

# Technology Transfer Services and Performance of Startup Firms Sponsored by University Incubators in Kenya

Muiruri Zipporah Karimi\* Dr. Patrick Karanja Ngugi Prof. Romanus Odhiambo  
Jomo Kenyatta University of Agriculture and Technology, P.O. Box 62000-00200. Nairobi. Kenya

## Abstract

Technology transfer is the process of transferring skills, knowledge, technologies, methods of manufacturing, samples of manufacturing and facilities among governments or universities and other institutions. This ensures that scientific and technological developments are accessible to a wider range of users who can then further develop and exploit the technology into new products, processes, applications, materials or services. Business incubation assist startup firms grow with the efficient use of business resources to become sustainable and develop competitive companies. The associated outcomes are jobs creation, technology transfer, commercialize new technologies and create wealth for economies. University business incubators provide a unique opportunity for start-up firms to benefit from the talent and resources located in the university, particularly in development of products that require higher level of technology and sophistication. The research objective was to find out how technology transfer services influence performance of startup firms sponsored by university incubators in Kenya. The study adopted a descriptive survey research design. Qualitative and quantitative data was collected from a random sample of university sponsored graduate incubates. A sample size of 189 was drawn from a population of 372. A self-administered questionnaire with closed-ended questions and open spaces for comments was used to collect primary data. Data was analyzed using descriptive and inferential statistics. Regression analysis was used to test the relationship between the dependent and independent variables. The study concluded that technology transfer services offered by university business incubators were statistically a significant factor in relation to the performance of startup firms. The study recommends that universities adopt and embrace business incubation strategy since they are major sponsors of technology transfer programs hence extend their basic mission of teaching, generating new knowledge and service to the society.

**Keywords:** Business Incubation, Technology transfer, Startup Firms Performance.

## 1 INTRODUCTION

### 1.1 Background of the Study

National Business Incubation Association (NBIA, 2014) defines business incubation as a business support process that accelerates the successful development of start-up and fledgling companies. The graduate companies' outcomes are jobs creation, technology transfer, commercialize new technologies and create wealth for economies (Ogutu & Kehonge, 2016; Al Mubarak & Busler, 2015). The centres achieve this by providing incubates with an array of targeted resources and services. Al Mubarak and Busler (2012) argue that strategic business incubation services are usually developed or orchestrated by business incubator management and offered both in the business incubator and through its networks. The NBIA (2014) report further posits that strategic business incubation helps incubates translate their ideas into workable and sustainable businesses by providing them with expertise, networks and tools that they need to make their ventures successful. In the long-term business incubator graduates have the potential to create jobs, revitalize neighbourhoods, commercialize new technologies, strengthen local and national economies and build wealth (Al Mubarak & Busler, 2011; 2014).

Business incubation in Africa especially in the Sub-Saharan Africa is in its infancy compared to regions with a longer history of incubation. In a study carried by Ruhui (2014), 21 countries from around the African continent have attempted to establish business incubators of which many are providing business development services. Kenya is rated at 6%, Nigeria at 13% and South Africa highest at 27%. According to the study done by the Economic Commission for Africa in selected 17 countries of North and Southern Africa, a total of 18 incubators and 40 business incubators have been created. The majority are located in North Africa comprising Tunisia, Morocco and Egypt where networks of incubators have been created (Ruhui, 2014; Joshua et al., 2010).

Government of Kenya's (GoK) policy intervention plan is to utilize science, technology and research findings to foster innovativeness in an objective to transform Kenya into a knowledge-led economy (KIPPRA, 2014; GoK, 2010; GoK, 2017). The report further alleges that strategic goals to achieve the objective are: strengthening business incubation process and institutions; provide funding for initial commercialization of research findings; provide clear policy and institutional framework for funding of research and commercialization of research findings; and collaboration between institutions of higher learning, research institutes and industry. In Kenya's Vision 2030 (GoK, 2013), the government projects to have set up 70 incubators by 2030 and 20 by 2020 under Research Innovation and Technology sector in an effort to transform the country into a knowledge-led community.

According to Al Mubarak and Busler (2012), BIs play a key role in providing support to start-ups firms, predominantly in the initial stages of their firm's lifecycle between six and forty two months. Al Mubarak *et al* (2013) explains further that they provide a range of services such as shared offices, access to research labs, access to knowledge and network pools to startup companies. In an earlier research (Al Mubarak *et al*, 2010), the authors argue that BIs can be particularly valuable in helping to develop local economies, promote technology transfer, generate jobs and commercialize new technologies. Business incubation has positive outcome in terms of start-up firms' survival and higher employment rate. Overall, incubates have increased likelihood of survival, lower failure rate and stronger learning upon exit (Claudia, 2013).

The universities are at central position in economic growth of a country by playing an active role in research and development, innovation, incubators and technology parks, and commercialization (Jamil *et al*, 2015). UBIs have a successful history in provision of location, human and financial capital, innovation and commercialization (Chandra & Chao, 2011). University Business Incubators (UBIs) provide a unique opportunity for start-up firms to benefit from the talent and resources located in the university, particularly in development of products that require higher level of technology and sophistication (Hanaoku *et al*, 2013). Salem (2014) argues that university business incubators are considered as the most powerful in that the results of innovation studies have increasingly emphasized the link between innovation, underlying research and business performance effort aimed at commercializing the results of research and development (R&D).

### 1.2 Statement of the Problem

The failure rate of startup firms is estimated at 75 % in developing and least developed countries within the first three years of operation (AFDB, 2014; Ogutu & Kehonge, 2016; Ruhui, 2014). Africa accounts for only 30% survival rate, compared to 77% in Australia, 71.3% in the UK and 69% in the US and in Kenya less than 40% (Ogutu & Kehonge, 2016; Rajeev *et al*, 2012). The main cited challenges are lack of an enabling environment that would result in a thriving ecosystem for small businesses to start, develop and mature (Rajeev *et al*, 2012). According to African Development Bank (AFDB, 2014), many potential start-ups have poor business planning skills, suggesting that even if they obtained funding, they would also face management and marketing challenges.

The success of business incubators is measured against certain key factors and highly dependent on expectations of stakeholders. These include among others the clarity of mission and objectives, monitoring of the performance of business incubation, the sector specificity, incubate selection process, exit processes, proximity to a major university, the level and quality of management support, the extent of access to potential internal/external networks, and the competency of the incubator manager to configure hard and soft elements of the business incubation environment (Lee *et al.*, 2011; UKBI, 2012). Kenya is considered a promising place to do business, with growing markets and good opportunities whereby private sector contributes 97% of gross domestic product (GDP). Greater integration of informal businesses into the formal sector would enhance their credit access, which would reinforce the positive output which continues to expand more rapidly comprising about 80% of youth (AFDB, 2014; KIPPRA, 2014). Job creation potential of businesses is related to their growth orientation where the Sub-Saharan Africa has the highest percentage of start-ups with low growth expectations at 85.5% and the lowest percentage with high growth expectations at 3.9% (Kew *et al*, 2013).

Business incubation is an effective method to foster new business ideas turning them into successfully commercialized and competitive innovative products globally (Al Mubarak *et al*, 2013, Ogutu & Kehonge, 2016). Business incubators play a key role in providing support to emerging start-ups predominantly in the initial stages of their start-ups' lifecycles (Al Mubarak *et al*, 2013). Ruhui (2014) findings report of disconnect between business incubation in Kenya and government's policy framework whereas Riunge (2014) reports resources inadequacy in business incubators in Kenya. Kinoti and Mieme (2011) report that incubates in Kenya posed frustrations in the short fall of their expectations while in the incubating process. It is against this background that the study seeks to establish the effect of strategic business incubation on performance of start-ups firms sponsored by university incubators in Kenya.

### 1.3 Research Objective

To find out how technology transfer services influence performance of startup firms sponsored by university incubators in Kenya.

#### Research Hypothesis

**H<sub>0</sub>**: There is an insignificant relationship between technology transfer services and performance of startup firms sponsored by university incubators in Kenya.

**H<sub>A</sub>**: There is a significant relationship between technology transfer services and performance of startup firms sponsored by university incubators in Kenya.

## 2 LITERATURE REVIEW

According to Zikmund (2010) there are various reasons why it is important to carry out literature review. These

include: pointing out what has been done and what is lacking, ability to develop variables relevant to the topic of interest, synthesizing and gaining a new perspective, identifying relationships between ideas and practices, establishing the context of the topic and the problem, rationalizing the significance of the problem, enhancing and acquiring the subject vocabulary, understanding the structure of the subject, relating ideas and theory to applications.

## 2.1 Theoretical Review

Creswell (2013) defines a theory as an interrelated set of constructs formed into propositions or hypotheses that specify the relationship among variables. The scholar posits that theories are analytical tools for understanding, explaining, and making predictions about a given subject matter or phenomena that occur in the world.

The Resource Dependence Theory (RDT) was developed by Pfeffer and Salancik in the year 1978 at the Stanford University first published in their work titled the external control of organizations, a resource dependence perspective. The authors had the intention to provoke additional thoughts, research attention, and concerns for three different ideas which includes the concept of resource interdependence, external social constraint, and organizational adaption. As alleged by Davis and Cobb (2010), the intentions of Pfeffer and Salancik led to the development of the RDT, providing an alternative perspective to economic theories of mergers and board interlocks in order to understand precisely the type of the inter-organizational relations. RDT leads to the basic concept that an organization can be characterized as an open system, dependent on contingencies in the external environment. Drees and Heugens (2013) posit that since the introduction in 1978, the RDT is used as a premier perspective in understanding organizational environmental relationships.

## 2.2 Empirical Review

According to Mc Adam and Mc Adam (2008), knowledge is a unique commodity in that while it can be created, it cannot be destroyed. Similarly it can be transferred but the source retains all of the knowledge it transfers to the recipient. Mc Adam and McAdam (2008) allege that universities are major sponsors of technology transfer programs. Their motivation to do so is an extension of their basic mission, namely to teach, generate new knowledge, and be of service to society. In a study by Millar *et al* (2009), the authors argue that university technology transfer offices (TTOs) are relied upon to identify and manage new discoveries in the best interest of the public. According to Wong *et al* (2006), TTOs specifically seek to preserve intellectual property rights, facilitate partnerships, generate revenue and institutional recognition, and protect academic research enterprises as a source of future innovations. Although the priority given to each of these factors may vary from university to university, the technology transfer they promote enables the public to enjoy a broad array of new products and processes.

According to Angelsoft (2010), state governments sponsor a wide variety of fiscal and tax incentives programs that have implications for the commercialization of research produced technologies. Although the majority of these programs are focused on state interests in economic development generally, some are designed to directly enhance the investment climate for the commercialization of new technologies resulting from research. State tax credits focused on angel investors are an example and the purpose is to reduce the risk and cost of angel investing in order to encourage more entrepreneurial activity in high-growth small businesses. As argued by Auerswald and kulkarini (2008), the theory is that if successful, these programs can attract investment dollars, create jobs, and contribute to the economic growth of a state. Tax credits represent a dollar-for-dollar reduction of the investor's tax liability and can be structured as refundable or nonrefundable credits.

Angelsoft (2010) further posits that opportunities for moving the products of research from ideas and concepts to commercialization can be fraught with difficulties which range from inadequate financial resources to uncertainty over marketability of the technology, and from exceptionally high risk of product or process failure to exceptionally long horizons before a financial payout. Economic Development Administration (2010) highlights examples such as high net-worth individuals that seek healthy returns on their investments or private equity firms that manage investments on behalf of individuals or groups of individuals like pension funds, endowments and foundations among others. The security offered by various local, state and federal government programs can also be a source of support for start-up companies. In some cases, the advancement of new technologies is promoted by a combination of public and private support, as is often the case with business incubators (AngelSoft, 2010).

Klenk and Hickey (2010) allege that regardless of the source of support a fledgling enterprise hoping to be a success must plead its case for some sort of financial, managerial or legal protection if its promising but risky product of research is to successfully move into a viable place in a market environment. Millar *et al* (2009) argue that successful partnerships are characterized by clear objectives, cost-sharing, industry leadership, limited but well-defined public commitments, measurable outcomes, and learning through sustained evaluations. Link and Link (2009) argue that although partnerships are an important tool, they are not a guarantee of successful technology transfer acknowledging the risk of some new technologies is important. Al Mubarak and Busler

(2014) and InfoDev (2009) argue that venture capitalists typically assist during four stages in a company's development, namely idea generation, start-up, ramp up, and exit. Al Mubarak *et al* (2013) further argue that since there are no public exchanges listing their securities, private companies meet venture capital firms and other private equity investors in several ways, including warm referrals from an investor's trusted business sources, investor conferences and symposia, and summits where companies pitch directly to investor groups in face-to-face meetings.

### **2.3 Business Incubation and Startup Firms Performance**

Firm performance is a relevant construct in strategic management research and frequently used as a dependent variable. Kaplan and Norton, 1996 as cited by Ceptureanu (2015) defines performance as a set of financial and nonfinancial indicators which offer information on the degree of achievement of objectives and results. According to Al Mubarak and Busler (2013), an incubator's ultimate goal should be incubate survival and growth organized in such a way that firm survival and growth are enhanced. European Commission (OECD & EU) (2013) agrees with the statement arguing that the purpose of a business incubator is to increase the chances of a start-up to survive at the beginning while adding value by maximizing the firms' growth potential. In a study by Mobegi *et al* (2012) findings show that in china, university incubators among others have played a crucial role in technological commercialization, job and wealth creation, and economic growth. The university business incubators have demonstrated superior abilities to link readily available faculty and students to entrepreneurship assistance, to accelerate the development of innovative high-tech firms and to facilitate the commercialization process of technical innovations.

### **2.4 Research Gap**

The findings of previous studies on literature reviewed affirms that business incubators in collaboration with governments and industry who are key stakeholders support startup firms through financing programs and close interaction to meet the objectives of technology and social development. The interaction is credited with generating several innovative new firms. The studies do not reflect performance of these new firms financially and non-financially which the researcher intends to find out from a Kenyan perspective.

## **3 RESEARCH METHODOLOGY**

### **3.1 Research Design**

A research design constitutes the blue print for the collection, measurement, and analysis of data. Cooper and Schindler (2011) define research design as the plan and structure of investigation conceived so as to obtain answers to research questions. A research design is a master plan that specifies methods and procedures for collecting and analyzing the needed information (Kothari, 2004). This study adopted a descriptive survey research design which yielded both qualitative and quantitative data in order to interpret the relationship of business incubation to the performance of startup firms among university sponsored incubators. Descriptive surveys can be used when collecting information about people's attitude, opinions, habits or any of the variety of education or social issues (Kombo & Tromp 2009). The aim of a survey is to explore and describe a phenomenon and is more efficient and economical (Kothari, 2004). Quantitative approach was used to quantify the hypothesized relationship between the dependent and independent variables. Qualitative approach was adopted to provide in-depth understanding of the situation about business incubation and performance of startup firms.

### **3.2 Population**

According to Kothari (2009), population is the aggregate of all that conforms to a given specification. The study population included all graduate incubates hosted by the university sponsored business incubators in Kenya between years 2011 and 2017 which totals to 372. Target population is the entire list of items on which the researcher wishes to generalize the study findings (Kothari, 2004; Mugenda & Mugenda, 2003). The study used simple random sampling of all start-ups firms managed by graduate incubates from the three university sponsored incubators. The institutions include: Manu Chandaria business innovation and incubation centre (BIIC) at Kenyatta University, IbizAfrica at Strathmore University and C4D (Computing 4 Development) Innovation lab at the University of Nairobi.

### **3.3 Sample and Sampling Technique**

A sample is a subgroup carefully selected so as to be a representative of the whole population with the relevant characteristics (Ngugi, 2012). The sample of the study was selected using purposive sampling method which is a non-probability technique used to pick items with the required characteristics (Kothari, 2009). Sample size determination formula recommended by Kothari (2009) was used to select 189 startups for intensive study.

### 3.4 Data Collection

Primary data was obtained from graduate incubates as key informants assumed to have received various services and support that constitute the objectives of the study. This was obtained by use of a semi-structured interviewer administered 5- scale Likert questionnaire. Secondary data sources included books, documented research, journal articles, and electronically stored information. Data collection exercise using questionnaires was administered to the graduate incubates with the help of research assistants. This was after training the research assistants, pre-testing the instruments, and obtaining necessary research permits from various institutions. The researcher closely supervised the assistants and held feedback meetings to collect completed data and ensure that the data collection process was implemented well.

### 3.5 Pilot Testing

According to Saunders *et al* (2009), pilot testing refines the questionnaire making it easy for the respondents when answering the questions. Ambiguity and sensitivity of the items and other issues related to data collection are noted and the tools and procedures revised and refined before the main study (Mugenda, 2012). Pre-testing enables a researcher to correct and improve the research instruments thus performance of data collection. According to Baker (1994 as cited by Ruhui, 2014), a sample of 5% to 10% of the sample size is a reasonable number of participants to consider enrolling in a pilot. In this study, 10 percent of 189 incubates participated in the pilot study which was 20 graduate incubates' start-ups who were not included in the main study.

### 3.6 Validity

Validity is the accuracy, truthfulness and meaningfulness of the data and all inferences made from the data (Mugenda, 2012). Validity exists if the instruments measure what they are supposed to measure. Content validity was tested and achieved through expert input, and also through adoption of questionnaires used in prior studies including Ruhui (2014), and Riunge (2014). Construct validity is a measure of the degree to which an instrument results conform to predicted correlations and other theoretical propositions (Kothari, 2004). This was ensured by anchoring the study to theoretical expectations.

### 3.7 Reliability of the Research Instrument

Data is said to be reliable for a decision when data collection method and the instruments used to collect the data produce similar results when applied repeatedly over time (Mugenda, 2012). To enhance reliability of research instrument, a pilot test on 10 percent of the population frame who qualifies but excluded from the final study was carried out to pre-test the research questionnaire.

## 4 RESEARCH FINDINGS

### 4.1 Response Rate

The number of questionnaires that were administered was 189. Out of these 150 were properly filled, returned and found suitable for analysis. This represented an overall response rate of 79.37%. According to Cooper and Schindler (2011), return rate of above 50% is acceptable to analyze and publish, whereas 60% is good, 70% is very good while above 80% is excellent. A response rate of 50% is adequate for analysis and reporting (Mugenda & Mugenda, 2003).

### 4.2 Results of the Pilot Test

From the findings of the study the value of the Cronbach alpha was above 0.7 and thus was accepted. This represented high level of reliability and on this basis it was supposed that scales used in this study is reliable to capture the internal consistency of the items being measured.

**Table 1: Reliability Coefficient of the Study Variables**

	Reliability Cronbach's Alpha	No. of Items	Comment
Technology Transfer Services	.838	6	Accepted
Startup Firms Performance	.801	8	Accepted

### 4.3 Preliminary Analysis

#### 4.3.1 Age of the Startup Firms

Majority of respondents (65.6%) of the start-up firms were between 1 and 2 years old, 31.1% were between 2 and 3 years old while 3.3% were 1 year old and below. The study agrees with the findings of Meru and Struwig (2015), Athena and Chris (2014) and Haven and Candace (2016).

#### 4.3.2 Nature of the Startup Firm

Respondents were requested to describe briefly the nature of their start-up firms. The descriptions were analyzed into three categories namely manufacturing, ICT and Non ICT based. According to the results, a majority (83%)



were in the ICT based services category, a significant (14%) were in the non-ICT based services while and manufacturing had least presentation (3%). The study agrees with the findings of Haven and Candace (2016) whereby ICT based start-up firms dominated the report. Kenya's ICT sector has been growing tremendously over the recent years which could be a major influence of the findings of this study (GoK, 2017).

#### 4.4 Descriptive Analysis

Descriptive statistics was used to establish the variation on the responses based on the statements on Technology transfer services. Data was analyzed which included measures of central tendency, measures of dispersion and measures of association. Analysis was explained using mean and standard deviation to indicate the average score and variability of the scores of the sample. The statements used for this purpose were ranked on a five-point Likert scale where 1= strongly disagree 2=disagree 3=not sure 4= agree 5= strongly agree.

##### 4.4.1 Technology Transfer Services

Table 2 below illustrates the variable on technology transfer services which consisted of six indicators. The total number of respondents that participated to this question was 150. Based on the statement of preservation of property rights, the respondents were slightly sure on average whether it was prudent for the incubator to pursue the preservation of property rights (mean=3.7333; S.D=0.72968). Based on strategic partnerships, the respondents agreed that the incubator effort to source strategic partners was reliable (mean=4.1400; S.D=0.55599). Based on prompt, timely communication, the respondents agreed that incubator style of communication innovation results to various media was prompt and timely with a mean=4.0733 and S.D=0.55599.

**Table 2: Technology Transfer Services**

	N	Min.	Max.	Mean	S.D.
Incubator preservation of property rights	150	1.00	5.00	3.7333	.72968
Reliable strategic partnerships source	150	2.00	5.00	4.1400	.55599
Prompt and timely incubator communication	150	3.00	5.00	4.0733	.60309
Public and private partnership	151	2.00	5.00	4.0199	.57120
Commendable incubator sponsorship	149	2.00	5.00	3.9933	.44261
Real-time market information by incubator	149	2.00	5.00	3.9933	.56349
<b>Aggregate score</b>				<b>3.9922</b>	<b>0.57767</b>

The study agrees that the incubator partnership with private and public organizations was effective (mean=4.0199; S.D=0.57120). Based on incubator sponsorship, the respondents responses were average (mean=3.9933; S.D=0.44261) whether the program was commendable. Based on real-time market information, the respondents were on average sure as to whether the ability to acquire real time information at the incubator for various markets was prompt (mean= 3.9933; S.D= 0.56349). Athena and Chris (2014) found out that start-up firms identified benefits resulting from their links with the incubator like awareness of the core-competences whereby they could identify their own limitations, increased strategic focus which start-ups struggle with and the need for knowledge databases to enable knowledge transfer. Databases can form part of a virtual infrastructure for start-ups support. The study agrees also with Mc Adam and McAdam (2008) who concludes that universities are major sponsors of technology transfer programs. Mansano and Pereira (2016) findings agree with the study on the role business incubators play in facilitating transfer of technology and innovation in the context of universities, government and private corporations and the need to promote university-industry interaction.

##### 4.4.2 Firms Performance

The study used several parameters to measure performance averaged over a period of three years. Based on the means, the study findings indicate a high level of profitability (4.23), high number of new products (4.01), increase in total sales (3.97), increase in the number of employees (3.54) and a low level of additional outlets (2.7). Overall, performance of startup firms sponsored by university incubators in Kenya has had a significant positive performance. The findings agree with several past studies that incubated startup firms have higher survival development and growth rates (Al Mubarak & Busler, 2015; NBIA, 2014; Claudia, 2013).

#### 4.5 Inferential Analysis

Based on the model summary table 3 below, the  $r^2$  (r squared) value indicates that 77.9% of the variation in performance of startups was a result of technology transfer services offered by the University Business Incubators. The other 22.1% of the variance is as a result of variables not included in the study. From the ANOVA table, the model used for the study was fit at  $p=0.000$ . From the coefficients table,  $\beta=0.721$ , which implies that one unit increase in technology transfer services would cause an increase in performance of startups by 0.721 units. The established regression equation was:  $Y = 0.968 + 0.721 X_1 + e$ . Where Y = performance of start-ups,  $X_1$  =technology transfer services. The study findings are in sync with those of Mansano and Pereira (2016) on the important role played by BIs in facilitating transfer of technology and innovation in the context of universities, government and private corporations and the need to promote university-industry relationship.

Since the corresponding p value= 0.000 ( $p < 0.005$  at 5% level of significance), the null hypothesis,  $H_0$  is rejected and inference drawn that statistically technology transfer services has significant effect on performance of startup firms sponsored by university incubators in Kenya.

**Table 3: Technology Transfer Services and Startup Firms Performance Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.883 <sup>a</sup>	.779	.777	.368		

  

Anova						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	71.146	1	71.146	524.672	.000 <sup>a</sup>
	Residual	20.205	149	.136		
	Total	91.351	150			

  

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	(Constant)	.968	.088		10.976	.000
	Technology transfer services	.721	.031	.883	22.906	.000

a. Dependent Variable: Performance of start-ups

## 5 SUMMARY, CONCLUSION AND RECOMMENDATIONS

### 5.1 Summary

The study found out that technology transfer services offered by the university business incubators had a positive significant relationship on the performance of startup firms. On an average of 3.99, respondents agreed that technology transfer services offered by the business incubators influenced the performance of their startups. The business incubators offered reliable strategic partnerships which was rated the highest with a mean of 4.14.

### 5.2 Conclusion

The study concludes that technology transfer services offered by university business incubators were statistically a significant factor in relation to the performance of startup firms. Universities being major sponsors of technology transfer programs must be seen to extend their basic mission of teaching, generating new knowledge and service to the society by retaining all the knowledge transferred to the client startups who are the recipients in this study.

### 5.3 Recommendation

The study recommends that universities adopt and embrace business incubation since they are major sponsors of technology transfer programs. They must be seen to extend their basic mission of teaching, generating new knowledge and service to the society by facilitating transfer of knowledge and need to promote university-government- industry relationship.

### 5.4 Recommended Areas for Further Research

The researcher highly recommends further research on the performance of these startups firms upon exit from the business incubation centres. It is also recommended to find out what happens to the dormant graduate incubates who do not commercialize their successfully incubated innovative ideas.

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