



Technology Entrepreneurship: Pathway to Industry- University Engagement

***Mercy Ejovwokeoghene Ogbari, Eberhibhekhole Esho,
Maxwell Ayodele Olokundun, Oluseye Olaleke Ogunnaike
& Tolulope Morenike Atolagbe**

Department of Business Management,
College of Business and Social Sciences,
Covenant University Ota, Nigeria

*mercy.ogbari@covenantuniversity.edu.ng
eberhibhekhole.esho@covenantuniversity.edu.ng
maxwell.olokundun@covenantuniversity.edu.ng
Olaleke.ogunnaike@covenantuniversity.edu.ng
tolulope.atolagbe@covenantuniversity.edu.ng

Abstract: Technology entrepreneurship is a concept that describes technology-driven entrepreneurship whereby technology is leveraged upon on to achieve entrepreneurial success. The countries called ASIAN tigers emerged on the platform of technology entrepreneurship. This study attempted the use of case studies to describe University- Industry transformation on society drawing strength from the theory of planned behaviour. It is premised upon the belief that universities can facilitate their partnerships with industry by developing competencies in the area of technology. Renowned world economies revolutionized on the bases of technology entrepreneurship. The current statistics in turn revealed that nine out of top ten firms in the world are technology-based. The study proposes that universities should embark on planned behaviour towards development-driven research in the area of technology. It further recommends that

innovation culture should be strategically integrated into the university system for enhanced societal and economic impact.

Keywords; Technology Entrepreneurship, Entrepreneurial success, Competencies, Research, and Universities

Introduction

In recent times, there has been an increase in the number of collaborations between the academia and industry. Although the reasons and motivations behind universities and industries entering University-Industry collaboration are both manifold and multi-faced, and may differ for both parties, the benefits of such collaborations are numerous. University-industry collaborations help to increase the practical relevance of academic research carried out within the walls of ivory towers, foster the commercialization of the results and outcomes of research and development, and help stimulate further research and development (Guimon, 2013). Indeed, both the university and the industry partner stand to derive numerous benefits from such collaborations. In addition to the benefits derived by both parties to the collaboration, the benefits extend to the wider economy.

Developed economies in the western world such as the United States (US) have long benefitted from university-industry collaborations. For example, many of the innovations from biotechnology that have benefitted the agricultural and health sectors in the US economy are products from research and development that began in the laboratories of many universities (Mowery et al, 2015 Geiger; 2017). Similarly, Calvert and Patel (2003) and Tijssen, Lamers, and Yegros (2017) present rich accounts of fruitful collaborations between industry and universities in the United Kingdom (UK) many of which have led to

product licensing and profitable commercialization of proprietary technology. Though the UK and the US are developed nations, University-industry collaborations can also serve as a platform that can help alleviate some of the challenges faced by many in developing economies (Guerrero et al, 2015; Gustafsson & Jarvenpaa, 2018). A study of Chile and Columbia by Marotta, Blom, and Thorn (2007) found that university-industry collaboration helped to increase product and other forms of innovations as evidenced by increased number of patent applications; thus making a case for the merits and usefulness of University-industry collaborations in emerging economies and developing nations.

An area that promises immense benefits for universities, industries, and the general economy at large for collaborations is technology entrepreneurship (Ajagbe et al, 2015a). The rapid industrialization and economic growth of the four Asian tigers, Hong Kong, Singapore, South Korea, and Taiwan, and the rise of China as an emerging economy can be attributed to their leverage of technology for entrepreneurial success (Ogbari et al, 2016). In addition, the successful launch and rapid growth of start-up companies such as Uber and Airbnb are all traceable to the use of technology as a leverage to offering solutions to common problems that had hitherto depended on solutions provided by traditional business models without any technological base. Indeed in an era of fast pace technological changes, technology entrepreneurship can be the

source of innovation that will be mutually beneficial to universities and industries Ajagbe et`al, 2015b).

Using the theory of planned behavior as a bedrock, this paper proposes that universities have to not only be willing to collaborate with industry, they also need to build the requisite capacity to attract firms in the industry for collaboration (Oztekin et`al, 2017). Consequently, this study aims to make two contributions to the literature and practice of university-industry collaboration. First, the paper contributes by applying the theory of planned behavior to an institutional body rather than to a person’s behaviour by presenting a simultaneous multi-action application of the theory of planned behaviour. Secondly, the paper also contributes by presenting an exemplary case study of a university in Africa involved in productive industry partnerships. In the remaining sections of this paper, first an overview of the concept of technology entrepreneurship is presented with the aim of clarifying the definition of the concept. Second, the theory of planned behavior is

presented. This is immediately followed by the conceptual model of the study. A case study of an effective university-industry collaboration based on the conceptual model developed is then presented. The paper concludes with a section on the policy implications of the conceptual model and recommendations for effective university and industry collaborations.

2. Literature Review

2.1 Technology Entrepreneurship

Technology entrepreneurship has various definitions both in the academic and practice-oriented literatures. Consequently, there is no universally accepted definition of the concept of technology entrepreneurship (Ogbari et`al, 2017). From table 1 below, the definitions of technology entrepreneurship are not only very diverse, they are also very different from one another. For example, while Jones-Evans (1995)’s popular research work on the typology of technology-based entrepreneurs defines it simply as the creation of a new technological enterprise.

Table 1

Study	Definition of Technology Entrepreneurship
Nicholas and Armstrong (2003)	Organization, management, and risk bearing of a technology based business
Venkataraman and Sarasvathy (2000)	Solutions in search of problems
Jones-Evans (1995)	The creation of a new technological enterprise
Liu et al. (2005)	Ways in which entrepreneurs draw on resources and structures to exploit emerging technology opportunities
Jelinek (1996)	Joint efforts to interpret ambiguous data, joint understanding to sustain technology efforts, and persistent, coordinated endeavor to accomplish technological change
Garud and Karnoe (2003)	An agency that is distributed across different kinds of actors, each of which becomes involved with a technology and, in the process, generates inputs that result in the transformation of an emerging

	technological path
Bailetti (2012)	An investment in a project that assembles and deploys specialized individuals and heterogeneous assets that are intricately related to advances in scientific and technological knowledge for the purpose of creating and capturing value for a firm.

Source: This Study

Garud and Karnoe (2003) gives a more complex definition. They define technology entrepreneurship from a socialized perspective that goes beyond the actors that use skills and resources to create a technological business as “an agency that is distributed across different kinds of actors. Each actor becomes involved with a technology and, in the process, generates inputs that result in the transformation of an emerging technological path” (Jones-Evans, 1995: pp 277). In other words, technology entrepreneurship is a process that results in innovation.

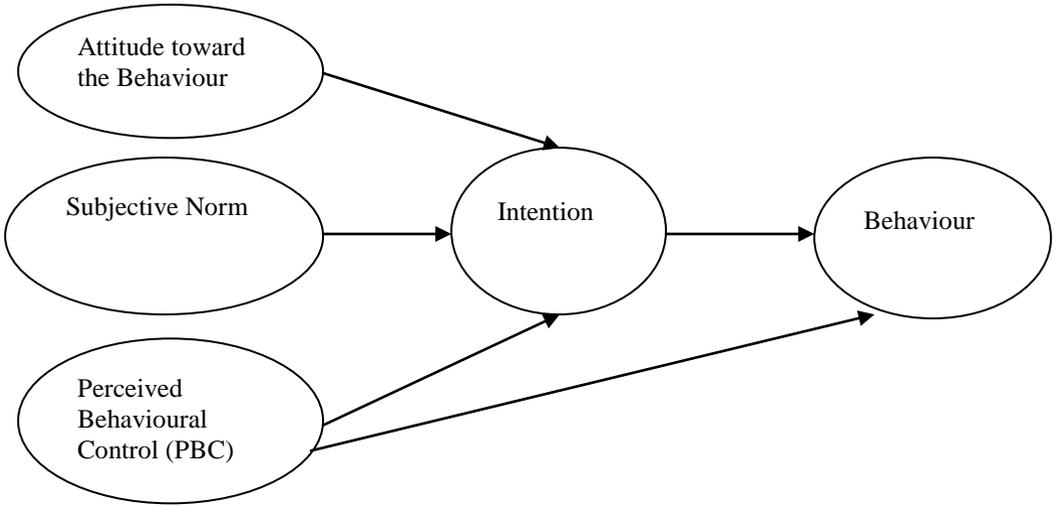
Despite the variations and differences in definition, a running thread in all the definitions is that technology entrepreneurship involves the use of technology. Summarily, in simple terms, technology entrepreneurship is the leverage of technology in creating new enterprises. The fulcrum of entrepreneurship technology is the use of technology to exploit new business opportunities. Consequently, all solutions to problems that involve the use of technology can be termed technology entrepreneurship Venkataraman and Sarasvathy (2000). This is especially so when such

solutions will lead to the creation of new business enterprises. Therefore, technology entrepreneurship inadvertently leads to innovation. Universities and companies desirous of innovation can go through the route of partnerships in different areas of technology entrepreneurship. Based on the Theory of Planned Behaviour, this study reiterates that universities have to deliberately embark on technology-based research in collaboration with industry partners (Bowen, 2018).

2.2 Theoretical Framework: Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TBP) (Ajzen, 1991) is an attempt at explaining the factors that explain human behavior. TBP postulates that human behavior is always preceded and influenced by the intention to engage in behaviour. The intention to engage in a certain behaviour is in turn influenced by attitudes, subjective norms, and Perceived Behavioural Control (PBC). TPB also posits that PBC not only influences behaviour through intention, it also directly influences behaviour (Figure 1 presents the relationships between the different factors in TPB).

Figure 1: Schematic Representation of TBP



Adapted from Ajzen (1991)

TPB postulates that before someone carries out any behavioural action, there must have been an intention to perform the act. In other words, individuals always have motivations for carrying out an act and these motivations are captured as intentions that influence the act. The strength of individuals' intention determines the likelihood that individuals will carry out a behavior (Ajzen, 1991). The theory of planned behavior assumes that for individuals' intention to influence their behavioural acts, such acts must be under the volitional control of the individual. These are called motivational factors. Thus, motivational factors influence individuals' behaviours. Non-motivational factors, on the other hand, are outside the volitional control of an individual, are not captured by intentions and consequently do not influence individuals' behaviour (Oztekin et al, 2017).

In TPB, there are three determinants of intentions to perform an act. These are an individual's attitude towards the behaviour, subjective norm, and

perceived behavioural control. Attitude towards the behaviour refers to an individual's personal evaluation of the behaviour (Ajzen, 1991). Subjective norm refers to pressure an individual's perception of the opinions of the wider society that facilitates or hinders the performance of the behaviour (Ajzen, 1991; Esposito *et al*, 2016). The final construct, perceived behavioural control refers to a person's perception of the ease or difficulty of performing a behaviour which usually is a result of experience (Ajzen, 1991; Esposito *et al*, 2016; Greene, 2017; Rosenberg, 2018).

TPB is an expansion of the theory of reasoned action, a similar theory that preceded TPB. By adding the concept of perceived behavioural control, Ajzen (1991) TPB expanded the theory of reasoned action. TPB has been used severally as the theoretical lens in research on health behaviour. Specifically, TBP has been used in explaining physical exercise activity and support for TPB has been established by several research such as Armitage and Conner (2001), Conner & Sparks

(1996), Esposito *et al*, 2016, and McEachan *et al* (2011). However, TPB has not been without its criticisms. For example, Sniehotta, Presseau, & Arau Jo-Soares (2014) have suggested that TPB should be retired as it has outlived its usefulness. Nevertheless, some research have sought to extend and improve on the perceived shortcomings of TPB. TPB failed to capture the effect that affect and other emotions may have on intent and behaviour. To account for this shortcoming, Esposito *et al* (2016) added three new constructs, desire, positive anticipated emotions, and negative anticipated emotions, to TPB and derived a new model which they called the model of goal directed behavior. Despite the shortcomings of TPB, a meta-analysis by McEachan *et al* (2011) found that TBP was able to predict and explain 23.9% of the variance in physical activity as a health behaviour.

TPB aims to explain, rather than merely predict, behavior (Ajzen, 1991). Consequently, the conceptual model presented in this paper aims to explain the determinants of successful collaborations and partnerships between universities and industry. It will also explain other collaborative partnerships that universities may enter into with government and policy makers.

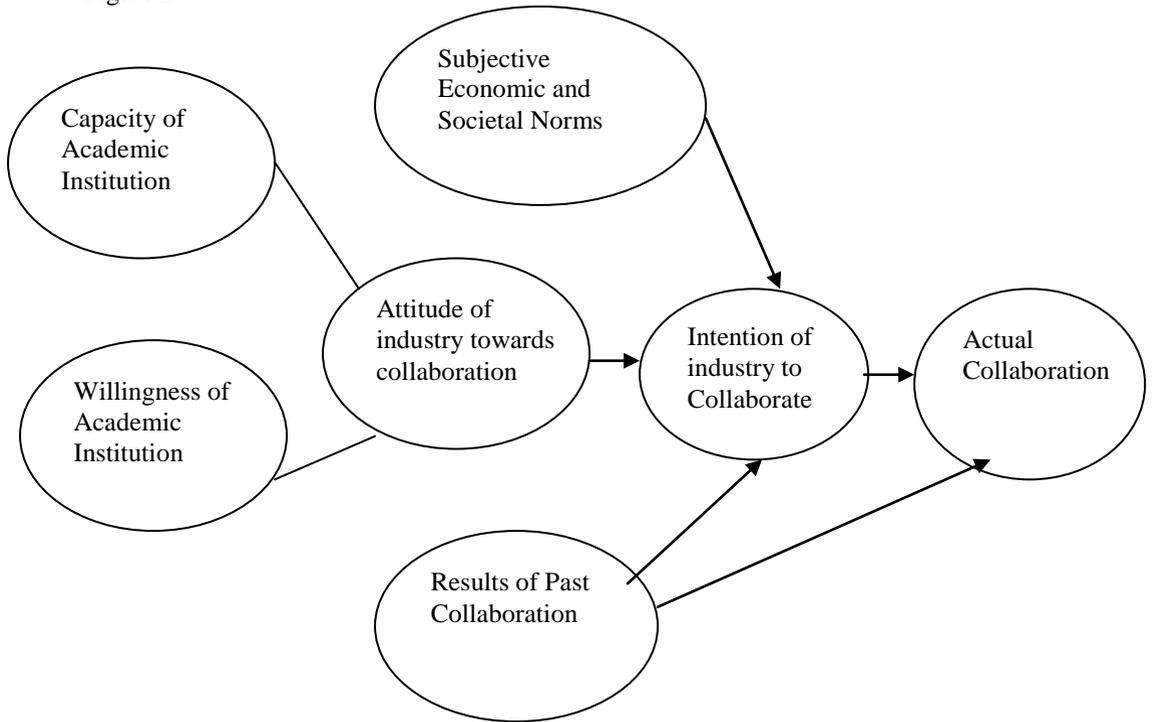
2.3 Conceptual Model: TPB and Effective University-Industry Collaborations

Before briefly describing the tenets of the conceptual model, it is pertinent to clarify any doubts and provide answers to criticisms that may arise in response to the use of TPB to derive a model of effective university-industry

collaboration. A major probable criticism is that TPB is a theory that predicts human behaviour at the individual or personal level and not human behaviour at the institutional level. However, this study makes two arguments in support of the use of TPB to predict and explain institutional behaviour. First, institutional bodies consist of various individuals whose joint efforts are geared towards the attainment of a common objective- the objective of the institution. Second, institutional bodies are managed by individuals and it is individuals that constitute its decision making tool (Bell & Adams, 2016). Consequently, any theory that explains human behaviour at the individual level can be applied to institutional behaviour (Bowen, 2018).

In other words, the behaviour of any institutional body will be derived from the agreed joint behaviour of certain groups of individuals responsible for decision making (Greene, 2017; Rosenberg, 2018). A second probable criticism is that TPB may be more suited to predicting and explaining health behaviours. However, this study argues that although the utility of TPB has been explored and used mostly to predict health behaviours, it nonetheless is capable of explaining and predicting all human behaviour (Oztekin *et al*, 2017). Moreover, TPB has been used by some research in marketing to predict consumer behaviour (e.g. Jain, Khan, & Mishra, 2015; Jin & Kang, 2011; Ling, 2009; Son & Jin, 2013). Jain, Khan, & Mishra (2015), for example, developed a conceptual framework based on TPB to explain consumers purchase intentions of luxury products.

Figure 2



Source: This Study

The conceptual model presented here (See Figure 2 above) postulates that collaboration between universities and industries is influenced by the intentions of organizations in the industry to enter into collaborative agreements and partnerships with academia. Intention to collaborate is postulated to depend on three independent constructs: attitude of the organization towards collaboration, economic and societal considerations, and results of past collaboration.

Similar to perceived behavioural control in TPB which captures how an individual perceives the ease or difficulty in carrying out a behaviour, the construct, results of past collaboration, influences both intention to collaborate and actual collaboration. The inclusion of results of past collaboration as a construct is apt not

only because of sound logical reasons but also because empirical tests of TPB have shown the efficacy of the construct. Although past behavior did not constitute a part of the original TPB in Ajzen (1985), Ajzen (1991)'s review of past empirical research confirms that including past behavior in empirical models substantially increased explained variance in the models studied by as much as 13% in some studies. The final construct in the conceptual model is subjective economic and societal. This construct consists of industry perceptions to economic and societal pressures that affect collaborations with industry. This also includes how organizations in the industry perceive government policies and regulations that aim to facilitate university-industry collaboration.

The attitude of an organization in the industry to collaborate with universities refers to the organization's evaluation of an academic institution. This evaluation is captured by two constructs: capacity of the academic institution and the willingness of the academic institution to collaborate with industry. The importance of this aspect cannot be overemphasized as it is the aspect that directly concerns universities. It is not enough for universities to merely seek after industry collaboration. Universities have to be both willing and perceived by organizations in the industry to be worthy of collaborations with industry. For organizations to agree to enter into collaborative relationships with the academia, universities have to prove themselves worthy of such collaborations by developing their internal capacity to carry out research and development.

It is pertinent to note that although the conceptual model presented here aims to explain and predict university-industry collaboration behaviour of organizations in the industry, the attitude of industry towards collaboration is influenced by universities. The attitude of industry towards university-industry collaboration is influenced by their perceptions of the university's capacity and willingness of the university to collaborate. Consequently, a university's capacity and willingness have to be visible to industry for a positive attitude towards collaboration to be created and one area that enhances visibility is technology entrepreneurship. Developing competencies and capacity in technology is one of the ways that universities can create visibility. In the following section, a case study of a

university in a Sub-Saharan African country, Nigeria that has been able to create this visibility is presented.

3. Materials and Method

The study employed the review research design. It explored several works (McEachan et al (2011; Sniehotta, Presseau, & Arau Jo-Soares , 2014; Oztekin et`al, 2017; Bowen, 2018) associated with the theme of the study. It applied the analysis of case studies from Universities in the US and Europe and the success of the ASIAN TIGER countries to project the strengths of theory of planned behaviour to validate the impact of university-industry engagement on societal and economic transformation. The study used one University in Nigeria to showcase the extent such engagement can foster the desired change expected both in the immediate society and economy at large.

4. The Case of Covenant University.

Covenant University is a private faith-based university located in Nigeria. Its motto of "raising a new generation of leaders" adequately captures the university's mission. A relatively young university, Covenant University was founded in 2002. However, in a little over fourteen years, the university has risen to become one of the leading university in Nigeria, surpassing counterpart universities that have been in existence for decades. The university ranked top in the first position as the best university in Nigeria in 2015 (Webometrics, 2015) and second best in the latest rankings released for 2017 (Webometrics, 2017).

In support of innovation and technology entrepreneurship, Covenant University has entered into a partnership with one of the leading Information Technology (IT) companies in Nigeria, AZ

Company. The collaboration will see Covenant University faculty and students develop software for onward commercialization by AZ Company. It is worthy of note that the AZ company took the initiative in this collaboration, confirming the prediction of the conceptual model presented in this paper that the attitude of industry towards collaboration is influenced by the capacity and willingness of academic institutions.

Covenant University showed willingness by a successful prior collaboration that saw the university become the first university to adopt a software solution provided by AZ Company. The university became the first university to be on the “confirm me” platform, an online verification system that provides online and real-time validation of certificates issued by academic and professional institutions, credit, and marriage registry. “Confirm me” will enable these certificate issuing institutions validate and confirm the authenticity of their certificates held by individuals thus eliminating the long and tedious process that was hitherto associated with such verifications. Covenant University was able to quickly adopt the validation service because it already had the required IT capacity. The successful implementation of this prior collaboration between Covenant University and the AZ Company has led to the new collaboration between the two parties.

In the new partnership arrangement, Covenant University is expected to develop software solutions that will be commercialized by AZ Company. With its vast experience in taking ideas to the market, AZ Company will bring in its expertise in marketing software solutions. Students from the university

will also be provided the opportunity to gain industrial experience in AZ Company during their internship programme that is undertaken by students as part of their undergraduate studies.

Although this collaboration between Covenant university and the company is relatively new, the willingness of AZ Company to initiate the collaboration is evidence that industry considers the results of past university-industry collaboration before embarking on future collaborations. As postulated in the model in Figure 2, results of past collaborations influence future collaborations through “intention to collaborate”.

5. Implications and Recommendations

An understanding of the constructs in the model and the relationships between them has implications for universities, organizations in the industry, government and regulatory agencies. In this section, three major implications and recommendations are presented. First, as shown in the case study above and the conceptual model, attitude of organizations in the industry towards collaboration with universities is influenced by both willingness and capacity of the academia. Therefore, the first recommendation is that universities concentrate on building the requisite capacity. Universities need to build the physical and intellectual capacity as evidenced in physical infrastructure and research and development output. Universities are advised to ensure that their faculty and students are actively engaged in research on technology entrepreneurship. However, research in technology entrepreneurship should not be limited to information technology or related units and departments. Indeed,

all facets of the university have to actively research, develop, and promote the use of technology in creating new enterprises. In so doing, universities will be able to innovate and create the necessary visibility to attract collaboration from industry irrespective of whether the university is classified using Guimon (2013)'s distinction between teaching, research and entrepreneurial universities.

In the conceptual model presented, results of prior university-industry affects collaboration behaviour of industry both directly and indirectly through its effects on intention. Consequently, how universities handle all collaborations with industry is important. This study recommends that universities should prioritize all industry collaborations to ensure that such collaborations are successful. Unsuccessful collaborations may not only hamper future collaborations with an organization in the industry. It may also hinder future prospective collaborations with other organizations.

Empirical evidence from Marotta, Blom, and Thorn (2007) shows that universities are quite adapt at creating and patenting inventions. However, the rate at which such patented inventions are commercialized is far below the rate at which they are created. Of the 2.5 million patents that were created in the US as at 2014, Forbes (2014) reports that about 95% of them have not been commercialized; only about 5% were commercialized. On the global stage, Lee (2016) reports that only 0.3% of

patents in the world are ever commercialized. The rate of commercialization of university patents is not much better as Wu, Welch, and Huang (2012) also present evidence that only a very small percentage of patents originating from universities are ever commercialized. With the rapid rate of change in technology, it is particularly important that technological innovations are not only patented but commercialized as soon as possible. From the case study of Covenant University, it is recommended that one route through which universities can explore commercialization of their patented inventions is by partnering with industry players who have vast experience with taking products to market. Such industry players would be willing to partner with universities if universities can show evidence of past successful collaborations.

Similar to Guimon (2013)'s recommendation, and based on the conceptual model, this study also recommends that universities should look for ways of rewarding faculty and staff who are able to successfully initiate and develop industry linkages. This will aid in ensuring that university-industry collaboration becomes mainstream rather than a mere sideline activity of universities.

Acknowledgements

The authors wish to appreciate the management of Covenant University for offering full sponsorship for this research work.

References

Ajagbe, M.A., Ogbari, M.E., Oke, A.O. & Isiavwe, D.T (2015)a. Campus Entrepreneurship, Innovativeness and Business Productivity.

Australian Journal of Management, Policy and Law 2(3), 1-9. ISSN: 2203-9473 (Print) ISSN: 2203-9481.

- Ajagbe, M.A., Ismail, K., Isiyavwe, D. T &Ogbari, M.E.I. (2015)b. Barriers to Technological and non-Technological Innovation Activities in Malaysia, *European Journal of Business and Management*, 7(6), 157-168.
- Ajzen, I. (1985). From intentions to actions: A theory of planned behavior. In J. Kuhl & J. Beckmann (Eds.), *Action-control: From cognition to behaviour* (pp. 11-39). Heidelberg: Springer.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Armitage, C. J., & Conner, M. (1999). The theory of planned behaviour: Assessment of predictive validity and “perceived control.” *British Journal of Social Psychology*, 38, 35-54.
- Bailetti, T. (2012). Technology Entrepreneurship: Overview, Definition, and Distinctive Aspects. *Technology Innovation Management Review*. February 2012, 5-12.
- Bell, L. A., & Adams, M. (2016). Theoretical foundations for social justice education. In *Teaching for diversity and social justice* (pp. 21-44). Routledge.
- Bowen, H. (2018). *Investment in learning: The individual and social value of American higher education*. Routledge.
- Calvert, J. & Patel, P. (2003). University-industry collaborations in the UK: Bibliometric trends. *Science and Public Policy*, 30(2): 85-96.
- Conner, M., & Sparks, P. (1996). The theory of planned behaviour and health behaviours. In M. Conner & P. Norman (Eds.), *Predicting health behaviour: Research and practice with social cognition models* (pp. 121 -162). Buckingham, UK: Open University Press.
- Esposito, G., Van Bavel, R., Baranowski,T. & Dutch-Brown, N. (2016). Applying the model of goal directed behavior, including descriptive norms, to physical activity intentions: a contribution to improving the theory of planned behavior. *Psychological Reports*, 119(1), 5-26.
- Forbes (2014). The real patent crisis is stifling innovation. Accessed on July 12 2017 online from <https://www.forbes.com/sites/daniefisher/2014/06/18/13633/#745357206f1c>
- Garud,R. & Karnoe, P. (2003). Bricolage versus breakthrough: distributed and embedded agency in technology entrepreneurship. *Research policy* 32 (2), 277-300.
- Geiger, R. L. (2017). *Research and relevant knowledge: American research universities since World War II*. Routledge.
- Greene, R. (2017). *Human behavior theory and social work practice*. Routledge.
- Guerrero, M., Cunningham, J. A., & Urbano, D. (2015). Economic impact of entrepreneurial universities’ activities: An exploratory study of the United Kingdom. *Research Policy*, 44(3), 748-764.
- Guimón, J. (2013). *Promoting UniversityIndustry Collaboration in Developing Countries*. World Bank, The Innovation Policy Platform (Policy Brief), 111. Retrieved from http://innovationpolicyplatform.org/sites/default/files/rdf_imported_do

- cuments/PromotingUniversityIndustryCollaborationInDevelopingCountries.pdf
- Gustafsson, R., & Jarvenpaa, S. (2018). Extending community management to industry-university-government organizations. *R&D Management*, 48(1), 121-135.
- Jain, S., Khan, M., & Mishra, S. (2015). Factors affecting luxury purchase intention: A conceptual framework based on extension of the theory of planned behaviour. *South Asian Journal of Management*, 22(4), 136-163.
- Jelinek, M. (1996). 'Thinking technology' in mature industry firms: Understanding technology entrepreneurship. *International Journal of Technology Management*, 11(7-8),799-813.
- Jin, B. & Kang, J. H. (2011). Purchase intention of Chinese consumers toward a US apparel brand. *Journal of Consumer Marketing*. 28(3), 187-199.
- Jones-Evans, D. (1995) "A typology of technology-based entrepreneurs: A model based on previous occupational background", *International Journal of Entrepreneurial Behavior & Research*, 1(1), 26 – 47.
- Lee, Y. (2016). Innovation management of patent commercialization. *Advances in Technology Innovation*, 1(1): 16-20.
- Ling, G. (2009). Understanding Consumer Purchasing behavior Regarding Luxury Fashion related goods in China. Retrieved from http://repository.lib.polyu.edu.hk/jspui/bitstream/10397/3954/2/b23216323_ir.pdf
- Marotta, D., M. Mark, A. Blom, & K. Thorn. (2007). "Human Capital and University-Industry Linkages' Role in Fostering Firm Innovation: An Empirical Study of Chile and Colombia." Policy Research Working Paper 4443, World Bank, Washington, DC. <https://openknowledge.worldbank.org/bitstream/handle/10986/7558/wps4443.pdf?sequence=1>
- McEachan, R. R.C., Conner, M., Taylor, N. J., & Lawton, R. J. (2011). Prospective prediction of health-related behaviours with the theory of planned behaviour: A metaanalysis. *Health Psychology Review*, 5(2), 97–144.
- Mowery, D. C., Nelson, R. R., Sampat, B. N., & Ziedonis, A. A. (2015). *Ivory tower and industrial innovation: University-industry technology transfer before and after the Bayh-Dole Act*. Stanford University Press.
- Nichols, S.R. & Armstrong, N.E. (2003). Engineering entrepreneurship: Does entrepreneurship have a role in engineering education?. *IEEE Antennas and Propagation Magazine*, 45(1), pp.134-138.
- Ogbari, M. E., Oke, A. O., Ibukunoluwa, A. A., Ajagbe, M. A., & Ologbo, A. C. (2016). Entrepreneurship and Business Ethics: Implications on Corporate Performance. *International Journal of Economics and Financial Issues*, 6(3S).
- Ogbari, M. E., Atolagbe, T. M., Adeboye, M. M., & Uzuegbunam, J. (2017). Challenges of Technology-Based Entrepreneurial Firms on Performance Drive in Nigeria. *Covenant Journal of Entrepreneurship*, 1(1).

- Oztekin, C., Teksöz, G., Pamuk, S., Sahin, E., & Kilic, D. S. (2017). Gender perspective on the factors predicting recycling behavior: Implications from the theory of planned behavior. *Waste Management*, 62, 290-302.
- Romisowski, A. J. (2016). *Designing instructional systems: Decision making in course planning and curriculum design*. Routledge.
- Rosenberg, A. (2018). *Philosophy of social science*. Routledge.
- Sarasvathy, S. D. 2000. Report on the Seminar on Research Perspectives in Entrepreneurship, *Journal of Business Venturing*, 15(1): 1-58. (Participating authors: Kenneth Arrow, Morton Kamien, Mancur Olson, Donald Sexton, Herbert Simon, and S. Venkataraman).
- Sniehotta, F. F., Presseau, J., & Araujo-Soares, V. (2014). Time to retire the theory of planned behaviour. *Health Psychology Review*, 8(1), 1–7.
- Son, J. and Jin, B. (2013). Consumers' purchase intention toward foreign brand goods. *Management Decision*, 51(2), 434-450.
- Tijssen, R., Lamers, W. and Yegros, A. (2017). UK universities interacting with industry: patterns of research collaboration and inter-sectoral mobility of academic researchers. Centre for Global Higher Education Working Paper Series, N0 14.
- Webometrics (2015). Ranking Web of Universities. Retrieved from <http://webometrics.info/en/Africa/Nigeria>.
- Webometrics (2017). Ranking Web of Universities. Retrieved from <http://webometrics.info/en/Africa/Nigeria>.
- Wu, Y., Welch, E. W., & Huang, W. (2012). Near-Term commercialization of university inventions: individual and institutional factors affecting the licensing of university patents within a four-year window. Paper presented at the 34th Annual Research Conference of Association for Public Policy Analysis and Management, Baltimore, MD, November 8-10, 2012.