Innovation Adoption and Firm Performance: The moderating effect of knowledge-skills among selected SMEs in Ota, Ogun State, Nigeria

Agbawodikeizu, J.1* Egwakhe, A. J2
School of Management Sciences
Department of Business Administration & Marketing
Babcock University, Ilishan-Remo, Ogun State

ABSTRACT
The study takes an inside view of workers' specifics (technological knowledge and skills) to justify innovation adoption and organizations' performance. It draws upon the workers' capabilities to develop sustainable performance by looking at workers' technological knowledge-skills heterogeneity as resource immobility. Cross-sectional survey research design was adopted with twenty firms purposively selected and four hundred and forty-six (446) respondents sampled. The used questionnaire was adapted, while validity and reliability were established. Hierarchical regression analysis was utilized to test the hypothesis that workers' knowledge and skills moderated the relationship between innovation adoption and firms' performance. The results indicated that technological knowledge-skills exhibits positive significant effect on the dynamics between innovation adoption and firms' performance. Therefore, it was recommended that strategic attention should be given to organizational learning, workers' training, and development programme for incumbent and future workforce to achieve an adequate level of technological and industry-related knowledge and specialized skills.

Keywords: Financial Capability, Firm Performance, Intrapreneurial Culture, Innovative Culture, Knowledge and Skills, Technological Capability

INTRODUCTION
Small and Medium Enterprises' (SMEs) innovation adoption mechanisms and performance improvement activities are relatively weak despite their operational contributions to employment creation, wealth maximization, and knowledge spillover. Theoretical and empirical literature present divergent but not contradictory perspectives on SMEs' instrumentality in accelerating economic growth (Berrios & Pilgrim, 2013; Bikpo, 2014; Eniola & Ektebang, 2014; Phillips & Bhatia-Panthaki, 2007), job creation, and household welfare improvement. A viable argument for SMEs' innovation adoption is pillared on competitive advantage, active economic agents, operational agility, productive innovators (Rogers, 1962; 1995), and prime movers or instigators of discontinuity (Aremu & Adeyemi, 2011; Harash, Al-Tamimi, & Al-Timimi, 2014). The theses seriously amplified SMEs' ability to engender equitable and sustainable economic development (Akande, 2011; Ashamu, 2014; Lawal, 2014; Ojeka, 2011) and absorber of surplus unemployed. However, their innovation adoptive capability is a side-constraint resulting from workers' technological knowledge gap and skills ineptness which dislodged internal consistency or capabilities in operations or performance. The aforementioned position makes SMEs susceptible to moral sentiment and performance relativism. The deficiency in identifying what stimulates and sustains their innovation adoption to performance achievement dilutes and undermines their over emphasized economic role.
The argument within content rests on SMEs' lack of unique knowledge and cutting-edge skills to adopt innovation which operationally hinders their sustained competitiveness and performance. Though innovation enables radical differentiation or operational uniqueness and competitiveness (Akhtar, Ismail, Ndoliman, & Husain, 2015; Hashim, 2012), the prerequisite knowledge and skills required to deploy, utilize, maintain, and institutionalize dominance are relatively weak among SMEs in Nigeria. Several studies (Hassan & Ogundipe, 2017; Hegde & Shapira, 2007; Thornhill, 2006; Tanriverdi, 2005; Yayavaram & Chen, 2015; Rogers, 1983) favoured and indicated the ripple-effect of knowledge and skills on performance and innovation adoption. In addition, some SMEs have failed to actualized stipulated objectives due to weak and unguided acquisition and application of knowledge and skills (Byukusenge, Munene, & Orobia, 2016). While the argument of Byukusenge et al. (2016) did not pre-excluded innovation adoption, it sees most SMEs' failure resulting from their inability to develop and shape an effective knowledge base for innovative practices in their operations.

Empirical evidence provides critical support associating adoption/diffusion of innovation with firms' performance (Hajar, 2015; Frambach & Schillewaert, 2002; Rogers, 1995; Thornhill, 2006) with derivable benefits fostering sustained competitiveness, productivity, and growth. Although, the aforementioned scholars differ in context, globalization has accelerated the rhythm of adoption and collapsed the differential mechanisms, either in context or generalization. It is within this purview that the work interrogated the moderating effect of technological knowledge and skills on the relationship between innovation adoption and firm's performance. This tactically implies that performance through innovation adoption depends on the ability to exploit workers' technological knowledge and skills to induce performance. Thematically, the work is structured thus; introduction, literature review, methodology, results presentation and discussion, conclusion and recommendation.

LITERATURE REVIEW

In today’s business world, firms’ performance in terms of wealth maximization is over emphasized (Kraus, 2012), yet performance measurement criteria differ. According to Harash, Al-Timimi and Alsaadi (2015), performance measurement parameters should focus on financial and operational (non-financial) indicators which are not far from Kaplan and Newton's (2006) balance scorecard. Most firms, however, adopt financial indicators to calibrate their performance (Akpabot & Khan, 2015; Rosli & Sidek, 2013). Such calibration techniques zero-in on return on assets (ROA), average annual occupancy rate, net profit after tax, and return on investment (ROI) (Tavitiyaman, Zhang, & Qu, 2012) which are financial or accounting indicators. However, financial index is one-sided indicator for measuring firms' performance since productivity, growth, number of employees, stakeholders' satisfaction, market share, and competitive position (Bagorogoza & Waal, 2010) exist. Supporting this opinion, Rubio and Aragon (2009) divided business performance into four dimensions; internal process, open system, rational goal and human relations, with each dimension measured by any changes in its own variables. Gonzalez-Benito (2005) articulates on objective and subjective approaches; judgmental assessments with indicators covering both financial and non-financial indicators. The complexity and technical difficulties in performance measurement bring about limitation and
divergence in methodology, scope, and nature. Within this work, firms’ performance was defined and measured through non-financial parameters.

Knowledge in its typologies, nature, and creation refers to a collection/or a body of information, tacit or implicit and human centered. It usage requires a combination of information and human context that enhances people capacity for action (Omota, 2015). This could mean that information is embedded in the form of theories, processes, systems, or it could be voiced in form of opinions, ideas and analysis. Wang and Noe (2010) define knowledge as information processed by individuals including ideas, facts, expertise, and judgment relevant for individual, team, and organizational performance. Additionally, Nickols (2012) asserts that knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provide a framework for evaluating and incorporating new experiences and ideas. It is the fundamental resource that allows people function intelligently and rationally. Therefore, it can then be stated that knowledge is an invisible (Grant, 1996) or intangible asset (Barney 1991), in which its acquisition involves complex cognitive processes of perception, learning (Wernerfelt, 1984), communication, association, and reasoning (Epetimehin & Ekundayo, 2011). Within content, knowledge means the insights, understandings, and practical know-that which people or workers possess and its usage becomes embedded input. In addition, Baporikar (2017) describes knowledge as the capacity to act on information and thereby make it valuable internal asset (Penrose, 1959), and ineffectual if not used. As such, used knowledge becomes embedded repositories, routines, processes, practices, norms and cultures which influences innovation.

The innovativeness in knowledge becomes strategic since it changes the competition model of business drastically and enables strategic agility from time to time (Gholipour, Jandaghi, & Hosseinzadeh, 2010; Ooi, 2009; Wang & Wu, 2011). Strategy hence, becomes an innovation which emerged from a combination of people's knowledge and learning. As such, Kamasak, Yavuz, and Altuntas (2016), Yayavaram and Chen (2015) and Nonaka and Takeuchi (1995) consider knowledge as the key raw material for innovation. Many studies (Bell & Zaheer, 2007; Smith, Collins, & Clark, 2005; van-Wijk, Jansen, & Lyles-Marjorie, 2008; Villasalero, 2017; Rogers, 1995; Nickerson & Zenger, 2004; Wu & Chen, 2014) have consistently indicated that the knowledge resources of a firm were strongly associated with innovation success. Although knowledge can be treated as unique and valuable asset, the way it sustains competitive advantage (Madhani, 2012) is not stationary, and knowledge itself is a static resource stock which needs to be transferred and spread throughout the organization to create value (Teece & Leih, 2016; Roger, 1995; Grant, 1996). Creating and applying knowledge or reconfiguring already existing knowledge results in new products or services, turning it into innovation success. Gonzalez and Martins (2017) focused on the dynamic side of knowledge such as knowledge creating, processing and transferring rather than on knowledge per se as an economic asset. Skills, on the other hand, is defined as an ability or proficiency at a task that is normally acquired through education, training and/or experience (Hero, Lindfors, & Taatila, 2017). It can at times be synonymous with the related concepts of competence, expertise, knowledge and human capital with the understanding that it means know-how. There is no one mix of skills that is considered good for innovation adoption and performance in all circumstances. Instead, the required skills
vary across the type of innovation concerned, the industry and the strategic model the firm pursues (Hero, et al., 2017). Different types of innovation may require different kinds of skills and competencies. Through research on innovation (Tether, Mina, Consoli, & Gagliardi, 2005; Roger, 1962; 1996), it is possible to highlight the skills needed in specific contexts.

The impact of innovation adoption on firms’ performance seems to be influenced by certain conditions according to previous research (Hashim, 2012). Akhtar, et al (2015), Hashim (2012) and Hero, et al (2017) demonstrate that skills and knowledge-base of employees are of utmost importance for SMEs not only to acquire new technologies, but also for their survival in a globalized world. Thus, knowledge and skills constitute the basic ingredients needed by organizations to bring about innovation adoption. Further, innovation was identified as a critical driver of firms' productivity (Barney, 1991) and economic growth (Korez-Vide & Tominc, 2016). Also, scholars, theorist, and practitioners (Grant, 1996; Hegde & Shapira, 2007; Tanriverdi, 2005; Yayavaram & Chen, 2015) in the management field agree that specific knowledge stock of a firm along with workers' skills depth enable firms to manage resources effectively for superior performance.

Innovation adoption requires flexibility platform (Rogers, 1995) to facilitate the acquisition and installation of new process or technology. This could be intra-firm or inter-organizations' arrangement to engender learning orientation, creative destruction (Schumpeter, 1942; Hart, 2005) or radical discontinuity. The determinants of adoption are geographically diverse and congruence exist not among scholars (Frambach & Schillewaert, 2002; Thornhill, 2006) on what drives adoption. Instead, quick response to market signals, competitiveness (Thornhill, 2006) learning orientation (Forster & Kaplan, 2001; Hart, 2005) and performance (Calantone, Causgil, & Zhao, 2002) were itemized. However, Nigerians (Hassan & Ogundipe, 2017; Ojeka, 2011) attributed adoption to integrated inventions and resilience activities. These perspectives make innovation adoption extremely important in firms' economic efficiency, wealth maximization, and improvement in systems, process and existing operations. Innovation adoption was linked to self-refining culture (Hart, 2005) and operational reconfiguration (Ghobakhloo, Hong, Sabouri, & Zulkifli, 2012; Salim & Sulaiman, 2011) which are apparently important performance driven-activities.

Innovation adoption and utilization depends heavily on technological knowledge (Grant, 1996) and requisite operational skills of workers (Xiaobo & Sivalogathasan, 2013) instead of accidental spillover. Employees' operational skills and technological knowledge provide collaborative link to innovation adoption that improves performance. This view was echoed by Eravia, Handayani, and Julina (2015), Ghobakhloo et al (2012), and Frambach and Schillewaert (2002) that adoption is influenced workers' knowledge and competency to enable utilization. The empirical work of Thornhill (2006) and Hassan and Ogundipe (2017) analyzed knowledge, innovation adoption and performance with findings supporting the positive significant relationship and interactions. The theoretical framework upon which the empirical footing were anchored are Rogers (1962; 1983; & 1995), Penrose (1959), Schumpeter (1942), and Grant, (1996). Further, Jimenez-Jimenez and Sanz-Valle (2011) results show that innovation, employer’s knowledge/skill and organizational
learning significantly influenced performance. Hence, the relevance of knowledge and skills to innovation adoption to stimulate performance (growth and productivity) is vital to firms' success. Accordingly, prior literature (Calantone, et al., 2002; Chen, 2015; Foster and Kaplan, 2001; Frambach & Schillewaret, 2002; Harash, et al., 2014; Ojeka, 2011) on innovation and SMEs demonstrate that organizations’ decision to acquire innovation is subject to competition, comparative analysis of cost-benefit, and workers’ knowledge/skills. This perspective implies that employers’ level of technical skills and accumulated knowledge are critical to adoption and integration of new technology into operations. From demand-side perspective, workforce absorptive capacity (skills and knowledge) enables adoption and further stimulates positive improvement in firms’ performance (O’Dell & Hubert, 2011). Nonaka and Takeuchi (2005) mentioned that sufficient knowledge sharing influences organizations’ innovation adoption, since it creates collective learning and raises collective benefits for members of the organization. Byukusenge, et al (2016) examined the mediating effect of innovation on the relationship between knowledge management and business performance of SMEs in Rwanda and the results revealed that innovation had positive significant effect on business performance. However, there was no direct effect of knowledge management on business performance, except through the full mediation of innovation which aligns with Thornhill (2006).

Moreover, a relationship between knowledge and innovation was discovered by Rigby & Zook (2002), suggesting that knowledge flow is important in innovation adoption process. Radical innovation researchers (Foster & Kaplan, 2001; Grant, 1996; Hart, 2005; Rogers, 1995) have suggested that a firm’s knowledge-base represents the most unique resources for radical innovation which Zhou and Wu (2010) sustained but Price, Stoica and Boncella (2013) submit that an exposure of organizations to knowledge is insufficient in adoption process. Organizations with pre-existing knowledge and skills have the capacity and mechanisms in place to adopt and incorporate new technology or innovations, and are more likely to first exploit new business opportunities (Aarons, Hurlburt, & Horwitz, 2011). This suggests that the knowledge-sourcing activities and individual skills or firm’s knowledge richness may influence innovation adoption and directly engender performance.

**METHODOLOGY**

This work adopted survey research design with emphasis on cross-sectional approach. This was pillared on the design's ability to mop perceptual-based data for the purpose of investigating the moderating effect of knowledge and skills on the relationship between innovation adoption and performance. SMEs in Ota/Agbara Industrial Layout, Ogun State constitutes the unit of analysis with majority located therein or hub/strategic centre for manufacturing companies, assembly and distribution of finished goods. There are no actual documentation on the exact figure of the population of SMEs in Ota/Agbara Industrial Layout, hence, a judgmental sampling technique was adopted to sample four hundred and forty-six (446) respondents from twenty (20) purposively selected companies. The criteria for selecting a firm rest on its number of employees, utilizes technology in operation, registered with Small and Medium Enterprises
Development Agency of Nigeria (SMEDAN), and has been in existence for more than ten (10) years.

The questionnaire was adapted from previous studies (Allocca & Kessler, 2006; Byukusenge et al., 2016; Cooper & Schindler, 2003) along the constructs with sections that captured demographic information, innovation adoption parameters, and SMEs performance indicators. The content validity was conducted and construct determined through Kaiser-Meyer Olkin (KMO), Barlett’s test and Average Variance Extracted and the reliability established with scores from Cronbach Alpha Coefficient above 70%. Four hundred and forty-six copies of the questionnaire distributed were retrieved from the surveyed respondents and the data analyzed through hierarchical method of regression analysis.

3.1 Model Specification
The econometric equation was stated as thus;

\[ Y = \beta_0 + \beta_1X + \beta_{z1}z_1 + \beta_{z2}z_2 + \beta_{iz1z2}Xz_1z_2 + \mu_i. \quad \ldots \ldots \ldots \ldots \ldots \quad (1) \]

with the inclusion of acronym, the equation emerged as

\[ Y = \beta_0 + \beta_1IA + \beta_2KS + \beta_{z1}(IA)(KS) + \mu_i \quad \ldots \ldots \ldots \ldots \ldots \quad (2) \]

Where \( Y \) = SMEs’ Performance; \( X \) = Innovation Adoption;

\( Z = \) Knowledge and Skills; (IA & KS) \( \beta_1, \beta_{z1}, \beta_{z2}, \beta_{iz1z2} \) = coefficient estimate of the effect of \( X, z_1, z_2 \) and \( X^* z_1, z_2 \) on \( Y \) respectively;

\( \beta_0 \) = coefficient estimate of the intercept. Innovation adoption consists of intrapreneurial culture, technological capability, innovative culture, and financial capability while SMEs' performance consists of competitive advantage, market share, and sales growth. The test focused on the moderating effect of knowledge and skills on the relationship between innovation adoption and performance of selected SMEs. The a priori expectation states that the work reject if \( \beta_i \neq 0 \) and \( p \leq 0.05 \); otherwise do not reject the core assumption. Ethical steps were taken in areas of confidentiality, respect for privacy and anonymity assurance as advised by Hatch and Cunliffe (2006) and Blaikie (1993) in filling the questionnaire. The researchers ensured that respondent names and other personal details were not sought for or documented anywhere in the study. Data reporting, processing and result reporting as well as the method and procedure used were guided by honesty. The researchers ensured no data falsification and manipulation in data collection and processing. Monetary or other material benefit was not given to induce cooperation, rather participation was voluntary/self-will. Plagiarism was avoided and scholars were credited appropriately where due.

3.2 Analysis and Findings
The thrust of this work as previously stated was to investigate the moderating effect of workers’ knowledge and skills on the relationship between innovation adoption and SMEs' performance. Towards this goal, 446 respondents were surveyed from SMEs in Ota/Agbara Industrial Layout in Ogun State, Nigeria and the formulated assumption was tested by subjecting the collated data to hierarchical method of regression analysis. The results are presented as follows in Tables 1.1, 1.2, and 1.3 respectively.
Table 1.1: Regression Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.53</td>
<td>0.28</td>
<td>0.28</td>
<td>6.479</td>
<td>0.28</td>
<td>152.594</td>
<td>1</td>
<td>380</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>0.61</td>
<td>0.37</td>
<td>0.36</td>
<td>6.089</td>
<td>0.08</td>
<td>26.107</td>
<td>2</td>
<td>378</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0.64</td>
<td>0.41</td>
<td>0.41</td>
<td>5.872</td>
<td>0.04</td>
<td>29.445</td>
<td>1</td>
<td>377</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Innovation Adoption  
b. Predictors: (Constant), Innovation Adoption, Innovation Adoption*Knowledge, Knowledge  
c. Predictors: (Constant), Innovation Adoption, Innovation Adoption*Knowledge, Knowledge, Innovation adoption*knowledge*Skills  

**Source**: Field Survey Result, 2018

Table 1.1 illustrates the hierarchical regression summary of the combined effects of knowledge and skills on the relationship between innovation adoption and performance of selected SMEs in Ota/Agbara, Ogun State, Nigeria. In step one; innovation adoption was regressed on performance of selected SMEs. The findings present the hierarchical regression analysis for Model 1 when only innovation adoption and performance of selected SMEs variables are in the equation model ($R^2 = 0.287, p<0.05$). It indicates that innovation adoption accounts for 28.7% of the variability in performance of selected SMEs.

Table 1.2: Table of ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression</td>
<td>6404.534</td>
<td>1</td>
<td>6404.534</td>
<td>152.594</td>
<td>0.00b</td>
</tr>
<tr>
<td>Residual</td>
<td>15949.047</td>
<td>380</td>
<td>41.971</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22353.581</td>
<td>381</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Regression</td>
<td>8340.254</td>
<td>3</td>
<td>2780.085</td>
<td>74.991</td>
<td>0.00c</td>
</tr>
<tr>
<td>Residual</td>
<td>14013.327</td>
<td>378</td>
<td>37.072</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22353.581</td>
<td>381</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Regression</td>
<td>9355.468</td>
<td>4</td>
<td>2338.867</td>
<td>67.837</td>
<td>0.00d</td>
</tr>
<tr>
<td>Residual</td>
<td>12998.113</td>
<td>377</td>
<td>34.478</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22353.581</td>
<td>381</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Performance  
b. Predictors: (Constant), Innovation Adoption  
c. Predictors: (Constant), Innovation Adoption, Innovation Adoption*Knowledge, Knowledge  
d. Predictors: (Constant), Innovation Adoption, Innovation Adoption*Knowledge, Knowledge, Innovation adoption*knowledge*Skills  

**Source**: Field Survey Result, 2018
Table 1.3: Regression Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>B</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>46.893</td>
<td>2.008</td>
<td>23.354</td>
</tr>
<tr>
<td>2</td>
<td>(Constant)</td>
<td>37.009</td>
<td>10.847</td>
<td>3.412</td>
</tr>
<tr>
<td></td>
<td>Skills</td>
<td>-0.001</td>
<td>0.025</td>
<td>-0.011</td>
</tr>
<tr>
<td></td>
<td>Knowledge</td>
<td>0.867</td>
<td>0.475</td>
<td>0.379</td>
</tr>
<tr>
<td>3</td>
<td>(Constant)</td>
<td>-589.355</td>
<td>115.903</td>
<td>-5.085</td>
</tr>
<tr>
<td></td>
<td>Skills</td>
<td>-1.523</td>
<td>0.281</td>
<td>-12.836</td>
</tr>
<tr>
<td></td>
<td>Knowledge</td>
<td>28.172</td>
<td>5.053</td>
<td>12.303</td>
</tr>
<tr>
<td></td>
<td>Innovation adoption<em>knowledge</em>Skills</td>
<td>0.005</td>
<td>0.001</td>
<td>2.631</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Performance

Source: Field Survey Result, 2018

Further, Table 1.3 shows Beta coefficient was 1.356, t=12.353, p<.05 when innovation adoption is in the model. These results indicate that for every unit increase in innovation adoption, performance of selected SMEs increased by 1.356. The overall model was also significant (F=152.594, p<.05). Knowledge and skills were introduced into Model 2, which significantly improves the effect of knowledge and skills on the relationship between innovation adoption and performance of selected SMEs (R^2 =0.373, p<0.05). Innovation adoption and knowledge and skills explain 37.3% of the variation in performance of selected SMEs. The F value was statistically significant (F=74.991, p<0.05) that the influence of the independent variable and the moderators were significant in the model. Table 1.3 shows the Beta coefficients of knowledge (β = 0.867, t= 1.825, p>0.05) and skills (β = -0.001, t= -0.053, p>0.05); that is for every unit increase in knowledge and skills, performance of selected SMEs increases by 0.383 and reduces by 0.001 respectively.

In model 3 the interaction term was introduced in the model. All the variables of innovation adoption, knowledge and skills and performance were entered in the regression model. The results observed change statistics, with R^2 change increased by 0.045 from 0.373 to 0.419 (R^2 ∆ = 0.045) when the interaction variable (Innovation adoption*knowledge*Skills) was added. The change was statistically significant at α=0.05 (p-value<0.05). The results show statistically significant relationship between innovation adoption, knowledge and skills and the interaction (F= 67.837, p<.05). The F changed from 74.991 to 67.837 showing a decrease when interaction was added. The F ratio shows that the regression of innovation adoption and knowledge and skills on performance of selected SMEs is statistically significant. The t values reveals that the coefficient of the model parameters are statistically significant at less than p<.05. The results in Model 1 Table 1.3 (for step one) show statistically significant regression coefficients for innovation adoption (β= 1.356, t=12.353, p<.05) indicating that there is a linear dependence of
performance of selected SMEs on innovation adoption. In model 2, knowledge and skills were not statistically significant knowledge ($\beta = 0.867$, $t= 1.825$, $p>0.05$) and skills ($\beta = -0.001$, $t= -0.053$, $p>0.05$). When interaction term was introduced, the beta coefficient was 0.005 meaning that for every unit change in interaction term, performance of selected SMEs increases by 0.005. Further, the interaction showed a positive effect ($\beta = 0.005$, $t= 5.426$, $p<0.05$) and it was statistically significant. The results suggest that knowledge and skills have statistically significant moderating effect on the relationship between innovation adoption and performance of selected SMEs in Ota/Agbara, Ogun State, Nigeria. The established regression equation from the results is stated as follows:

$$SMEP = -589.355 + 0.639IA -1.523SK + 28.172KN + .005IA*K*S$$ ……………...Eq. vi

Where:

- SMEP = SMEs' Performance
- IA = Innovation Adoption
- SK = Skills
- KN = Knowledge
- $IA*K*S$ = Interaction of Innovation Adoption, Knowledge and Skills

The results indicate that knowledge and skills have statistically significant effect on the relationship between innovation adoption and SMEs' performance.

**DISCUSSION OF FINDINGS**

Unlike prior research works, this study focused on organizations' innovation adoption and performance with technological knowledge and skills as the moderating variables. The focus was on selected SMEs in Ota, Ogun State, Nigeria. The study revealed that knowledge and skills had significant moderating effect on the relationship between innovation adoption and performance of selected SMEs in Ota, Ogun State, Nigeria. Such finding agrees with previous studies that have found a link between innovation adoption, knowledge and skills, and performance of selected SMEs. Through this empirical position, credence is added to prior studies done by Fening et al (2013), Hart (2005), Olise et al (2014), Grant (1996), Ghobakhloo et al (2012), Akomea-Bonsu and Sampong (2012) and Al-Ansari et al. (2014) which associated knowledge and skills with innovation adoption and performance of selected SMEs. Valdez-Juárez et al (2016) also established that knowledge has a significant influence on innovation but the influence on the level of performance of SMEs was insignificant.

However, training employees as part of knowledge enhancement showed no significant influence on innovation adoption in SMEs when isolated from performance. This indicates that firms' leaders must design deliberate openness to changes in the adoption and implementation of technology towards fostering performance. This work contributes primarily to literature development focused on knowledge and skills as these relate with innovation and a firm's performance. The result is also in agreement with the findings by Nduati et al (2015) who concluded that individual worker basic level of ICT and administrative support are critical to ICT learning process. Byukusenge et al (2016) finding is sustained in Nigeria context along the mediating effect of innovation in the relationship between knowledge management and business performance of SMEs in Rwanda.
The mechanisms by which innovation adoption and knowledge-skill inflow from market and science-based actors to affect firms' performance will differ, but workers' knowledge/skills bases provide strategic insight into performance. Workers' skills/knowledge inflows inform innovation adoption directly or serendipitously, while performance is influenced indirectly through workers’ utilization of knowledge/skills and absorptive capacity. The workers' robustness constitutes adoption and performance enhancement. The study surveyed firms although it is not the organizations themselves, rather organizational members who warehouse and utilize skills and knowledge. In other words, firms need their workers' skills and insights to put into viable use the adopted innovation for intended performance. Thornhill (2006) and Byukusenge, et al (2016) have stressed individual's cognitive and skills infrastructure to facilitate an organization’s innovation adoption. Building on the theoretical theme of internal capabilities (workers) (Penrose, 1959; Roger, 1983; 1995), Creative destruction (Schumpeter, 1942; Hart, 2005) and knowledge theory (Grant, 1996), this study connects innovation adoption to firms' performance through the unique interface of workers' knowledge and skills to fill literature void.

The results demonstrate that innovation adoption is subject to workers' specific knowledge and skills-level to firms' performance. Therefore, the findings of this study empirically extended the existing innovation adoption, knowledge-skill, and performance literature by focusing on the effect at the organizational-level. As such, strategic leaders can encourage or institutionalize employees' knowledge and expertise sharing or transfer within the organization to foster performance. Further, it is appropriate to create communities of learners, internal or external to organizations, to enhance social networking practice which may foster synergistic cooperation and information exchange. The provision of hands-on-training could assist employees' skills development and knowledge enhancement through social network within the industry, hence creating organizational contexts that enable assimilation of new technological knowledge and skills.

CONCLUSION AND RECOMMENDATION

The findings from this study amplified the power of workers' knowledge and skills. First, this study investigated innovation adoption and performance with emphasis on moderating effect. The study observed that innovation adoption is important to firms' performance but workers' technological knowledge and skills play significant role within the interaction. Hence, workers with significant practical knowledge and skills facilitate innovation adoption to enable organizational performance. Thus, innovation adoption to firms' performance is not an accidental-spoolver, rather the outcome of workers' knowledge and skills. Therefore, strategic attention should be given to designing organizational learning, training, and development programme for incumbent current and future workforce to achieve an adequate level of technological and industry-related knowledge and specialized skills.

REFERENCE


