

# Deciphering the Role of Technological Diffusion in the Development of University-based Entrepreneurial Ecosystem: Evidence from Nigeria

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**Abstract:** *This article underscores the necessity of addressing the inconsistencies and mixed results inherent in prior entrepreneurial ecosystem research categories and constructs. During the process of analysis and coding, some of the emergent categories associated with the development of University-based entrepreneurial ecosystem (U-BEE) are in consonant with prior research, especially from the developed countries. A Constructivist grounded theory method was employed to decipher the essence of Technological diffusion in the development of University-based entrepreneurial ecosystem (U-BEE) in Nigerian universities. Empirically, observational data and interviews were employed in 3 stages, identifying 3 initial categories and 7 macro-themes. The respondents' perceptions about Technological diffusion was explicated elaborately in cognizance of the complexities of the research ambience. The dimensional nuances in the emergence of the constructs reflects the convoluted complexities in developing UBEE in Nigerian context. The implication of the research in relation to future theoretical improvement are concisely delineated.*

**Keywords:** *Technological Diffusion, Constructivism, University-Based Entrepreneurial ecosystem, Entrepreneurial ecosystem*

## 1. Introduction

In congruent with global research, a growing body of scholarly literatures ascertain a positive relationship between technological diffusion and entrepreneurial adoption (Comin & Nanda, 2019; García-Sánchez, García-Morales & Martín-Rojas, 2018; Shim & Bliemel, 2018), which invariably influences U-BEE. Czerniewicz, Ravjee, and Mlitwa (2005) confirm the notional division that exists among entrepreneurial actors, and policy makers regarding the position and use of technology in U-BEE. This article, upon critical consideration of the result of this study in conjunction with the studious perusal of the works of Feenberg (1991, 1995 & 2006) as regards technological theories, notices a transitive relationship between entrepreneur's technological orientation and entrepreneurial action. The bulk of what has been set forth in the theoretical deliberations

of Feenberg’s technological theory has intrinsic influence on entrepreneurial perception in developing U-BEE. Therefore, this article shows the positive relationship between technological diffusion and the development of university-based entrepreneurial ecosystem. There are issues demanding indigenous substantiation in the diffusion of technology in relation to university-based entrepreneurial ecosystem development. This study reveals that using constructs from developed nations is not agreeable with indigenous entrepreneurial issues in Nigerian universities and only elucidations of our substantive issues is needed. This study explicates the intricacies surrounding technological diffusion in relation to the development of university-based entrepreneurial ecosystem in Nigeria. Technological diffusion establishes infrastructural relations that aid technological orientation, among other entrepreneurial roles.

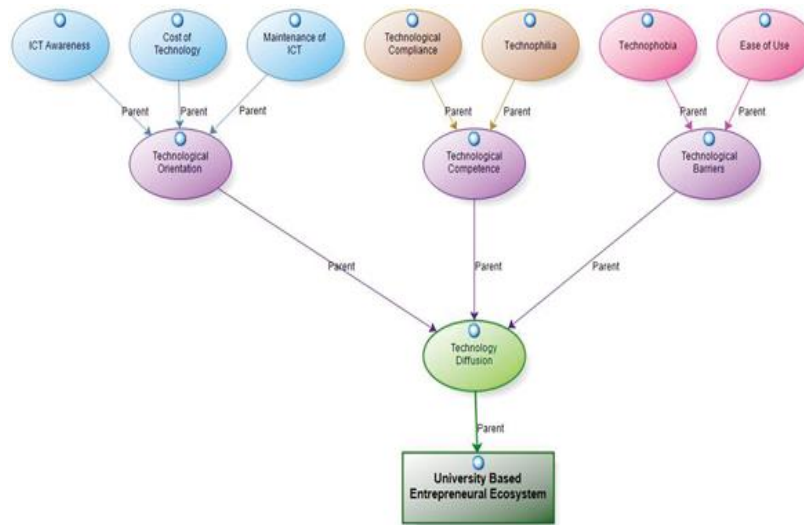


Figure 1. The Role of Technological Diffusion in the development of University-based Entrepreneurial Ecosystem.

Figure 1. above shows that technological diffusion foreshadows Technological Orientation, Technological barriers and Technological Competence. The increasing concern for advances in entrepreneurship stresses a social-technical path to research that encompasses Technological Orientation, Technological barriers and Technological Competence in relation to entrepreneurial development. The nuances in the dimensions of Technological Orientation, Technological barriers and Technological Competence have vast nomological distinction and their nomological significance and technocentric utilities. Scholars have contended over the causality and definitions of these dimensions and several views have been maintained in the explication of these dimensions in line with other entrepreneurial inclinations.

Entrepreneurial ecosystem research is yet to have an inductive perspectives and

Deciphering the Role of Technological Diffusion in the Development of University-based Entrepreneurial deductive study is often devoid of dimensional variations. This inductive study explores entrepreneurial prototypes relative to university entrepreneurial ecosystem development in Nigerian universities. In general, extant studies is deficient of inductive depth but this study underscores the substantive implications of technological diffusion. Empirically, this article is written due to the numerous issues in deductive approach and the role of Technological diffusion in the development of university-based entrepreneurial ecosystem in Nigerian universities.

## 2. The Aim of the Research

Intrinsically, this article shows that extant studies are fraught with deductive adaptive technical perspectives and there is need for an inductive research with social-technical paradigms in relation to technological diffusion. Therefore, this article stresses latent technical adaptive dimensions in technology diffusion in line with the development of university-based entrepreneurial ecosystem in Nigerian universities.

## 3. Methodology

Data ware gathered substantively and purposively by interviewing 10 entrepreneurial students in ten (10) private and public universities in Nigeria. The authors used a semi-structured questionnaire that unravels the socio-technical experiences of the respondents.

The caliber and range of informants that provided information aligns with the dictates of Constructivist Grounded theory. Grounded data often comes from respondents' rich inductive experience (O'Connor, Carpenter & Coughlan, 2018; Charmaz, 2006), thus purporting the plausible emergence of Technological diffusion. Constructivist grounded theory research shows that the coding process is functional to the emergence of substantive constructs (Aldiabat & Le Navencec, 2018; Charmaz, 2006).

## 4. Analysis and Discussion

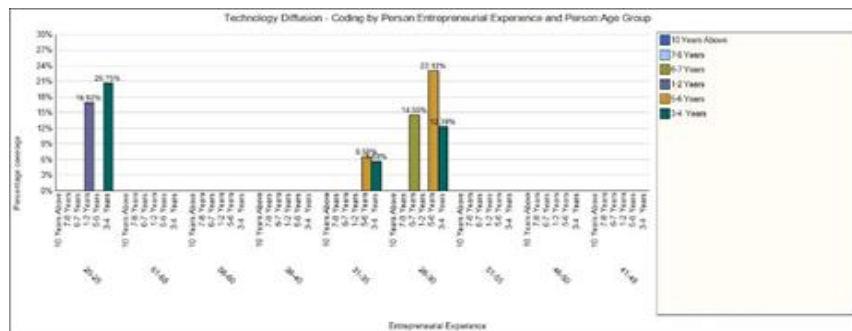


Figure 2: Technology Diffusion by Gender and Informants' Years of Experience

The findings as stated in Figure 2 show that so many factors account for the diffusion of technology. However, buttressing other views, the age range of those who uses technology are 23% of those within the age range of 25-30 and this 23% is still negligible, considering the size of the wider population. The researchers found that males are more willing to handle technology than female respondents and therefore conclude that this may likely to continue except there is a higher degree of motivation that would advance technology diffusion. This is in line with research about the overt gender gap in technology diffusion. According to Kahn and Ginther (2018) women in Australia made up less than one in five students earning degrees in information technology (17.0%) and engineering and related technologies (15.6%) and women accounted for less than one in eight (12.4%) engineers in Australia's labor force in 2016 and they also stated that as of August 2017, women made up less than a quarter (20.7%) of those employed in computer system design and related services. However, most informants (M = 69%, F = 31%) just used technology for entertainment and (M = 41%, F = 59%) of the interviewed adolescent make use of technology for other educative purposes.

Table 1 Technology Diffusion – Matrices by Age

Technology Diffusion	Age:20-25	Age:26-30	Age:31-35
140 : Technological Barriers	0%	0%	0%
141 : Technological Competence	2.06%	0.65%	1.51%
142 : Cost of Technology	0.9%	0.38%	0%
143 : Poor statistical and technological base affects the development of entrepreneurial programs	0.45%	0%	0%
144 : Purchasing technology is sometimes expensive	0.45%	0%	0%
145 : Technologies still has to be learnt and taught	0%	0.25%	0%
146 : Technology is not affordable	0%	0.13%	0%
147 : Maintenance of ICT	1.15%	0.27%	1.51%
148 : Facilitates entrepreneurial understanding	0.49%	0%	0%
149 : Good guidance is needed before technology can be used profitably	0%	0%	1.51%
150 : Protocols could be overtly unattainable	0.66%	0%	0%
151 : There's increasing call for technological management by universities	0%	0.27%	0%
152 : Universities that achieve good technological management have the best result	0%	0.27%	0%
153 : Technological Orientation	2.63%	1.76%	1.08%
154 : Advancement in technology is yet to be proportional to university entrepreneurial development	0%	0.2%	0%
155 : Blogging and advertisement business have been on the rise	0.62%	0%	0%
156 : Online business should be encouraged and they should do it with an entrepreneurial mind	0%	0%	1.08%
157 : Entrepreneurial learning, yes, it can be learnt formally!	0%	0.24%	0%
158 : Espousing technologies helps to access entrepreneurial opportunities	0.62%	0%	0%
159 : Exposure to technologies enhances entrepreneurial inclination	0%	0.36%	0%
160 : Protocols could be overtly unattainable	0.66%	0%	0%

Following the result of this study, as seen in Table 1, Technological diffusion is a function of age and experience. Some of the respondents' experiences clearly demonstrate this verity:

Technology helps to promote their products ...(Informant 8)

The entrepreneurship of Innovation entails technology...(Informant 7)

Coordination requires a greater level of technical skills and effort...(Informant 5).

Aspiring entrepreneurs are not educated enough in high tech devices...(Informant 1).

Exploration of new concepts through technology...(Informant 3).

**Two Propositions:** Two propositions vividly emerged from the respondents' coded interview:

- (i) "The entrepreneurship of Innovation entails technology". This indicates that Technology diffusion is positively related to the development of entrepreneurial ecosystem.
- (ii) "Exploration of new concepts through technology". This indicates that Technology diffusion influences the development of entrepreneurial ecosystem.

**Two Contextual Issues:**

(i) Necessity of Technological diffusion in relation to the development of entrepreneurial ecosystem.

(ii) Necessity of value creation in relation to Technology diffusion.

Buttressing this study, Abubarka and Mitra (2016) analyzed a vast data of several leaders of entrepreneurship in Nigeria and posited that technology diffusion is critical to the development of entrepreneurship. Walrave and Raven (2016) conducted research on system modelling and concurs with the result of this study about an apparent transition in Technology diffusion and the influence of social-technical research aids the development of University-based entrepreneurship ecosystem (Samuel, Salleh & Suhairi, 2018). This study proffers answers to some of the research questions which include:

- How does technological diffusion affect entrepreneurship in incipient of entrepreneurial ecosystems?
- How does technological diffusion aid the efficacy of entrepreneurial ecosystem in emerging economies?

The result compares the recurring debate about the position of Technological diffusion and entrepreneurial adaptation using digital expertise. Camisón-Haba, Clemente-Almendros & Gonzalez-Cruz(2019) argue that technological diffusion heightens entrepreneurial advancement and the result of this study shows that technological diffusion aids digitization and entrepreneurial processes. Datta, Mukherjee & Jessup (2015) conclude that deductive approach to technological diffusion aids the development of entrepreneurial ecosystem, this study reveals that inductive approach aids Technology diffusion in the ambience of Nigeria.

**5. Conclusion**

This study develops a substantive appurtenance for technological diffusion in the development of university-based entrepreneurial ecosystem in Nigerian ambience. Therefore, impending research on technological diffusion could be indigenously and substantively modelled and explicated for the development of an intelligent university-based entrepreneurial ecosystem in Nigeria. Hence, this study focuses on the dimension of Technological diffusion and its theoretical scaffold for theoretical validation. Empirical

validation aids the deciphering of technological diffusion in enabling entrepreneurial processes in Nigeria. However, this study significantly underscores the relationship between technological diffusion and the development of university-based entrepreneurial ecosystem. This study also confirms the findings of Camisón-Haba, Clemente-Almendros & Gonzalez-Cruz (2019) about the correlational verity of technological diffusion and smart digitization in the development of university-based entrepreneurial ecosystem. Hence, technological diffusion helps the entrepreneurial processes involved in developing university-based entrepreneurial ecosystem in Nigeria.

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