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#### **REVIEW ARTICLE**

### NURTURING ENTREPRENEURSHIP IN KENYA THROUGH TRAINING OF INTELLECTUAL PROPERTY (I.P.) IN UNIVERSITIES

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#### **ABSTRACT**

The research undertook an econometric analysis of Nurturing Entrepreneurship in Kenya through Training of Intellectual Property (I.P.) in Universities using the classical or traditional methodology of econometrics (Gujarati and Porter, 2009). The econometrics methodology proceeds along the following lines: statement of theory or hypothesis, specification of the mathematical model of the theory, specification of the statistical or econometric model, obtaining the data, estimation of the parameters of the econometric model, forecasting or prediction, using the model for control or policy purposes. From the study results it can be concluded that indeed entrepreneurial growth is not only caused by Intellectual Property related factors but may be due to a combination of other factors. It means the study was not exhaustive enough to include other factors that contribute to growth in entrepreneurship in universities.

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#### INTRODUCTION

#### **Intellectual Property as Entrepreneur's Asset**

Intellectual property (I.P.) rights are vital part of entrepreneurs' assets as I.P. promotes creativity and innovation. Additionally, it is an assurance that entrepreneur gets fair profit from his investments. I.P. rights are important also because they promote economic growth by protecting inventors, artists and designers and enabling them to get profit from their work. Intellectual property (IP) is the backbone of a competitive European economy, creating jobs and bringing innovative products and services to consumers and companies (www.ipo.gov.uk)

Entrepreneurship has been considered a way to increase economic welfare and create employment especially in transition countries such as Croatia where free enterprise is emerging. Today's students are tomorrow's potential entrepreneurs. However, there is little understanding of the factors that affect students' motivation of becoming entrepreneurs and the relationship between entrepreneurship education and students' entrepreneurial attitudes towards entrepreneurship. This paper seeks to contribute toward redressing this gap whether education affects students attitudes, subjective norms about entrepreneurship, and whether these, in

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Lecturer at University of Eldoret, Ph.D Student at Jomo Kenyatta University of Agriculture and Technology, P.O. BOX 2769-30100, Eldoret, Kenya turn affect their motivation on becoming an entrepreneur. In doing so, it enhances our understanding of whether, and if so, how, education can affect students' attitudes toward entrepreneurship. The article is based on a survey performed on second year students of the University Department for Professional Studies in Croatia (Senka Borovac Zekan, 2014) Economic progress depends on new ideas and new knowledge. Companies and entrepreneurs will invest in innovation and creation if they can reap the fruits of their endeavours. At the same time, innovation and creativity must be accessible to as many people as possible so that dynamic businesses can thrive, consumers can benefit from innovative products and services, and cultural diversity can flourish. For these reasons, the Commission aims to promote balanced IP rules, by continuing to build an IP infrastructure that works for European citizens and Europe's competitiveness (Michel Barnier-2012) This view is in no doubt, a pointer to the urgency of introducing this important concept to students in institutions of higher learning as a way of nurturing entrepreneurship.

According to the AUTM, academic institutions in 1999 received \$27 billion of federal research funding, generated 12,000 invention disclosures, filed 8,800 U.S. patent applications, were issued 3,600 U.S. patents, executed 3,900 new license or option agreements, and collected \$860 million in licensing fees). That same year, at least 350 new start-ups were formed and 420 new products were introduced based on university-licensed technology. Considering that the federal government invested \$75 million research funding for each

new startup formed in 1999, and that licensing deals average less than \$100,000 in up- front fees and modest royalties or equity stakes7, it is clear that at least the potential to free ride exists. Of course, IP is properly valued on expected future cash flows, not sunk costs, so actual value captured by the entrepreneur varies on a deal-by-deal basis (web site, www.autm.net)

#### **Innovative and Creative Entrepreneurship**

I.P. rights help significantly promote innovation, creativity and trade. Infringement of I.P. rights causes economic damage. Therefore, it is important for everyone to fight against the infringement of I.P. rights, protect the entrepreneurs' interests and people's lives and health. People have ideas all the time. In business, new ideas can lead to new products and services. They can lead to a better way of doing something. Ideas can come from existing businesses through research and development. For example, Apple, an established technology company, developed the iPod. Ideas generate value to the economy by encouraging people to buy or invest in new developments. Many ideas come from entrepreneurs who go on to start up new businesses. They also inspire competitors to invent new products in order to regain market share. Trademarks in particular are helpful for consumers, as trademarks assure the consumers that the products and services they consume are of high-quality, legal, safe and reliable. The increasing value of I.P. rights is an indicator of success. This inevitably makes these rights tempting also for counterfeiters, who have enough money and have become active in industrial business.

Traditionally, luxury goods, music and film industries, clothing and accessories have been the subject of an infringement of I.P. rights. Nowadays, IP rights are infringed also in consumers' goods like cosmetics, foods, spare parts of airplanes and cars, toys, technics and electric products. The UK Intellectual Property Office (UK IPO-www.businesscasestudies.co.uk/i.p.) helps owners and entrepreneurs to protect their concepts or creativity by registering their intellectual property rights. For entrepreneurs, the idea is often the entire basis for the new business. Without the idea, the business would not exist. Entrepreneurs invest money to develop business ideas. It is therefore essential that entrepreneurs safeguard this investment.

#### **Benefits of Intellectual Property**

Intellectual property (IP) rights provide entrepreneurs with many benefits:

- IP rights provide protection against a competitor directly copying the idea. This helps the entrepreneur to recover their costs in developing the idea.
- IP rights help businesses maintain their long-term competitive edge. Registered IP ensures that entrepreneurs get all the financial benefits from their ideas. Continued revenue will keep the business afloat.
- Registered IP is an asset. It helps convince financial institutions to invest in a business, enabling more money to be raised for development.

- Registered IP gives consumers confidence that products meet appropriate standards and quality.
- By being able to profit from their IP, entrepreneurs are rewarded for taking risks and developing new innovations. They can invest profits in work on new ideas.
- Ownership of the IP enables entrepreneurs to license or franchise ideas to others without risk. This means entrepreneurs are able to expand the market for their products and services more easily, and can increase revenue for the business.

#### Industrialization

The endeavour for a national policy and strategy is driven by Kenya's desire to industrialize and become a middle income economy by the Year 2030 and bring the country policy in tandem with its intellectual and international commitment under the World Trade Organization (WTO) on Trade Related Aspects of Intellectual Property Rights. Hence the need to understand and review how tech startups in Kenya view Intellectual Property in technological innovations taking into consideration an understanding of their current experiences, the structures they have put in place, their understanding of conducting IP and its benefits, as well as challenges they have faced and recommendations.

#### The Importance of the Intangible Business Asset

"Innovation is the specific tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or a different service. It is capable of being presented as a discipline, capable of being learned, capable of being practiced. Entrepreneurs need to search purposefully for the sources of innovation, the changes and their symptoms that indicate opportunities for successful innovation. And they need to know and to apply the principles of successful innovation'.-Peter F. Drucker, "The Father of Modern Management"

#### **How Entrepreneurs Protect Their Ideas**



There are four main categories of intellectual property rights (IPR). Each gives a different protection and is used for different purposes.

#### **Patents**

Patents are for inventions. Entrepreneurs can seek patents for a new product or a new process that can be used in industry. For example, James Dyson obtained a patent for his bag-less vacuum cleaner. A patent can protect the invention, preventing other businesses from making, using, importing or selling similar products. To apply for a patent, a business must submit a patent specification. This is a written description, often with drawings of the invention. This sets out what the invention does and provides important technical details. A patent can last up to 20 years; if it is renewed every year.

#### **Designs**

Registering a design prevents a competitor copying the physical appearance of a product or component. The appearance of a product includes lines, shape, contours, texture, colours and materials. A registered design lasts initially for five years, although it can be renewed for up to 25 years. For example, registering designer fashions will stop others from using those designs. This helps to protect designs from being copied and appearing as cheap fakes on the high street.

#### Trade marks

A trade mark is a sign that can distinguish goods and services from those of other traders. A sign can include a combination of words, logos and pictures. To register a trade mark, it must be:

- Distinctive for a group of goods and services
- Not the same as (or similar to) any earlier marks on the register for the same or similar goods and services

A trade mark is a marketing tool which helps to develop and distinguish the brand. The trade mark also provides reassurance for consumers. People will recognise products more easily when they see them advertised. For example, goods bearing the Nike 'tick' logo demonstrate they are Nike products and meet Nike quality standards. Trade Marks can last indefinitely provided that they are renewed every 10 years. Entrepreneurs register trade -marks, designs and logos to protect and represent their brands. Branding delivers huge commercial value to a company. Many people recognise brands rather than individual products or services. Stelios Haji-Ioannou, the founder of easyJet®, uses trademarks to protect the 'easy' brand. The entrepreneurs behind Innocent smoothies use distinctive logos and trademarks to create a recognisable brand.

#### Copyright

Copyright is an IP right that relates to the expression of an idea, not the idea itself. For example, anyone can write a story based on the idea of a superhero, but they cannot copy the name, the text or illustrations from other books about the same subject. Copyright protects sound recordings, films, broadcasts, photographs and original artistic, musical, dramatic and literary works. Unlike patents, designs and trademarks, copyright is an unregistered right. It applies as soon as something is created. There is no registration process or fee. It covers both printed and web-based materials.

Intellectual property also covers concepts as diverse as trade secrets, plant varieties and performers' rights. Often, more than one type of IP may apply to the same creation. For example, the Harry Potter books, films and merchandise are covered by:

- Copyright for the books and films
- Design for some of the Harry Potter scarves and clothes
- Trade marks for the Harry Potter range of toys, games, etc An inventor who has a new idea should keep it secret until the idea is registered. If an idea is discussed in public, then it cannot be protected.

#### **Conclusion of Literature Review**

Entrepreneurs take great ideas like Innocent Smoothies, the biOrb fish tank and the easyJet budget airline and bring them to the market by setting up new businesses. They invest energy, time and money in developing new ideas. Starting up a new business is a high-risk activity and there is no guarantee of return on investment. Registering patents, trademarks and designs protects them from being copied and gives the owner's business a competitive advantage. This helps to take some of the risk out of enterprise. Counterfeiting with medicines has also increased. This puts people's lives and health into a great danger. Trading in goods infringing intellectual property may often seem to be an innocent activity, but the consequences that can result from the use of such goods, may be quite sad. There is need to change our attitude towards the use of counterfeit products. They do get profit, but it is important to be aware of the direct connection between trading with counterfeit products and criminal organizations. We have to think that the issue is not only the decrease in IP rights owner's profits, but also a direct threat to human life and health.

The infringement of IP rights has become a great issue to society. On one hand, the IP rights owners suffer losses because of the huge investments made in the quality, marketing and betterment of their products. On the other hand suffers the consumer when buying in a good faith a particular company's product or product with particular trademark, but receiving a product with low-quality. The costumer therewith supports illegal activity.

#### MATERIALS AND METHODS

#### The Econometrics Methodology

This assignment undertook an econometric analysis of Nurturing Entrepreneurship in Kenya through Training of Intellectual Property (I.P.) in Universities using the classical or traditional methodology of econometrics (Gujarati and Porter, 2009). The econometrics methodology proceeds along the following lines: statement of theory or hypothesis, specification of the mathematical model of the theory, specification of the statistical or econometric model, obtaining the data, estimation of the parameters of the econometric model, forecasting or prediction, using the model for control or policy purposes.

#### **Statement of Theory or Hypothesis**

In-depth interviews with a sample size of 4 entrepreneurship trainers from two private universities and three public universities were conducted, as well as interviewing students by use of questionnaires to understand the case of IP and Entrepreneurship growth scenario in Kenyanuniversities. Some observations were also made at the institutions, and a thorough Literature Review on Intellectual Property rights in Kenya through online and manual archived materials was conducted. A one on one interview with Technology Transfer Officer (Antony Mbayaki)-from Moi University was conducted just to shade light on some technical issues relating to I.P. The data collection took a period of one month, followed by 2 weeks of analysis, design, and reporting.

The general hypothesis of the study was that exposing the students and trainers to I.P. is supposed to enhance innovation and invention and thereby nurture entrepreneurship in Universities. The central question therefore, in our study was whether the I.P. knowledge and training is a key component in the process of nurturing entrepreneurial growth in Universities. To inform our answers, we interviewed several people, not only those with direct experience in I.P, but also the entrepreneurship trainers, and students.

#### **Objectives**

#### Objectives of the Study were to

- I. Establish if there is a Paradigm Shift or Mindset change of Students and Trainers from Tangible Assets /Property of Entrepreneurship to include Intangible Asset (I.P.). That is non-Dependence on tangible assets only.
- II. Find out if a mechanism is in place for the Development of theoretical and practical tools of training on intellectual property for entrepreneurship Students
- III. Observe if a Criteria for identification/establishment the professional trainers for lecturing trainees
- IV. Enquire if there is any program in empowering future generation for employment creation rather than the continual mindset of being employed. This is in order to fulfil the vision 2030 of enabling Kenya to become a middle income country by that year
- V. Investigate if there is any tangible programme of enhancing inventiveness and innovativeness for students and trainers
- VI. Establish if students & Trainers are empowered/supported to transform their ideas from theoretical format into business products/consumables that end up on shelves i.e. developing viable commercial products or services based on the IP assets.

All the above were meant to give an indication of whether or not entrepreneurship is being nurtured in the institutions concerned.

#### Specification of the mathematical model of the theory

This study was designed to approximate the impact of training Students on I.P. on growth of entrepreneurship in universities. This was done by means of simultaneous system of equations that assess the relationships between knowledge of I.P. and growth of entrepreneurship as variables in a given time span.

#### Specification of the statistical or econometric model

We took the use of a dummy variable with a series of regressions investigating how the growth of entrepreneurship in universities varies with the training of students on Intellectual Property(I.P.) and the type of university involved-whether private or public. The model taken as our starting point is shown below:

#### Growth in Entrepreneurship ( $_{g}$ )= $_{1}$ + $_{2}$ N+ $_{3}P_{+}D$ ,

where GROWTH is the change recorded in attitudes by students towards starting any enterprise and an expression of

passion to become entrepreneurs. and N is the number of students approving that I.P. is inevitable in growth of entrepreneurship and P represents the number of those with entrepreneurial knowledge who have started a venture at any time.D represented the type of university. This was then done by fitting a regression to a sample of 65university students in Eldoret Town in the first quarter of 2014.

#### Obtaining the data

The data was obtained from stuedents and trainers in the classes of Entrepreneurship – a common unit at the Mt.Kenya University and the University of Eldoret, Moi University, Kisii University and Catholic University of Eastern Africa, all of which in Eldoretfor 2014/2015 academic year.

Source: Class Of Entrepreneurship at University of Eldoret, Mt.Kenya University, Kisii University, Moi University and Catholic University of Eastern Africa in the first quarter of 2014

Numbers/University	Mku univer.	Moi univer.	CUEA	UoE	Kisii univer.
Initiated some venture	7	8	6	6	4
Knowledge in Patents and	3	4	3	5	4
Technology					
I.P. key in Entrepreneurship growth	11	10	9	8	11
I.P tools availability in training	4	6	3	4	3
Passion to be Entrepreneurs	9	7	10	9	8
TOTALS	34	35	31	32	30

Field Data 2014

#### Estimation of the parameters of the econometric model

#### Growth in Entrepreneurship $(_{g}) = _{1}+_{2}N+_{3}P_{+}D$

$$\begin{array}{cccc} _g = 19.290 + 0.410N + 1.401P + 0.671D \\ t & (5.635) & (1.476) & (0.379) \\ p & (0.012) & (5.692) & (0.111) \\ R^2 = 0.971 \end{array}$$

The intercept here is statistically significant given the t and p-values. However, the slope co-efficient is not statistically significant despite it being high looking at the p-value that is well above the 0.05. This means that whereas in this model number of those who initiated a venture has effect on entrepreneurship growth, there are several other factors that influence growth that have not been specified in the model. The same thing can be seen of the P variable going by its t-value and p-values. Altogether the type of university has an effect of 67% on the growth of entrepreneurship in the institutions.

$$R^2 = 0.971$$

R<sup>2</sup>= Coefficient of determination; is the proportion of variation in the dependent variable due to variation in the explanatory variable.

It means 97.1% of variation in  $_{\rm g}$  is due to N,P and others. It is the goodness of fit in the model.

Υ	X1	X2	D		SUMMARY OUTPUT								
34	1	L	7	0									
35	10	)	8	1	Regression S	tatistics							
31	9	9	6	0	Multiple R	0.985181248							
32		3	6	1	R Square	0.970582092							
30	1	L	4	1	Adjusted R Square	0.882328367							
					Standard Error	0.711328352							
					Observations	5							
					ANOVA								
						df	SS	MS	F	gnificance	F		
					Regression	3	16.69401	5.564671	10.99763	0.217306			
					Residual	1	0.505988	0.505988					
					Total	4	17.2						
						- **							
						Coefficients				Lower 95%			
					Intercept	19.29041916	3.423601	5.63454	0.111821	-24.2106	62.7914	-24.2106	62.79139835
					X1	0.410179641	0.27796	1.47568	0.379152	-3.12163	3.941994	-3.12163	3.94199363
					X2	1.401197605	0.246165	5.6921	0.110713	-1.72663	4.529025	-1.72663	4.529024647
					D	0.670658683	0.669642	1.001518	0.499517	-7.83795	9.179268	-7.83795	9.179268136

From the above analysis it can be concluded that indeed entrepreneurial growth is not only caused by Intellectual Property related factors but may be due to a combination of other factors. It means the study was not exhaustive enough to include other factors that contribute to growth in entrepreneurship in universities.

#### **Using the Model for Policy Purposes**

As it is, Initiating some venture, Passion to be Entrepreneurs and so on have a strong impact on entrepreneurship growth. However, the partial analysis indicates that there is need to carry out a comprehnsive study of other potential factors that contribute togrowth in entrepreneurship including knowledge in patents & technology, intellectual property as intangible asset, tools for training on I.P. among others.

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www.businesscasestudies.co.uk/intellectual-propertyoffice/intellectual-property-rights-andentrepreneurship/introduction.html#ixzz2kYiujZd1

www.epo.org. www.ipo.gov.uk a. Start-up Basics

() () ()

b. Business Planning c. Entrepreneurial Finance () () () ()d. Business Models () () () () () ()() e. Corporate Entrepreneurship

f. Patents & Technology

() () () () () () () () () () ()

#### **APPENDICES**

www.wfp.org/p4p

www.oami.europa.eu

#### Appendix 1Questionnaire

#### SECTION A: PERSONAL DATA/BIO DATA

Office, "Our Business," PTO web page

Economics Ulrich KaiserApri

1.	Age:				
2.	Gender:	Female	Ma	ale	)

- What programme are you studying in: \_\_\_ (not applicable forAssessment)
- What do you expect from the Mku Entrepreneurship Programme? Please tick only one question

www.isu.uzh.ch/cms/entrepreneurship/Teaching/fs09.htmlUniv

www.uspto.gov 17 March 2001. US Patent and Trademark

ersity of Zürich ISU Institute for Strategy and Business

- I have no precise expectation. ()
- I have a general interest and want to learn more about entrepreneurship.

This will help to decide whether becoming an entrepreneur is an option for me.

- I could imagine becoming an entrepreneur. Therefore, I want to learn the necessary skills and competencies.
- I am determined to start my own business. Therefore, I want to learn the necessary skills and competencies.
- 5. To what extent do you value your depth of knowledge in the following areas of entrepreneurship?

1 (to no extent) to 7 (to a great extent)

6. You hail from:(a) PublicUniversity (b). Private university

7. Your Year of Study	Self Confidence
(a) $1^{st}$ (b) $2^{nd}$ (c) $3^{rd}$ (d) $4^{th}$	Q7. Are you happy with your life and talents?
8. Have you initiated an activity or a project outside of college?	a. Very happy b. Somewhat happy c. Neutral d. Not very happy
a. Yes b. No	Q8. Do you have the ability to cope with challenges in the job market?
9. Name the three jobs you would like the most to occupy in the future:	a. Yes b. Somewhat c. Neutral d. Not at all
I	Creativity
<ul><li>III</li></ul>	<ul><li>Q9. How much do you like to propose new solutions to current challenges?</li><li>a. Very much b. Somewhat c. Neutral d. It depends!</li></ul>
<ul><li>100 (fits perfectly)</li><li>11. Have you taken a course or training program that focuses on entrepreneurship / Self-employment in the past?a. Yesb. No</li></ul>	Q10. Are you happy to offer "crazy" creative ideas?  a. Very much b. Somewhat c. Undecided d. Not at all
12. Have you participated in an extra-curricular activity that focuses on entrepreneurship / Self-employment?	Intellectual Property
Yes No  13. In College I have been taught how to create a new activity or starting a company. 1 2 3 4	Q11. Do you think I.P. is an asset to an Entrepreneur?  a. Yes b.No c. I don't know b.  Q12. Which University is best suited in teaching I.P. to its Entrepreneurship Students?
SECTION B	a. Public b. Private c. None of the two
Market Knowledge	Section c questionnaire
Q1.How much do you know about rules, conditions, opportunities, and challenges in orderto establish a firm and get it running?	1. Explain what you understand by Intellectual Property (I.P). Do you think trainers as well as students of Entrepreneurship consider I.P. as an asset? Elaborate on your answer.
a. Nothing b. A little c. Somewhatd. Very Much	
Q2. Have you ever visited a factory or worked in a firm during your education?	2. As an entrepreneurship student, highlight both the theoretical and practicals tools that your institution has put in place for training on I.P in your entrepreneurship curriculum
a. Never b. Yes one time c. Yes, more than one time	
Q3.How much are you interested in taking long-term courses to learn more about job markets?	<ol> <li>Clarify to the examiner the criteria you think your college uses in identifying professional training &amp; establishing the terms of engagement</li> </ol>
a.Not at all b. Not now c. Neutral d. Very much	4. In its vision 2030, Kenya aspires to be a middle income country
Q4. Will you be satisfied with continuous employment and payment by fixed salary?	by that period. What is your view on whether or not the young generation is being trained to create jobs or become job seekers; where is the missing link?
a. Very interested b. Somewhat interested c. Neutral d. Not at all	
Risk-Taking Propensity	5. Describe the programme that your institution has in enhancing innovativeness and inventiveness for entrepreneurship learners
Q5. Would you prefer a job involving change, travel, and variety, even though the job is less secure?	and trainers
a. Very much b. Somewhat c. Undecided d. Not at all	6. Do you feel sufficiently empowered/supported to transform your
Q6. How much do you prefer to run your own business rather than participate in a lower-risk business aftergraduation?	ideas & concepts from theoretical format into business products/consumables that can end up on shelves i.e. developing viable commercial products or services based on the IP assets? Explain your answer
a. Very much b. Somewhat c. Neutral d. Don't like	

#### Appendix 2

Intellectual Property

- Values 2010 (www.interbrand.com)
- 1stCoca Cola \$70,000,000,000.00

- 2 ND IBM \$65,000,000,000.00 3<sup>rd</sup> Microsoft \$61,000,000,000.00 4<sup>th</sup> Google \$44,000,000,000.00

#### Appendix 3

Υ	X1	X2		D		SUMMARY OUTPUT								
34	1	11	7		0									
35	5	10	8		1	Regression S	tatistics							
31	L	9	6		0	Multiple R	0.985181248							
32	2	8	6		1	R Square	0.970582092							
30	)	11	4		1	Adjusted R Square	0.882328367							
						Standard Error	0.711328352							
						Observations	5							
						ANOVA								
							df	SS	MS	F	gnificance	F		
						Regression	3	16.69401	5.564671	10.99763	0.217306			
						Residual	1	0.505988	0.505988					
						Total	4	17.2						
							Coefficients	andard Err	t Stat	P-value	Lower 95%	Upper 95%	ower 95.0%	Upper 95.0%
						Intercept	19.29041916	3.423601	5.63454	0.111821	-24.2106	62.7914	-24.2106	62.79139835
						X1	0.410179641	0.27796	1.47568	0.379152	-3.12163	3.941994	-3.12163	3.94199363
						X2	1.401197605	0.246165	5.6921	0.110713	-1.72663	4.529025	-1.72663	4.529024647
						D	0.670658683	0.669642	1.001518	0.499517	-7.83795	9.179268	-7.83795	9.179268136

\*\*\*\*\*





























