

# ICIST 2015

1<sup>st</sup> ICRIL-INTERNATIONAL  
**Conference**  
on Innovation in Science and Technology  
20<sup>th</sup> April 2015

# PROCEEDINGS

Organized By:



**1<sup>st</sup> ICRIIL-International Conference on Innovation in  
Science and Technology (IICIST 2015)**

20<sup>th</sup> April, 2015

**Universiti Teknologi Malaysia, Menara Razak, Kuala Lumpur  
Malaysia**

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## FOREWORD by the Vice-Chancellor, Universiti Teknologi Malaysia

السلام عليكم ورحمة الله وبركاته

and Salam Sejahtera,

First and foremost, I would like to congratulate the Science Development Network Leadership Center (SDNLC), UTM International Student Centre, Yemeni Scientists Research Group of Science and Technology (YSRGST) and *Persatuan Saintis Muslim Malaysia* (PERINTIS) for organizing this inaugural ICRIIL International Conference of Innovation in Science and Technology 2015

(IICIST 2015).

IICIST 2015 offers participants from across the globe the opportunity to share practices, discoveries, challenges and solutions related to innovation in Science and Technology.

I urge all participants to work towards establishing long-term collaboration, particularly in high impact innovative research and projects. I believe that through this conference, we are able to identify exceptional and innovative research talents, as well as exemplary academicians and practitioners who are committed to the sharing of knowledge and in establishing collaboration network among innovative researchers in Science and Technology.

To all participants, take this golden opportunity to gain invaluable knowledge and foster new partnerships with both national and international researchers in order to facilitate the award of research grants, joint research and publication, and other academic endeavors. I am confident that such collaborative efforts will foster and boost rapid innovation that can, in the long run, benefit the community at large.

I wish everyone a stimulating and productive conference.

Best wishes,

A handwritten signature in black ink, appearing to be 'Wahid Bin Omar', written over a thin horizontal line.

PROF. IR. DR. WAHID BIN OMAR  
Vice-Chancellor



### Conference General Chair

In conjunction with the 2nd International Conference and Roundtable Conference on Islamic Leadership (ICRIL 2015), the Science Development Network Leadership Center in Universiti Teknologi Malaysia (SDNLC- UTM), International Islamic University Malaysia (IIUM), Persatuan Saintis Muslim Malaysia (PERINTIS) and the Yemeni Scientists Research Group (YSRG) are organizing this 1<sup>st</sup> ICRIL International Conference of Innovation in Science and Technology (IICIST 2015) at Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia.

I am honored and delighted to welcome you all to this conference. The IICIST 2015 is a day program that features a very important Keynote Speech titled ***Restoring Values in Science, Engineering and Technology Education and Research*** by Prof. Dato'. Abang Abdullah Abang Ali. Furthermore, it also features 197 selected papers presented in nine parallel sessions. In all, the conference received 257 submissions out of which the final selection was made. Thus, the acceptance rate for this conference is 76% which exhibits its standard of maintaining quality. In addition, we specifically expect that the conference would provide you all the numerous opportunities for informal networking.

As the General Chair of IICIST 2015, I would like to thank Prof. Dato'. Abang Abdullah Abang Ali for accepting the invitation to share his knowledge and experience with us during this conference, and all the authors for their participation in this conference. Furthermore, I extend my thanks to the IICIST 2015 team for a wonderful Conference and in particular, the Scientific Committee for a thorough and timely review process, as well as the Organizing Committee for their great effort and attention in ensuring the successful implementation of the conference. Finally, my sincere appreciation goes to the management and staff of UTM for the assistance rendered.

*Professor Dr. Azman Hassan*



### Program Committee Chair

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

On behalf of the program committee, I would like to welcome you to the 1st ICRIL International Conference of Innovations in Science and Technology, themed “Innovations for Reengineering the Future of the Ummah” to be held at Menara Razak, Universiti Teknologi Malaysia (UTM), Kuala Lumpur, Malaysia. This conference is organized by the Science Development Leadership Center in Universiti Teknologi Malaysia (SDNLC-UTM), International Islamic University Malaysia (IIUM), Persatuan Saintis Muslim Malaysia (PERINTIS), and Yemeni Scientists Research Group (YSRG).

IICIST 2015 provides a forum for accessing the most up-to-date and authoritative knowledge from both industrial and academic worlds, sharing best practice in the field of Engineering, Science, Technology, and Management towards sustainable development. Furthermore, the conference provides an opportunity for highlighting the recent developments and identifying emerging and future areas of growth and collaboration among scholars, and researchers in these exciting fields.

I would like to express my sincere appreciation and thanks to the conference patron, chair, co-chairs, the technical program committee members, organizing committee members, and the external reviewers for their great efforts in the review process. I would like to thank all the authors who submitted their abstracts to IICIST 2015. Furthermore, I would like to thank UTM International and all management of Universiti Teknologi Malaysia for the full support.

Again, I wish to extend the very warmest of welcome to all delegates and participants of IICIST 2015, and I wish you a pleasant and memorable stay in UTM Kuala Lumpur.

*Dr. Faisal Saeed*





### ***Keynote Speaker:***

**Prof. Dato'. Abang Abdullah Abang Ali**

#### **Brief Profile**

Prof. Dato'. Abang Abdullah Abang Ali Born in Kuching, Sarawak and he is the President, Federation of Engineering Institutions of Islamic Countries (FEIIC), President, Malaysian Society for Engineering and Technology (mSET) and immediate Past President, the Institution of Engineers, Malaysia (IEM) started his schooling years in Sarawak. After finishing his Fifth Form at SMK Green Road and Sixth Form at St. Thomas's Secondary School in Kuching, he then proceeded to the United Kingdom to do Civil Engineering at Brighton and Structural Engineering at Manchester.

On his return in January 1976, he joined Universiti Putra Malaysia, as a lecturer in Structural Engineering. In 1981, he was appointed Deputy Dean, Faculty of Engineering and then Dean in 1982. His research work focused on construction materials, affordable quality housing and industrialized building systems. Prof. Abang Abdullah was promoted to the post of Professor of Civil Engineering in 1987. Apart from contributing as Dean and Professor, he was the founding Director of the Institute of Advanced Technology (ITMA) and Housing Research Centre (HRC) in the university. To date he has written over 160 publications mainly in structural engineering and engineering education and served as editor or referee to a number of local and international journals. His research group at HRC has obtained a U.S., U.K. & Malaysian Patent and won a Geneva Innovation Gold Medal and a CIDB R&D Award for their research. In 2002, he was elected a Fellow of the Academy of Sciences, Malaysia (ASM).

On the professional practice front, Prof. Abang Abdullah has served as a design structural engineer with Perunding Bakti and Miconsult in the 70's and early 80's, designing buildings, housing and bridges. He has also assisted consulting engineers EEC, Gabungan Jurubina and Perunding Muhandis in various capacities. He is a registered PEng in Malaysia and CEng in the United Kingdom. He is a Fellow of IEM, Institution of Civil Engineers (ICE) (U.K.) and International Ferrocement Society (IFS). He was recently elected Honorary Fellow of ASEAN Federation of Engineering Organisations (AFEEO).

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# **BIOTECHNOLOGY**

## Sustainable Government Policy as a Silver Bullet to Sustainable Business Incubation Performance in Nigeria

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### Abstract

Business incubation has variously been described as a support programme that assist the early-stage entrepreneurs to develop and stay on their own. Furthermore, business incubation programme has been acknowledged as an economic development tool most countries globally adopted. The aim of this study is to examine the contribution of government policy on the relationship between the critical success factors (CSFs) and incubator performance in Nigeria. The questionnaire method of data collection was used to gather 113 usable questionnaires from incubatees in Nigeria's business incubators. Structural Equation Modeling (SEM) was performed to determine the result using the Partial Least Square (PLS) Software. Government policy as a moderator did not show a significant moderation relationship between the CSF and incubator performance.

**Keywords.** Business incubator; Government Policy; Nigeria

### 1 Introduction

Business incubation has variously been described as a support programme that assist the early-stage entrepreneurs to develop and stay on their own. Furthermore, business incubation programme has been acknowledged as an economic development tool most countries globally adopted [1-2]. The fundamental idea behind the business incubator is to offer fledgling businesses with a series of resources and services associated with establishing the businesses [3]. In determining the performance of incubation programme, especially in the developing countries, governments' attitudes towards incubation contribute a very significant function for the reason that incubators in developing countries are typically financed by government. Studies have shown that business incubation programme has grown progressively significant within both developed and emerging nations. Furthermore, in the industrialized nations, incubators are primarily driven in the direction of high technological innovation businesses. Another highlight is the existence of a robust linkage among invention, academes as well as business incubators.

### 2 Problem Statement

Despite the positive affirmation of business incubation, there is lack of studies related to its performance such that it is argued whether the programme is effective or not. Consequently, there is a questionable evidence on incubation performance in the developing countries, especially, Nigeria. This study provides a conceptualisation of business support, infrastructure, financial resources, networking, incubator governance as well as government policy, and joins those constructs using RBV and institutional Theory as supporting theories. Despite many studies that have investigated various factors that influence Incubator performance, most of them were conducted mainly in Asia, United States of America (USA), Australia and Europe while paying less attention to the African continent, particularly in Nigeria. Hence, Incubator Performance deserves further investigation in Nigeria because the findings of the previous studies may not be generalisable to the Nigerian context due to cultural and contextual differences.

### 3 Research Theory

With respect to theory, it is the development of competitive advantage that bridges government support programmes to superior financial performance. This assumption is grounded in the resource-based view (RBV) of the firm [4-5]. In accordance with the RBV, although resources (such as financial resources) are important, companies need to develop unique, inimitable assets and capabilities that will set the foundation for sustainable competitive advantage.

Furthermore from institutional theory [6] we take the arguments of how government financial support can influence the initial resource flows for new businesses either through direct financial resources (e.g. seed capital) or through legitimacy-enhancing mechanisms (e.g. policy mandating banks to set aside certain amount from their profit to support start-ups on low interest repayment basis) that ease access to recourses such as bank financing. Thus, we offer a theoretically model depicting the importance of competitive advantage as a measure of the outcome of incubator performance using government support policies. In addition, institutional theory which is consistent with incubator development is largely affected by legal policies and local authority, government as well as university support [7-8]. As numerous incubators are not-for-profit; in line with this incubator programme is a social service which depends wholly on government funding. Therefore, government policy related to funding for social service such as TBI will operationally affect the programme. Furthermore, incubators and other business support programme facilitator such as science parks, technology parks in many cases arise from public-private partnerships.

### 4 Methods

The study involves a data collection process of surveying stakeholders in Nigeria with direct involvement in the national programme. A sample size of 153 is drawn from a population of 253 entrepreneurs within the Nigeria business incubation programme using [9]. 113 usable questionnaires were returned. In order to ensure an equal distribution of entrepreneurs in the 29 incubation centres located in the 6 geopolitical zone of Nigeria, a quota sampling technique was used to select 153 determined sample size. According to [10] "Quota sampling can be described as a purposive sampling in which relevant characteristics are used to stratify the sample. Sekaran and Bougie [11] considered as a form of balanced stratified sampling, in which a predetermined proportion of people are sampled from different groups, but on a convenience basis". The justification for using Quota sampling technique in this study was three-fold. To start with, for the reason that sampling frame could not be accessed, quota sampling (i.e., a non-probability sampling technique) is considered appropriate for the present study despite the fact that findings cannot be generalized [10], [12]. However, this study is more concerned about theory rather than on population. The structural equation model (SEM-PLS) will be highly employed in the study.

### 5 Results and Discussion

The key goal of this research is to examine the moderating effect of government policy on the relationship between the critical success factors and incubator performance. To this end, the following question was asked: Does government policy moderate the relationship between the (various individual) critical success factors and incubator performance in Nigeria? The results of this study showed that a positive and supportive relationships exist between business support and incubator performance; incubator governance and incubator performance as hypothesised. However, the results also confirmed that government policy did not act as a moderator in the relationship between the critical success factors and incubator performance. TBI programme in Nigeria is a social service and depends wholly on Government funding. So government policy regarding funding for social service such as TBI will nevertheless affect the programme operationally. Furthermore, government policy towards entrepreneurship development and youth employment will positively affect the TBI programme. so the performance of TBI programme revolves around Government Policies.

### 6 Conclusion

Ideally good sustainable government policies are the required panacea needed to move the Technology Business Incubation programme in Nigeria from the level the programme has been at inception to where it is at the moment and to meet the global best practices in the nearest future. However, Government policy did not support any of the

relationship related to moderator. One of the key reasons may perhaps rests on the characteristics of the respondents; for example, majority of the respondents are not well educated as can be seen from the descriptive analysis related to level of education; wherein most of them are diploma graduate and other vocational trainings. As such they may not be able to decipher how important the policies of government influence entrepreneurship generally and business incubation programme to be specific. Another likely reason may perhaps be as a result of low sample size.

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