to make a significant difference.

6.8 Contribution to Knowledge

There has been little work undertaken to identify the traits and characteristics that make entrepreneurial people, entrepreneurs, and the identification of Youth Entrepreneurship has been afforded even less work. As Rudawska & Krzysztofek, (2021) commented: 'The issue of entrepreneurial behaviours is a vital aspect of the study of entrepreneurship and identification relations and factors determining student's decisions in this area, seems critical.' The critical significance of my research, at this time, is imperative. The aim of many government bodies as clearly articulated, is to try to increase and assist the numbers of young people starting their own businesses. Jane Harrison the Principal Policy and Project Officer for London Councils commented that "Youth entrepreneurship may help to overcome some of the structural problems associated with youth unemployment as it allows young people to become value creators in the economy and generate their own employment. It may also help to address some of the issues around recruitment of younger people as it will increase levels of young people as employers." In order to be able to identify those young people with the potential to become successful entrepreneurs it is important to understand what it is that makes an entrepreneur who they are. I have, in this study been able to positively identify a significant number of traits that make a person entrepreneurial and my research in this study has enabled me to characterise and define the group of traits common to most entrepreneurs into a single defined trait in a unique and distinctive way, using a variety of methods, which has been named an Entrepheotypic Trait. This is the first time that such an in-depth study has been undertaken on entrepreneurial traits that has produced a method for the identification of potential young entrepreneurs. Trait analysis in the past has focused on a small number of traits that were first theorised in 1930's by Schumpeter and hardly expanded upon since then. Schumpeter, Timmons & Spinelli and a few other notable scholars seem to be cited regularly in research involving entrepreneurship without challenge or expansion. In my study I have challenged not only the theories in terms of traits stated by the notable scholars, which seemed adequate for the context in which they were used, at the time, but also the resolution of such traits when required to provide identification of young and older entrepreneurs. Research into entrepreneurship has evolved, as have the types of businesses created by entrepreneurs, but their definable features have never been delineated in the way that I have done, and to such depth. The ability to be able to identify entrepreneurs through such a comprehensive grouping of traits as their distinguishing features will be crucial in the future. Identification of Youth Entrepreneurs offers something unique. Through my research I have identified the essential nature of that uniqueness and then categorised it. The ability to define and categorise a group of personality traits that distinguish entrepreneurs from their contemporaries is therefore imperative if we are to identify and develop entrepreneurs of the future.

6.9 Research Objectives - Achieved

The research objectives that were set at the start of the study are listed below, with confirmation that each objective had been achieved.

6.9.1 Objective One:

Investigate and identify the traits, characteristics, behavioural and environmental factors which have a positive effect on becoming a young entrepreneur: Publication reviews will be carried out to ascertain which previous methodologies have been identified as effective in the identification of adult and youth entrepreneurs and a list of identifiable traits produced which identify those traits that are responsible for making a person entrepreneurial.

Objective One: Achieved

The creation of the Entrepreneurial Trait and its twenty-four identified traits that comprise it, were identified as being present in both Adult and Young Entrepreneurs thus confirming that Objective One had been achieved.

6.9.2 Objective Two:

Develop a framework for identifying a young persons' ability to become an entrepreneur derived from a combination of identification methods: Based upon the outcomes of objective 1, a theoretical framework derived from a combination of existing and proposed methodologies will be developed to support the hypothesis that no one methodology is 100% accurate in providing identification of a young persons' potential to become entrepreneurial and that it is a combination of existing methodologies aligned to provide a high degree of accuracy that has the most potential to be effective.

Objective Two: Achieved

A framework was created that used a combination of trait analysis, situational questioning and strategic exercises to determine whether a person exhibited entrepreneurial traits. The use of trait analysis as a primary tool, based upon the twenty-four identified traits which form the Entrepreneurial trait is a good basis from which to undertake further assessment of a young persons potential to become successful entrepreneurs.

6.9.3 Objective Three:

Develop user age-appropriate web-based interface tools of the framework that will engage and stimulate the effective extraction of information from the potential young entrepreneurs: An online web portal will be developed that will use a combination of questions and challenges based upon the framework developed in objective 2 to positively identify whether or not a young person has the ability and potential to become an entrepreneur. This will be measured against existing entrepreneurs in a variety of fields and disciplines to validate its accuracy

Objective Three: Achieved

A website called Young Entrepreneurs was developed which engages and stimulates the information regarding a young persons' propensity to be entrepreneurial. In addition to the Entrepreneur Questionnaire there are useful and informative videos and other information. The content of the website can be further enhanced with additional content, the use of AI, and inspiring videos.

6.9.4 Objective Four:

Provide validation and verification of the traits that entrepreneurs exhibit, and that Young Entrepreneurs also exhibit the same traits as their adult counterparts.

Objective Four: Achieved

Validation of the framework was achieved with the engagement of known Young Entrepreneurs as test subjects, who were successful finalists in the Young Entrepreneur section of the annual UK-wide Federation of small business awards

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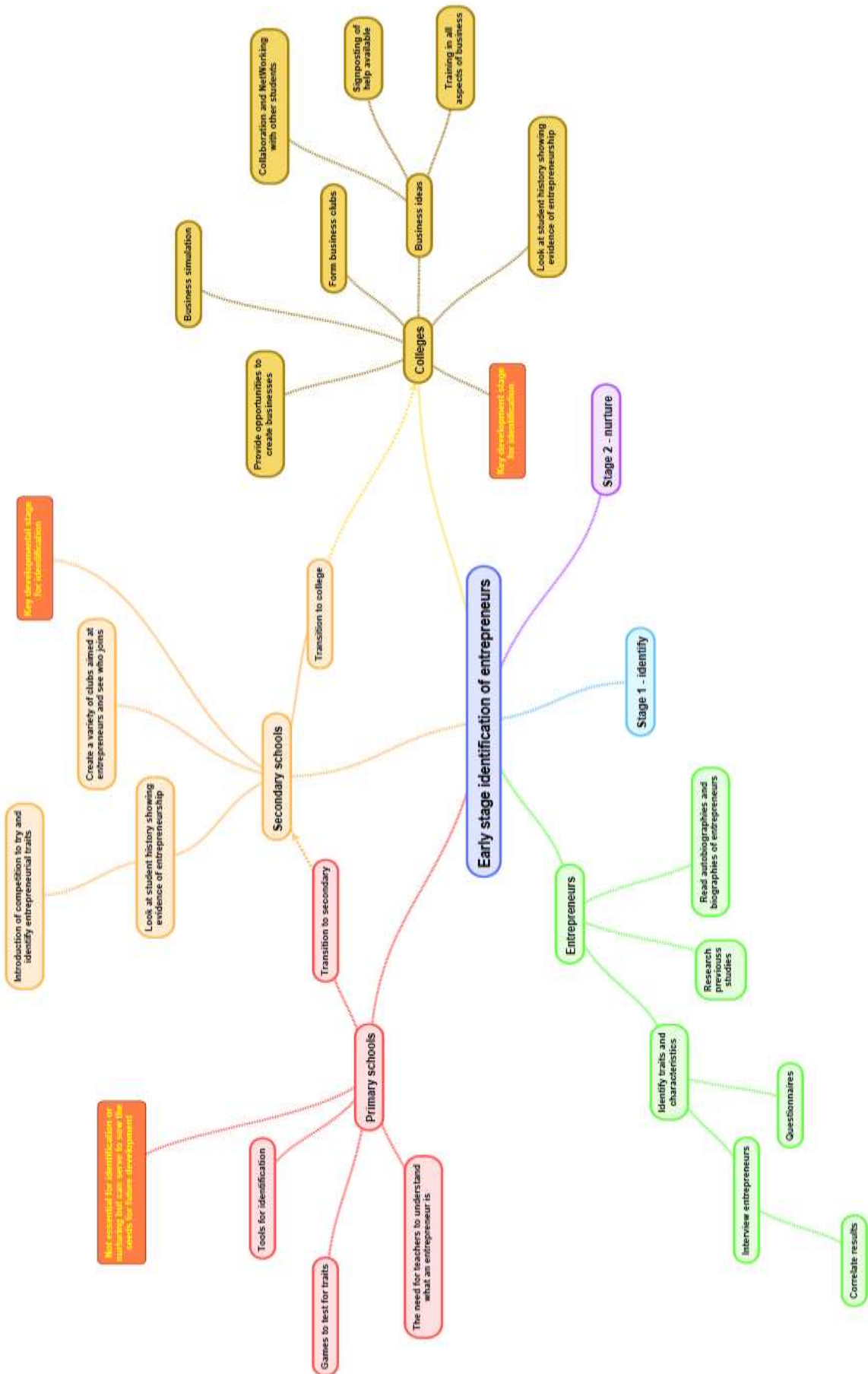
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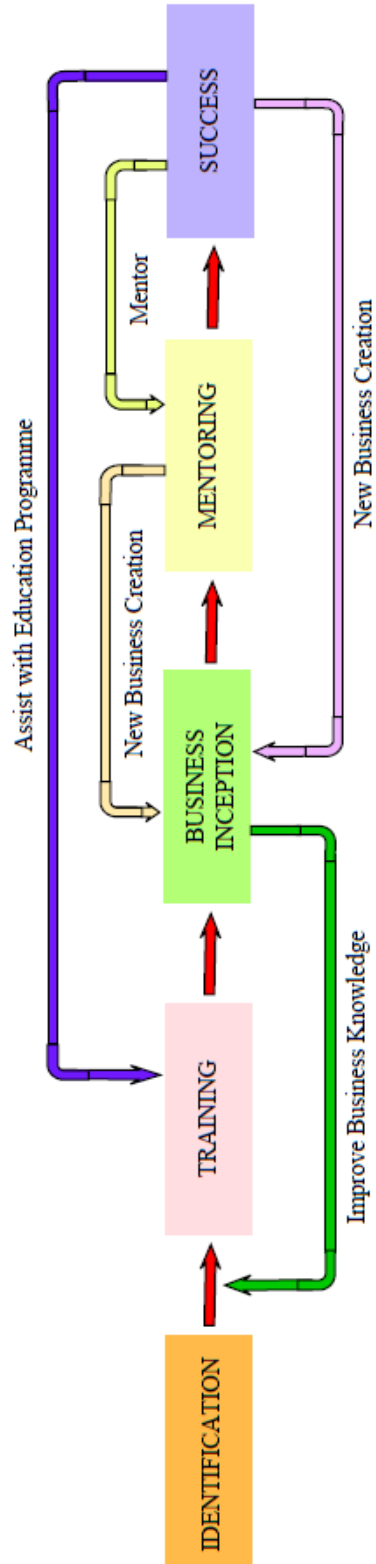
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APPENDICES

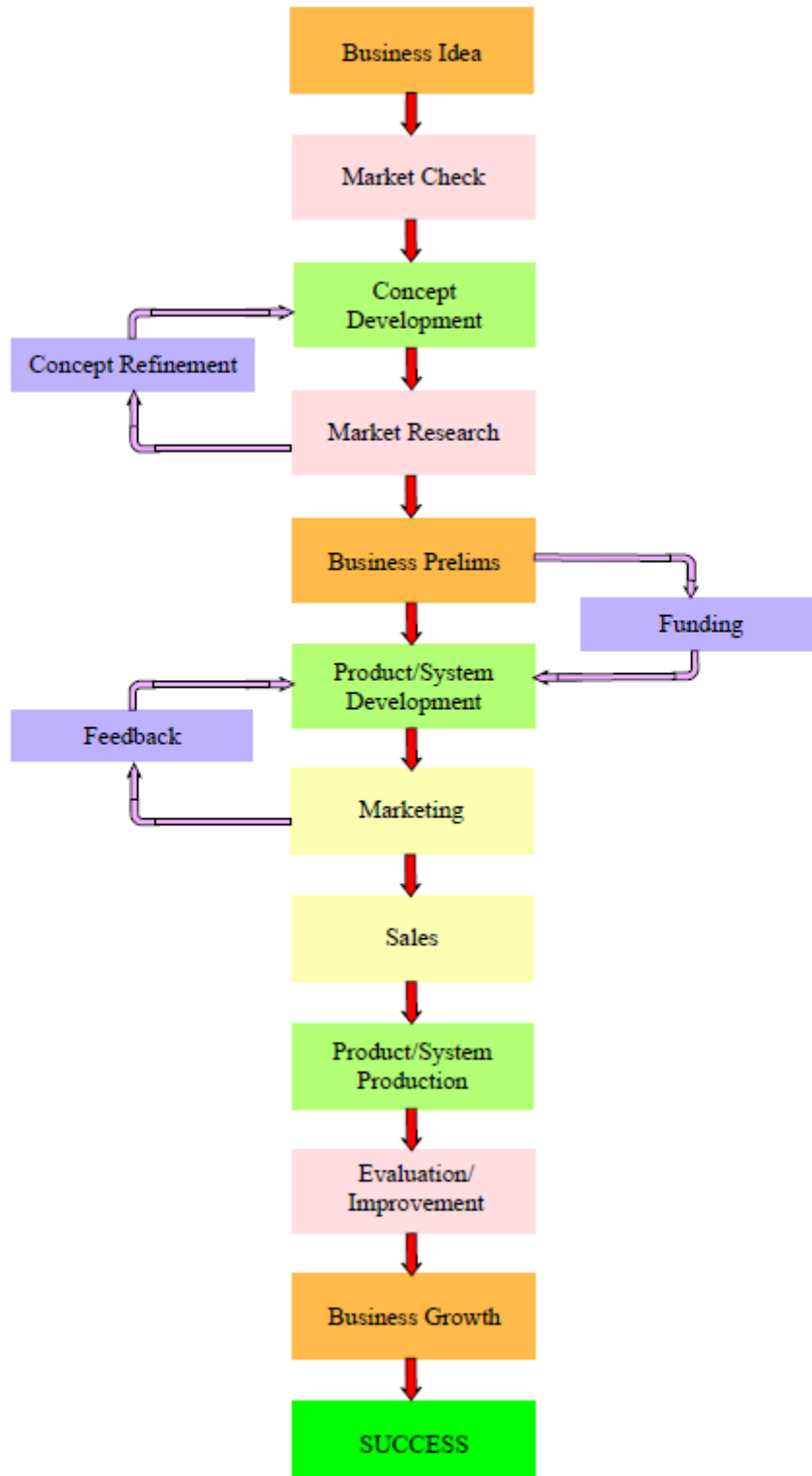
EARLY-STAGE IDENTIFICATION OF ENTREPRENEURS MIND MAP



Entrepreneurial Framework from Identification to Success



STAGES OF ENTREPRENEURIAL INNOVATION



Survey One Initial List of Traits

1. Amiable	60. Authoritarian	120. Inconsiderate
2. Articulate	61. Competitive	121. Indecisive
3. Aspiring	62. Complex	122. Insecure
4. Attention to detail	63. Conservative	123. Insensitive
5. Balanced	64. Contradictory	124. Irresponsible
6. Challenging	65. Deceptive	125. Irritable
7. Clever	66. Determined	126. Malicious
8. Confident	67. Dominating	127. Narcissistic
9. Courageous	68. Emotional	128. Negativistic
10. Competitive	69. Formal	129. Obnoxious
11. Communication skills	70. Frugal	130. Obsessive
12. Continual improvement	71. Impassive	131. One-dimensional
13. Creative	72. Impersonal	132. Opinionated
14. Decisive	73. Impressionable	133. Pedantic
15. Dedicated	74. Intense	134. Petty
16. Desire to give back	75. Non-competitive	135. Possessive
17. Disciplined	76. Ordinary	136. Prejudiced
18. Dynamic	77. Outspoken	137. Presumptuous
19. Efficient	78. Political	138. Pretentious
20. Enthusiastic	79. Predictable	139. Reactionary
21. Farsighted	80. Questioning	140. Regimental
22. Focused	81. Religious	141. Resentful
23. Hardworking	82. Reserved	142. Scheming
24. Imaginative	83. Sarcastic	143. Selfish
25. Innovative	84. Self-conscious	144. Self-indulgent
26. Insightful	85. Solitary	145. Shallow
27. Intelligent	86. Strict	146. Superstitious
28. Intuitive	87. Stubborn	147. Thoughtless
29. Logical	88. Stylish	148. Treacherous
30. Multi-levelled	89. Tough	149. Unappreciative
31. Networker	90. Unpredictable	150. Uncooperative
32. Objective	91. Abrasive	151. Unimaginative
33. Observant	92. Abrupt	152. Unreliable
34. Optimistic	93. Argumentative	153. Unrestrained
35. Passionate	94. Arrogant	154. Vindictive
36. Perceptive	95. Careless	155. Vulnerable
37. Perfectionist	96. Complacent	
38. Personable	97. Conceited	
39. Positive	98. Conformist	
40. Practical	99. Conventional	
41. Precise	100. Cynical	
42. Rational	101. Deceitful	
43. Realistic	102. Demanding	
44. Reflective	103. Dependent	
45. Relaxed	104. Devious	
46. Reliable	105. Difficult	
47. Resourceful	106. Discourteous	
48. Risk taker	107. Disorderly	
49. Self-critical	108. Disorganized	
50. Self-aware	109. Disruptive	
51. Skilful	110. Egocentric	
52. Spontaneous	111. Extravagant	
53. Systematic	112. False	
54. Venturesome	113. Fanatical	
55. Ambitious	114. Greedy	
56. Determined	115. Hesitant	
57. Trusting	116. Hostile	
58. Winning	117. Imitative	
59. Ambitious	118. Impatient	
	119. Impulsive	


Results of Survey One – Trait Investigation


The results of the surveys as per the graphical format shown in fig have been compiled onto a spreadsheet and are shown in the tables below. Questions 157 – 184 have been left in their original format.

46	Disorganised	34	Y/N	3	31	8.82	91.18
47	Disruptive	34	Y/N	7	27	20.59	79.41
48	Dominating	34	Y/N	7	27	20.59	79.41
49	Dynamic	34	Y/N	24	10	70.59	29.41
50	Efficient	34	Y/N	26	8	76.47	23.53
51	Egocentric	34	Y/N	3	31	8.82	91.18
52	Emotional	34	Y/N	16	17	48.48	51.52
53	Enthusiastic	34	Y/N	29	5	85.29	14.71
54	Envious	34	Y/N	1	33	2.94	97.06
55	Extravagant	34	Y/N	3	31	8.82	91.18
56	Fanatical	34	Y/N	6	28	17.65	82.35
57	Farsighted	34	Y/N	21	13	61.76	38.24
58	Focused	34	Y/N	29	5	85.29	14.71
59	Formal	34	Y/N	3	31	8.82	91.18
60	Frugal	34	Y/N	16	18	47.06	52.94
61	Greedy	34	Y/N	1	33	2.94	97.06
62	Hardworking	34	Y/N	33	1	97.06	2094
63	Hesitant	34	Y/N	7	27	20.59	79.41
64	Hostile	34	Y/N	0	34	0	100
65	Imaginative	34	Y/N	28	6	82.35	17.65
66	Imitative	34	Y/N	5	29	14.71	85.29
67	Impassive	34	Y/N	1	33	2.94	97.06
68	Impatient	34	Y/N	13	21	38.24	61.76
69	Impersonal	34	Y/N	1	33	2.94	97.06
70	Impressionable	34	Y/N	9	25	26.47	73.53
71	Impulsive	34	Y/N	13	21	38.24	61.76
72	Inconsiderate	34	Y/N	1	33	2.94	97.06
73	Indecisive	34	Y/N	5	29	14.71	85.29
74	Innovative	34	Y/N	30	4	88.24	11.76
75	Insecure	34	Y/N	3	31	8.82	91.18
76	Insensitive	34	Y/N	5	29	14.71	85.29
77	Insightful	34	Y/N	22	12	64.71	35.29
78	Intelligent	34	Y/N	25	9	73.53	26.47
79	Intense	34	Y/N	14	20	41.18	58.82
80	Intuitive	34	Y/N	27	7	79.41	20.59
81	Irresponsible	34	Y/N	1	33	2.94	97.06
82	Irritable	34	Y/N	6	28	17.65	82.35
83	Logical	34	Y/N	23	11	67.65	32.35
84	Malicious	34	Y/N	0	34	0	100
85	Multi-leveled	34	Y/N	24	10	70.59	29.41
86	Narcissistic	34	Y/N	1	33	2.94	97.06
87	Negativistic	34	Y/N	1	33	2.94	97.06
88	Networker	34	Y/N	21	13	61.76	38.24
89	Non-competitive	34	Y/N	4	30	11.76	88.24
90	Objective	34	Y/N	26	8	82.35	17.65
91	Obnoxious	34	Y/N	1	33	2.94	97.06
92	Observant	34	Y/N	28	6	82.35	17.65

93	Obsessive	34	Y/N	7	27	20.59	79.41
94	One-Dimensional	34	Y/N	0	34	0	100
95	Opinionated	34	Y/N	15	19	44.12	55.88
96	Optimistic	34	Y/N	28	6	82.35	17.65
97	Ordinary	34	Y/N	4	30	11.76	88.24
98	Outspoken	34	Y/N	15	19	44.12	55.88
99	Passionate	34	Y/N	27	7	79.41	20.59
100	Pedantic	34	Y/N	7	27	20.59	79.41
101	Perceptive	34	Y/N	23	11	67.65	32.35
102	Perfectionist	34	Y/N	20	14	58.82	41.18
103	Personable	34	Y/N	24	10	70.59	29.41
104	Petty	34	Y/N	3	31	8.82	91.18
105	Political	34	Y/N	9	25	26.47	73.53
106	Positive	34	Y/N	31	3	91.18	8.82
107	Possessive	34	Y/N	3	31	8.82	91.18
108	Practical	34	Y/N	26	8	82.35	17.65
109	Precise	34	Y/N	19	15	55.88	44.12
110	Predictable	34	Y/N	3	31	8.82	91.18
111	Prejudiced	34	Y/N	2	32	5.88	94.12
112	Presumptuous	34	Y/N	1	33	2.94	97.06
113	Pretentious	34	Y/N	3	31	8.82	91.18
114	Questioning	34	Y/N	28	6	82.35	17.65
115	Rational	34	Y/N	24	10	70.59	29.41
116	Reactionary	34	Y/N	9	25	26.47	73.53
117	Realistic	34	Y/N	27	7	79.41	20.59
118	Reflective	34	Y/N	23	11	67.85	32.35
119	Regimental	34	Y/N	2	32	5.88	94.12
120	Relaxed	34	Y/N	24	10	70.59	29.41
121	Reliable	34	Y/N	27	7	79.41	20.59
122	Religious	34	Y/N	10	24	29.41	70.59
123	Resentful	34	Y/N	1	33	2.94	97.06
124	Reserved	34	Y/N	4	30	11.76	88.24
125	Resouceful	34	Y/N	27	7	79.41	20.59
126	Risk Taker	34	Y/N	24	10	70.59	29.41
127	Sarcastic	34	Y/N	10	24	29.41	70.59
128	Scheming	34	Y/N	6	28	17.65	82.35
129	Self-Aware	34	Y/N	23	11	67.65	32.35
130	Self-conscious	34	Y/N	11	23	32.35	67.65
131	Self-critical	34	Y/N	20	14	55.82	44.18
132	Self-indugent	34	Y/N	3	31	8.82	91.18
133	Selfish	34	Y/N	3	31	8.82	91.18
134	Shallow	34	Y/N	1	33	2.94	97.06
135	Skilful	34	Y/N	26	8	82.35	17.65
136	Solitary	34	Y/N	6	28	17.65	82.35
137	Spontaneous	34	Y/N	24	10	70.59	29.41
138	Strict	34	Y/N	10	24	29.41	70.59
139	Stubborn	34	Y/N	13	21	39.24	61.76

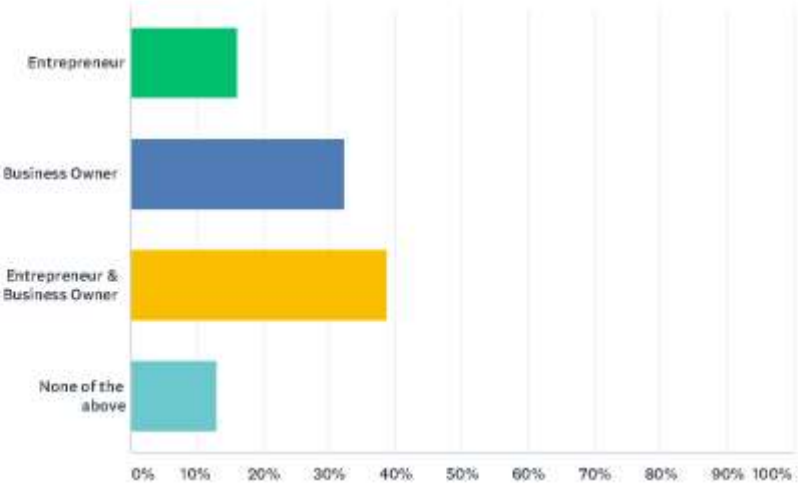
140	Stylish	34	Y/N	11	23	32.35	67.65
141	Superstitious	34	Y/N	4	30	11.76	88.24
142	Systematic	34	Y/N	24	10	70.59	29.41
143	Thoughtless	34	Y/N	0	34	0	100
144	Tough	34	Y/N	19	15	55.88	44.12
145	Treacherous	34	Y/N	0	34	0	100
146	Trusting	34	Y/N	28	6	82.35	17.65
147	Unappreciative	34	Y/N	0	34	0	100
148	Uncooperative	34	Y/N	1	33	2.94	97.06
149	Unimaginative	34	Y/N	0	34	0	100
150	Unpredictable	34	Y/N	6	28	17.65	82.35
151	Unreliable	34	Y/N	1	33	2.94	97.06
152	Unrestrained	34	Y/N	3	31	8.82	91.18
153	Venturesome	34	Y/N	24	10	70.59	29.41
154	Vindictive	34	Y/N	0	34	0	100
155	Vulnerable	34	Y/N	7	27	20.59	79.41
156	Winning	34	Y/N	26	8	82.35	17.65

Scores 70% - 79% 

Scores 80% - 100% 

Q157 What is your Business Status

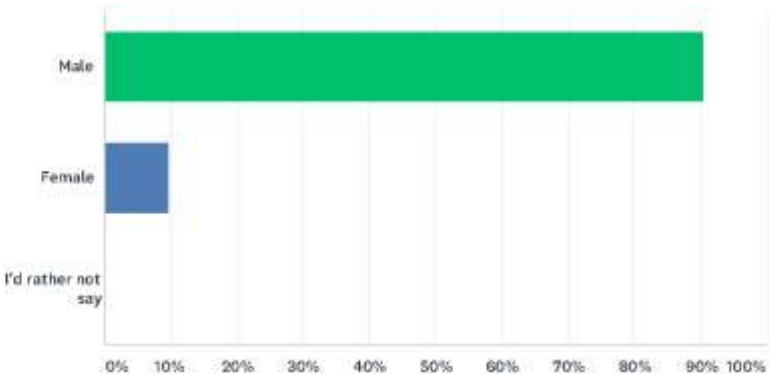
Answered: 31 Skipped: 3



ANSWER CHOICES	RESPONSES	
Entrepreneur	16.13%	5
Business Owner	32.26%	10
Entrepreneur & Business Owner	38.71%	12
None of the above	12.90%	4
Total Respondents: 31		

Q158 What is your Gender

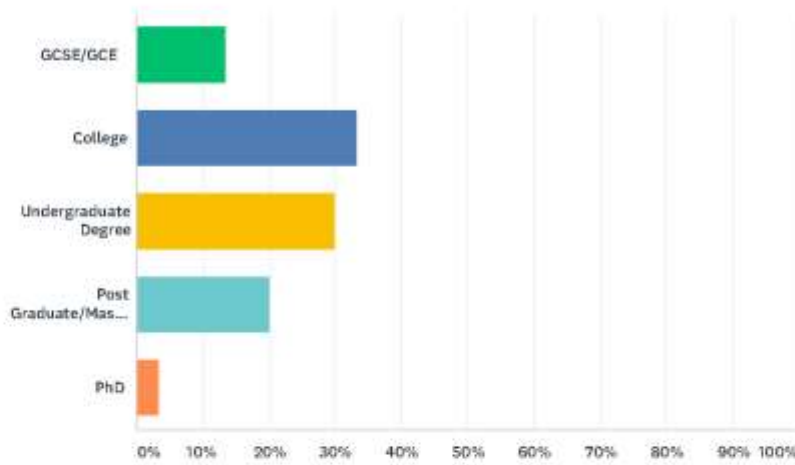
Answered: 31 Skipped: 3



ANSWER CHOICES	RESPONSES	
Male	90.32%	28
Female	9.68%	3
I'd rather not say	0.00%	0
Total Respondents: 31		

Q159 What is your highest Education Level

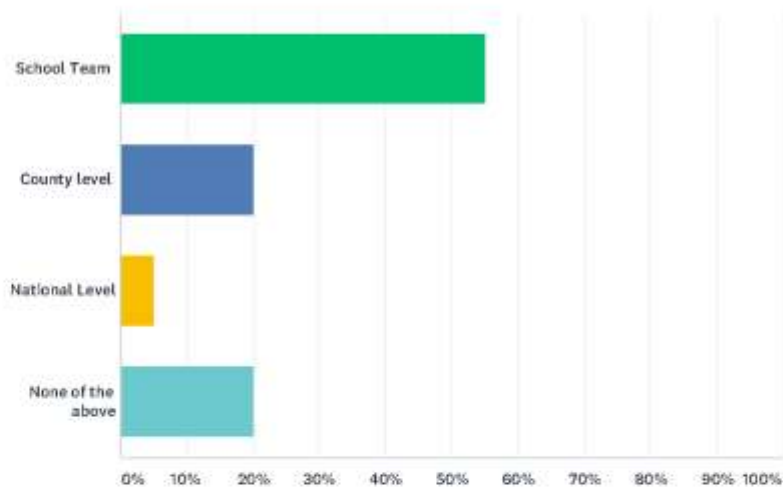
Answered: 30 Skipped: 4



ANSWER CHOICES	RESPONSES	
GCSE/GCE	13.33%	4
College	33.33%	10
Undergraduate Degree	30.00%	9
Post Graduate/Masters	20.00%	6
PhD	3.33%	1
TOTAL		30

Q161 What level of sport have you competed in?

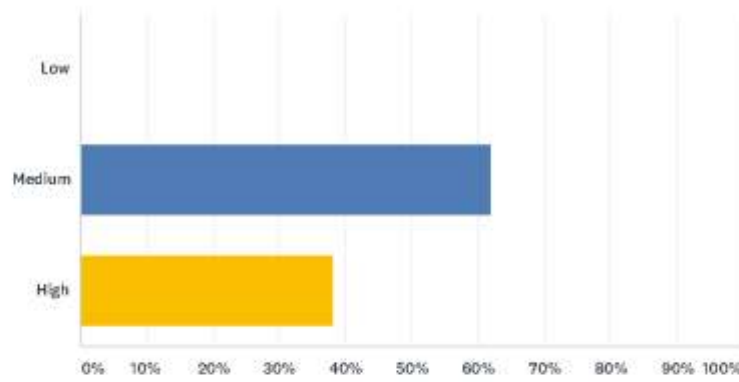
Answered: 20 Skipped: 14



ANSWER CHOICES	RESPONSES	
School Team	55.00%	11
County level	20.00%	4
National Level	5.00%	1
None of the above	20.00%	4
Total Respondents: 20		

Q162 How would you rate your level of success in life?

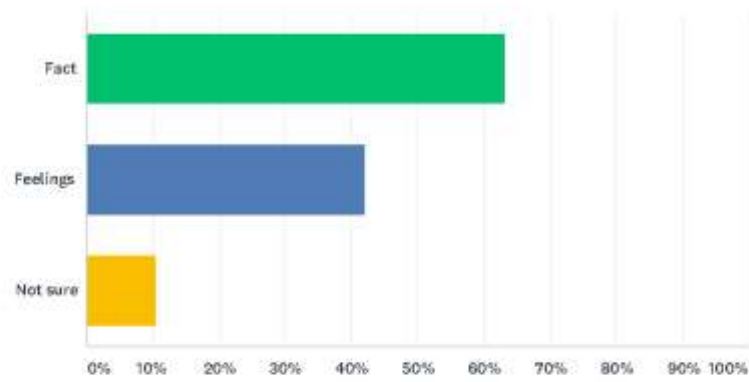
Answered: 21 Skipped: 13



ANSWER CHOICES	RESPONSES	
Low	0.00%	0
Medium	61.90%	13
High	38.10%	8
Total Respondents: 21		

Q163 Do you make decisions on facts or feelings?

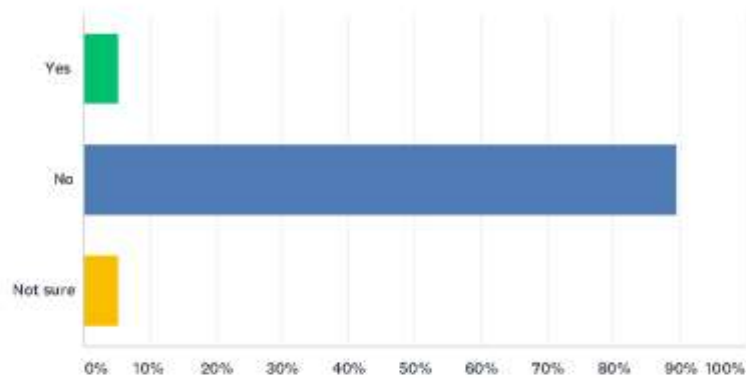
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Fact	63.16%	12
Feelings	42.11%	8
Not sure	10.53%	2
Total Respondents: 19		

Q164 Do you have difficulty understanding abstract ideas?

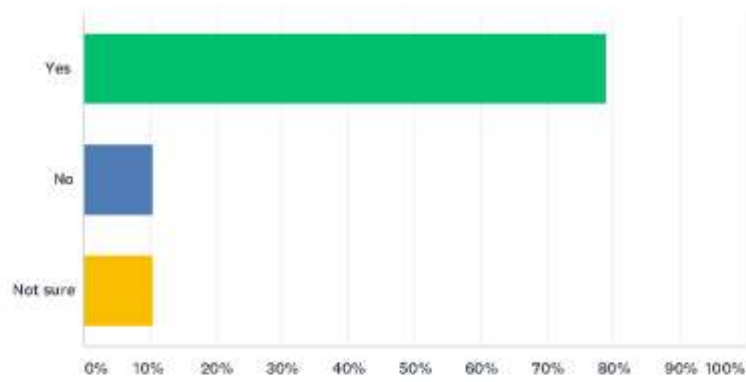
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES
Yes	5.26% 1
No	89.47% 17
Not sure	5.26% 1
TOTAL	19

Q165 Are you interested in theoretical discussions

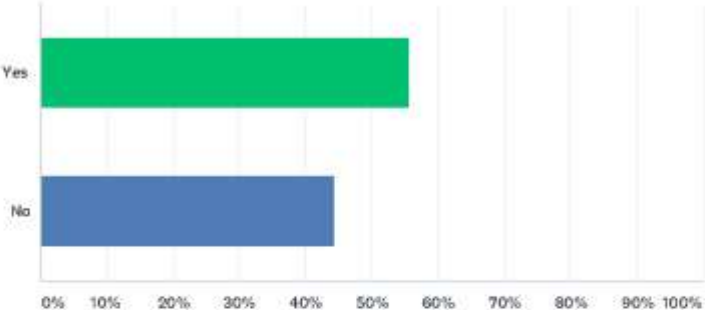
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	78.95%	15
No	10.53%	2
Not sure	10.53%	2
Total Respondents: 19		

Q166 Have you personally developed any innovative concepts over the past 2 years?

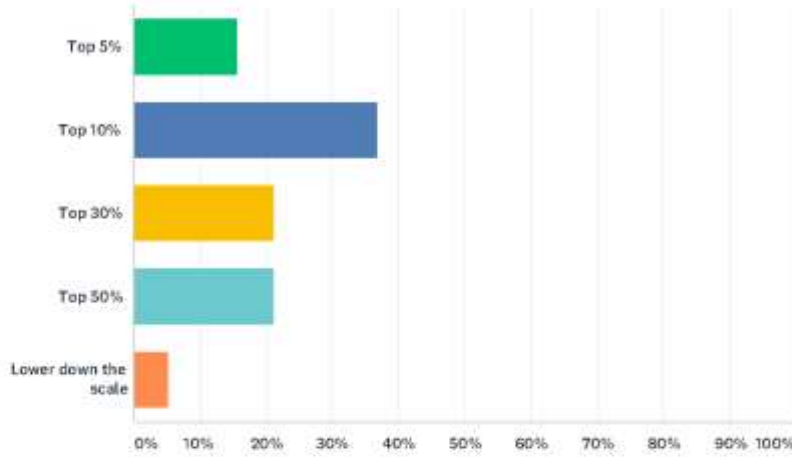
Answered: 18 Skipped: 16



ANSWER CHOICES	RESPONSES
Yes	55.56% 10
No	44.44% 8
Total Respondents: 18	

Q167 If you were to rate yourself among your peers, how would you see yourself in terms of achievement or potential for achievement?

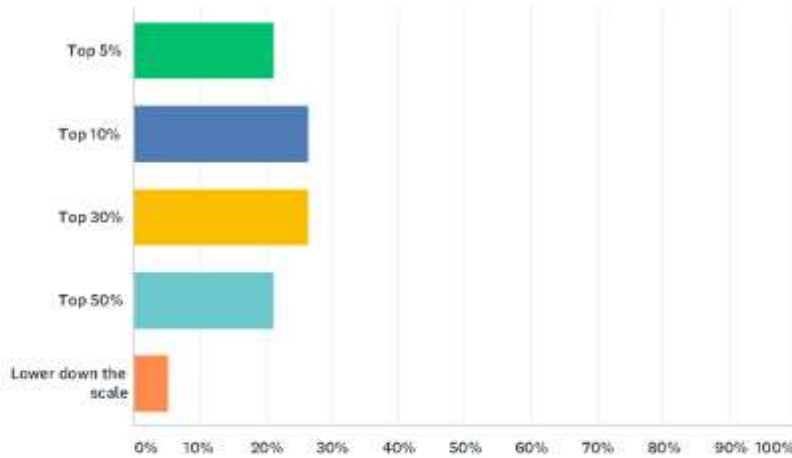
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Top 5%	15.79%	3
Top 10%	36.84%	7
Top 30%	21.05%	4
Top 50%	21.05%	4
Lower down the scale	5.26%	1
Total Respondents: 19		

Q168 If your peers were to rate you among them, how would you perceive they'd rate you in terms of achievement or potential for achievement?

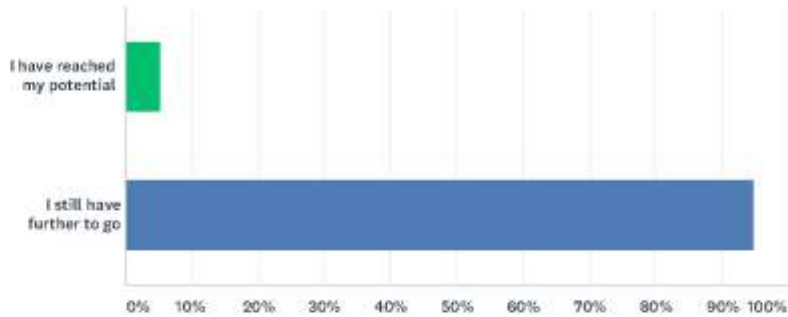
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Top 5%	21.05%	4
Top 10%	26.32%	5
Top 30%	26.32%	5
Top 50%	21.05%	4
Lower down the scale	5.26%	1
Total Respondents: 19		

Q169 Do you feel you have reached your potential or do you feel you still have further to go?

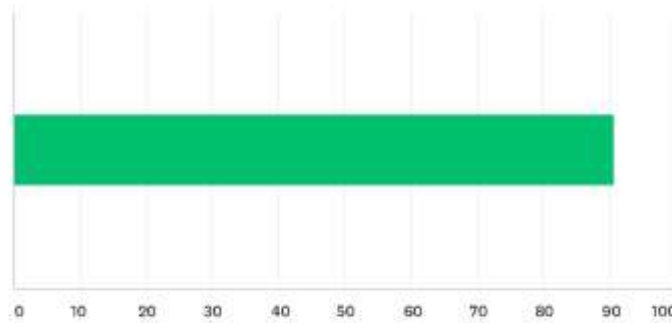
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES
I have reached my potential	5.26% 1
I still have further to go	94.74% 18
Total Respondents: 19	

Q170 What is your level of curiosity in things?

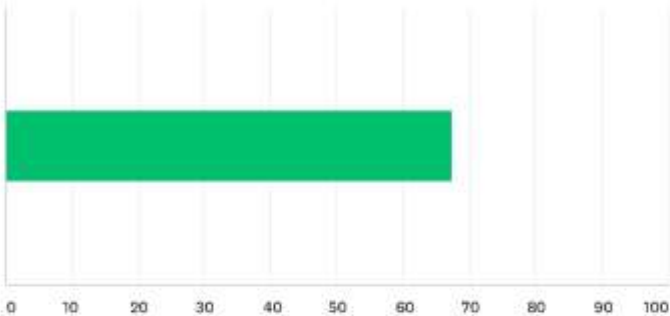
Answered: 19 Skipped: 15



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
		91	1,720
Total Respondents: 19			19

Q171 How effective is your time management?

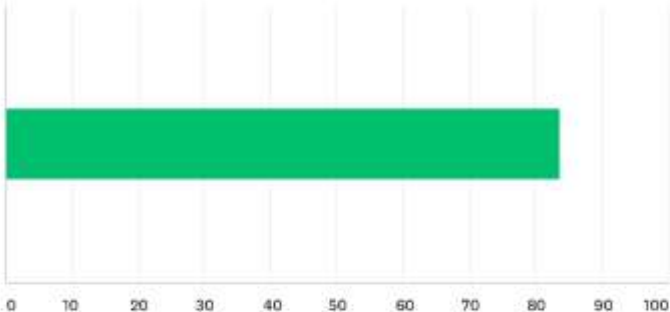
Answered: 19 Skipped: 15



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	67	1,281	19
Total Respondents: 19			

Q172 How strategic a thinker are you?

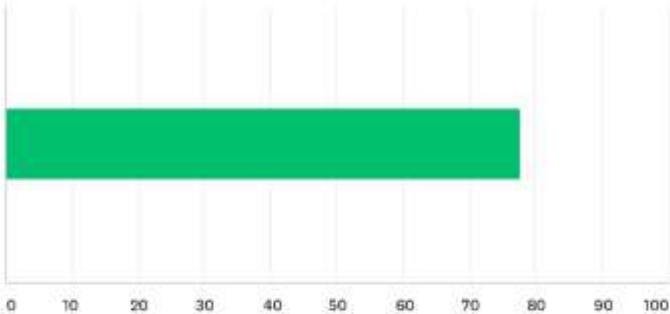
Answered: 19 Skipped: 15



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
		84	1,589
Total Respondents: 19			19

Q173 How efficient are you?

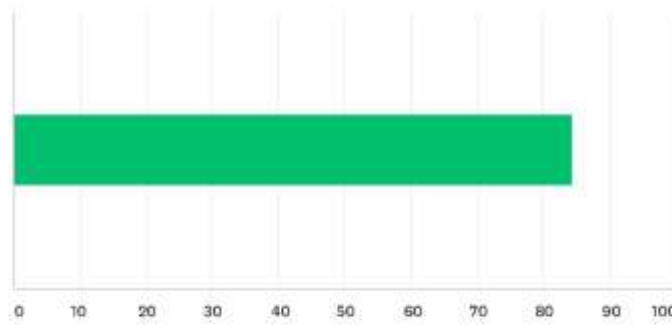
Answered: 18 Skipped: 16



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
	78	1,396	18
Total Respondents: 18			

Q174 What level is your personal resilience?

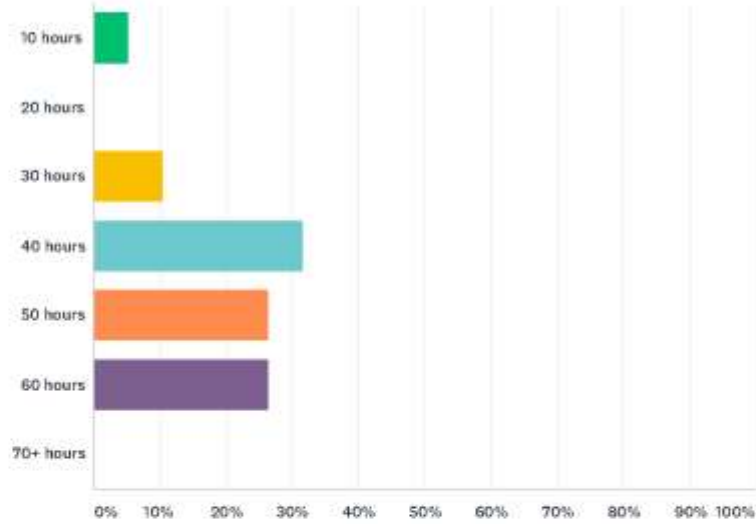
Answered: 19 Skipped: 15



ANSWER CHOICES	AVERAGE NUMBER	TOTAL NUMBER	RESPONSES
		84	1,602
Total Respondents: 19			19

Q175 How many hours a week on average do you work? (select the highest option)

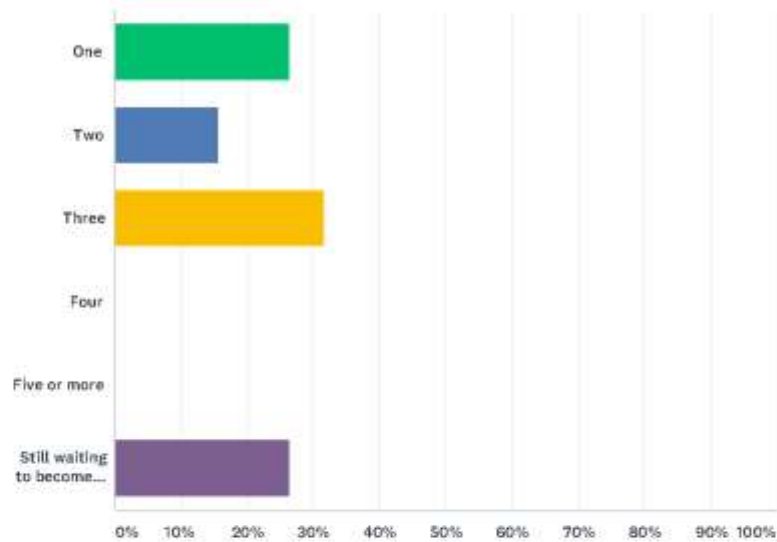
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
10 hours	5.26%	1
20 hours	0.00%	0
30 hours	10.53%	2
40 hours	31.58%	6
50 hours	26.32%	5
60 hours	26.32%	5
70+ hours	0.00%	0
Total Respondents: 19		

Q176 How many businesses or business ideas did you go through until you had a successful one?

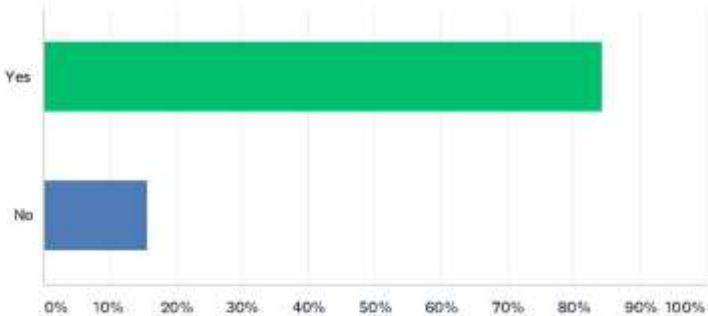
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
One	26.32%	5
Two	15.79%	3
Three	31.58%	6
Four	0.00%	0
Five or more	0.00%	0
Still waiting to become successful	26.32%	5
Total Respondents: 19		

Q177 Have you ever organised a fund raising event for charity?

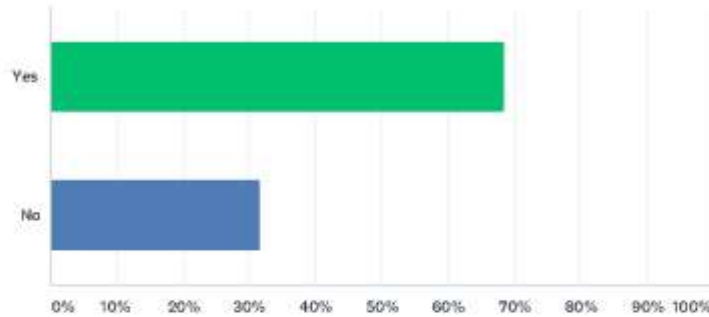
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	84.21%	16
No	15.79%	3
Total Respondents: 19		

Q178 Have you ever organised a social event for a large number of attendees?

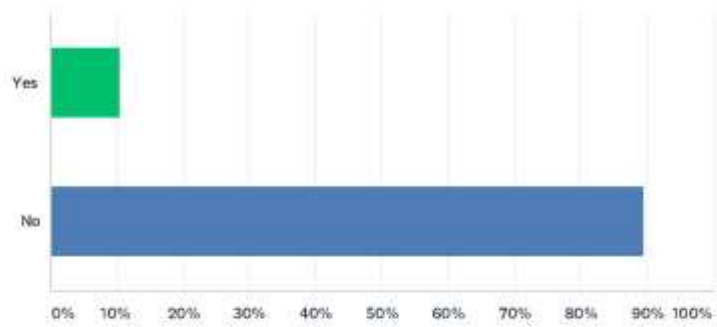
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	68.42%	13
No	31.58%	6
Total Respondents: 19		

Q179 Have you ever written a book?

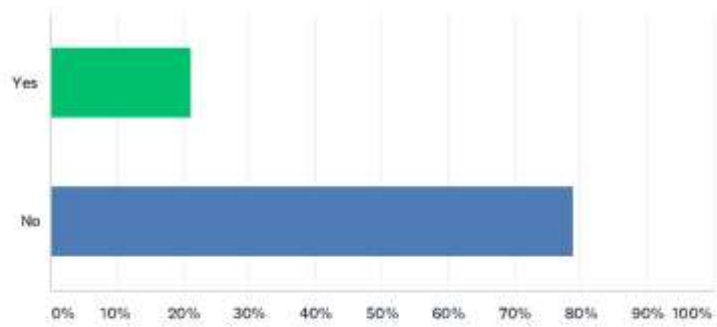
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	10.53%	2
No	89.47%	17
Total Respondents: 19		

Q180 Have you ever been featured on television?

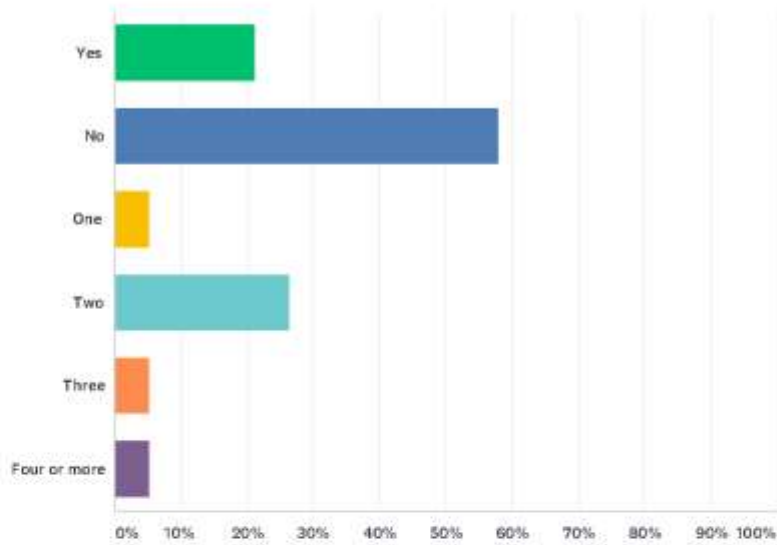
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	21.05%	4
No	78.95%	15
Total Respondents: 19		

Q181 Have you ever won any business awards? If 'Yes' how many

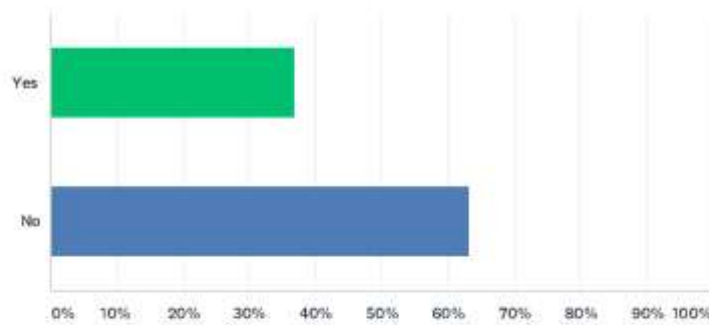
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	21.05%	4
No	57.89%	11
One	5.26%	1
Two	26.32%	5
Three	5.26%	1
Four or more	5.26%	1
Total Respondents: 19		

Q182 Have you ever been a finalist in a business awards competition?

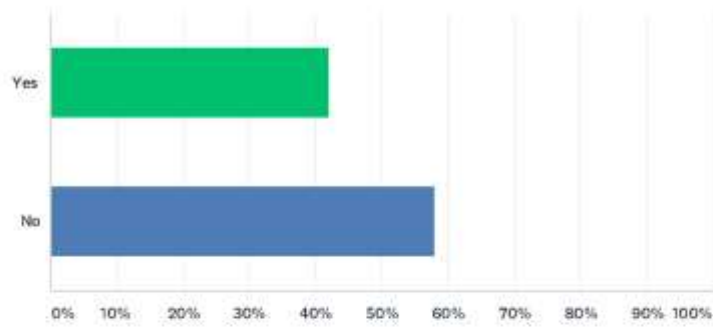
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	36.84%	7
No	63.16%	12
Total Respondents: 19		

Q183 Have you ever taken part in an endurance event?

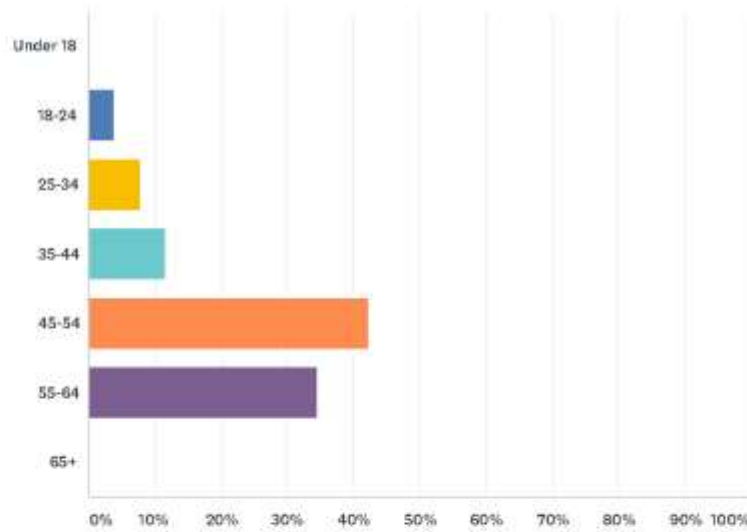
Answered: 19 Skipped: 15



ANSWER CHOICES	RESPONSES	
Yes	42.11%	8
No	57.89%	11
Total Respondents: 19		

Q184 What is your current age group

Answered: 26 Skipped: 8



ANSWER CHOICES	RESPONSES	
Under 18	0.00%	0
18-24	3.85%	1
25-34	7.69%	2
35-44	11.54%	3
45-54	42.31%	11
55-64	34.62%	9
65+	0.00%	0
TOTAL		26

Results of Survey Two – Final Trait Identification

YoungEntrepreneurs Entrepreneur Trait Analysis

Entrepreneur Traits

Statements like 'Entrepreneurs are made not born' have been given and are in part true, but not wholly accurate. Maths geniuses aren't made, nor are top scientists otherwise anyone could be taken and made into a top mathematician or scientist. The same can be said for entrepreneurs, successful ones that is. Whilst it's true that the knowledge required to be acquired by the individuals is imparted from those who have gone before them, the requisite level of intelligence and ability to assimilate information and formulate new ideas and concepts is believed to some degree innate and genetically inherited.

It is therefore important to identify this innate genetic ability at an early stage and begin the nurturing process towards becoming successful entrepreneurs. A genetically gifted athlete who isn't given the opportunity to train and be coached in the right techniques to make them the best that they can be, would probably never realise the potential that exists within them, a) because it hasn't been identified and b) because they haven't been coached how to make the most of their abilities. Top athletes don't just appear on the world stage without training, they spend many hours, weeks and months refining their skills and even then may not make it to the top level. The same is true of entrepreneurs, they don't become an immediate success overnight, they learn their trade, hone their skills and surround themselves with the right people and resources.

Young Entrepreneurs aims to identify young people who have the innate ability to become entrepreneurs and then nurture them to become successful ones.

We are currently developing the framework that will enable us to positively identify young entrepreneurs and need the help of existing successful entrepreneurs to do so, and have created the following survey to examine traits and characteristics of entrepreneurs to see how they relate to each other and if there is a common set of traits and characteristics attributable to all entrepreneurs that make them who they are.

Your assistance with the surveys is greatly appreciated and could help to identify future generations of entrepreneurs.

Below you will see a list of 45 Traits.

You are requested to score them using the 'star' system from not having the trait to it being one of your strongest traits.

There are no right or wrong answers and it is requested that you give yourself an honest appraisal for each one, rather than putting the answer you think we want to see.

1. What is your business status

- Entrepreneur
- Business Owner
- Entrepreneur & Business Owner
- None of the above

2. What is your gender?

- Female
- Male

3. What is your highest education level

- GCSE/GCE
- College
- Undergraduate Degree
- Post Graduate/Masters Degree
- PhD

4. What County do you reside in?

5. Adaptable

I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆

6. Ambitious

I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆

7. Amiable

I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆

8. Articulate

I do not have this Trait	A weak Trait for me	An average Trait for me	A strong Trait for me	One of my strongest Traits
☆	☆	☆	☆	☆

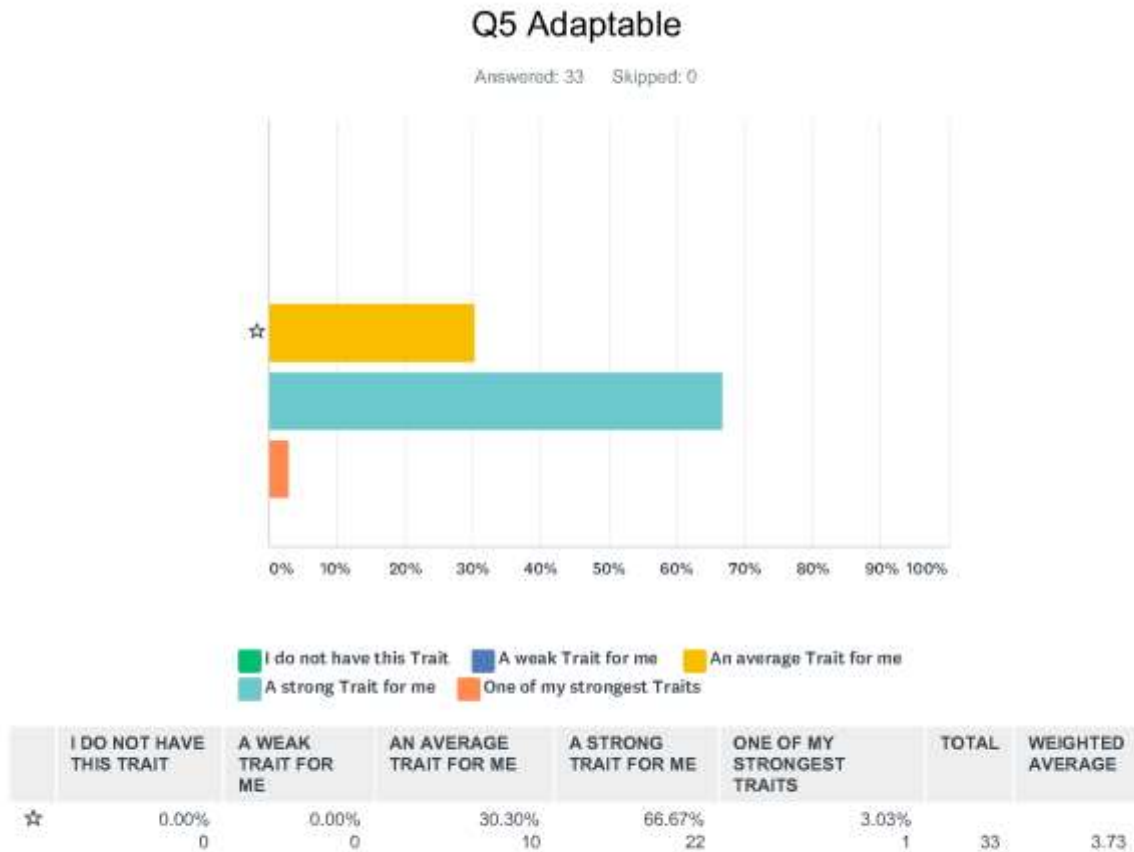
List of identified Traits from Survey One.

1. Adaptable
2. ambitious
3. Amiable
4. Articulate
5. Aspiring
6. assertive
7. Balanced
8. Challenging
9. Communication Skills
10. Competitive
11. Confident
12. Continual Improvement
13. Creative
14. Decisive
15. Determined
16. Dynamic
17. Efficient
18. Enthusiastic
19. Focused
20. Hardworking
21. Imaginative
22. Innovative
23. Intelligent
24. Intuitive
25. Multi-levelled
26. Objective
27. Observant
28. Optimistic
29. Passionate
30. Personable
31. Positive
32. Practical
33. Questioning
34. Rational
35. Realistic
36. Relaxed
37. Reliable
38. Resourceful
39. Risk Taker
40. Skilful
41. Spontaneous
42. Systematic
43. Trusting
44. Venturesome
45. Winning

Results of the above survey questions are shown on the following pages.

5. Adaptable

Definition: able or willing to change in order to suit different conditions



Conclusions:

It can be concluded from the results of this survey question that the percentage of respondents answering it as a 'Strong Trait for Me' or 'One of my Strongest Traits' amounts to less than 80% and is therefore deemed not to be an Entrepreneurial Trait.

Compiling the results from Survey 2 into tabular form

The results of Survey 2 were compiled into tabular form, with the traits that over 80% of respondents scored as 'Strong' or 'One of their Strongest Traits' counted as being an Entrepreneurial Trait and becoming one of the traits contained within the Entrephenotypic Trait.

Q.	Description	Answered	None	%	Weak	%	Average	%	Strong	%	Strongest	%	Total of Strong/Strongest	Entrepreneur Trait	
1	Adaptable	33	0	0	0	10	30.3	22	66.67	1	3.03	69.7			
2	Ambitious	33	0	0	0	4	12.12	17	51.52	12	36.36	87.88	YES		
3	Amiable	33	0	0	0	16	48.48	13	39.39	4	12.12	51.51			
4	Articulate	33	0	0	0	6	18.18	23	69.7	4	12.12	81.82	YES		
5	Aspiring	33	0	0	0	1	3.03	21	63.64	11	33.33	96.97	YES		
6	Assertive	33	1	3.03	5	15.15	19	57.58	8	24.24	0	24.24			
7	Balanced	33	0	0	1	3.03	21	63.64	11	33.33	0	33.33			
8	Challenging	33	0	0	0	0	0	17	51.52	16	48.48	0	48.48		
9	Comms Skills	33	0	0	0	4	12.12	26	78.79	3	9.09	87.82	YES		
10	Competitive	33	0	0	0	6	18.18	21	63.64	6	18.18	81.82	YES		
11	Confident	33	0	0	1	3.03	4	12.12	22	66.67	6	18.18	84.85	YES	
12	Cont improvement	33	0	0	0	5	15.15	25	75.76	3	9.09	84.85	YES		
13	Creative	33	0	0	1	3.03	5	15.15	19	57.58	8	24.24	81.82	YES	
14	Decisive	33	0	0	0	0	0	6	18.18	22	66.67	5	15.15	81.82	YES
15	Determined	33	0	0	0	2	6.06	23	69.7	8	24.24	93.94	YES		
16	Dynamic	33	0	0	0	6	18.18	25	75.76	2	6.06	81.82	YES		
17	Efficient	33	0	0	0	6	18.18	21	63.64	6	18.18	81.82	YES		
18	Enthusiastic	33	0	0	0	0	0	26	78.79	7	21.21	100	YES		
19	Focused	33	0	0	0	6	18.18	25	75.76	2	6.06	81.82	YES		
20	Hardworking	33	0	0	0	0	0	28	84.85	5	15.15	100	YES		
21	Imaginative	33	0	0	0	8	24.24	22	66.67	3	9.09	75.76			
22	Innovative	33	0	0	1	3.03	5	15.15	20	60.61	7	21.21	81.82	YES	
23	Intelligent	33	0	0	0	8	24.24	23	69.7	2	6.06	75.76			
24	Intuitive	33	0	0	0	10	30.3	23	69.7	0	0	69.7			
25	Multi-levelled	33	0	0	0	27	81.82	6	18.18	0	0	18.18			
26	Objective	33	0	0	1	3.03	17	51.52	15	45.45	0	45.45			
27	Observant	33	0	0	0	5	15.15	27	81.82	1	3.03	84.85	YES		
28	Optimistic	33	0	0	0	5	15.15	25	75.76	3	9.09	84.85	YES		
29	Passionate	33	0	0	0	11	33.33	19	57.58	3	9.09	66.67			
30	Personable	33	0	0	0	19	57.58	10	30.3	4	12.12	42.42			
31	Positive	33	0	0	0	0	0	30	90.91	3	9.09	100	YES		
32	Practical	33	0	0	0	7	21.21	19	57.58	7	21.21	78.79			
33	Questioning	33	0	0	0	14	42.42	19	57.58	0	0	57.58			
34	Rational	33	0	0	0	4	12.12	28	84.85	1	3.03	87.88	YES		
35	Realistic	33	0	0	0	5	15.15	28	84.85	0	0	84.85	YES		
36	Relaxed	33	0	0	1	3.23	24	77.42	6	19.35	0	19.35			
37	Reliable	33	0	0	0	0	0	32	96.97	1	3.03	100	YES		
38	Resourceful	33	0	0	0	6	18.18	18	54.55	9	27.27	81.82	YES		
39	Risk Taker	33	0	0	2	6.06	9	27.27	21	63.64	1	3.03	66.67		
40	Skilful	33	0	0	0	18	54.55	14	42.42	1	3.03	45.45			
41	Spontaneous	33	0	0	1	3.03	16	48.48	16	48.48	0	48.48			
42	Systematic	33	0	0	0	4	12.12	29	87.88	0	0	87.88	YES		
43	Trusting	33	0	0	1	3.03	23	69.7	9	27.27	0	27.27			
44	Venturesome	33	0	0	0	10	30.3	23	69.7	0	0	69.7			
45	Winning	33	0	0	0	8	24.24	23	69.7	2	6.06	75.76			

From the 45 identified traits confirmed in Survey 1, we were able to determine that 24 'strong' traits existed in Entrepreneurs. They are highlighted in green below as part of the 45 originally identified.

1. Adaptable
2. ambitious
3. Amiable
4. Articulate
5. Aspiring
6. assertive
7. Balanced
8. Challenging
9. Communication Skills
10. Competitive
11. Confident
12. Continual Improvement
13. Creative
14. Decisive
15. Determined
16. Dynamic
17. Efficient
18. Enthusiastic
19. Focused
20. Hardworking
21. Imaginative
22. Innovative
23. Intelligent
24. Intuitive
25. Multi-levelled
26. Objective
27. Observant
28. Optimistic
29. Passionate
30. Personable
31. Positive
32. Practical
33. Questioning
34. Rational
35. Realistic
36. Relaxed
37. Reliable
38. Resourceful
39. Risk Taker
40. Skilful
41. Spontaneous
42. Systematic
43. Trusting
44. Venturesome
45. Winning

By removing those traits not deemed to be entrepreneurial, we are left with a definitive list as follows.

The final list of 'strong' traits, that combined form the Entrepheotypic Trait.

- 2. Ambitious - 87.88%
- 4. Articulate - 81.82%
- 5. Aspiring - 96.97%
- 9. Communication Skill - 87.88%
- 10. Competitive - 81.82%
- 11. Confident - 84.85%
- 12. Continual improvement - 84.85%
- 13. Creative - 81.82%
- 14. Decisive - 81.82%
- 15. Determined - 93.94%
- 16. Dynamic - 81.82%
- 17. Efficient - 81.82%
- 18. Enthusiastic - 100%
- 19. Focused - 81.82%
- 20. Hardworking - 100%
- 22. Innovative - 81.82%
- 27. Observant - 84.85%
- 28. Optimistic - 84.85%
- 31. Positive - 100%
- 34. Rational - 87.88%
- 35. Realistic - 84.85%
- 37. Reliable - 100%
- 38. Resourceful - 81.82%
- 42. Systematic - 87.88%

Total 24 Traits proven to exist and identifiable in Entrepreneurs.

Results of additional questions

Additional questions were asked of the respondents as shown below

What is your business status?

	Entrepreneur	Business Owner	Entrepreneur & Business Owner	None of the above
Number	2	4	25	0
Percentage	6.45	12.9	80.65	0

What is your Gender?

	Male	Female	Rather not say
Number	25	6	0
Percentage	80.65	19.35	0

What is your highest education level

	GCSE/GCE	College	Degree	Masters	PhD
Number	3	11	12	5	0
Percentage	9.68	35.48	38.71	16.13	0

Summary

Of the respondents surveyed, the majority saw themselves as both entrepreneurs and business owners.

The percentage of the sample taken that are male, far outweighs those entrepreneurs that are female. This has been found to be the case in other studies on entrepreneurs undertaken, but the gap between them has closed slightly over recent years.

In terms of education level, the higher percentage of entrepreneurs had either gone on to study at Colleges or Undertaken University Degrees.

This doesn't necessarily mean that entrepreneurs are highly educated, but could indicate the propensity for knowledge and the ability to learn.

Definitions of the Identified Traits

Adaptable - *Definition:* able or willing to change in order to suit different conditions

Ambitious - *Definition:* having a strong wish to be successful, powerful, or rich

Amiable - *Definition:* pleasant and friendly

Articulate - *Definition:* able to express thoughts and feelings easily and clearly, or showing this quality

Aspiring - *Definition:* wishing to become successful in a particular type of job

Assertive - *Definition:* Someone who is assertive behaves confidently and is not frightened to say what they want or believe

Balanced - *Definition:* considering all sides or opinions equally

Challenging - *Definition:* difficult to deal with or achieve, especially in a way that forces you to prove your skill or determination to succeed

Communication Skill - *Definition:* The ability to convey or share ideas and feelings effectively.

Competitive - *Definition:* wanting very much to win or be more successful than other people

Confident - *Definition:* having confidence: the quality of being certain of your abilities or of having trust in people, plans, or the future

Continual improvement - *Definition:* also often called a continuous improvement process (abbreviated as CIP or CI), is an ongoing effort to improve products, services, processes or self-ability

Creative - *Definition:* producing or using original and unusual ideas

Decisive - *Definition:* able to make decisions quickly and confidently, or showing this quality

Determined - *Definition:* wanting to do something very much and not allowing anyone or any difficulties to stop you

Dynamic - *Definition:* having a lot of ideas and enthusiasm

Efficient - *Definition:* working or operating quickly and effectively in an organized way

Enthusiastic - *Definition:* showing enthusiasm: a feeling of energetic interest in a particular subject or activity and an eagerness to be involved in it

Focused - *Definition:* giving a lot of attention to one particular thing

Hardworking - *Definition:* always putting a lot of effort and care into your work

Imaginative - *Definition:* good at thinking of new, original, and clever ideas

Innovative - *Definition:* using new methods or ideas

Intelligent - *Definition:* showing intelligence, or able to learn and understand things easily

Intuitive - *Definition:* able to know or understand something because of feelings rather than facts or proof

Multi-levelled - *Definition:* having different levels or planes

Objective - *Definition:* based on real facts and not influenced by personal beliefs or feelings

Observant - *Definition:* quick at noticing things

Optimistic - *Definition:* hoping or believing that good things will happen in the future

Passionate - *Definition:* having very strong feelings or emotions

Personable - *Definition:* having a pleasant appearance and character

Positive - *Definition:* full of hope and confidence, or giving cause for hope and confidence

Practical - *Definition:* relating to experience, real situations, or actions rather than ideas or imagination

Questioning - *Definition:* Questioning is a major form of human thought and interpersonal communication. It involves employing a series of questions to explore an issue, or idea.

Rational - *Definition:* based on clear thought and reason

Realistic - *Definition:* accepting things as they are in fact and not making decisions based on unlikely hopes for the future

Relaxed - *Definition:* feeling happy and comfortable because nothing is worrying you

Reliable - *Definition:* deserving trust; dependable

Resourceful - *Definition:* skilled at solving problems and making decisions on your own

Risk-taker - *Definition:* a person who is willing to do things that involve danger or risk in order to achieve a goal

Skilful - *Definition:* good at doing something, especially because you have practised doing it

Spontaneous - *Definition:* Taking action, often sudden way, without any planning or without being forced

Systematic - *Definition:* using an organized method that is often detailed

Trusting - *Definition:* always believing that other people are good or honest and will not harm or deceive you

Venturesome - *Definition:* used to describe a person who is willing to take risks, or an action or behaviour that involves risks

Winning - *Definition:* that is successful in achieving or getting something that others also wanted

Results of Survey Three – The Validation

Survey 3 (validation) was carried out on known young entrepreneurs who were finalists in the Federation of Small Business's 'Young Entrepreneur of the Year' award. For 2020 and 2021

The Likert format for Survey 2, was adopted for the questions in Survey 1, which meant that all traits were examined, but rather than a set of Yes/No answers with no weighting, each question was weighted by the use of the Likert Scale in order to determine whether or not, the Entrepreneurial trait and its' component parts was exhibited by the respondents.

Observations from the survey comparison

A comparison is made in table F1 between the results obtained from Adult Entrepreneurs to those from Young Entrepreneurs (Young E's). Whilst the results proved the hypothesis that the Young Entrepreneurs exhibit the same entrepreneurial traits as Adult Entrepreneurs, in that they all exhibit the 24 Traits of the Entrepreneurial Trait, three of the traits are lower in terms of percentage scored, as shown below.

35 – Decisive (Adult scores = 79.41%, Young E's score = 62.5%) – Cardinal Trait

The reason that the score is lower could be a result of a number of factors:

- a) The numbers of respondents differ significantly. In the adults there are 33 respondents, and in the Young Es there are 8 respondents. This can have an impact on the results as one more Young E stating it was a 'Strong' or 'One of my Strongest' would have increased the score to over 70% which would have been on a par with the adult score.
- b) Being decisive may be a trait that increases with experience, and therefore not exhibited to the same degree in a young person, to that of an experienced older person.

49 – Dynamic (Adult scores = 70.59%, Young E scores = 50%) – Secondary Trait

The reason that the score is lower could be a result of a number of factors:

- c) The numbers of respondents differ significantly. In the adults there are 33 respondents, and in the Young Es there are 8 respondents. This can have an impact on the results as one more Young E stating it was a 'Strong' or 'One of my Strongest' would have increased the score to over 70% which would have been on a par with the adult score.
- d) A Young E may not see themselves as being particularly dynamic, as being dynamic might be a normal part of a young persons' behaviour, therefore the weighting that they put on this trait may be less than an older person.

142 – Systematic (Adult scores = 70.59%, Young E's = 62.5%) – Secondary Trait

The reason that the score is lower could be a result of a number of factors:

- a) The numbers of respondents differ significantly. In the adults there are 33 respondents, and in the Young Es there are 8 respondents. This can have an impact on the results as one more Young E stating it was a 'Strong' or 'One of my Strongest' would have increased the score to over 70% which would have been on a par with the adult score.
- b) The Young E may not fully understand the meaning of 'Systematic' and may not believe it to be a 'strong' trait for them.
- c) The nature of the exercise is that the answers are based upon the persons own opinion of themselves and can be subjective and biased, therefore there could be a margin of error in the results based upon this subjectivity.

Conclusions to be drawn from the comparison of the surveys.

It can be concluded from the surveys of 155 traits of both Adult and Young Entrepreneurs, that both exhibit the same 24 Cardinal, Central and Secondary traits that comprise the Entrephenotypic Trait. Of the three traits which were scored lower in the Young Entrepreneurs, two of them were secondary traits and not deemed to be as important as the Cardinal and Central Traits.

The validation was undertaken using known Young Entrepreneur finalists in the Federation of Small Business Awards held Nationally by regions in the UK.

These findings answer Research Questions 1, 2 and 3 and have proven the hypothesis made, that there are identifiable traits that are common to both adult and young people who are entrepreneurial.

Proposed Identification Platform for Young Entrepreneurs and Framework Architecture

In addition to the trait questions asked, the online framework should also consist of a series of questions that are devised to help identify the applicants characteristics, by asking questions that are applicable to the trait being tested.

Similar tests should be devised for most if not all of the twentyfour Entrepheotypic traits to verify that an applicant actually does exhibit the trait, and is not just saying that they have it. The questions shouldn't be stated as to which trait they are testing for, merely part of a list of questions that the algorithm calculating the scores is aware of.

Below is the format of the online framework consisting of four sections, that are a set of questions devised to test each of the traits, and characteristics of the applicant. The sections highlighted in 'Green' or 'Red' are the answers to each of the questions.

Section 1: Personal information

Section 2: Trait Analysis of the 156 self-identified Traits

Section 3: Trait confirmation questions

Section 4: Entrepreneurial ideas question

Questions were asked of ChatGPT as to what questions could be asked of respondents to see if they had each of the traits under investigation. The answers were then given to each one.

ChatGPT shows an insightful and articulate way of answering that further proves why the use of AI in entrepreneurial identification and training is important.

Entrepreneur Trait and Characteristic confirmation questions

For the questions below the respondents are asked to please be honest and open with their answers and select their actual choice rather than one they think we would be looking for as there are no right and wrong answers only personal choices.

Section 1:

This section would start with questions that delve into why a person wants to become an entrepreneur.

1. What motivated you to consider becoming an entrepreneur?
2. Have you always had an interest in entrepreneurship, or is it a recent aspiration?
3. What do you hope to achieve through starting your own business?
4. Are there any specific problems you hope to solve or industries you want to disrupt?
5. How do you envision your business making a positive impact in the world?
6. Do you see entrepreneurship as a means to create personal wealth or as a way to make a difference?
7. How do you see your values and personal goals aligning with your business aspirations?
8. Are you prepared for the challenges and uncertainties that come with starting a business?
9. How do you see your business evolving and growing over time?
10. What steps have you taken so far to pursue your entrepreneurial aspirations?

Additional questions to be asked that require written answers that would be processed by AI to see if the responses meet the requisite criteria and display entrepreneurial potential are:-

1. Have you ever started your own business or attempted to start one?
2. What motivates you to pursue entrepreneurial endeavors?
3. How do you identify and evaluate business opportunities?
4. Have you ever taken a risk to achieve a business goal? Can you give an example?
5. How do you handle failure or setbacks in your business endeavors?
6. Do you have any unique or innovative ideas for a new business?
7. How do you stay up-to-date with industry trends and changes?
8. Have you ever sought out mentorship or guidance from successful entrepreneurs?
9. How do you manage your time and prioritize tasks to achieve your business goals?
10. Have you ever raised capital or secured funding for a business venture? Can you describe the process?
11. Have you ever identified a problem and thought of a potential solution to address it?
12. How do you handle uncertainty and ambiguity in your decision-making process?
13. Have you ever taken on a project or task outside of your comfort zone? How did you approach it?
14. How do you stay motivated and push through challenges or obstacles in pursuit of a goal?
15. Have you ever shown leadership qualities in a group or team setting? Can you give an example?
16. How do you approach risk-taking? Are you comfortable taking calculated risks?

17. Have you ever sought out opportunities to learn and develop new skills outside of your current profession?
18. How do you prioritize and manage your time to achieve your goals?
19. Have you ever demonstrated creativity in finding new solutions or ideas in a project or task?
20. How do you handle failure or setbacks? Do you see them as opportunities for growth and learning

Section 2:

Trait Questions 156 Traits

Section 3:

(In this section green highlight = Best or positive answer, Yellow = Least or negative answer)

1. Ambitious

You are working for a fast food chain and are offered a position working for a small but successful company of only six staff, but only on 60% of your current salary.

Select what you think would be the best course of action.

- a) Politely decline, making an excuse as to why you would prefer to remain in your current position.
- b) Tell them that the pay is too low and you would want more to entice you to join them.
- c) Accept the offer thanking them for the opportunity to hopefully learn more about business.
- d) Accept the offer and use it as a stepping stone to better paid employment.
- e) Not bother replying to the offer and continue as you are.

Select what you think would be the least preferable course of action.

- f) Politely decline, making an excuse as to why you would prefer to remain in your current position.
- g) Tell them that the pay is too low and you would want more to entice you to join them.
- h) Accept the offer thanking them for the opportunity to hopefully learn more about business.
- i) Accept the offer and use it as a stepping stone to better paid employment.
- j) Not bother replying to the offer and continue as you are.

ChatGPT - what question would you ask to see if a person is ambitious?

Answer - One question that could be used to determine a person's level of ambition is: "What are your long-term goals and how do you plan to achieve them?"

Ambitious people tend to have clear and specific goals for their future and are actively working towards them. They may also be able to articulate the steps they are taking or plan to take to achieve their goals. This question can provide insight into a person's level of motivation and determination towards achieving their aspirations.

2. Articulate

Select which of the sentences below is the better articulate?

- a) The portrayal of female officers on television has been shown to influence public perceptions of male and female police. Female officers are often presented in a caring role rather than a crime fighting role and also as someone who is subordinate to a male officer. Police TV shows show crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes: this association of strength with successful police work may reinforce public concerns about female officers' physical capacity for police work.

- b) Programmes containing female police officers on television has been shown to influence public perceptions of male and female police officers. Female officers are often presented in a caring role rather than a crime fighting role and frequently as a character who is subordinate to a male officer. Police TV shows overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes: this association of strength with successful police work may reinforce public concerns about female officers' physical capacity for police work.
- c) The image police officers on television has been shown to influence public perceptions of male and female ones. Female ones are often presented in a caring role rather than a crime fighting role and frequently as a character who is below a male officer. Police overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes, This association of strength with police work may reinforce public concerns about female officer's physical ability for police work.
- d) The portrayal of female officers on television has been shown to influence public perceptions of male and female police officers. Female officers are often presented in a caring role rather than a crime fighting role and frequently as a character who is subordinate to a male officer. Police TV shows overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes: this association of strength with successful police work may reinforce public concerns about female officers' physical capacity for police work.
- e) The portrayal of female officers on television has been shown to influence public perceptions of male and female police officers: Female officers are often presented in a caring role rather than a crime fighting role and frequently as a character who is subordinate to a male officer, Police TV shows overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes? this association of strength with successful police work may reinforce public concerns about female officer's physical capacity for police work.

Select which of the sentences below is the worst articulated?

- f) The portrayal of female officers on television has been shown to influence public perceptions of male and female police. Female officers are often presented in a caring role rather than a crime fighting role and also as someone who is subordinate to a male officer. Police TV shows show crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes: this association of strength with successful police work may reinforce public concerns about female officers' physical capacity for police work.
- g) Programmes containing female police officers on television has been shown to influence public perceptions of male and female police officers. Female officers are often presented in a caring role rather than a crime fighting role and frequently as a character who is subordinate

to a male officer. Police TV shows overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes: this association of strength with successful police work may reinforce public concerns about female officers' physical capacity for police work.

- h) The image police officers on television has been shown to influence public perceptions of male and female ones. Female ones are often presented in a caring role rather than a crime fighting role and frequently as a character who is below a male officer. Police overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes, This association of strength with police work may reinforce public concerns about female officer's physical ability for police work.
- i) The portrayal of female officers on television has been shown to influence public perceptions of male and female police officers. Female officers are often presented in a caring role rather than a crime fighting role and frequently as a character who is subordinate to a male officer. Police TV shows overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes: this association of strength with successful police work may reinforce public concerns about female officers' physical capacity for police work.
- j) The portrayal of female officers on television has been shown to influence public perceptions of male and female police officers: Female officers are often presented in a caring role rather than a crime fighting role and frequently as a character who is subordinate to a male officer, Police TV shows overemphasise crime fighting and the use of physical force in every day policing in an attempt to produce interesting programmes? this association of strength with successful police work may reinforce public concerns about female officer's physical capacity for police work.

ChatGPT - The question asked was what question would you ask to see if a person is articulate?

Answer - One question that could be used to determine a person's level of articulation is: "Can you explain your thoughts on [a specific topic] in detail?"

An articulate person will be able to convey their thoughts and ideas in a clear and concise manner, using appropriate language and tone. They will be able to explain complex concepts and ideas in a way that is easy to understand for others. By asking them to explain their thoughts on a specific topic, you can observe their ability to express themselves effectively, and whether they are able to organize their ideas coherently and communicate them in a logical and compelling way.

3. Aspiring

You would like to raise some money for a local charity to help increase their finances, but you are limited on your available time. Which is the most preferable option?

- a) Arrange a sponsored event, make up sponsorship forms and get friends to sponsor you and then go and do the event.

- b) Go to the charity and ask them how they would like you to help who say you could go to the local supermarket with one of their staff with charity tins to get donations.
- c) Get a group of friends together to all take part in a sponsored event and ask friends on social media also to do it, then get the forms made up and do the event.
- d) Organise a charity ball with entertainment intending to make money on ticket sales and raffles.
- e) Make a donation from your own pocket

Which is the least preferable option?

- a) Arrange a sponsored event, make up sponsorship forms and get friends to sponsor you and then go and do the event.
- b) Go to the charity and ask them how they would like you to help who say you could go to the local supermarket with one of their staff with charity tins to get donations.
- c) Get a group of friends together to all take part in a sponsored event and ask friends on social media also to do it, then get the forms made up and do the event.
- d) Organise a charity ball with entertainment intending to make money on ticket sales and raffles.
- e) Make a donation from your own pocket

ChatGPT - what question would you ask to see if a person is aspiring?

Answer - One question that could be used to determine a person's level of aspiration is: "What are your current passions and interests, and where do you see yourself in five years?"

An aspiring person typically has a strong desire to achieve success in their personal and professional life. By asking them about their passions and interests, you can get a sense of what motivates them and what they enjoy doing. Asking about their goals and aspirations for the future can give you insight into their level of ambition and drive to achieve success. You can also follow up by asking about the steps they are taking or plan to take to achieve their goals.

4. Communication skills

Select which of the two statements you would use.

- a) "The crisis was solved by me earlier this morning when a solution came to me,"
- b) "I solved the crisis by coming up with a solution."

If you were writing an article for publication would you

- a) Be confident in your writing ability to go ahead and send it
- b) Want to have someone trusted proof read it for you and give feedback.

ChatGPT - What question would you ask to see if a person has good communication skills?

Answer - One question that could be used to determine a person's level of communication skills is: "Can you tell me about a time when you had to communicate a complex idea to someone who had no prior knowledge of the topic?"

Effective communication involves being able to convey ideas and information in a way that is easily understood by others. By asking about a specific instance where someone had to communicate a complex idea, you can observe their ability to break down complex information into simple, digestible pieces. You can also see whether they were able to tailor their communication style to the audience and adjust their approach as needed to ensure understanding.

Additionally, you can ask follow-up questions to learn more about their communication skills, such as how they approach difficult conversations or how they handle misunderstandings in communication.

5. Competitive

Select which of the below sentences best describes you.

- a) Not everyone can be a winner and if I don't win at something it doesn't bother me.
- b) I try to be the best I can at what I do and most of the time succeed in my efforts**
- c) I am naturally gifted and don't really need to try in order to be the best at what I do.
- d) I try to do well in most things and do reasonably well.
- e) Some things I'm good at and others I'm not, so I concentrate on doing the things I can do well.

Select which of the below sentences least describes you.

- a) Not everyone can be a winner and if I don't win at something it doesn't bother me.**
- b) I try to be the best I can at what I do and most of the time succeed in my efforts
- c) I am naturally gifted and don't really need to try in order to be the best at what I do.
- d) I try to do well in most things and do reasonably well.
- e) Some things I'm good at and others I'm not, so I concentrate on doing the things I can do well.

ChatGPT - what question could you ask to see if a person is competitive?

Answer - One question that could be used to determine a person's level of competitiveness is: "Can you tell me about a time when you faced a challenge or competition and how you responded to it?"

Competitive people tend to enjoy challenges and strive to achieve success in their personal and professional lives. By asking about a specific instance where someone faced a challenge or competition, you can observe their attitude towards competition and their willingness to push themselves to succeed. You can also learn about their approach to problem-solving and their ability to handle pressure.

Additionally, you can ask follow-up questions to learn more about their competitive nature, such as what motivates them to succeed and how they handle setbacks or failures in a competitive environment.

6. Confident

Select which of the statements below best describes you.

- a) I know that whatever I do, if I put my mind to it I'll do well.
- b) I am confident that I can be one of the best at whatever I do.
- c) I'm a bit of a Jack of all trades, but master at none.
- d) I can do most things that I'm shown to do, provided I have an opportunity to practice.
- e) With a little encouragement I can be really good at things.

Select which of the statements below least describes you.

- a) I know that whatever I do, if I put my mind to it I'll do well.
- b) I am confident that I can be one of the best at whatever I do.
- c) I'm a bit of a Jack of all trades, but master at none.
- d) I can do most things that I'm shown to do, provided I have an opportunity to practice.
- e) With a little encouragement I can be really good at things.

ChatGPT – what question could you ask to see if a person is confident

Answer - One question that could be used to determine a person's level of confidence is: "Can you tell me about a time when you took on a new challenge or responsibility that you were initially unsure about?"

Confident people tend to be comfortable taking risks and stepping outside of their comfort zone. By asking about a specific instance where someone took on a new challenge or responsibility, you can observe their level of self-assurance and willingness to embrace new opportunities. You can also learn about their approach to problem-solving and their ability to adapt to new situations.

Additionally, you can ask follow-up questions to learn more about their confidence, such as how they handle setbacks or failures, or what they do to maintain a positive outlook in challenging situations.

7. Continual Improvement

Select which of the statements below best describes you.

- a) I'm never 100% satisfied with things and always looking to improve what I've done.
- b) Everything I do, is to a high standard and I'm therefore satisfied with my level of performance.
- c) It doesn't matter how things turn out as long as I've given it my best shot.
- d) If at first you don't succeed, try, try, try until you do is a motto I live by.
- e) If I can't achieve perfection then second best will do.

Select which of the statements below least describes you.

- a) I'm never 100% satisfied with things and always looking to improve what I've done.
- b) Everything I do, is to a high standard and I'm therefore satisfied with my level of performance.
- c) It doesn't matter how things turn out as long as I've given it my best shot.
- d) If at first you don't succeed, try, try, try until you do is a motto I live by.
- e) If I can't achieve perfection then second best will do.

ChatGPT – what question could you ask to see if a person strives for continual improvement?

Answer - One question that could be used to determine a person's desire for continual improvement is: "What steps do you take to stay up-to-date with industry trends and best practices?"

Individuals who strive for continual improvement tend to be dedicated to learning and growing in their personal and professional lives. By asking about their efforts to stay up-to-date with industry trends and best practices, you can observe their commitment to staying informed and enhancing their skills and knowledge. You can also learn about their approach to professional development and their willingness to seek out new opportunities for growth.

Additionally, you can ask follow-up questions to learn more about their attitude towards learning, such as what they do to overcome challenges or obstacles in their learning journey, or how they seek out feedback and incorporate it into their ongoing development.

8. Creative

To make a tower over 0.5m in height that will support a table tennis ball I will need the minimum following items

- a) 20 lengths of dried spaghetti, packet of Blu tack
- b) 20 lengths of dried spaghetti, packet of Blu tack, roll of insulation tape
- c) 20 lengths of dried spaghetti, packet of Blu tack, roll of insulation tape, 3m of string
- d) 20 lengths of dried spaghetti, packet of Blu tack, roll of insulation tape, 3m of string, tube of glue
- e) 20 lengths of dried Spaghetti, Packet of Blu tack, tube of glue

ChatGPT – what question could you ask to see if a person is creative?

Answer - One question that could be used to determine a person's level of creativity is: "Can you describe a project or task where you had to think outside the box to find a solution?"

Creative people tend to approach problems and challenges in unique and innovative ways. By asking about a specific project or task where someone had to think creatively, you can observe their ability to generate new ideas and come up with unconventional solutions. You can also learn about their approach to problem-solving and their willingness to take risks.

Additionally, you can ask follow-up questions to learn more about their creativity, such as what inspires them to be creative or how they nurture their creative thinking skills. You can also ask them to describe a time when they faced a particularly challenging creative project and how they overcame any obstacles or setbacks.

9. Decisive

The value of Pi to 11 decimal places

- a) Is 3.14159265359
- b) Could be 3.14159265359
- c) Is approximately 3.14159265359
- d) Is not 3.14159265359
- e) Is 3.142

ChatGPT – what question could you ask to see if a person is decisive?

Answer - One question that could be used to determine a person's level of decisiveness is: "Can you tell me about a time when you had to make a tough decision under pressure?"

Decisive people tend to be confident in their ability to make tough decisions, even in high-pressure situations. By asking about a specific instance where someone had to make a tough decision, you can observe their ability to weigh options, analyze information, and make a clear and effective decision. You can also learn about their approach to problem-solving and their ability to remain calm and focused under pressure.

Additionally, you can ask follow-up questions to learn more about their decisiveness, such as how they handle uncertainty or ambiguity in decision-making, or how they seek out feedback and input from others before making a decision. You can also ask about their decision-making process, such as whether they tend to rely on intuition or data-driven analysis, and how they balance short-term vs. long-term considerations in their decisions.

10. Determined

Which of the following best describes you

- a) You make your own destiny and your future is in your own control
- b) A person's future is determined by outside forces and influences

Do you set yourself goals to achieve

- a) Yes
- b) No

If the answer to the above question is 'yes' do you set your goal and

- a) Go all out to achieve it
- b) Set yourself small steps, completing each one until you achieve the goal

ChatGPT – what question could you ask to see if a person is determined?

Answer - One question that could be used to determine a person's level of determination is: "Can you tell me about a time when you faced a significant obstacle or setback and how you overcame it?"

Determined people tend to be persistent and resilient in the face of challenges and setbacks. By asking about a specific instance where someone overcame a significant obstacle, you can observe their ability to stay focused and motivated towards achieving their goals. You can also learn about their approach to problem-solving and their willingness to persist through difficult circumstances.

Additionally, you can ask follow-up questions to learn more about their determination, such as what motivates them to keep going when faced with challenges, or how they manage their emotions and stay focused on their goals. You can also ask about their long-term aspirations and how they stay committed to achieving them, even in the face of adversity.

11. Dynamic

Which of the below list describes you (more than one answer can be selected)

- a) Funny
- b) Charming
- c) Charismatic
- d) Quiet
- e) Is a relatively Shy person
- f) Has a positive attitude and approach.
- g) Can adjust to various environments.
- h) Can come up with brilliant solutions for seemingly impossible problems.
- i) People go to you for getting their queries solved
- j) Innovative and creative
- k) Eager to learn and use what he/she has learnt.

ChatGPT – what question could you ask to see if a person is dynamic?

Answer - One question that could be used to determine a person's level of dynamism is: "Can you tell me about a time when you had to adapt to a new situation or environment?"

Dynamic people tend to be adaptable and flexible, able to thrive in different situations and environments. By asking about a specific instance where someone had to adapt to a new situation, you can observe their ability to learn quickly, embrace change, and navigate unfamiliar circumstances. You can also learn about their approach to problem-solving and their willingness to think creatively and innovatively.

Additionally, you can ask follow-up questions to learn more about their dynamism, such as how they manage competing demands and changing priorities, or how they stay focused and productive in a fast-paced environment. You can also ask about their experience working with diverse teams or clients and how they leverage their skills and strengths to build strong relationships and achieve common goals.

12. Efficient

You have been offered a placement for a company to get some business experience and receive an email from a senior manager in the Finance department, David Roberts, who will be your placement supervisor when you join the team in 3 months' time. He is keen that you are aware that you will be joining the department at their busiest time. You are due to start in Finance in January which is the peak financial planning season. The staff will be working flat out to produce the annual business plans and budget allocations for each department in Sm@rt Technology and to align this with the projections of profit & loss for the business. Your supervisor feels that it is very important you are aware of this so you can 'hit the ground running' when you join the team. You have never worked in a finance role before.

Review the answers below a) to d) and select which you believe to be the most effective response to the situation.

- a) Search on the internet for information about business planning, budgeting and profit & loss calculation
- b) Email David and ask whether it would be possible to have a one-to-one meeting with him before you begin your placement to find out as much as possible about the projects on which you might be working.
- c) Thank David and say that you will contact him in December, a few weeks before your placement, and ask for specific details of your projects.
- d) Email David thanking him for his early warning. Ask him whether he can provide any information on the projects on which you might be working in January.

Review the answers below a) to d) and select which you believe to be the least effective response to the situation.

- a) Search on the internet for information about business planning, budgeting and profit & loss calculation
- b) Email David and ask whether it would be possible to have a one-to-one meeting with him before you begin your placement to find out as much as possible about the projects on which you might be working.
- c) Thank David and say that you will contact him in December, a few weeks before your placement, and ask for specific details of your projects.
- d) Email David thanking him for his early warning. Ask him whether he can provide any information on the projects on which you might be working in January.

ChatGPT – what question could you ask to see if a person is efficient?

Answer - One question that could be used to determine a person's level of efficiency is: "Can you tell me about a project or task you recently completed ahead of schedule or under budget?"

Efficient people tend to be highly productive and able to complete tasks and projects quickly and effectively. By asking about a specific instance where someone completed a project or task ahead of schedule or under budget, you can observe their ability to prioritize tasks, manage their time

effectively, and work efficiently. You can also learn about their approach to problem-solving and their willingness to take initiative and find ways to streamline processes.

Additionally, you can ask follow-up questions to learn more about their efficiency, such as how they prioritize their tasks and manage their workload, or how they stay organized and focused on their goals. You can also ask about their experience working with others and how they leverage their efficiency to support their team and achieve common goals.

13. Enthusiastic

You are a retail assistant in a branch of a large book and stationery chain, deputising as the assistant manager whilst the assistant manager is away on maternity leave.

It is late June. You have just had your monthly 'book section' team meeting and have been given a special target for the following month by the branch manager. You have been asked to work towards increasing sales of children's books by 15% compared to last July's figures. July is always a difficult month for children's products as it is the end of the summer term and families don't tend to spend money on books or stationery for children at this time. You will not have any extra budget available to achieve this goal.

Review the following responses and select the one you would be most likely to make in response to the situation.

- a) Put a hand-written poster near the till promoting the great range of summer activity books that your branch stock for children
- b) Pick out a selection of summer-themed books and 'summer holiday' activity books and put them near the front of the children's area.
- c) Tidy up the children's book area and make it look as presentable as possible.
- d) Approach as many customers with children (or who look like they might have children or grandchildren) and politely mention to them that your branch has a great range of summer holiday activity books and story books for children and show them where the children's books are.

Review the following responses and select the one you would be least likely to make in response to the situation.

- a) Put a hand-written poster near the till promoting the great range of summer activity books that your branch stock for children
- b) Pick out a selection of summer-themed books and 'summer holiday' activity books and put them near the front of the children's area.
- c) Tidy up the children's book area and make it look as presentable as possible.
- d) Approach as many customers with children (or who look like they might have children or grandchildren) and politely mention to them that your branch has a great range of summer holiday activity books and story books for children and show them where the children's books are.

ChatGPT – what question could you ask to see if a person is enthusiastic?

Answer - One question that could be used to determine a person's level of enthusiasm is: "What aspect of your job or work are you most passionate about?"

Enthusiastic people tend to have a genuine excitement and interest in their work or activities. By asking about what aspect of their job or work they are most passionate about, you can observe their level of energy and enthusiasm towards their work. You can also learn about their areas of interest, their values, and their motivation for doing their job.

Additionally, you can ask follow-up questions to learn more about their enthusiasm, such as how they maintain their passion for their work, or how they deal with challenges or setbacks that may impact their enthusiasm. You can also ask about their experiences working on projects that were particularly inspiring or motivating and how they channeled their enthusiasm to achieve success.

14. Focused

You have arrived at 8:30am on a Monday for work in a large retail store. You are working an eight hour shift finishing at 4:30pm. The shop is open from 9am to 6pm today.

There are only two of you on duty today as a colleague has called in sick. You now find that there are the following tasks for the kitchen department written in the diary by your supervisor, who is due in at 9:30 am:-

- 1) Sort a delivery of utensils and silverware that came in late on Saturday, ensure it is properly shelved in the stock room.
- 2) Check the department and stock up on the shelves and displays where necessary, Saturday was very busy so no-one had the chance to do this.
- 3) Dismantle a special offer display for Dishwashers as the offer had expired on Saturday at 5:30pm
- 4) Clean and tidy the till area as it had been left in a bit of a state by the Saturday team.
- 5) One of you should attend the inter-departmental staff meeting from 10am to 11am today.

Review the following responses and select which is the most effective.

- a) Start work on the special offer display immediately, you are concerned about the legal implications. Say to your colleague that you will talk through the rest of the tasks later with them.
- b) Wait to talk to your supervisor and ask their opinion on the priority of tasks and whether to attend the meeting as you have an absent colleague.
- c) Dismantle the special offer display immediately as you are concerned that customers will be misled. Then tidy the till area and prepare for customers. Decide on who will attend the meeting and the other one remains in the department to re-merchandise and deal with customers. Once the meeting is finished there should be time in the remainder of the day to deal with the delivery.
- d) Quickly talk through the tasks with your colleague. Suggest you deal with the delivery first as the store isn't open yet and you can both work on it until 9am. Identify the 'special offer'**

display and tidying the till as the next most important tasks. See if you can get a summary of the meeting from a colleague in another department so that neither of you need attend.

- e) Deal with the delivery first as the shop isn't open and you can both work on it until 9am. Dismantle the special offer display straightaway at 9am whilst your colleague tidies the till area. Decide on who will attend the meeting with the other one to remain in the department to re-merchandise and deal with customers.

Review the following responses and select which is the least effective.

a) Start work on the special offer display immediately, you are concerned about the legal implications. Say to your colleague that you will talk through the rest of the tasks later with them.

- b) Wait to talk to your supervisor and ask their opinion on the priority of tasks and whether to attend the meeting as you have an absent colleague.
- c) Dismantle the special offer display immediately as you are concerned that customers will be misled. Then tidy the till area and prepare for customers. Decide on who will attend the meeting and the other one remains in the department to re-merchandise and deal with customers. Once the meeting is finished there should be time in the remainder of the day to deal with the delivery.
- d) Quickly talk through the tasks with your colleague. Suggest you deal with the delivery first as the store isn't open yet and you can both work on it until 9am. Identify the 'special offer' display and tidying the till as the next most important tasks. See if you can get a summary of the meeting from a colleague in another department so that neither of you need attend.
- e) Deal with the delivery first as the shop isn't open and you can both work on it until 9am. Dismantle the special offer display straightaway at 9am whilst your colleague tidies the till area. Decide on who will attend the meeting with the other one to remain in the department to re-merchandise and deal with customers.

ChatGPT – what question could you ask to see if a person is focused?

Answer - One question that could be used to determine a person's level of focus is: "Can you tell me about a time when you had to work on a complex task or project that required a high level of concentration and focus?"

Focused people tend to have a strong ability to concentrate and stay engaged in their work, even when faced with distractions or competing priorities. By asking about a specific instance where someone had to work on a complex task or project, you can observe their ability to stay focused, organized, and attentive to detail. You can also learn about their approach to problem-solving and their ability to manage their time and priorities effectively.

Additionally, you can ask follow-up questions to learn more about their focus, such as how they manage distractions or interruptions while working, or how they stay motivated and engaged in their work. You can also ask about their experience working in high-pressure or fast-paced environments, and how they stay calm and focused during times of stress or uncertainty.

15. Hardworking

How is your daily time divided up?

- a) 6 - 8 hours working, 6 – 10 hours relaxation, the rest sleeping.
- b) 6 – 10 hours working, 6 – 8 hours relaxation, the rest sleeping.
- c) 10+ hours working, less than 6 hours relaxation, the rest sleeping.
- d) Less than 6 hours working, 10+ hours relaxation, the rest sleeping.
- e) I don't really know the average split of my time.

ChatGPT – what question could you ask to see if a person is Hardworking?

Answer - One question that could be used to determine a person's level of hard work is: "Can you tell me about a time when you had to put in extra effort to complete a project or task?"

Hardworking people tend to have a strong work ethic and are willing to put in the necessary effort and time to achieve their goals. By asking about a specific instance where someone had to put in extra effort, you can observe their dedication, perseverance, and commitment to their work. You can also learn about their approach to problem-solving and their ability to manage their time and priorities effectively.

Additionally, you can ask follow-up questions to learn more about their hard work, such as how they stay motivated and focused when faced with difficult tasks or obstacles, or how they maintain a positive attitude when working on challenging projects. You can also ask about their experience working in fast-paced or high-pressure environments and how they manage their workload to ensure they meet their goals and deadlines.

16. Innovative

Which best describes you?

- a) I like to read a lot of books about business.
- b) I am constantly seeing ways to improve things that other people have created.
- c) I watch a lot of YouTube videos to see how things are done.
- d) I don't really do anything outside of work, but work hard at what I do.
- e) I feel like an entrepreneur and think I'll be really good at it.

ChatGPT – what question could you ask to see if a person is innovative?

Answer - One question that could be used to determine a person's level of innovation is: "Can you tell me about a time when you came up with a new or creative solution to a problem?"

Innovative people tend to have a knack for thinking outside the box and coming up with novel solutions to problems. By asking about a specific instance where someone had to come up with a new or creative solution, you can observe their ability to think creatively, take risks, and approach problems

in a unique way. You can also learn about their approach to problem-solving and their ability to adapt to changing situations.

Additionally, you can ask follow-up questions to learn more about their innovation, such as how they come up with new ideas or approaches to problems, or how they foster a culture of innovation within their team or organization. You can also ask about their experience working on projects that required innovation and how they collaborated with others to achieve success.

17. Observant

The value of Pi to 11 decimal places

- a) Is 3.141592265359
- b) Could be 3.14159265359**
- c) Is approximately 3.24159265359
- d) Should be 3.14259265359
- e) Is 3.142

ChatGPT – what question could you ask to see if a person is observant

Answer - One question that could be used to determine a person's level of observation is: "Can you tell me about a time when you noticed something that others missed?"

Observant people tend to have a keen eye for detail and are able to pick up on subtle cues or changes in their environment. By asking about a specific instance where someone noticed something that others missed, you can observe their attention to detail, their ability to observe and process information, and their critical thinking skills.

Additionally, you can ask follow-up questions to learn more about their observation skills, such as how they stay alert and aware of their surroundings, or how they use their observations to make informed decisions or solve problems. You can also ask about their experience working in environments that require a high level of observation, such as law enforcement, security, or research, and how they have developed and refined their observation skills over time.

18. Optimistic

I think my potential to do really well on these questions is

- a) Fairly good
- b) Extremely good**
- c) Quite good
- d) OK
- e) Not too sure

ChatGPT – what question could you ask to see if a person is optimistic?

Answer - One question that could be used to determine a person's level of optimism is: "Can you tell me about a time when you faced a difficult situation, and how you remained positive despite the challenges?"

Optimistic people tend to have a positive outlook on life, even when faced with difficult situations or setbacks. By asking about a specific instance where someone faced a challenging situation and remained optimistic, you can observe their resilience, their ability to stay motivated and engaged, and their problem-solving skills.

Additionally, you can ask follow-up questions to learn more about their optimism, such as how they maintain a positive attitude in the face of adversity, or how they stay motivated and focused on their goals. You can also ask about their experience working in fast-paced or high-pressure environments and how they maintain their optimism and enthusiasm in those situations. Finally, you can ask about their experience working with others and how they help to foster a positive and optimistic team environment.

19. Positive

How would you describe your mindset on a day-to-day basis

- a) I like to have a laugh and always enjoy what I do.
- b) I like to communicate a lot with friends and use social media to do it constantly throughout the day.
- c) I believe that from a negative incident there will always be a positive one that is even better.
- d) I think that something good will happen if I try hard enough.
- e) Nothing ever happens to me that is exciting or particularly life changing.

ChatGPT – what question could you ask to see if a person is positive?

Answer - One question that could be used to determine a person's level of positivity is: "Can you tell me about a time when you faced a challenge or setback, and how you approached it with a positive attitude?"

Positive people tend to have a sunny disposition and a can-do attitude. By asking about a specific instance where someone faced a challenge or setback and approached it with positivity, you can observe their resilience, their ability to stay motivated and engaged, and their problem-solving skills.

Additionally, you can ask follow-up questions to learn more about their positivity, such as how they maintain a positive attitude in the face of adversity, or how they stay motivated and focused on their goals. You can also ask about their experience working in fast-paced or high-pressure environments and how they maintain their positivity and enthusiasm in those situations. Finally, you can ask about their experience working with others and how they help to foster a positive and optimistic team environment.

20. Rational

Question 1: At a dinner party this weekend, a friend introduces you to a woman named Genevieve. He tells you that Genevieve recently graduated from Bryn Mawr College with a B.A. in philosophy, where she was an active volunteer in an advocacy group for women's health and edited a literary magazine. You're interested in talking to Genevieve about [Georg] Hegel, the subject of her senior thesis, but your friend jumps in and asks you to rank the following statements about Genevieve in order of their probability:

- (1) Genevieve is a feminist.
- (2) Genevieve is looking for a job as a sanitation worker.
- (3) Genevieve is a feminist who is looking for a job as a sanitation worker.

Which is the correct order?

- a) 1, 3, 2
- b) 2, 3, 1
- c) 2, 1, 3
- d) 3, 1, 2
- e) 3, 2, 1

The Answer

Question 1: This is known in the literature as the "Linda" problem, or the "conjunction fallacy." It tests how well individuals reason using probability theory. In Kahneman and Amos Tversky's 1983 study, 85 percent of subjects got it wrong. Your answer was incorrect, too, if you ranked statement (3) in the first or second position. Logic dictates that (3) is the least likely scenario: *two* conditions being true (Genevieve is an ardent feminist + Genevieve is looking for a job as a sanitation worker) is always less probable than only *one* of these being true. If you got this one right — it doesn't matter whether you put (1) or (2) first, just that you ranked (3) last

ChatGPT – what question could you ask to see if a person is rational?

Answer - One question that could be used to determine a person's level of rationality is: "Can you walk me through your decision-making process in a complex or difficult situation?"

Rational people tend to make decisions based on logic and reason, rather than emotions or biases. By asking about their decision-making process in a complex or difficult situation, you can observe their ability to gather information, evaluate options, and make informed decisions based on the facts.

Additionally, you can ask follow-up questions to learn more about their rationality, such as how they balance emotions and facts in their decision-making process, or how they handle situations where there are conflicting opinions or information. You can also ask about their experience working in fast-paced or high-pressure environments and how they maintain their rationality and focus in those situations. Finally, you can ask about their experience working with others and how they help to ensure that decisions are made based on facts and rational thinking.

21. Realistic

You are a retail assistant on the kitchenware department of a large chain of department stores which has built a strong brand as an ethical and responsible retailer.

It is 10am. A customer has been in the department for the past 45 minutes looking at dishwashers and asking you for advice and information on makes and models. She has three children and her husband works from home so she needs a machine that will be robust and can endure a lot of use. She has a budget of £300.

You have shown her the two most suitable machines. One is a cheaper model costing £299 which is fine but will probably last only 2 or 3 years with the high level of use she is describing. There is also a model which is of far superior quality which came on the market at an introductory offer price of £350 two weeks ago; the offer ends today and the model will revert to its normal price of £499 when the shop closes today. You believe that this model will last her and her family between 5 and 8 years of use. The customer is unsure about the extra £50 over her budget allocation and says she feels uncomfortable buying at the higher price without consulting her husband.

Review each of the following responses and select which one you feel to be the most effective response.

- a) Say that you can understand her worries and perhaps she should give her husband a call to discuss it with him. Remind her of the savings on the 'offer' machine, in that its longevity will be twice that of the cheaper model. So, in other words, she could spend nearly £600 for 6 years use with the other model (as she'll have to replace it after 3 years) or £350 for 6 years' use with the superior model.
- b) Say that you are very worried she will miss out on this deal if she doesn't make a decision soon.
- c) Leave the customer to ponder her decision.
- d) Say that it is often better to buy a quality item than a 'cheap and cheerful' one.
- e) Remind the customer of the 'real' savings she would make if she purchased the more expensive but better quality machine. Over 6 years she would be paying £350 instead of £600 for two cheaper machines.

Review each of the following responses and select which one you feel to be the least effective response.

- a) Say that you can understand her worries and perhaps she should give her husband a call to discuss it with him. Remind her of the savings on the 'offer' machine, in that its longevity will be twice that of the cheaper model. So, in other words, she could spend nearly £600 for 6 years use with the other model (as she'll have to replace it after 3 years) or £350 for 6 years' use with the superior model.
- b) Say that you are very worried she will miss out on this deal if she doesn't make a decision soon.
- c) Leave the customer to ponder her decision.
- d) Say that it is often better to buy a quality item than a 'cheap and cheerful' one.
- e) Remind the customer of the 'real' savings she would make if she purchased the more expensive but better quality machine. Over 6 years she would be paying £350 instead of £600 for two cheaper machines.

ChatGPT – what question could you ask to see if a person is realistic?

Answer - One question that could be used to determine a person's level of realism is: "Can you tell me about a time when you had to adjust your expectations or goals based on new information or circumstances?"

Realistic people tend to have a grounded understanding of what is possible and what is not, and are willing to adjust their expectations and goals based on new information or circumstances. By asking about a specific instance where someone had to adjust their expectations or goals, you can observe their ability to evaluate situations realistically and adjust their approach accordingly.

Additionally, you can ask follow-up questions to learn more about their realism, such as how they balance optimism and realism in their decision-making process, or how they handle situations where there are conflicting opinions or information. You can also ask about their experience working in fast-paced or high-pressure environments and how they maintain their realism and focus in those situations. Finally, you can ask about their experience working with others and how they help to ensure that expectations and goals are set realistically and achievable.

22. Reliable

Which of the following options best describes you?

- a) Showing up to work/school related events, arriving everywhere on time, consistently meeting deadlines, eager to take on more responsibility, taking initiative when needed.
- b) Producing high quality work, looking smart at all times, usually the centre of attention, a good leader, highly intelligent, a good team player.
- c) Dominant among my peers, well like by the opposite sex, good at talking and always have something to say, willing to show someone what to do.
- d) Always the first to volunteer, proficient at most sports, usually get people to agree to my point of view, follow instructions without question, enjoy my social activities.
- e) Look to others for inspiration, get a lot of likes in my social media posts, I'm good at a lot of things I do, people look up to me, find it easy to make new friends.

ChatGPT – what question could you ask to see if a person is reliable

Answer - One question that could be used to determine a person's level of reliability is: "Can you tell me about a time when you had to meet a deadline or deliverable, and how you ensured that you were able to do so?"

Reliable people tend to be dependable and consistent in meeting their commitments and responsibilities. By asking about a specific instance where someone had to meet a deadline or deliverable, you can observe their ability to plan and prioritize their work, manage their time effectively, and follow through on their commitments.

Additionally, you can ask follow-up questions to learn more about their reliability, such as how they handle situations where unexpected obstacles or delays arise, or how they communicate with others when there may be changes to their commitments or timelines. You can also ask about their

experience working in team environments and how they contribute to a culture of reliability and dependability. Finally, you can ask for references or examples of instances where they have demonstrated their reliability in previous roles or projects.

23. Resourceful

How would you describe yourself (*Note: scoring - a point for each one selected*)

I perceive problems as opportunities

I believe opportunity is not scarce – it's abundant.

I would attempt different strategies to identify the optimal one, given the situation.

I have a sense of awareness.

ChatGPT – what question could you ask to see if a person is resourceful?

Answer - One question that could be used to determine a person's level of resourcefulness is: "Can you tell me about a time when you had to solve a problem with limited resources or information?"

Resourceful people tend to be creative and adaptable in finding solutions to problems, even when faced with limited resources or information. By asking about a specific instance where someone had to solve a problem with limited resources or information, you can observe their ability to think outside the box, identify alternative solutions, and leverage their existing resources to achieve their goals.

Additionally, you can ask follow-up questions to learn more about their resourcefulness, such as how they handle situations where there are unexpected obstacles or challenges, or how they collaborate with others to find creative solutions to problems. You can also ask about their experience working in fast-paced or high-pressure environments and how they maintain their resourcefulness and adaptability in those situations. Finally, you can ask for examples of instances where they have demonstrated their resourcefulness in previous roles or projects.

24. Systematic

What is the correct sequence of numbers shown below

- a) 1, 4, 9, 25, 36, 49, 64, 81
- b) 1, 2, 5, 7, 9, 11, 13, 15, 17
- c) 3, 7, 13, 19, 28, 35, 48, 60
- d) 2, 4, 8, 16, 32, 49, 64, 98
- e) 5, 50, 55, 155, 255, 550

ChatGPT – what question could you ask to see if a person is systematic

Answer - One question that could be used to determine a person's level of systematic thinking is: "Can you walk me through your process for tackling a complex problem?"

Systematic thinkers tend to be organized and methodical in their approach to solving problems. By asking about their process for tackling a complex problem, you can observe their ability to break down a problem into smaller components, prioritize tasks, and develop a plan for achieving their goals.

Additionally, you can ask follow-up questions to learn more about their systematic thinking, such as how they gather and organize information, how they evaluate different options, and how they measure progress and success. You can also ask about their experience working in team environments and how they contribute to a culture of systematic thinking and problem-solving. Finally, you can ask for examples of instances where they have demonstrated their systematic thinking in previous roles or projects.

Section 4:

Have you had any Entrepreneurial ideas for business over the past few years that you think could develop into a successful business?

If so, please give an overview in the boxes below.

What is your idea for a business? (500 words max)

What is it that makes the business unique? (200 words max)

Why do you think it could be successful? (300 words max)

What would you estimate to be the start-up capital required and why? (500 words max)

What key staff would you require and how would you select them? (500 words max)

Comparison between Survey 2 & Survey 3 Results

Q	Description	Answered	None	%	Weak	%	Average	%	Strong	%	Strongest	%	Total of Strong/Strongest	Entrepreneur Trait	Survey 1 Scores
1	Abrasive	8	3	37.5	2	25	3	37.5	0	0	0	0	0		14.71
2	Abrupt	8	3	37.5	3	37.5	1	12.5	1	12.5	0	0	12.5		18.18
3	Adaptable	8	0	0	1	12.5	0	0	6	75	1	12.5	87.5		97.06
4	Ambitious	8	0	0	0	0	0	0	1	12.5	7	87.5	100		91.18
5	Amiable	8	0	0	0	0	2	25	3	37.5	3	37.5	75		70.59
6	Argumentative	8	1	12.5	4	50	1	12.5	2	25	0	0	25		29.41
7	Arrogant	8	5	62.5	1	12.5	2	25	0	0	0	0	0		11.76
8	Articulate	8	0	0	0	0	1	12.5	4	50	3	37.5	87.5		76.47
9	Aspiring	8	0	0	0	0	2	25	2	25	4	50	75		76.47
10	Assertive	8	0	0	0	0	2	25	3	37.5	3	37.5	75		70.59
11	Detail Attention	8	0	0	1	12.5	0	0	4	50	3	37.5	87.5		67.65
12	Authoritarian	8	1	12.5	1	12.5	1	12.5	4	50	1	12.5	62.5		20.59
13	Balanced	8	0	0	0	0	2	25	4	50	2	25	75		79.41
14	Blunt	8	1	12.5	6	75	1	12.5	0	0	0	0	0		32.35
15	Careless	8	5	62.5	3	37.5	0	0	0	0	0	0	0		2.94
16	Challenging	8	0	0	2	25	2	25	3	37.5	1	12.5	50		79.41
17	Charismatic	8	0	0	0	0	3	37.5	4	50	1	12.5	62.5		64.71
18	Clever	8	1	12.5	1	12.5	0	0	3	37.5	3	37.5	75		64.71
19	Communication Skill	8	0	0	0	0	1	12.5	3	37.5	4	50	87.5		79.41
20	Competitive	8	0	0	0	0	1	12.5	4	50	3	37.5	87.5		79.41
21	Complicit	7	5	71.43	1	14.29	1	14.29	0	0	0	0	0		2.94
22	Complex	8	2	25	4	50	2	25	0	0	0	0	0		47.06
23	Concited	8	3	37.5	3	37.5	0	0	2	25	0	0	25		8.82
24	Confident	8	0	0	0	0	2	25	4	50	2	25	75		73.53
25	Conformist	8	3	37.5	2	25	2	25	1	12.5	0	0	12.5		8.82
26	Conservative	7	2	28.57	3	42.86	2	28.57	0	0	0	0	0		26.47
27	Cont Improvement	8	0	0	0	0	0	0	5	62.5	3	37.5	100		88.24
28	Contradictory	8	2	25	4	50	2	25	0	0	0	0	0		20.59
29	Conventional	8	3	37.5	3	37.5	1	12.5	1	12.5	0	0	12.5		11.76
30	Courageous	8	0	0	0	0	1	12.5	6	75	1	12.5	87.5		61.76
31	Creative	8	0	0	0	0	2	25	3	37.5	3	37.5	75		82.35
32	Cynical	8	1	12.5	3	37.5	3	37.5	1	12.5	0	0	12.5		24.53
33	Deceitful	8	6	75	2	25	0	0	0	0	0	0	0		0
34	Deceptive	8	7	87.5	1	12.5	0	0	0	0	0	0	0		5.88
35	Decisive	8	0	0	2	25	1	12.5	3	37.5	2	25	62.5		79.41
36	Dedicated	8	0	0	0	0	0	0	4	50	4	50	100		67.65
37	Demanding	8	1	12.5	1	12.5	3	37.5	1	12.5	2	25	37.5		50
38	Dependent	8	3	37.5	2	25	1	12.5	1	12.5	1	12.5	25		20.59
39	Desire to give back	8	1	12.5	0	0	1	12.5	2	25	4	50	75		58.82
40	Determined	8	0	0	0	0	0	0	3	37.5	5	62.5	100		88.24
41	Devious	8	7	87.5	1	12.5	0	0	0	0	0	0	0		8.82
42	Difficult	8	2	25	4	50	1	12.5	1	12.5	0	0	12.5		11.76
43	Disciplined	7	0	0	0	0	1	14.29	3	42.86	3	42.86	85.72		58.82
44	Discourteous	8	7	87.5	1	12.5	0	0	0	0	0	0	0		2.94
45	Disorderly	8	6	75	1	12.5	1	12.5	0	0	0	0	0		8.82
46	Disorganised	8	4	50	2	25	0	0	2	25	0	0	25		8.82
47	Disruptive	8	3	37.5	2	25	2	25	0	0	1	12.5	12.5		20.59
48	Dominating	8	0	0	3	37.5	4	50	1	12.5	0	0	12.5		20.59
49	Dynamic	8	0	0	0	0	4	50	3	37.5	1	12.5	50		70.59
50	Efficient	7	0	0	0	0	0	0	4	57.14	3	42.86	100		76.47
51	Egocentric	7	5	71.43	1	14.29	1	14.29	0	0	0	0	0		8.82
52	Emotional	8	2	25	1	12.5	4	50	1	12.5	0	0	12.5		48.48
53	Enthusiastic	8	0	0	0	0	1	12.5	3	37.5	4	50	87.5		85.29
54	Envious	8	2	25	3	37.5	2	25	0	0	1	12.5	12.5		2.94

Figure I1: Comparison of Survey 2 and Survey 3 Results

55	8	8	2	25	3	37.5	1	12.5	1	12.5	1	12.5	25	8.82
56	8	3	37.5	2	25	1	12.5	1	12.5	1	12.5	25	17.65	
57	8	1	12.5	1	12.5	1	12.5	2	25	3	37.5	62.5	61.76	
58	8	0	0	0	0	0	0	4	50	4	50	100	85.29	
59	8	0	0	2	25	3	37.5	3	37.5	0	0	37.5	8.82	
60	8	2	25	0	0	2	25	3	37.5	1	12.5	50	47.06	
61	8	5	62.5	2	25	1	12.5	0	0	0	0	75	2.94	
62	8	0	0	0	0	2	25	2	25	4	50	75	97.06	
63	8	3	37.5	2	25	3	37.5	0	0	0	0	0	20.59	
64	8	6	75	1	12.5	1	12.5	0	0	0	0	0	0	
65	8	0	0	1	12.5	1	12.5	4	50	2	25	75	82.35	
66	8	3	37.5	1	12.5	2	25	1	12.5	1	12.5	25	14.71	
67	8	3	37.5	2	25	2	25	1	12.5	0	0	12.5	2.94	
68	8	1	12.5	2	25	2	25	3	37.5	0	0	37.5	38.24	
69	7	3	42.86	4	57.14	0	0	0	0	0	0	0	2.94	
70	8	2	25	1	12.5	3	37.5	2	25	0	0	0	14.71	
71	8	2	25	0	0	3	37.5	2	25	1	12.5	37.5	38.24	
72	8	4	50	4	50	0	0	0	0	0	0	0	2.94	
73	8	3	37.5	2	25	1	12.5	2	25	0	0	25	26.47	
74	8	0	0	1	12.5	1	12.5	2	25	4	50	75	88.24	
75	8	3	37.5	2	25	2	25	1	12.5	0	0	12.5	8.82	
76	8	4	50	3	37.5	1	12.5	0	0	0	0	0	14.71	
77	8	0	0	2	25	1	12.5	4	50	1	12.5	62.5	64.71	
78	8	0	0	2	25	0	0	4	50	2	25	75	73.53	
79	8	0	0	2	25	2	25	4	50	0	0	50	41.18	
80	8	0	0	0	0	1	12.5	6	75	1	12.5	87.5	79.41	
81	8	5	62.5	3	37.5	0	0	0	0	0	0	0	2.94	
82	8	2	25	4	50	2	25	0	0	2	25	75	17.65	
83	8	0	0	0	0	2	25	4	50	2	25	0	67.65	
84	8	7	87.5	1	12.5	0	0	0	0	0	0	0	0	
85	8	1	12.5	0	0	1	12.5	5	62.5	1	12.5	75	70.59	
86	8	4	50	3	37.5	1	12.5	0	0	0	0	0	2.94	
87	8	3	37.5	4	50	1	12.5	0	0	0	0	0	2.94	
88	8	0	0	1	12.5	3	37.5	2	25	2	25	50	61.76	
89	8	5	62.5	2	25	0	0	1	12.5	0	0	12.5	11.76	
90	8	0	0	0	0	3	37.5	3	37.5	2	25	62.5	82.35	
91	8	7	87.5	1	12.5	0	0	0	0	0	0	0	2.94	
92	8	0	0	1	12.5	0	0	6	75	1	12.5	87.5	82.35	
93	8	1	12.5	2	25	1	12.5	3	37.5	1	12.5	50	20.59	
94	8	7	87.5	1	12.5	0	0	0	0	0	0	0	0	
95	8	1	12.5	1	12.5	2	25	4	50	0	0	50	44.12	
96	8	0	0	0	0	0	0	7	87.5	1	12.5	100	82.35	
97	8	4	50	3	37.5	1	12.5	0	0	0	0	0	11.76	
98	8	0	0	1	12.5	3	37.5	3	37.5	1	12.5	50	44.12	
99	8	0	0	0	0	1	12.5	4	50	3	37.5	87.5	79.41	
100	8	1	12.5	1	12.5	2	25	3	37.5	1	12.5	50	20.59	
101	8	0	0	0	0	4	50	3	37.5	1	12.5	50	67.65	
102	8	0	0	0	0	2	25	4	50	2	25	75	58.82	
103	8	0	0	0	0	1	12.5	4	50	3	37.5	87.5	70.59	
104	8	4	50	3	37.5	0	0	1	12.5	0	0	12.5	8.82	
105	8	3	37.5	2	25	1	12.5	0	0	2	25	25	26.47	
106	8	0	0	0	0	0	0	6	75	2	25	100	91.18	
107	8	3	37.5	1	12.5	3	37.5	1	12.5	0	0	12.5	8.82	
108	8	0	0	0	0	3	37.5	4	50	1	12.5	62.5	82.35	
109	8	0	0	1	12.5	1	12.5	4	50	2	25	75	55.88	
110	8	2	25	1	12.5	3	37.5	2	25	0	0	25	8.82	

111	Prejudiced	8	3	37.5	2	25	3	37.5	0	0	0	0	0	0	0	0	5.88
112	Presumptuous	8	2	25	4	50	2	25	0	0	0	0	0	0	0	0	2.94
113	Pretentious	8	4	50	3	37.5	1	12.5	0	0	0	0	0	0	0	0	8.82
114	Questioning	8	0	0	0	0	0	12.5	5	62.5	2	25	87.5	82.35	70.59	70.59	82.35
115	Rational	8	0	0	0	0	0	0	6	75	2	25	100	70.59	70.59	70.59	82.35
116	Reactive	8	2	25	2	25	1	12.5	3	37.5	0	0	0	0	0	0	26.47
117	Realistic	8	0	0	0	0	2	25	5	62.5	1	12.5	75	79.41	79.41	79.41	82.35
118	Reflective	8	0	0	2	25	0	0	5	62.5	1	12.5	75	79.41	79.41	79.41	82.35
119	Regimental	8	1	12.5	3	37.5	3	37.5	1	12.5	0	0	0	0	0	0	5.88
120	Relaxed	8	0	0	3	37.5	2	25	0	0	0	0	25	70.59	70.59	70.59	82.35
121	Reliable	8	0	0	0	0	0	0	5	62.5	3	37.5	100	79.41	79.41	79.41	82.35
122	Religious	8	6	75	0	0	0	25	2	25	0	0	25	29.41	29.41	29.41	8.82
123	Resentful	8	5	62.5	2	25	1	12.5	0	0	0	0	0	0	0	0	2.94
124	Reserved	8	4	50	2	25	1	12.5	1	12.5	0	0	12.5	11.76	11.76	11.76	8.82
125	Resourceful	8	0	0	0	0	1	12.5	6	75	1	12.5	87.5	79.41	79.41	79.41	82.35
126	Risk Taker	8	0	0	0	0	2	50	4	50	2	25	75	70.59	70.59	70.59	82.35
127	Sarcastic	8	1	12.5	3	37.5	4	50	0	0	0	0	0	0	0	0	29.41
128	Scheming	8	4	50	4	50	0	0	0	0	0	0	0	0	0	0	17.65
129	Self-Aware	8	0	0	0	0	0	0	7	87.5	1	12.5	100	67.65	67.65	67.65	8.82
130	Self-conscious	8	1	12.5	1	12.5	2	25	4	50	0	0	50	32.35	32.35	32.35	8.82
131	Self-critical	8	0	0	1	12.5	2	25	5	62.5	0	0	0	0	0	0	55.82
132	Self-indulgent	8	1	12.5	4	50	2	25	1	12.5	0	0	12.5	8.82	8.82	8.82	8.82
133	Selfish	8	4	50	3	37.5	1	12.5	1	12.5	0	0	0	0	0	0	8.82
134	Shallow	8	6	75	2	25	0	0	0	0	0	0	0	0	0	0	2.94
135	Skilful	8	0	0	1	12.5	0	0	7	87.5	0	0	87.5	82.35	82.35	82.35	8.82
136	Solitary	8	2	25	2	25	2	25	2	25	0	0	25	17.65	17.65	17.65	8.82
137	Spontaneous	8	1	12.5	0	0	2	25	4	50	1	12.5	62.5	70.59	70.59	70.59	8.82
138	Strict	8	1	12.5	0	0	4	50	3	37.5	0	0	37.5	29.41	29.41	29.41	8.82
139	Stubborn	8	2	25	1	12.5	3	37.5	2	25	0	0	25	39.24	39.24	39.24	8.82
140	Stylish	8	3	37.5	0	0	2	25	2	25	0	0	37.5	32.35	32.35	32.35	8.82
141	Superstitious	8	4	50	1	12.5	3	37.5	0	0	0	0	0	0	0	0	11.76
142	Systematic	8	1	12.5	0	0	2	25	4	50	1	12.5	62.5	70.59	70.59	70.59	8.82
143	Thoughtless	8	5	62.5	3	37.5	0	0	0	0	0	0	0	0	0	0	2.94
144	Tough	8	0	0	1	12.5	4	50	3	37.5	0	0	37.5	55.88	55.88	55.88	8.82
145	Treacherous	8	4	50	4	50	0	0	0	0	0	0	0	0	0	0	2.94
146	Trusting	8	0	0	0	0	4	50	4	50	0	0	50	82.35	82.35	82.35	8.82
147	Unappreciative	8	4	50	3	37.5	0	0	0	0	1	12.5	12.5	0	0	0	2.94
148	Uncooperative	8	4	50	3	37.5	1	12.5	0	0	0	0	0	0	0	0	2.94
149	Unimaginative	8	4	50	2	25	2	25	0	0	0	0	0	0	0	0	0
150	Unpredictable	8	1	12.5	4	50	2	25	1	12.5	0	0	12.5	17.65	17.65	17.65	8.82
151	Unreliable	8	4	50	4	50	0	0	0	0	0	0	0	0	0	0	2.94
152	Unrestrained	8	3	37.5	4	50	1	12.5	0	0	0	0	0	0	0	0	8.82
153	Venturesome	8	0	0	0	0	2	25	3	37.5	3	37.5	75	70.59	70.59	70.59	8.82
154	Vindictive	7	4	57.14	3	42.86	0	0	0	0	0	0	0	0	0	0	0
155	Vulnerable	8	3	37.5	2	25	3	37.5	0	0	0	0	0	0	0	0	20.59
156	Winning	8	0	0	1	12.5	1	12.5	4	50	2	25	75	82.35	82.35	82.35	8.82

Scores 70% - 79%
 Scores 80% - 100%
 Entrepreneurship Link
 Commonality of trait

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Supporting statements from Extant Literature in Chapter 2, Section 2.4 - Key Publications supporting the need for this study.

We need to provide future generation with the skills for innovation to a greater degree than ever before: the confidence and insight to generate a novel idea or new approach; the motivation, commitment and resilience to pursue that idea; the leadership, energy and dynamism to communicate their vision to others and drive it forward from concept to reality.

For these skills to have currency in education we need to be able to identify and measure them.

countries had increasingly seen entrepreneurship as a tool for empowering people and the key to job creation. SME's are now the driving force in providing people with new job opportunities and eradicating unemployment.

The study reveals that the entrepreneur possesses specific traits that influence the process of procuring resources and improving SMEs performance during crisis/pandemic.

(Khan, Mohammed Aref, & Farooque, 2020)[19] validates the results of this study which shows that the traits and resource types of entrepreneurs are important for creating value.

There has long been interest in the personality traits, motivations, attitudes, and behaviours that contribute to entrepreneurial status and success. To date, however, efforts to measure these constructs have typically proceeded in a piecemeal fashion.

Another question has to do with the predictive power of the skill and trait domains. In this investigation we found, as expected, that trait dimensions predicted entrepreneurial status more strongly than did skills.

Such an effort would be in keeping with the Baum et al. (2001) model linking personality traits to entrepreneurial outcomes via their impact on mediating variables such as goal-setting and self-efficacy.

Is there an entrepreneurial personality, and does it appear early in life? We provide a new answer to this important question by examining traits related to Type A behaviour (Aggression, Leadership, Responsibility, and Eagerness-Energy) measured during adolescence and their relationship to entrepreneurship propensity in adulthood.

Thus, it is crucial to understand who becomes a successful entrepreneur to develop policy measures that support individuals who pursue entrepreneurial careers.

Empirically, personality characteristics are related to individuals' propensity to become and experience success as an entrepreneur (e.g., Brandstätter, 2011). Given this evidence, it is interesting to examine whether such a personality-based propensity towards entrepreneurship can be identified early in life, i.e., before labour market entry.

Thus, entrepreneurial characteristics that predict entrepreneurial careers appear early in life.

Difficulties faced by young entrepreneurs across European Union – such as youth unemployment - remains important, and there is increased awareness for European Union policy makers about the economic and social consequences associated with them. Considering the high potential of entrepreneurs to create jobs and sustainable development, promoting youth entrepreneurship and making Europe more entrepreneurial has become in the last years a priority on the EU policy agenda.

as only a minority of young people have the right skills, ideas and personality traits.

Until recently, there were no congruent policy actions focused on youth entrepreneurship. Most initiatives to support youth creativity and to promote entrepreneurial spirit among young people emerged from education policies.

One point of concern come from an OECD study stating that while young people were more likely to have positive attitudes to entrepreneurship, they were less likely to be self-employed in practice.

Only some of the young people have the abilities, knowledge and attitudes to become entrepreneurs. Unfortunately, only a small share of youths have the right skills and attitudes to become entrepreneurs (Curtain, 2000, Chigunta, 2002).

we should consider the positive impact of youth entrepreneurship on so many levels. First, youth entrepreneurship has a direct impact on job creation as it creates employment opportunities for both self-employed youth and other young people who may be hired by the newly created companies. Moreover, it may also increase innovation and raise competition, two of the drivers of economic growth (Green, 2013). Youth entrepreneurship also promotes resilience among young people, encouraging them to find new, alternative solutions (Chigunta, 2002).

Supporting entrepreneurship is considered solution to the problem of youth unemployment. Recent studies have shown that businesses run by entrepreneurs will generate more jobs than large corporations in the next decades. For all these reasons, we consider that supporting youth entrepreneurship must be a European priority.

However, there has been little research into how young entrepreneurs actually build their businesses, and the limited existing research about young entrepreneurs has tended to focus on participants who have struggled to achieve business survival and growth.

Young entrepreneurship has only received a limited amount of research attention (Lewis and Massey, 2003; Rouse, 2004; Lewis, 2009).

where we anticipate future large-scale research and the growing depth of the field are likely to clarify matters. There are many areas, like how firm performance connects to entrepreneurial personality, that are woefully understudied and ripe for major advances if the appropriate cross- disciplinary ingredients are assembled.

The topic of personality/psychological traits of entrepreneurs is of great importance for the study of entrepreneurship in a multitude of contexts.

the predictors of entrepreneurial success, the evaluation of the effects of entrepreneurship policies, and the design and assessment of different approaches to entrepreneurship education. While many theories and empirical analyses have approached the concept, the literature remains arguably underdeveloped due to the conceptual and empirical challenges faced by researchers.

It is hard to envision a setting where one will obtain widespread and exogenous variation in personality, but substantial progress can be made with pre-determined traits only.

The literature is often unclear as to whether individuals with a given set of personality traits selected into entrepreneurship, or whether individuals developed the traits endogenously after becoming entrepreneurs.

This discrepancy between entrepreneurial attitudes and action underscores the need for programs that foster the development of entrepreneurship in today's youth.

In this study, we triangulate across quantitative and qualitative data from the Young Entrepreneurs Study, showing that self-regulation skills, financial risk tolerance, innovation orientation, and the presence of entrepreneurial adults may be especially important for promoting entrepreneurial intent in older adolescents and young adults.

Entrepreneurship is vital for economic growth (Clifton, 2011), and enhancing the development of a cadre of young entrepreneurs can be a key contributor to such progress.

There has been little elucidation of how, within the relational developmental system (Overton, 2013), attributes of individuals and contexts combine to shape the trajectories of entrepreneurs.

Using Conversational AI to Evaluate whether a person exhibits a particular Trait

ChatGPT was used to see if conversational AI could be used to hold a conversation with someone and evaluate if a person had a particular trait. I used myself as the test subject and provided honest answers to the questions asked. The results were quite astounding and showed that conversation AI could in fact be used effectively to ascertain whether a person exhibits specific traits or not. The responses from ChatGPT were virtually instant, and it probed for more information each time in an extremely articulate manner until it made a decision as to whether the trait under examination existed in the respondent. This type of conversational AI will undoubtedly make a difference to the identification of Young Entrepreneurs.

The AI automatically inserted my name where I inputted information into the dialogue box.

Steve Pearson – Question to ChatGPT

When evaluating a person for the ambitious trait, if they said that they would really like to be a boss someday and make lots of money, would that show the ambitious trait

ChatGPT - Expressing a desire to become a boss and make lots of money could be an indicator of the ambitious trait, but it is not definitive on its own. Ambition is a complex personality trait that encompasses a range of characteristics, such as a strong desire to achieve goals, a willingness to take risks, and a persistent drive to succeed.

To evaluate a person's level of ambition, you may want to consider their past achievements, their work ethic, their willingness to take on new challenges, and their level of persistence in pursuing their goals. You may also want to assess whether they are proactive in seeking out opportunities for growth and advancement, and whether they are willing to put in the effort and take calculated risks to achieve success.

Overall, expressing a desire to become a boss and make lots of money may be a sign of ambition, but it should be considered alongside other indicators of the trait to get a more accurate assessment of the person's personality.

Steve Pearson – Instruction to ChatGPT

Phrase a reply to the person in response to their reply above that will further evaluate if they have an ambitious trait

ChatGPT - Thank you for sharing your aspirations to become a boss and make lots of money. To further evaluate your level of ambition, can you tell me about a time when you set a challenging goal for yourself and what steps you took to achieve it? Additionally, how do you handle setbacks and obstacles in your pursuit of success? Understanding more about your approach to goal-setting and perseverance can provide further insight into your level of ambition.

Steve Pearson

I set a goal of breaking a world record for weight lifting. I undertook progressive training to build up the number of reps I could do in a minute. I had a setback during it when I hurt my shoulder, so I rested it and continued with other strength training exercises that didn't make it worse and also did more cardio.

ChatGPT - Thank you for sharing your experience. Pursuing a challenging goal like breaking a world record for weightlifting certainly demonstrates a high level of ambition. Your ability to adapt to setbacks and find alternative ways to continue progressing towards your goal also shows resilience and determination, which are important qualities for achieving success.

Can you tell me about some other goals you have set for yourself in the past? How did you go about achieving them and what did you learn from the experience? Understanding more about your track record of goal-setting and achievement can provide further insight into your level of ambition.

Steve Pearson

I also set a goal to undertake a PhD. I decided that I would do it in entrepreneurship and spent several years researching the subject and then completing a thesis.

ChatGPT - Thank you for sharing your experience. Pursuing a PhD is a significant achievement that requires a great deal of dedication and hard work. Setting a goal to undertake such a challenging task and then committing several years to researching and completing a thesis certainly demonstrates a high level of ambition.

Can you tell me about some other goals you have for yourself in the future? How do you plan to achieve them and what steps have you taken so far to work towards them? Understanding more about your future aspirations and the actions you are taking to achieve them can provide further insight into your level of ambition.

Steve Pearson

My future goals are to represent GB at triathlon for the over 60 age group. Running is my weakest discipline so I therefore intend competing in Park Runs most weekends until I am able to run 5km in under 25 minutes. I will also focus on my swimming and cycling which I am quite proficient at.

ChatGPT - Thank you for sharing your future goals. Setting a goal to represent GB at triathlon for the over 60 age group is an ambitious objective that requires a great deal of dedication and hard work. Your plan to focus on your weakest discipline, running, by participating in Park Runs and gradually improving your time demonstrates a proactive approach to achieving your goal. Additionally, your intention to focus on your strengths in swimming and cycling shows an understanding of the importance of building on existing skills to achieve success.

To further evaluate your level of ambition, can you tell me about any obstacles or challenges you anticipate in pursuing your future goals and how you plan to overcome them? Understanding how you handle potential roadblocks can provide insight into your resilience and determination towards achieving success.

Steve Pearson

Weight is my current obstacle and therefore I intend losing weight by cutting out foods that are not good for me and concentrating on protein-based meals with vegetables.

ChatGPT - Thank you for sharing your plan for overcoming the obstacle of weight. It's great to hear that you have identified a specific action plan to address this challenge, such as cutting out unhealthy foods and focusing on protein-based meals with vegetables. Taking a proactive approach to managing potential roadblocks is a hallmark of ambitious individuals.

In addition to managing your weight, are there any other potential obstacles or challenges that you anticipate in pursuing your future goals? If so, how do you plan to overcome them? By anticipating and planning for potential roadblocks, you can demonstrate a strong sense of determination and perseverance towards achieving your goals.

Steve Pearson

I have certain injuries that are never going to improve. My shoulder only has one out of four rotator cuff muscles connected and restricts my mobility in that area. I have to persevere and concentrate on doing what I can and not what I can't and will not let it hinder me.

ChatGPT - Thank you for sharing your experience with your injuries. It's admirable to hear that you have a positive attitude towards persevering and focusing on what you can do rather than what you can't do. This kind of resilience and determination is a key characteristic of ambitious individuals.

It's important to remember that while some obstacles and challenges may be out of our control, we can still work to develop strategies and approaches that allow us to overcome them. By focusing on what you can do and finding ways to work around your limitations, you are demonstrating a proactive approach to achieving your goals.

Overall, your responses suggest that you possess several qualities associated with the ambitious trait, including a strong desire to achieve challenging goals, a willingness to take calculated risks, and a persistent drive to succeed despite setbacks and obstacles.

List of my Publications

- Global Youth Unemployment – Is early identification of entrepreneurs the solution for reducing unemployment and the burden on the welfare state? (2018)
- A new conceptual model to identify Potential Youth Entrepreneurs based upon academic research and Entrepreneurial Insight (2019)
- Research into Early-Stage Identification of Entrepreneurs and Innovators with Development of an Identification Guidance Framework. (2021)
- Development of a New Research Methodology Tool, 'Pearsons Visual Relationship Framework'. (2021)
- Research into Early-Stage Identification of Entrepreneurs and Artificial Intelligence: Towards Self-Sustained Tools to Identify Young Entrepreneurs. (2022)
- Research into Early-Stage Identification of Entrepreneurs: Education Tools using Virtual and Augmented Reality. (2022)

And Finally.....

It has been an honour and a pleasure undertaking this PhD and the completion of this Thesis with the University of Derby. It has been a chapter of my life spanning the last six years, one that I won't forget.

I look forward to the next chapter in my journey of life.