WhatsApp an Innovative Research Collaboration Tool for Institutions of Higher Learning in Rivers State

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ABSTRACT
The wide use of social media in institutions of higher learning and its e-learning potential of the technology are making educators take critical look at social network model available to be used in support and improvement of our educational practices. This study examines the use of WhatsApp instant messaging media for learning support and building research collaboration among two universities in Rivers State; namely, Rivers State University (RSU) and Ignatius Ajuru University of Education (IAUOE). This model is designed to be used by distant learning communities or groups and therefore could be deployed across Niger Delta and beyond. The study adopted descriptive survey method; using questionnaire to elicit responses from 100 randomly sampled respondents 50 from each university was used. Questionnaire instrument titled “WhatsApp an Innovative Research Support Tool for Collaboration in Higher Institutions in Rivers State” (WIRSTCHI) was used for data collection. The instrument was validated and test of reliability was conducted using Cronbach Alpha Coefficient with an index of 0.84. Mean and Standard Deviation was used to analyze the data obtained from the respondents while hypotheses were tested with ANOVA. Finding revealed that WhatsApp if well modeled could provide innovative research support tools among institutions of higher learning and enhance learning efforts across West African Sub-region. Recommendations were made that suggested among other things the development of different usable models and creating awareness on when and where to use them for greater effectiveness.

Keywords: Teaching and learning, Social media, WhatsApp, Business Educator, Innovative Research Collaboration.

INTRODUCTION
The major thrust of this work is to explore way of using social media or networks to support learning and learning communities for greater effectiveness. There are so many instant messaging applications available, however, WhatsApp instant messaging network is chosen as the case study. The use of social networks in to promote and enhanced learning has become a major trend in the 21st century because of its role in effective communication and the impact of the technology in our changing life style. There is an unending debate by among teachers, educators and professional on the use of social media for educational purpose. Opponents of the system often complain of its tendency to cause distraction and unstructured nature of the knowledge content. The proponents believe that the platform brings about communication effectiveness as well as enhance learning because of its audio/visual appeal. Lets not make mistake about this; Social Medias are designed for fun/entertainment primarily, and its application in learning is either by accident or design. Any attempt at using the system outside its design framework (say for classroom learning) will require some kind of control structure (re-configuration, re-designing, re-engineering or rules setting to guide the usage) in order to mitigate inherent and undesirable effect of the original use function inimical to learning. Establishing the appropriate control structure and its effective management will be crucial in achieving strategic result in social support learning.
There are two types of control structure to apply when using any of the social media for educational purposes. The first is the internal control; that borders on re-configuring the platform by enabling or disenabling some of the programme’s features or functions to make suitable for the desired use. Incidentally, WhatsApp has a simple design and direct use functions devoid of unsolicited interference from third party. This is what makes WhatsApp adaptable supportive platform for learning.

**Concept of WhatsApp and its use Features in Learning**

Brain Anton and Jan Koom with the aid of $8 million investment from a Silicon Valley investment holding company invented WhatsApp social media in 2009 (Chokri, 2015). The name WhatsApp was coined from the English phrase “What is up” meaning “what’s new” an instantaneous messaging application specially designed for smartphones. WhatsApp as a social networking enables users to share text messages, videos, images and audio messages via internet connection. WhatsApp is superior to SMS messaging, which can be very costly when used in foreign countries due to roaming charges; WhatsApp, in contrast, relies on the Wi-Fi network technology.

WhatsApp allow two types of account within its platform, the individual (personal) and group account (many users) allowing 256 participants only in a group account. Individual WhatsApp account allows one-on-one interact with a friend (single user). Group account allows interaction among members of a group (multi-user). This is suitable for class support learning or community learning environment. The creator of the group becomes an administrator controlling power to admit, erase and control membership of the group. Apart from the case of admitting and removal of members in a group enjoys equal right and privileges. The software makes it possible for members to receive notification for each message sent or, alternatively, to mute the incoming message for 8 hours in a day, or a whole week.

WhatsApp social networking platform has became very popular and in 2013, gained over 350 million users and rated the most downloaded application in 127 countries (Cohavi, 2013); with record average of 31 billion daily messages (Tzuk, 2013). According to the statistics, the platform had reached track record of 1 billion daily chart users, 1.3 billion monthly active users, 55 billion messages sent per day, 4.5 Billion Photo shared per day, 1 billion videos shared per day and support about 60 languages (Barb, 2017).

The use of WhatsApp as a support tools for learning on-line also enhances collaboration and cooperation between and among students connected from school or home in a blended mobile lecture and several other educational value (Chokri, 2015).

WhatsApp and other social networks have increased the possibilities of communicating with a wider audience around the globe (Deng & Tavares, 2013). Social network have become “a widespread tool for communication and exchange of ideas and as a result of its wider coverage and flexibility, the platform are now utilized to enhance academic engagement and improved learning performances (Onomo, 2012). Learning communities, a concept viewed as group of people engaged in learning activities” are increasingly facilitated through social networks platforms. Social media networks are being deployed to establish links and collaborating between and among these learning communities, groups and environments; as well students and their peers (Mingle, J. and Adams, M., 2016; Deng and Tavares 2013).

The underlying use of WhatsApp in learning primarily is to facilitate communication, and communication is the hallmark of education. Thus WhatsApp provides a veritable platform through which teachers can achieve faster and more seamless communication with their students especially outside the classroom. The platform can also increase communication among students which fosters group learning and problem solving. There are several reasons why WhatsApp is considered a preferred choice social networking media for learning and research collaboration as follows:

i) Utility for Group Chats, creation of learning environments, communities and study groups
ii) Information and knowledge are easily constructed and share through WhatsApp instant messaging.
iii) Information sharing using text, audio and visual facilities inform of documents, images, videos, music, emoji and symbols to develop impressive contents for maximum impact on the learner.
iv) Web-friendly support features which can be integrated and perform from WhatsApp platform such as: T9 function (text prediction), spellchecker, on-line dictionaries, pronunciation check, internet search, translator facilities, etc.
v) WhatsApp platform can be used as a class management tool; a system for staying in contact with students outside the classroom, getting in touch with their parents, sending report cards.

vi) Facilitate real-time communication between students to teachers and teacher to parents

Other beneficial use of WhatsApp for learning and collaboration activities include:
— It allows free unlimited sending and receiving of messages, texts, pictures, audios and videos.
— The Chat features of WhatsApp are powerful interactive platforms designed to hold group and individual conversations.
— It can effectively run on free MBs where there is no data plan.
— It can be used directly over the Internet via WhatsApp Web.
— Designed to be used across platforms; suitable for various devices.
— Cheap and effective way to maintain communication with students and parents compared to other communication models.
— Students are reached via the technology they are most familiar with: their phones
— WhatsApp can be used to develop learning communities and collaborate research and learning efforts within and outside different demographics or geographical boundaries.

WhatsApp instant messaging is the most favored mobile based applications (SimilarWeb, 2016; Statista, 2016, Church, K. & de Oliveira, R. 2013). They emphasized that the growth in WhatsApp popularity is based its beneficial application in the field of education.

SimilarWeb, 2016; Statista, 2016, Church, K. & de Oliveira, R. 2013 all described WhatsApp as the most favoured mobile based application beneficial in the field of education. However all educators are in tandem with this position. There are a number of educators who are skeptical about instant messaging as a learning tool and view it as a potential source of distraction. Distractions in the system emanates from abuse or misuse of the platform by participants who will want to announce rather than discuss. Notwithstanding the distraction factors, educators must finds ways of minimizing the damaging effects of this in the use of the platform and find ways to use the platform because of its huge educational potential. This can be achieved by using the control settings in the programme and developing user customized structures that can minimize distraction impact on participants.

Statement of the Problem

There is need to encourage the use of WhatsApp as a social media for learning and research collaboration. Social media today has become an indispensable our daily life and a meeting point for works of life and background. Social media provides platform to disseminate, sharing information and knowledge which many useful to one another. Because social media are design for fun, it attracts heavy traffic in the network especially among school children and even adults. There is no denying the fact that the network carries rich educational contents which can be of great benefit to education and learning. The question now is how do we tap into the huge educational resources and potentials provided in Whatsapp social media designed for fun and entertainment to the educational benefit of the learner. This is against the backdrop of the fact that most Business Educators are yet to incorporate WhatsApp in their teaching and learning scheme of things due to the perceived distractive tendencies of social Medias. For effective use of WhatsApp or any social media for teaching and learning, there has to be a control mechanism to minimize the likely impact of misuse and abuse which is expected of a system build around fun and entertainment. This research aimed at developing an end-user model of WhatsApp that can be adapted for teaching and learning as well as carry out innovative research collaboration among institutions of Higher Learning in outside the country using the platform.

Purpose of the Study

The purpose of this study is to explore the use of WhatsApp instant messaging as an innovative tool to collaborate research effort among study groups and learning communities among institutions of Higher Learning in Rivers State.

Research Questions
- What are the facilities in WhatsApp as a support tool for learning and research development among Institutions of Higher Learning in Rivers State?
• How effective is the use of WhatsApp to achieve innovative and collaborative research among Institutions of Higher Learning in Rivers State?

**Hypothesis**

HO1: There is no significant difference in the mean response of RSU and IAUOE on the facilities in WhatsApp as a support tool for learning and research development among Institutions of Higher Learning in Rivers State.

HO2: There is no significant difference in the mean response of RSU and IAUOE on the use of WhatsApp to achieve innovative and collaborative research among Institutions of Higher Learning.

**RESEARCH METHODS**

The study adopted descriptive survey because it is effective in providing both quantitative and numeric information on the responses of respondents on the subject matter. The population of this study consists of Business Education third year students of Rivers State University (RSU) and Ignatius Ajuru University of Education (IAUOE); all in Rivers State. A total of 100 students and two lecturers each from the two universities were used for the study. The instrument for data collection was the researchers’ constructed questionnaire titled “WhatsApp an Innovative Research Collaboration Tool for Institutions of Higher Learning” (WIRCTIHL). Random sampling method was used in selecting the 50 students from each university who fulfill the following three conditions: the student must have a Smartphone with access to WiFi or data bundle, willing to participate in the programme and abide by the code established for participants. WIRCTIHL instrument was divided into two sections A and B. Section A, sought demographic information about the respondents, section B deals with the use of WhatsApp as a support tool for learning and building collaboration. Four point rating scale of Strongly Agree (SA-4), Agree (A-3), Disagree (D-2) and Strongly Disagree (SD-i) was used. Validation of the instrument was carried out by two Business Educator and expert from measure and evaluation department all in Rivers State University. The reliability of the instrument was determined using Cronbach Alpha coefficient that yielded an index of 0.84. Word version of the questionnaire was distributed to participants via WhatsApp attachment and hundred percent retrieval of distributed questionnaire was achieved. It was arranged that an item with a calculated mean value equal to or greater than 2.50, [2.50 - 4.00] was accepted while item was considered rejected if calculated mean is less than or equal to 2.49, [0.00 - 2.49]; while ANOVA statistical analysis was used to test the null hypotheses of the study.

**Study Design**

Research on Innovative Research Collaboration could be carried out among Business Education Students in Higher Institutions using WhatsApp Platform.

- Concept of Social Medias and WhatsApp
- Uses of WhatsApp as information communication and learning
- Use of WhatsApp for developing learning communities and Research Collaboration
- What are we getting right and where are we getting things wrong?
- Which way moving forward?

Using WhatsApp for learning and research collaboration requires putting in place good control structures. The control options available in Group WhatsApp are that of being the Administrator of the group; who has the power to admit and deregister members, as well as moderate the activity of the group. The WhatsApp models (Fig. 1) can be adopted both for learning and collaboration purposes. The model is designed to utilize the existing WhatsApp features as well as incorporating the additional new WhatsApp features. The best way to use social networking programs for learning is to try as much as possible to retain its original features amidst attempt at instituting control measures to guide against distraction, misuse and possible abuse of the system. This is better achieved at sub-group level which provides greater interaction among participants, most suitable for a Close User Group (CUG) with identified common interest. Even with that, it is still subject to abuse because of some members who have the attitude of making announcement rather than engaging in discussion. This makes group chat or discussion messy. It’s often difficult to predict individual’s behaviour especially in large group settings; therefore control structure is vital to keep in check of possible abuse of the programme and its objectives.

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An innovative collaborative research effort can be achieved using WhatsApp Group Chat by two Business Education Lecturers in two Universities in different learning communities and environment. The WhatsApp model in Figure 1 is designed with two levels of control structures in place. At the level of A and B the platform is used in normal settings allowing member’s of the platform unrestricted and unfiltered access to share, post and contribute to the platform. This level gives students and relax frame of mind to explore and share ideas, opinion, and information in a fun and less official manner. This helps to generate lots of ideas on the subject matter. Control at this level is left in the hands of students administrators with the two Lecturers overseeing. The two groups articulate their ideas and make submission of their work general group WhatsApp in platform C.

The next stage, all the members of groups A and B are migration of to platform C. In this platform control is important; the two lectures will be the only administrators of the group. The group’s works are uploaded on the platform for assessment with relevant questions that needed answers posed to the group for contributions to be made.

As part of activities designed to examine the use of WhatsApp as an Innovative Research tools for Collaboration among Business Education Students in Higher Institutions, two sets of questionnaire were distributed to participants via WhatsApp platform in Ms Word Table format, to be filled electronically and returned via the same WhatsApp platform for analysis (Tables 1 and 2). With WhatsApp platform adopted for teaching, learning and research tools, questionnaire distribution/retrieval and data gathering effort are made easier.

Fig. 1: WhatsApp two levels Platform
**RESULTS AND DISCUSSION**

Research Question 1: What are the learning facilities in WhatsApp instant messaging that encourages learning and research collaboration?

<table>
<thead>
<tr>
<th>SN</th>
<th>Questionnaire Item</th>
<th>$X_1$</th>
<th>$SD_1$</th>
<th>Decision</th>
<th>$X_2$</th>
<th>$SD_2$</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>WhatsApp is considered a particular favourite Electronic Learning Tools for classroom support among the social networks?</td>
<td>3.07</td>
<td>0.006</td>
<td>Agree</td>
<td>3.03</td>
<td>0.044</td>
<td>Agree</td>
</tr>
<tr>
<td>2.</td>
<td>WhatsApp has good privacy features designed to allow direct one-on-one and group interaction?</td>
<td>3.06</td>
<td>0.022</td>
<td>Agree</td>
<td>3.12</td>
<td>0.028</td>
<td>Agree</td>
</tr>
<tr>
<td>3.</td>
<td>WhatsApp group chats feature enables the creation of learning communities and study groups, allowing collaborative learning</td>
<td>3.01</td>
<td>0.068</td>
<td>Agree</td>
<td>3.05</td>
<td>0.009</td>
<td>Agree</td>
</tr>
<tr>
<td>4.</td>
<td>Information and knowledge are easily constructed and share through the WhatsApp?</td>
<td>3.06</td>
<td>0.022</td>
<td>Agree</td>
<td>3.05</td>
<td>0.060</td>
<td>Agree</td>
</tr>
<tr>
<td>5.</td>
<td>WhatsApp allows the sharing of text content, videos, audio messages, pictures, music, emoji, symbols that can create strong learning impact on the learner.</td>
<td>3.02</td>
<td>0.060</td>
<td>Agree</td>
<td>3.01</td>
<td>0.100</td>
<td>Agree</td>
</tr>
<tr>
<td>6.</td>
<td>WbatsApp integrates extra support application function such as T9 text prediction, spellchecker, on-line dictionaries, pronunciation check, internet search within the platform?</td>
<td>2.91</td>
<td>0.172</td>
<td>Agree</td>
<td>3.00</td>
<td>0.077</td>
<td>Agree</td>
</tr>
<tr>
<td>7.</td>
<td>It is fast and economic means of reaching out to students.</td>
<td>3.00</td>
<td>0.085</td>
<td>Agree</td>
<td>2.93</td>
<td>0.140</td>
<td>Agree</td>
</tr>
<tr>
<td>8.</td>
<td>Facilitate real-time and effective communication between students to teachers and teachers to parents</td>
<td>3.10</td>
<td>0.148</td>
<td>Agree</td>
<td>3.24</td>
<td>0.141</td>
<td>Agree</td>
</tr>
<tr>
<td>9.</td>
<td>It can be used directly on Wi-Fi without a data plan and over the Internet via WhatsApp Web?</td>
<td>3.09</td>
<td>0.210</td>
<td>Agree</td>
<td>3.29</td>
<td>0.203</td>
<td>Agree</td>
</tr>
<tr>
<td>10.</td>
<td>WhatsApp can be accessed from different communication platforms</td>
<td>3.08</td>
<td>0.102</td>
<td>Agree</td>
<td>3.03</td>
<td>0.095</td>
<td>Agree</td>
</tr>
<tr>
<td>11.</td>
<td>WhatsApp can be used to reach students via the technology they are most familiar with: their phones</td>
<td>3.04</td>
<td>0.039</td>
<td>Agree</td>
<td>3.04</td>
<td>0.046</td>
<td>Agree</td>
</tr>
<tr>
<td>12.</td>
<td>The use of WhatsApp can be a serious source of distraction in teaching and learning?</td>
<td>3.06</td>
<td>0.015</td>
<td>Agree</td>
<td>3.20</td>
<td>0.008</td>
<td>Agree</td>
</tr>
</tbody>
</table>

**Average Mean and Standard Deviation**

Mean 2.5 and above = Agree while mean of 2.49 and below Disagree
The study revealed that WhatsApp has support tools that encourage learning and researching development among Institutions of Higher Learning. This aligned with the findings of Tulika and Dhananjay (2014) who noted that WhatsApp as a learning tool fosters students interaction, retention and learning outcome. There is a growing interest and willingness to use social media, Microsoft Office Tools, Google Apps. Mobile Apps., WhatsApp, Twitter, Academia.edu, Blogs, FB. Linkedin, Youtube, Slideshare and other social media platforms in teaching and learning (Lupton, 2014).

**Research Question 2:** How effective is the use of WhatsApp in achieving innovative and collaborative research among Institutions of Higher Learning in the Niger Delta?

**Table 2: Effective use of WhatsApp in achieving innovative and collaborative research among Institutions of Higher Learning in Rivers State**

<table>
<thead>
<tr>
<th>SN</th>
<th>Item Statement</th>
<th>RSU (N1=50)</th>
<th>SD1</th>
<th>Decision</th>
<th>IAUOE (N2=50)</th>
<th>SD2</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WhatsApp is a popular Learning Media Systems (LMS) that provides students with the platform to learn in groups and enhance their academic pursuit</td>
<td>2.88</td>
<td>0.137</td>
<td>Agree</td>
<td>2.95</td>
<td>0.049</td>
<td>Agree</td>
</tr>
<tr>
<td>2</td>
<td>WhatsApp supports virtual learning, e-learning, distant learning, participatory and contributory learning effort?</td>
<td>3.01</td>
<td>0.154</td>
<td>Agree</td>
<td>2.93</td>
<td>0.186</td>
<td>Agree</td>
</tr>
<tr>
<td>3</td>
<td>The use of videos and graphic facilities in platform help create panoramic view and effect on any subject matter for research.</td>
<td>3.03</td>
<td>0.137</td>
<td>Agree</td>
<td>2.95</td>
<td>0.049</td>
<td>Agree</td>
</tr>
<tr>
<td>4</td>
<td>WhatsApp aids in to highlight and geo location of the study area of the research</td>
<td>3.01</td>
<td>0.008</td>
<td>Agree</td>
<td>2.98</td>
<td>0.079</td>
<td>Agree</td>
</tr>
<tr>
<td>5</td>
<td>WhatsApp can be configured to enable the distribution, filling and retrieval of research data gathering instrument electronically</td>
<td>3.17</td>
<td>0.013</td>
<td>Agree</td>
<td>3.11</td>
<td>0.050</td>
<td>Agree</td>
</tr>
<tr>
<td>6</td>
<td>Literature search and research material can easily be gathered using an integrated web search option?</td>
<td>2.90</td>
<td>0.008</td>
<td>Agree</td>
<td>2.96</td>
<td>0.054</td>
<td>Agree</td>
</tr>
<tr>
<td>7</td>
<td>The platform can be used to share internet links, review, editing and attachment for all file formats (Ms Word, Excel, PowerPoint, PDF, Html etc) and other mechanisms for information sharing.</td>
<td>3.02</td>
<td>0.120</td>
<td>Agree</td>
<td>3.06</td>
<td>0.077</td>
<td>Agree</td>
</tr>
<tr>
<td>8</td>
<td>There are in-built control structure for class management especially when using the WhatsApp platform for teaching and learning.</td>
<td>3.05</td>
<td>0.021</td>
<td>Agree</td>
<td>3.04</td>
<td>0.030</td>
<td>Agree</td>
</tr>
<tr>
<td>9</td>
<td>The platform is designed in accordance with the needs of science and information, and can be used to achieve collaborative research among institutions of higher learning in Nigeria.</td>
<td>3.04</td>
<td>0.046</td>
<td>Agree</td>
<td>3.04</td>
<td>0.045</td>
<td>Agree</td>
</tr>
<tr>
<td>10</td>
<td>It is possible to promote innovative participatory research in human capital development among institutions of higher learning in Sub-regional African countries.</td>
<td>3.07</td>
<td>0.034</td>
<td>Agree</td>
<td>3.01</td>
<td>0.0029</td>
<td>Agree</td>
</tr>
</tbody>
</table>

**Average Mean and Standard Deviation**

|               | 3.02 | 0.05 | 3.00 | 0.062 |

*Mean 2.5 and above = Agree while mean of 2.49 and below = Disagree*

Findings of the study revealed majority of respondents agreed WhatsApp is an innovative tool to achieve collaborative research among Institutions of Higher Learning. According to Levent, C. (2017), the use of different instant messaging platforms in education has the potential to increase learning, active participation,
interaction among students, institutions and research collaboration. It also helps to create strong sense of belonging and interaction among groups (Smit, I. 2012; Cifuentes & Lents, 2010; Doering, A., Lewis, C. Veletsianos, G. & Nichols-Besel, K. 2008; Sweeny, S. M. 2010), and elimination of social barriers (Plana., M. G- C., Escofet, M. I. G., Figueras, I. T., Gimeno, A., Appel, C., & Hopkins, J. 2013). These benefits are in support of studies conducted by Bouhnik, D. & Deshen, M. (2014), Church, K. & de Oliveira, R. (2013) and Nguyen, D.T. & Fussell, S.R. (2016), which noted that WhatsApp learning platform has become a useful tool for developing learning communities and collaborative work among individual and groups.

WhatsApp as a Learning Media System are useful for individual and group learning separated in space and time (physical distance). The programme has designed capacity to share information, exchange of internet links, review, edit and file attachments, in various formats (Ms Word, Excel, PowerPoint, PDF, Html etc). Analysis of questionnaire items in Table 2 showed that 3.02 and 3.00 of RSU and IAUOE respondents respectively agree that the platform could be used innovatively to conduct collaborative research among individuals and group and institutions higher learning.

**Table 3: Analysis of Variance on the learning facilities in WhatsApp Instant Messaging**

**Analysis of Variance**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Count</th>
<th>Sum</th>
<th>Average</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>12</td>
<td>36.501</td>
<td>3.042</td>
<td>0.0027891</td>
</tr>
<tr>
<td>Column 2</td>
<td>12</td>
<td>36.987</td>
<td>3.082</td>
<td>0.011657</td>
</tr>
</tbody>
</table>

**ANOVA**

<table>
<thead>
<tr>
<th>Source of Variables</th>
<th>SS</th>
<th>Df</th>
<th>Ms</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.009842</td>
<td>1</td>
<td>0.01</td>
<td>1.3626376</td>
<td>0.25558</td>
<td>4.3009</td>
</tr>
<tr>
<td>Within Groups</td>
<td>0.158900</td>
<td>22</td>
<td>0.007</td>
<td>0.00128</td>
<td>0.61857</td>
<td>4.4139</td>
</tr>
<tr>
<td>Total</td>
<td>0.16875</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 3 shows ANOVA results for Hypothesis 1: There is no significant difference in the mean response of RSU and IAUOE students on the facilities in WhatsApp as a support tool for learning and research development revealed that Fai, (1,362) is less than F-c (4.300); tested at 0.05% degree of freedom. Hence the null hypotheses which states that there is no significant difference in the mean response of RSU and IAUOE on the facilities in WhatsApp as a support tool for learning and research development is accepted.

**Table 4: Analysis of Variance on the effect of utilization of WhatsApp as a tool for innovative and collaborative research**

**Analysis of Variance**

<table>
<thead>
<tr>
<th>Groups</th>
<th>Count</th>
<th>Sum</th>
<th>Average</th>
<th>Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Column 1</td>
<td>10</td>
<td>30.203</td>
<td>3.02</td>
<td>0.0067471</td>
</tr>
<tr>
<td>Column 2</td>
<td>10</td>
<td>30.004</td>
<td>3.004</td>
<td>0.0032271</td>
</tr>
</tbody>
</table>

**ANOVA**

<table>
<thead>
<tr>
<th>Source of Variables</th>
<th>SS</th>
<th>Df</th>
<th>Ms</th>
<th>F</th>
<th>P-value</th>
<th>F crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>0.00128</td>
<td>1</td>
<td>0.001</td>
<td>0.2566632</td>
<td>0.61857</td>
<td>4.4139</td>
</tr>
<tr>
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Table 4 shows ANOVA results for Hypothesis 2: There is no significant difference in the mean response of RSU and IAUOE on the use of WhatsApp to achieve innovative and collaborative research among
Institutions of Higher Learning in sub-regional Africa revealed that Fai, (0.256) is less than Frit (4.300); tested at 0.05% degree of freedom. Hence the null hypotheses which states that there is no significant difference in the mean response of RSU and IAUOE on the facilities in WhatsApp as a support tool for learning and research development is accepted.

**IMPLICATIONS**

Twenty first century has witnessed a revolution in almost everything known to man in the course of history due to the dominant drive of technology and innovation in the global economy. This has placed everything in a state of constant of change. There is the need now more than ever to develop new pedagogies and argosies that caters for need of integrating digital mobile technologies in our educational system. The use of social media like WhatsApp as a tool for learning and collaborative research is one way using technology to enhance educational practices. The study calls on 1-ligher Institutions in Rivers State and indeed Niger Delta to adopt WhatsApp as their social media network because of the huge educational potential the platform offers. Adopting a uniform social media platform for Higher Institution in Rivers State will be strategic in the following ways:

a) Easy to provide training and resources for users of one particular platform
b) Adequate training will bring about effective and innovative use of the platform
c) Encourages greater use of social media among lecturers in their teaching.
d) It will be easier to address concerns and short falls in the programme through for collective action.

The study concludes that WhatsApp application is an effective collaborative tool which can be used for teaching and learning for students and educators in the 21st century educational system.

**REFERENCES**


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