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Market innovation for economic diversification in Lagos: A resource-based perspective

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Abstract

This study investigates approaches to market innovation by Knowledge-Intensive Business Services (KIBS) for economic diversification in a developing economy, based on the Resource-Based View (RBV). A framework is built in which KIBS employed invention, extension, duplication and syntheses approaches for market innovation to diversify. A survey was carried out in Lagos, Nigeria with the sample consisting of 1788 KIBS and analysed using Principal Component Analysis, Pearson-Moment correlation and multiple linear regressions. The findings indicate that the four approaches are significantly related to market innovation; however, duplication is the most frequently used. The results would assist in framing programs to encourage market innovation by KIBS in developing economies.

Key words: *Economic diversification; Developing economies; Knowledge-Intensive Businesses (KIBS); Market innovation.*

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1. Introduction

The global fall in the price of crude oil in 2014 has made economic diversification a crucial issue in most developing economies like Nigeria. A diversified economy is a country with several and different revenue streams that provide for sustainable growth. Economic diversification may be diversity of economic activities or markets. Achieving this objective becomes a great challenge for many developing economies that depended heavily on the production of primary commodities that are vulnerable to climate variability and change. At the extreme is the dependence on a mono-product (crude oil) like Nigeria. Economic diversification usually provides a nation with the needed reliability and security, so that if one revenue stream fails, there will be other options of revenue to fall back to. The negative effect became so conspicuous that a developing economy like Nigeria with potential in several areas is battling with the dwindling foreign reserves due to the huge importation bills that have affected the naira exchange value. The incumbent government, the media and masses now emphasizes the need for economic diversification.

There is therefore the need in Nigeria to create a non-oil tradable sector in addition to competitive business environments in order to obtain the desired economic growth. Economic diversification will remove the dependence on oil and high-wage expatriate labor to refocus on other economic activities especially the Knowledge-Intensive Businesses (KIBS). KIBS are private consultancy and problem-solving firms that create, accumulate and disseminate knowledge (Miles, Kastrinos, Bilderbeek, & den Hertog, 1995) for client or client-firms in order to actuate their businesses. They are characterized by high knowledge intensity, professionalism, non-routine and interactive consultancy services to other firms and organizations (Muller & Doloreux, 2009). Researchers (such as Schumpeter, 1996, Mitra, 2012) argued that entrepreneurship and innovation is the primary reason for the existence of knowledge-based firms. Shane and Venkataraman (2000) described entrepreneurship as the discovery of an opportunity, exploiting and converting it to a marketable course, while innovation is the exploitation of new ideas for the purpose of commercialization. Such innovation could be product/service, process, opening of new market, organizational or providing a new source of raw material (Schumpeter, 1934; Kuratko, 2009; Adeyeye & Adepoju, 2015). Schumpeter (1934) was one of the first to associate entrepreneurship with innovation at the core of his theory of entrepreneurship. He initiated a strong connection between entrepreneurship, technological development and economic progress (Schumpeter, 1996).

Knowledge-Intensive Businesses (KIBS) emerged as technological innovation that gained recognition in the 1980s and has become a powerful sector. The sector so expanded that Miles *et al.* (2000) had to categorize them as P-KIBS (pure or traditional professional services for legal, accountancy, business and management,

marketing research firms) which are intensive users of technology; and T-KIBS (technological-based services for those related to services, engineering, R&D and consultancy) which are directly linked to Information and Communication Technology or technical activities to support other businesses to function effectively. Lately, an additional group was included as C-KIBS, referring overtly to computer and software related services (Martinez-Fernandez and Miles, 2006). Innovations largely depends on the likelihood of an existing marketplace or creation of a new marketplace where none existed in order to be transmuted to economic rent (Mitra, 2012). Such opening of new market is referred to as ‘market innovation’ (MI) hence KIBS need to explore the MI opportunity for economic diversification. Nonetheless, for any entrepreneurial activity, it is assumed that the uniqueness of available resources is vital to determine the approaches for MI. Researchers (such as Schumpeter, 1934; Abubakar, 2009; Akoni 2011; Mitra, 2012) did not explore the possible approaches like invention, extension, duplication and syntheses that can expedite market innovation by KIBS in developing economies. This creates some knowledge gap in the literature on the knowledge and theories of market innovation especially in developing economies. Therefore, building on previous research, this paper investigates the main approaches employed by KIBS for market innovation in Lagos, Nigeria using Resource-Based View. The study further analyse the strength and nature of relationship between the various approaches and market innovations. Through this analysis, a better understanding of various approaches adopted by KIBS to enhance market innovation is provided especially in Nigeria, which can be useful in development and management of KIBS in Nigeria and other developing countries.

2. Literature review

2.1. Concept of Knowledge –Intensive Businesses (KIBS)

KIBS are broadly consultancy and problem-solving firms which perform for clients or clients –firms the services that are highly intellectual and value-added driven (Miles *et al.*, 1995). They offer personalized proficient service solutions to issues that client- firms or individuals do not have the capacity to handle. They function actively in manufacturing and human resources industries of many countries. They currently represent over 60% of the Gross National Income (GNI) in most developed and developing countries (Hazdra, 2010). The recent report about KIBS stated precisely that in 2015, 78.1% and 78.6% of GDP in USA and UK respectively was in the service sector (World Bank, 2015). Similarly, KIBS contributed 50% to GDP in Uganda; 50.4% in Zambia; 52% in India over 60% in Korea and Brazil with 54.6% in Nigeria (World Bank, 2015). It has the largest contribution to Nigeria economy, aside oil and gas (National Bureau of Statistics (NBS), 2015). In addition, the accelerating growth in information and communication technology (ICT) as a significant part of KIBS has also contributed 8.27% to GDP of Nigeria in 2015

(NBS, 2015). MI is critical to economic diversification hence KIBS need to be active about expansion from one place to another in Nigeria. They must introduce their services to existing markets, or new group of users or generate a new market where there is none thereby satisfying unfulfilled needs of the knowledge community and revamping the economy.

2.2. Market innovation (MI)

Market innovation (MI) otherwise referred to as opening of new market, according to OECD (2005) is different from other types of innovation by its main objective which is to increase the volumes of sales or market share, consequently affecting the firm's size and profitability. MI is fundamentally driven by geographical extension of innovative firms into a new market or by introducing the innovation to new users (Klepper & Thompson, 2006). It is the ultimate of all innovations because market creation provides opportunities for entrepreneurs to operate (Acs & Virgill, 2009). Thus, entrepreneurship's focus on wealth creation is based on the discovery of new and emerging opportunities in the marketplace (Shane & Venkataraman, 2000; Adeyeye & Adepaju, 2015). Furthermore, innovation is incomplete without a purposeful and deliberate search for new opportunities in different places to penetrate into the markets (Kuratko & Hodgetts, 2008; Adeyeye & Adepaju, 2015). Hence, the need to enter a market becomes inevitable since the market is the ultimate for both buyers and sellers. This is crucial in explaining different empirical facts about innovative approaches that KIBS firms' usually employ for its MI. However, this study is based on the Resource Based-View (RBV) as it is often found relevant in literature of entrepreneurship (for instance, Barney, 1997; Wickham, 2006) to provide a single theoretically consistent framework that explains the approaches for MI.

2.3. The resource-based view (RBV)

The RBV addresses the basic question of how firms position resources differently to achieve and maintain a competitive advantage. It states that each firm possesses resources that are specific to the recognition of new opportunities (Barney, 2001; Lockett & Thompson, 2004) especially in the market place. Resources are inputs that facilitate firms to execute innovative activities and must be valuable, rare, non-substitutable and inimitable (Barney, 1997). The ability of a firm to achieve such quality is fundamental to innovation. Thus, KIBS possess specialised knowledge resources that are valuable, rare, non-substitutable and inimitable. However, they must identify the form of approach that can be employed for market innovation and economic sustainability (Rumelt, 1987; Barney, 2001). The more innovative a firm is, the more its resources grow; the more the possibility for diversification, the more its ability to contribute to economic and social values in the community. Innovation is the core of RBV (Wickham, 2006). KIBS employ experts to use knowledge as

inputs and outputs in client-participation oriented services in an interactive process of consultancy. They rely basically on professional knowledge to incorporate different knowledge into composite knowledge, that is, knowledge or competencies related to a particular discipline or functional area, and provision of knowledge-based intermediate products and services (Miles *et al.*, 1995; den Hertog, 2000; Xin *et al.*, 2009). In view of the uniqueness of KIBS in the world of growth-constrained opportunities and struggle for the available opportunities; KIBS need to spread their horizon beyond their terrain to explore (Lockett & Thompson, 2004) the economic diversification through market innovation. The main resource of KIBS is human capital but little is known about the approaches that promote market innovation in a developing economy. This therefore supports the need of the research to investigate the approaches that could enable KIBS market innovation.

2.4. The approaches to market innovation

MI is connected with structural changes in an economy which can produce a positive effect on development (Acs & Virgill, 2009). It enables the act of pioneering into a new market in other regions (Klepper & Thompson, 2006) through certain approaches with the purpose of meeting customers' needs in a better way and boosting firms' credibility. MI is the most prominent and effective innovation in the developing economies (Acs & Virgill, 2009) as they more often transfer inventions and innovations from developed countries into a different market (OECD, 2005; Adeyeye, 2013). For instance, in Zimbabwe and Nigeria, "re-pats" (returning emigrants) are discovering new opportunities (entrepreneurial) in their home countries and returning home to become entrepreneurs by contributing to telecommunications, financial services and other services (Uzowanne, 2011; Adeyeye, 2013) which are KIBS. This authenticates the relevance of this study on approaches for MI in a developing economy context at this time. The main approaches for market innovation generally are through invention, and other innovative approaches referred to as Extension, Duplication and Syntheses (Kuratko, 2009) which is the focus of this study. More often, invention is technological push while extension and duplication are market pull and the fourth, syntheses may either be technological push or market pull or both.

2.4.1. Invention

Invention is the creation or introduction of the newest of technologies/products/service/process that is completely new to the world such as the Wright brothers' airplane (Kuratko, 2009). Invention sometimes referred to as discontinuous or once for all innovation because it changes customers' ways of addressing a particular need historically (Kuratko, Morris & Covin, 2012). Suffice to say that most notable inventions are from developed countries (Abubakar, 2009). For instance, inverter technology was invented by Toshiba in 1981 but through MI, it has become a household

product for office and domestic uses to solve the erratic power challenge in Nigeria. Such concepts are radical, revolutionary or disruptive in nature for customers as well as existing competitors as they offer something entirely new to render existing ones obsolete (Christenson, 1997). It has drastically reduced people's preference for generating plant and consequently reduced its marketability. In summary, invention is the commercialization of new technologies/products /service/process in such a way that the impact renders existing ones obsolete and non-competitive in the market (Mitra, 2012; Adeyeye & Adepoju, 2015). KIBS that have functional Research and Development programme can enter any new market with this approach.

2.4.2. Extension

The second is extension, the development of a new application from an existing technology, product, service, application or process. It can be by modifying existing products or services found in the country or another country to present something new for MI. A vivid example is the expansion of the use of internet for Facebook that was created by Mark Zuckerberg. Such is referred to as next generation innovation since it is not the original (Hisrich, *et al.*, 2009). The original service was modified and enhanced to present something different and better. KIBS could enter a new market through this approach.

2.4.3. Duplication

Another approach for MI is duplication. That is, the entrepreneurial replication of an existing concept by copying, adapting or mimicking with some variations. For instance, a yoghurt brand from USA produced in Nigeria with similar ingredients with no allusion to USA perhaps for Nigeria market; Shoprite imitated Wal-mat (ASDA) to set up the normal departmental store uniquely in South Africa and other countries including Nigeria. KIBS may innovate by duplicating or imitating what existed in other markets, industries or organizations outside the purview of the new market within the country or abroad, with some added values as solution to customers' needs (Kuratko *et al.*, 2012) as long as it facilitates economic diversification.

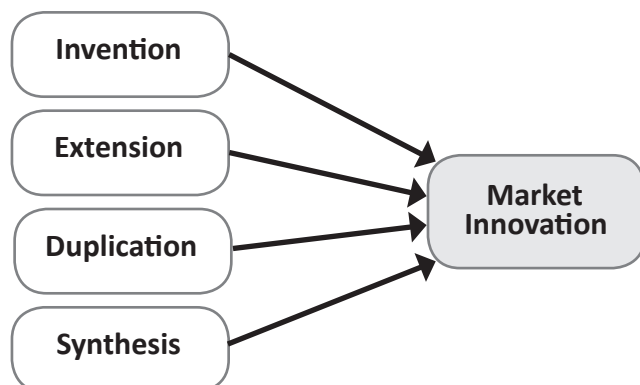
2.4.4. Syntheses

Finally, syntheses is a dynamically continuous innovation that combines two or more of existing technologies/products/service/process to develop a new application or formulation that will improve the standard of living of the members of the society (Hisrich *et al.*, 2009). An example is the combination of audio and virtual compact disc player by Sony to produce a stereo. KIBS could synthesize by combining two or more products /applications /services found in the country or abroad with little or no improvement to bring out something new (Christenson, 1997). Hisrich *et al.* (2009) summarised all these innovative approaches as replacements, extensions, product improvements, reformulations and remerchandising. A frame work is developed

to explain the approaches employed for MI in developing economies by KIBS (as presented in figure 1 below).

Figure 1 illustrates the various approaches by KIBS for MI. KIBS could harness their resources maximally to employ any of the approaches for economic diversification in Nigeria. This framework is based on previous studies on innovation (e.g. Hisrich *et al.*, 2009; Kuratko *et al.*, 2012).

Figure 1: Framework showing the approaches to market innovation



Source: Adeyeye (2016)

3. Methodology

3.1. Sample frame

The study was focuses on Lagos, the commercial, economic and financial headquarter of Nigeria. Lagos has the highest concentration of the public and private institutions and highest record of KIBS (Uzowanne, 2011). For instance, there is the ‘computer village’ at Ikeja that is made up of clusters of all forms of ICT related products, general services and KIBS. It is a renowned market patronised nationally and internationally (Uzonwanne, 2011) with respect to KIBS. It thus can be presented as a worthy sample to investigate the approaches for MI by KIBS in a developing economy so that the findings can be extrapolated to metropolises with identical characteristics in other developing economies.

The sample frame for the study is all registered KIBS in Lagos as contained in and obtained from Nigerian Yellow Pages (2015) and Nigeria Search Engine (2015) which are the main and commonly used business directories in Nigeria. A quantitative approach was employed with the survey research design at firm level to obtain numerical data on Market innovation and the various approaches for innovation. A self-structured questionnaire on a Likert’s scale with close-ended questions on a five degree-of-agreement score was designed to elicit specific information for this

study from entrepreneurs/managers, in unification with the research objective and question. Each item has five responses in which respondents have to indicate: (0) for Not Applicable, (1-5) for 'Not Important at all' to 'Very Important'. The highest is five while the lowest is zero points respectively.

3.1.1. Population, sample and sampling technique

The population for the study was 1788 KIBS that fell into the selection criteria of KIBS with employees below 300 (Adeyeye, 2013), and have existed for 20 years or below (Abubakar, 2009) as pertinent to innovative firms. Systematic random sampling method was employed by selecting every odd numbers of the sample frame. 894 samples representing 50% of the registered KIBS were used for data collection between February, 2016 and June, 2016 for a period of five years (2011-2016). The study was made up of 840 KIBS owner/manager that accounted for 94% of the sample at the end of the analysis. Thus, it can be classified high enough for validity (Bryman & Bell, 2011). The empirical research was carried out in two ways: a pilot study using test-re-test and the main survey on approaches for MI by KIBS. The result is based on maximum level of risk of 5% that is conventional for social science research (Bryman & Bell, 2011). The data was analysed using descriptive analysis, Principal Component Analysis and Multiple Linear Regressions to answer the research questions.

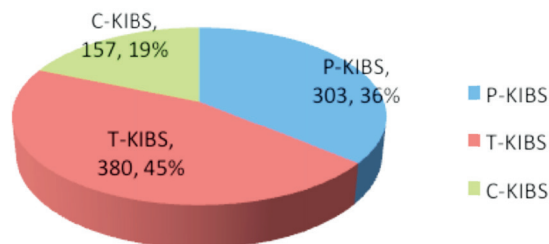
4. Presentation of results and discussions

4.1. Results

4.1.1. Descriptive statistics

Descriptive statistics is used to define the general characteristics of innovative KIBS on the various approaches employed to embark on MI for economic diversification in Nigeria.

Figure 2: Distribution of respondents by KIBS categories



The Standard Industrial Code (SIC, 2007) in United Kingdom and Europe has been of tremendous assistance in classification of all economic activities including KIBS. It is the universal standard that describes KIBS and used by most countries including Nigeria. This study is limited to SIC 72-74. 45% of the respondents are T-KIBS (technological-based services like those related to services, engineering, R&D and consultancy) that have direct link to Information and Communication Technology or technical activities to support other client-firms effective functioning. This result supports Yue (2001) argument that most KIBS features are based on growing usage of ICT globally and domestically that has made definite impact on the nation. Next is the P-KIBS (pure or traditional professional services like legal, accountancy, business and management, marketing research firms) which are intensive users of technology that are 36% of the respondents; P-KIBS are cardinal to a knowledge-based economy like Nigeria. They produce, distribute and use knowledge as the main driver of growth, wealth creation and employment of all industries (OECD, 1996) while 19% are C-KIBS, the computer and software related services (Martinez-Fernandez and Miles, 2006). The low rate might be because most of these firms do not care much about registration as such majority is not captured in the frame. Moreover, it involves higher level of innovation in comparison to others.

Figure 3: Distribution of respondents by the approaches used for market innovation

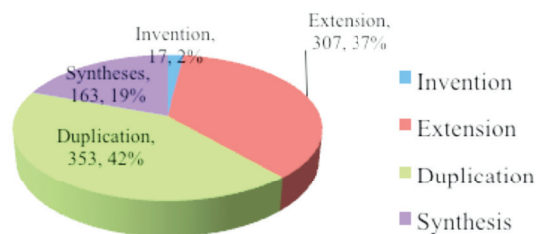


Figure 3 above results shows that 17 (2%) of KIBS respondents use invention approach while 307 (37%), 353 (42%) and 163 (19%) employed extension, duplication and syntheses approaches respectively for MI. This reveals that the KIBS in the sample are the innovative ones that are involved in MI as it agreed with Abubakar (2013) that KIBS are mainly innovative firms. However, majority employed duplication and extension approaches mainly but the most frequently used is duplication approach. This supports OECD (2005) claim that most products/services/applications are merely transfer of inventions and innovations from developed countries into a different market (outside the developed countries) by returning emigrants. Hence the newness is not to the world but to the country, nevertheless, it is quite relevant for diversification so as to boost the economy of the country at this crucial period. Furthermore, it supports Johannesson (2007) concept of globalization of think global but act local as it enhances the national economy.

4.1.2. The dependent variable: market innovation

To measure market innovation, owners/managers were asked to indicate the level of the newness of their product /service/ application to the new markets. ‘Innovations are new to the market when the firm is one of the first to introduce the innovation in its market’ (OECD/Eurostat, 2005:209). The outcome is presented in Table 1 below.

Table 1: Measurement indices for market innovation

Factor 1: Newness as Market innovation	
Newly introduced to the country	0.80
Newly introduced to the firm	0.86
Newly introduced to the market	0.80
New to a group of people as customers /client firm	0.83
Newly introduced to the environment	0.78
Improved version of a previous product/service	0.81
Combined version of two or more existing products/service	0.56
Presented existing product/service in a different ways from other firms	0.88
<i>Explained variance by the factor: 84.8% KMO.76.5% Cronbach's alpha 85% (.000)</i>	

Source: Authors' Calculations based on GLSS 6 data

Statistically, the factor is satisfactory as it explained above average outcomes of the total variance. The factor components were tested for reliability using Chronbac alpha with an average score of 85% which can be said to be reliable (Bryman & Bell, 2003). However, newness to market was used to extend the measure for MI by KIBS. Liebermann & Montgomery (1998) claimed that newness of a product or service or application is one of the essential variables to gain acceptance in marketplace. Therefore, for proper clarifications, 12 items were employed to explain MI as a measure of innovative activities but was reduced to 8 items with eigenvalue more than 1. These items were transformed into one variable for regression analysis.

4.1.3. Independent variables and measures

Invention was identified by 6 items commonly used to measure the Intellectual Property Rights (IPRs) (Dolfsma, 2011). KIBS can score ‘0’ or a maximum score of ‘6’. Thus, it takes the value ‘1’ if a firm has plant patents or design patents or trademarks or copyright that protect databases under copyright law (Maurer, Hugenholtz & Onsrud, 2001), or Secrecy as enforced by labour or contract laws or Trade Related Aspects of Intellectual Property Rights (TRIPS) (Levin, Klevorick, Nelson & Winter, 1987; Dolfsma, 2011), and ‘0’, if not applicable. Also, the variable, extension was designed with 8 items (Kuratko *et al.*, 2012). KIBS can score minimum of ‘0’ and maximum

of '8'. Furthermore, 6 items were constructed to measure duplication with minimum score as '0' and maximum '6' (Kuratko *et al.*, 2012). Lastly, in order to measure syntheses, 4 question items were developed to measure and the score is minimum of '0' and maximum of '4' (Hisrich *et al.*, 2012) (this is presented in Table 2).

4.1.4. The control variables

MI depends on these four approaches in this study. Firm's age, as commonly used in previous authoritative studies (example, Muller & Doloreux, 2009), was kept constant so as to reduce probable distortion of the estimated outcomes (details are presented in Table 4).

4.1.5. Principal component analysis (PCA)

For the entire sample, the suitability of PCA was assessed to eliminate items below 0.5 loading on the primary factor on 36 items originally from the questionnaire so that attention can be focused on factors with significant impact. The principal components analysis revealed the presence of 24 components with eigenvalue exceeding 1. The Kaiser-Meyer-Olkin value in all the cases exceeded the recommended value of .6 and Bartlett's Test of sphericity reached statistical significance. The structural matrix at rotation revealed the presence of 4 factors components and correlation matrix of .487 (this is presented in Table 2).

Twenty-four variable responses were developed for the approaches to MI and four factors emanated. The first factor, 'invention' explained 68% of the total variance for KIBS MI. The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy is 61% while Cronbach alpha 74% , indicating a high level of reliability coefficient index. The second factor, 'extension' which represents modification of existing products or applications or services by size, content, outlook or usage and explained 59.31% of the total variance of this MI model and the reliability score is 83%. The third factor represents 'duplications' of existing products or applications or services which explained 67.2% with Chronbac alpha 88% for reliability of the instrument. This factor mainly relates to KIBS copying, adapting, mimicking or repackaging of other local or international competitors' products or applications or services to enter into a new market. The last factor represents 'syntheses. It explained 33.14% of the MI model with the reliability coefficient of 76% thus the items are considered reliable. Pallant (2007) asserted that KMO coefficient of 60% and above and significant indicates the appropriateness of the sample and the Cronbach's alpha not less than 80% is very good and be considered reliable. The entire factors in the sample KMO shows the appropriateness and the Cronbach's alpha co-efficient confirms that there is internal consistency hence the factors are considered reliable and the entire model explained a substantial portion of the total variance of the approaches for MI. Hence, the relevance of these constructs for market innovation as a means of economic diversification from failed crude oil market.

Table 2: Result of PCA analysis of approaches to market innovation

Component	1	2	3	4
<u>Factor 1.0: Invention</u>				
Design Patent	0.94			
Plant Patent	0.78			
Copyright	0.92			
Trademark	0.94			
Secrecy	0.36			
TRIP (Trade Related Aspects of Intellectual Property)	0.94			
<i>Explained variance by the factor 68% KMO .61 Chronbac alpha .74</i>				
<u>Factor 2. 0: Extension</u>				
Modification of the size of an existing product/service /application in the country.		0.77		
Modification of the size of an existing product/service /application from abroad.		0.84		
Modification of the content of an existing product/service/application in the country.		0.79		
Modification of the content of an existing product/service/application from abroad.		0.74		
Modification of the outlook of an existing product/service /application in the country.		0.71		
Modification of the outlook of an existing product/service /application from abroad.		0.77		
Modification of the use of an existing product/service /application in the country.		0.72		
Modification of the use of an existing product/service /application from abroad.		0.76		
<i>Explained 59.31% of the variance; KMO.75; Chronbach alpha .83</i>				
<u>Factor 3.0: Duplication/imitation</u>				
Copying and repackaging a product/service found in the country			0.82	
Copying and repackaging a product/service found abroad			0.86	
Adapting and repackaging a product/service found in the country			0.81	
Adapting and repackaging a product/service found abroad			0.84	
Mimicking and repackaging a product/service found in the country			0.78	
Mimicking and repackaging a product/service found abroad			0.64	
<i>Explained 67.2% of the variance; KMO 80; Chronbach alpha .88)</i>				

Component	1	2	3	4
<u>Factor 4 .0: Syntheses</u>				
Combination of two or more products/ applications/ services found in the country for new.				0.62
Combination of two or more products /applications/services found abroad for new.				0.87
Combination of /and improvement on two or more products / applications /services found in the country for new.				0.75
Combination of/ and improvement on two or more products / applications /services found abroad for new				0.86
<i>Explained 33.14% of the variance; KMO.70;Chronbach alpha .76)</i>				

Source: Computer Computation (2017)

Twenty-four variable responses were developed for the approaches to MI and four factors emanated. The first factor, ‘invention’ explained 68% of the total variance for KIBS MI. The Kaiser-Meyer Olkin (KMO) measure of sampling adequacy is 61% while Cronbach alpha 74%, indicating a high level of reliability coefficient index. The second factor, ‘extension’ which represents modification of existing products or applications or services by size, content, outlook or usage and explained 59.31% of the total variance of this MI model and the reliability score is 83%. The third factor represents ‘duplications’ of existing products or applications or services which explained 67.2% with Chronbac alpha 88% for reliability of the instrument. This factor mainly relates to KIBS copying, adapting, mimicking or repackaging of other local or international competitors’ products or applications or services to enter into a new market. The last factor represents ‘syntheses. It explained 33.14% of the MI model with the reliability coefficient of 76% thus the items are considered reliable. Pallant (2007) asserted that KMO coefficient of 60% and above and significant indicates the appropriateness of the sample and the Cronbach's alpha not less than 80% is very good and be considered reliable. The entire factors in the sample KMO shows the appropriateness and the Cronbach's alpha co-efficient confirms that there is internal consistency hence the factors are considered reliable and the entire model explained a substantial portion of the total variance of the approaches for MI. Hence, the relevance of these constructs for market innovation as a means of economic diversification from failed crude oil market.

4.1.6. Pearson-moment correlation result

The result of the Pearson’s-moment correlation matrix that identifies the strength of relationship between these factors and MI presented below.

Table 3: Pearson product-moment correlations between market innovation, approaches and age

Market Innovation	MI
1. Inventions	.363**
2. Extension	.452**
3. Duplication	.572**
4. Syntheses	0.341**
5. Firm Age	0.099

Notes: ** and * means Correlation is significant at the 0.01 and 0.05 level (2-tailed), respectively.

There are 840 cases in this report and the test of significance is at 1% level of significance. The large size is an indication that the relationships between these approaches and MI do not arise by chance (that is, sampling error). Thus, the results could be concluded that there exists a strong and positive statistically significant relationship between MI and the four approaches by KIBS in Lagos for economic diversification (Pallant, 2007). The control variable, age shows a weak and insignificant relationship with MI. In other words, the use of inventions, extension, duplication and syntheses are very much related to MI while age of the firm is not significantly related, in order to diversify in the Nigeria economy.

4.1.7. Multiple regression models result

The explanatory power of the multiple regressions in explaining MI by the independent variables was explored. The econometric model for the regression is

$$Y_i = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e_i \quad (1)$$

where

Y_i = Market Innovation

B_0 = Constant, the intercept of the axis

B = Slope Coefficients

$B_{1,2,3,4}$ = Invention, extension, imitation and syntheses

e_i = error term

The analysis was carried out to answer the research question stating if there is a relationship between the four innovative approaches by KIBS and MI in a developing economy for economic diversification. These approaches are invention, extension, duplication and syntheses being identified as independent variables.

Table 4: Regression results of the approaches for market innovation

	MI Model 1	MI Model 2
Constant	.244 (2.858)**	.255 (-2.971)
Invention	.174 (2.420)**	.179 (2.441)**
Extension	.446 (8.613)***	.470 (8.900)***
Duplication	.654 (12.310)***	.695 (12.625)***
Syntheses	.303 (6.341)**	.333 (6.508)***
Control: Age		.056 (1.368)
R ²	.546	.560
Adjusted R ²	.540	.545
F	84.664***	87.841***

Notes: ***, **, * denotes significance at 1%, 5% and 10% respectively. Values of the t-statistics are indicated in parentheses. The sample size used for calculations is 840 KIBS. Reference categories for control variable age is 1-20yrs .

From Table 4 above it can be deduced that in the 2 models, all the approaches are significant. Invention is least significant while duplication is most significant. Also, the total variance explained by model 1 (r^2) is 54.6% and the F-value is .84.664 with overall statistical significance at $p < .01$. In model 2, while controlling for firm-age, 56% of the variance in a KIBS ability for MI with the various approaches are explained and the F-value is 87.841 at $p < .01$. Based on the model 2 equation:

$Y_i = B_0 + B_1 X_1 + B_2 X_2 + B_3 X_3 + B_4 X_4 + e_i$ substituted as:

Constant $B_0 = .255$

Invention $B_1 = .179$

Extension $B_2 = .470$

Duplication $B_3 = .695$

Syntheses $B_4 = .333$

$Y_i = .255 + .179X_1 + .470X_2 + .695X_3 + .333X_4 + .05$

Furthermore, the overall result shows that there is a significant relationship existing between the use of invention, extension, duplication and syntheses for MI. It indicates that there is a positive and strong relationship between these four approaches for MI

by KIBS. The overall result of the sample is in consonance with previous empirical studies in that they confirm the relationship between the approaches for innovation (see, Levin *et al.*, 1987; Maurer *et al.*, 2001; Klepper & Thompson, 2006; Dolfsma, 2011; Kuratko *et al.*, 2012). However, the ‘originality’ of this finding is the relevance of these approaches for MI by KIBS in Nigeria in line with the RBV. The resource of KIBS for MI is the expertise knowledge which distinguished them from other firms according to the RBV criteria where resources must be valuable, rare, non-substitutable and inimitable. The four approaches are highly significant at 5% level with or without controlling for age of firms.

According to the RBV, resources are specific to recognition of opportunities. KIBS possess different resources capacity that can enable them to employ any of the approaches for market innovation. Each KIBS approach is basically dependent on the innovation that the firms’ resources can afford. The study indicates that very few KIBS employed invention approach. The situation in the developing economies diverges from the developed economies findings of Kuratko & Hodgett (2008) and Abubakar’s (2009) that at this era of technology and knowledge-based economy, most developed countries employ invention approach for competitive advantage. No wonder, Baiyere, Haken, Westgeet, and Ratingen (2011) in their study argued that invention should be context-dependent. Furthermore, Abubakar (2009) stated that there is no record of any world inventors emanating from developing countries. The findings of this study disagreed with that assertion as there are records of inventions from the developing economies. For instance, the world’s fastest computer designed by a Nigerian, Philip Emeagwali was patented in 2015. Also Chevrolet Volt car was designed by Jelami Aliu, a Nigerian. The challenge is that most patents are bought over by developed countries that can sponsor the projects. This is probably because of the poor architectural, infrastructural and logistical designs void of motivations for invention by the developing economy’s policy makers. Other reasons may not be far from the low level of technological development in most developing economies as most of their innovations are mere transfer of innovations from developed countries into another market (OECD, 2005) because of unwillingness to take risk into the uncharted area.

Invention approach can be very effective for economic diversification since it is new to the world, especially for breakthrough. The effect will not only be felt on the local economy but universally. Invention is often an outcome of R&D and are protected by Intellectual property rights (trademarks, plant patent, design patent, copyright law and others) (Maurer *et al.*, 2001; Dolfsma, 2011). Knowledge staff in KIBS are resourceful, independent and highly skilled enough to influence and design necessary instruments (Kefela, 2010) needed for invention. KIBS in Nigeria employed more of extension approach for MI. It takes creativity and innovativeness to improve on existing products or services or applications. It is probably the level

of structural support the economy could provide for now. However, this finding agrees Kuratko *et al.* (2012) that extension enhances the performance of existing product as new features and or applications are added. KIBS innovation by extension exerts certain influence on customers' preference thereby discarding old products or services or applications for the improved version (Schumpeter, 1934). The firms' profitability is increased and consequently the idea of exportation of products or service or applications emanates and eventually becomes a source of diversification and income to the nation. Beyond any consideration, there is the need to achieve and sustain a competitive position arising from extension in the quest for economic diversification.

Furthermore, the duplication approach has the highest frequency probably because most citizens of the developing economies find it convenient, less costly and risky to imitate other countries' or companies' products. For instance, Dell introduces its printer and photocopier; HP computer duplicates by introducing its brand and so on. At this time of economic diversification, the market for duplication may be inadequate because of over saturation of diverse brands in the market, if the difference is not quite obvious.

Finally, the syntheses approach is an intense upgrading of the state-of-the-art solution by combining existing products or services or applications it is a continuous stream of improvement born out of R&D, an evolutionary adaptation to existing concepts. Few KIBS employ this approach for their MI (Kessler, Bierly & Gopalakrishnan, 2000). This is probably due to KIBS placing a high priority on R&D which they cannot singularly achieve the purpose. A new product or service gains a foothold in the market only when there is a diffusion of similar products and the gradual evolution of dominant designs or technologies. Market and technological uncertainties may arise due to shifts in technology and changes in customers' perceptions or wants leading to 'creative destruction' (Schumpeter, 1934). Hence, the need to improve funding of both the research institutes as well as the universities for effective research because poor research status has been an inhibiting factor for KIBS to embark on syntheses approach.

5. Conclusion and recommendations

The recent need for diversification in the developing economies as well as development in KIBS justifies a research to ascertain the relationship between the various approaches for innovation and MI. Previous studies neither examined the relevance of invention, extension, imitation and syntheses approaches for MI by KIBS in a developing economy nor considered it in line of the RBV. Therefore, this study focused on the approaches to market innovation by KIBS for economic diversification in a developing economy, using the Resource-Based View. RBV emphasizes that resources are specific to recognition of opportunities hence, KIBS

resource is the expertise knowledge that assist in recognition and choice of approach for MI. MI is about entry into a new market with any of the various approaches. The overall result of the findings revealed that there is a positive relationship between the use of invention, extension, imitations and syntheses and market innovation for economic diversification by KIBS at 5% level of significance. The more unique the innovation approach employed by KIBS, the easier the capability for MI and the more the economy can diversify. Thus, in answering the research questions, it could be stated that there is a positive relationship between the four innovative approaches by KIBS for MI for economic diversification in a developing economy. However, duplication approach is mostly used by KIBS for MI in a developing economy because of low technology and poor architecture. This result would assist in framing programs to encourage MI by KIBS in developing economies. It is therefore, among others suggested that there should be sensitization programme for the public and law makers on the relevance of KIBS for diversification as well as policy makers to provide supportive and enabling structures and infrastructures to all the approaches for MI. Also, funding should be made available for Universities and Research Institutes for effective R&D. Invention should be encouraged and search for sponsorship from within will be of great benefit of economic diversification. Lastly, there is the necessity for the country to strengthen the educational base from the elementary level to the tertiary end along the lines of technological innovation.

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