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Editorial

Journal of Education and Vocational Research (JEVR) provides an avenue for quality research in the ever-changing fields of Education and Vocational Research and related disciplines. Work submitted for publication consideration should not be limited by any narrow conceptualization of education and vocational research but comprises interdisciplinary and multi-facet approaches to education and vocational theories and practices as well as general transformations in the fields. The scope of the JEVR includes: subjects of educational technology, educational administration, educational planning, measurement and evaluation in education, developmental psychology, special education, distance learning, vocational education, technology-based learning, environmental education, business education, educational psychology, physical education, innovation, vocational training, knowledge management. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal and that all listed authors approve its submission to JEVR. It is JEVR policy to welcome submissions for consideration, which are original, and not under consideration for publication by another journal at the same time. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. The current issue of JEVR comprises of papers of scholars from Nigeria, South Africa, Nepal and Ghana. Effect of Mathematics Practical Work Instructional Approach on Mathematics Performance and Retention of Secondary School Students, Enterprise Resource Planning Tools Management in Private Higher Education, Economics of Higher Education: Developing a Sustainability Plan, Lecturer Perceptions of General Education in Enhancing Self-Efficacy of Accounting Students and Influence of Brand Credibility, Satisfaction and Quality on Brand Equity in Non-Conventional Health Industry are some of the major practices and concepts examined in these studies. Journal received research submission related to all aspects of major themes and tracks. All the submitted papers were first assessed by the editorial team for relevance and originality of the work and blindly peer-reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity for the purpose. The current issue will, therefore, be a unique offer, where scholars will be able to appreciate the latest results in their field of expertise and to acquire additional knowledge in other relevant fields.

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PAPERS

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Effect of Mathematics Practical Work Instructional Approach on Mathematics Performance and Retention of Secondary School Students

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Abstract: This study determined if the practical work instructional approach (PWIA) affects senior secondary school students' academic performance and retention of mathematics. The population of the study was 2709 SSS III students in the public secondary schools in the Nsukka zone of Enugu State, Nigeria. The study was guided by three research questions and three hypotheses. The hypotheses were tested at $p \leq .05$ level of significance. A multi-stage sampling technique was adopted, through which 133 subjects were randomly sampled and used for the study. Mathematics Achievement Test (MAT) instrument containing essay items and developed by the researcher was used for gathering data. The MAT was subjected to experts in Mathematics Education and Measurement and Evaluation areas for face validation and its reliability estimate was determined using the Spearman-Brown proficiency formula which yielded 0.85. The MAT was used for data collection. Data collected with the MAT were analyzed using mean and standard deviations (S.D) to answer the research questions while ANCOVA statistic was used to analyze the hypotheses ($p \leq .05$). Results of the study revealed that the practical work instructional approach is effective in teaching and learning Mathematics. Gender was found not to be a significant factor of variance in mathematics performance when PWIA is used in mathematics instruction, among other issues found in the work. It was recommended to teachers to infuse PWIA in mathematics instruction for enhanced science/technology and entrepreneurship development and sustainability in Nigeria, among other issues.

Keywords: *Practical work, instructional approach, mathematics, performance and retention.*

1. Introduction

Education is an instrument for the development of any nation in the world. Ideally, this is the belief upon which, philosophy of Nigeria education is based. The federal government of Nigeria, therefore set education to maximize the creative potentials and skills of the individual for self-fulfillment and general development of the society (FRN, 2013). This belief can be actualized through the implementation of the objectives of the Post-Basic Education and Carrier Development (PBECD) Education Program which include providing entrepreneurial, technical and vocational job-specific skills for self-reliance, and agricultural, industrial, commercial and economic development; and to provide trained manpower in the applied science, technology and commerce at sub-professional grades (FRN, 2013). More crucially, the FRN (2013) demands that the pursuance of goals of Technical and Vocational Education and Training (TVET), the curriculum for technical colleges shall include, workshop practice, entrepreneurial training, among others. Basically, implementation of PBECD objectives demands adequate training of manpower for the acquisition of much needed entrepreneurial, technical and vocational skills most essential for "providing training that enables students to acquire continuous education that makes them self-reliant, wealth creator and providers of employment" (FRN, 2013; P. 32). Furthermore, to actualize the objectives, each student offering a subject.

In Senior Secondary School level (i.e. Post-Basic Education Curriculum) should select one Trade/Entrepreneurship subject listed in TVET syllabus covering science and mathematics, Technology, Humanities and Business studies. Specifically, entrepreneurship education aimed at covering Global System Mobile phone (GSM) Maintenance and Repairs, Animal Husbandry, Fishery, Marketing, and salesmanship. These entrepreneurial education subjects are aimed at providing students with skills and competencies to become self-reliant and wealth creators. Mathematics manipulation and outstanding mathematical ability is a precise entrepreneurship education need because without mathematics there is no physics and without physics, there is no room for acquisition of GSM maintenance and repairs skills and competencies. Obviously, an entrepreneur requires knowledge and skills of basic mathematics to enable him/her to authenticate the results which will certainly make an entrepreneur succeed; and facts could be presented by using frequency distribution, bar charts, pie charts, histograms, which are all in the domain of mathematics (Odomoso and Olusesan, 2016). An entrepreneur needs to be equipped with mathematical skills, knowledge and

competencies to function effectively in communicating business ideas, forecasting, applying trend analysis, applying statistical techniques in the analysis of data, etc. More so, mathematical ability is crucial to entrepreneurs opting for animal husbandry and fishery farming.

Because of the competencies required in the knowledge and application of mathematics in calculations of quantities, volumes, weighting/scaling, etc involved giving drugs, feeding of animals, fishes, birds, production of feeds, etc. Mathematics and statistics are also deeply involved in marketing and salesmanship which requires accurate decision-taking to succeed. Mathematics Education could positively influence the computational skill, problem-solving, analytical skill, abstract thinking skill and creative skill that encourage individual to make decisions that would benefit self and society (Odumosu; Olusesan and Adeniran, 2016). Probably because of the need for mathematics and statistics to entrepreneurs that mathematics and statistics programs such as Business Mathematics, Mathematics for Economists, Actuarial mathematics, etc have been designed to ensure competency in these areas of entrepreneurship. Obviously, to achieve success in acquiring science, technology and entrepreneurial skills demand being competent in manipulating mathematics very handsomely. Possession of Mathematics skills is a tool for achieving success in the entrepreneurial development of any nation. For instance, an entrepreneur may need to interpret results obtained from data analysis of sales. Cash flows, etc to be able to arrive at useful decisions which call for the knowledge of mathematics and so basic mathematics knowledge and skills are required to authenticate the results which will certainly make an entrepreneur succeed (Odomoso and Olusesan, 2016). Entrepreneurship education, invariably, is paramount in today's world.

Where economic recession is ravaging almost all countries of the world, and Nigeria, in particular, which is over-dependent on crude oil that its price is constantly dropping. Some important skills such as communication, decision making, innovation, analytical and creativity, which are essential ingredients for success in entrepreneurship activities can be acquired through competent manipulation of mathematics (Odomoso and Olusesan, 2016). Mathematics is a cognitive tool and indispensably an agent of development, wealth and vocational skills acquisition. Ideally, without mathematics there is no vocational skill acquisition, without vocational skill acquisition, there is no entrepreneurial skills acquisition and without entrepreneurial skill acquisition, there will be no economic self-reliance nation. It may be in due consideration of all these vital contributions and central position of mathematics to the science, technology, vocational skills and entrepreneurial development that the Nigerian government made mathematics a compulsory subject at primary and secondary school level of education in Nigeria (FRN, 2013). 21st-century secondary students cannot develop or acquire vocational skills or create wealth, because students' poor performance on the subject among Nigeria primary and secondary school students is persistently reported. The Problem of poor performance in mathematics among Nigeria students have continued to be topical and attracts the attention of mathematics educators and researchers. Low attainment in mathematics among Nigerian secondary school students is a clear manifestation of this problem.

Despite numerous methods, strategies and approaches infused into teaching the subject, reports are still raging on concerning persistent upward trend in students' poor performance on the subject. Students' persistent poor performance in mathematics is evidenced in the literature (WAEC Chief Examiners' reports, 2010-2015 and NECO Chief Examiners' reports, 2011-2017; Dogo, Keyeleve and Kurumeh, 2018). Specifically, despite the importance attached to mathematics by all stakeholders in education, senior school students still perform poorly in the subject. More so, the performance of secondary school students in mathematics in the West African Senior School Certificate Examination (WASSCE) has remained consistently poor; and this phenomenon has remained a source of concern to the researcher, parents, education administrators and the Nation at large. Probably because of all these reports that Blogsport (2018) and Samanta and King (2018), all demanded that activity-based method should be used in teaching mathematics, because it makes the teaching of mathematics practical and experiential (FRN, 2013). The practical work teaching strategy is most appropriate in mathematical topics, especially geometry and measuration (Schwartz, 2014; and Unodiaku, 2018). Based on evidence and consistently poor performance of students on the subject, it appears that all methods, strategies and approaches used by the classroom teachers failed to reverse the trend. It becomes pertinent therefore to infuse practical work instructional approach in teaching and learning of mathematics as demanded by the FRN (2013).

2. Literature Review

Generally, there exists a robust literature on concepts of practical work and retention as well as empirical reports on gender variability on the mathematics performance of students. Practical work is conceptualized to refer to any mathematics activity that enables the students to effectively use concrete objects, models, charts, pictures, etc, thereby making mathematics learning easy for the students to understand and internalize the basic mathematical concepts, ideas, principles and algorithms; that develops the self-confidence and build interest in learning mathematics, and encourages social interaction and cooperation among the students as students work in groups. Mallar (2009) defined Practical work as any teaching or learning activity involving students in observing or manipulating objects or materials. Ideally, practical work may include a field trip, classroom activities and laboratory practicals. In this research work, classroom work and practical activities were the focus and are used interchangeably to mean the same thing. According to National strategies (2008), practical work is any activity that enables pupils to have directed often a hands-on experience of phenomena they are studying. This makes mathematics teaching real and understandable to the students as opposed to the abstract or theoretical presentation of facts, principles and concepts of mathematics subject matter. The researcher believes that practical work activities can strategically make clear certain fundamental concepts, ideas, principles, etc, by working with concrete materials thereby stimulating students' interests, removing mathematics phobia in them and promoting the psychomotor domain of the learners.

There is a need for a practical work teaching approach to be infused into mathematics teaching and learning insofar it is an embodiment of hands-on activities that can promote achievement and retention of mathematics learning experiences. According to Bichi (2002), retention refers to the ability to retain and consequently remember things learned, later when needed. Ausubel (1968), conceptualized retention to mean the process of maintaining the availability of a replica of the acquired new meaning or some of them. Cognitive retention in mathematics is conceptualized to refer to continued use, existence, or possession of mathematics information (Unodiaku, 2018). The researcher views retention as the ability to retain mathematics, experiences learned and recall the information later time needed. The above definitions of retention suggest that retention is a factor of academic achievement, especially in mathematics. When information is stored correctly, retrieval becomes accessible. Retention needs to be considered when measuring students' learning. The reason for students' poor performance in mathematics could be possibly linked to students' failure to retain and recall learned concepts and theories when needed at a later time. Ayuba and Timayi (2018), investigated the impact of computer-based instruction of students' performance and retention in Algebra world problems, in the Kaduna State of Nigeria.

The study investigated the retention ability of JSS students when taught algebraic world problems using CBI. The study was guided by two research questions and two null hypotheses. The population of the study comprises of junior secondary school two (JSS 2) students of the public secondary schools in Kafanchan Educational zone of Kaduna state. A simple random sampling technique was used to sample two co-educational schools. A simple random sampling technique was further used to sample two (2) intact classes from the JSS 2 arm from which 98 students were used as an effective sample for the study (50 males and 48 females). Instrument (Algebraic Word Problems Performance [AWPP]) was used for data collection. The data were analyzed using test-retest at the $P \leq .05$ level of significance. The result of the study showed a significant difference in performance in favor of the CBI group. Also, the CBI group was observed to have better retention ability compared with their counterpart in the conventional group. Okwuoza, Gimbu and Durojaiye (2018), investigated the effect of Computer Assisted Instructional Package on senior secondary school students' retention of latitudes and longitudes in Abuja, Nigeria. The study investigated the effect of the CAI package on the mean retention score of senior secondary school students taught latitudes and longitudes compared to those taught the same concept using a conventional method.

The study was guided by two research questions and two null hypotheses. The sample of the study was 178 SSS 2 students (90 males and 88 females). The population of the study was not mentioned. The instrument used for data collection was the Mathematics Retention Test (MRT). MRT has a reliability estimate of 0.86 obtained using Pearson Product Moment correlation statistic. The content and face validity of the MRT was established by experts. The data collected were analyzed using mean and standard deviations to answer the

research questions while t-test statistic was used in testing the hypotheses ($P \leq .05$). Findings of the study revealed that students taught latitudes and longitudes using the CAI package, retained more than those taught latitudes and longitudes using the conventional method of teaching. The effectiveness of CBI and CAI in the above studies suggests the need to conduct this study to determine the effectiveness of the practical work instructional approach on Mathematic performance and retention of secondary school students. Literature concerning gender and academic performance in Mathematics exists with varied views and findings. For instance, Unodiaku (2018) conducted a study to determine the effect of teaching geometrical and mensuration proofs with an origami-based instructional model approach among senior secondary school students in the Enugu state.

The study investigated the difference in the mean achievement of males and females students taught mathematics using the origami-based instructional model approach. The study was guided by two research questions and two null hypotheses. The population of the study consisted of 1025 SSS III students in the public secondary schools in Awgu Urban of Awgu Education zone of Enugu State. A sample of 115 SSS III students from 3 schools out of 23 SSSs that composed Awgu urban of Awgu Education zone was randomly sampled (54 males and 61 females) and used for the study. A validated instrument (MAT) with a reliability index of 0.77 established using the alpha technique was used for data collection. The data obtained with MAT was analyzed using mean, standard deviation (S.D) and analysis of covariance (ANCOVA) statistics. The hypotheses were tested at the $P \leq .05$ level of significance. The result of the study showed that gender is not a significant factor of variance in mathematics performance when the teaching of mathematics is origami-based. Onyeka and Charles-Ogan (2018), conducted a study to determine the effect of the contextual application of Pythagoras' theorem in teaching geometry in senior secondary school one in River state, Nigeria. The study investigated the difference in the mean scores of male and female students when Pythagoras' theorem is applied contextually in an experimental group.

The study was guided by four research questions and three null hypotheses. Intact classes of 2010 SS I students formed the sample of the study using a simple random sampling technique. The research instrument used for the study was the Mathematics Achievement Test (MAT). The 0.78 reliability coefficient of the MAT was obtained using a test-retest method with the Pearson Product Moment Correlation Statistic. The data obtained with the MAT was analyzed using the mean, S.D, percentage and ANCOVA statistics. The result of the study revealed that male students in the experimental group performed better than their female counterparts. These studies on gender superiority in mathematics tests appear inconclusive. There is a need therefore to conduct this study on the effect of mathematics practical work instructional approach on mathematics performance and retention to see if it can bridge the gap in gender disparity in mathematics performance. These inconsistent reports on males' and females' superiority in mathematics tests appear inconclusive. The study is aimed at clarifying this notion. Considering the observed variability in cognitive ability levels of the students and the need for using an activity-based instructional approach in teaching students mathematics as demanded in the National Policy on Education (NPE) (FGN, 2013), it is pertinent therefore to seek for intervention of practical work teaching approach to determine its effectiveness in tackling the problem of poor performance and retention on mathematics among senior secondary school students.

Statement of the Problem: Despite that mathematics is the principal determinant of scientific, technological and entrepreneurial development and sustainability in any nation of the world, and all methods/strategies/approaches infused into teaching and learning of the subject, there is persistent failure to reverse the trend of the poor performance of students on mathematics, especially in the areas of geometry (National Centre for Education statistic, 2016; and Schwartz, 2014) and measuration (Edutopia, 2016; and Unodiaku, 2018). This situation is worsened by many obstacles posed by teachers' inability to use instructional materials during mathematics lesson as demanded by WAEC Chief Examiner (2012); Samanta & King (2018); and Blogsport (2018), who all demanded that activity-based method (practical work approach) should be used in teaching mathematics, because it makes the teaching of mathematics practical and experiential (FRN, 2013). The question is, how can a practical work instructional approach be used in the teaching of mathematics among senior secondary school students? This question is the thrust of the problem in the study.

3. Methodology

Quasi-experimental research of pre-test post-test non-randomized group design was used in the conduct of this study. Specifically, a non-randomized pre-test (PR – to determine the ability level of the students for positioning before treatment), post-test (PT – to determine students' performance after treatment), post-post-test (PPT – to determine the students' retention in using practical work instructional approach for solving mathematics problems) was used. The experimental group (E_1) received treatment while the control group (C_1) did not receive treatment. Further treatment was given to the experimental group (E_2) to determine students who retained information provided by the use of PWIA in solving mathematics problems. The design is presented thus:

$$\frac{PR}{PR} - - - \left(\frac{E_1}{C_1}\right) - - - \frac{PT}{PT}\left(\frac{E_2}{C_2}\right) - - - \frac{PPT}{PPT}\left(\frac{E_3}{C_3}\right)$$

Where PR = pre-test (both the experimental and control groups were pretested)
PT = post-test (PR reshuffled before administering to the subjects in experimental and control groups)
PPT = PT = retention test after two weeks
E_1 = treatment (experimental group)
C_1 = no treatment (control group)

- - - shows that the two groups (experimental and control) are not equated by random assignment.

The study was conducted in the Nsukka local government area of Engu Education Zone, Enugu State. This zone was studied because students from the zone taught by qualified mathematics teachers due to the proximity and accessibility of the schools to the University of Nigeria, Nsukka. Statistical records were obtained from the statistical unit of the Post Primary Schools Management Board (PPSMB), Nsukka Education Zonal Office (2019). 133 randomly sampled students were used for the study. The sample was composed through a multi-stage sampling technique. The first stage involved sampling 6 schools from 30 public schools. This was followed by randomly sampling one intact class from each of the 6 schools. The 6 intact classes yielded a total of 133 subjects composed of 59 males and 74 female students. Three of the 6 sampled schools were randomly assigned to experimental group A, while the remaining three schools were assigned to control group B. This yielded a total of 63 students in group A and 70 students in group B.

Purpose of the Study: The main purpose of the study was to determine empirically the effect of mathematics practical work instructional approach (PWIA) on senior secondary school students' academic performance and retention on mathematics. Specifically, the study sought to determine:

- The difference in means of achievement test scores of students taught using PWIA and those taught with a conventional approach.
- The difference in means of achievement test scores of male and female students taught mathematics using PWIA.
- The difference in means of retention test scores of students taught mathematics with PWIA and those taught with a conventional approach.

Research Questions: The study was guided by three research questions. They are posed as follows:

- What is the mean difference between the mean achievement test scores of students taught mathematics with PWIA and those taught with the conventional approach?
- What is the mean difference between the mean achievement test scores of males and females students taught mathematics with PWIA?
- What is the mean difference between the mean retention test scores of students taught mathematics with PWIA and those taught using the conventional approach?

Hypotheses: Three formulated null hypotheses guided the study. The hypotheses were tested using $p \leq .05$ level of significance.

Ho_1: There is no significant mean difference between the mean achievement test scores of students taught mathematics with PWIA and those taught using the conventional approach.

Ho_2: There is no significant mean difference between the mean achievement test scores of males and females students taught mathematics with PWIA.

Ho_3: There is no significant mean difference between the mean retention test scores of students taught mathematics with PWIA and those taught with the conventional method. The researcher tested for linearity between the pre-scores and the post-scores for the studied group. Having established the existence of linearity between the groups, the researcher went ahead and carried out an analysis of covariance (ANCOVA) test. This ANCOVA test was considered necessary to ensure that cognitive ability present among the pupils was ruled out as a factor during the testing of the effect of PWIA on the participants. Mathematical Achievement Test (MAT) was the instrument used for data collection was a mathematics achievement test (MAT). The MAT was constructed by the researcher using test development principles.

The MAT contains 16 essay questions covering geometry and mensuration. Adequacy of the MAT content and the cognitive objective levels coverage of senior secondary school mathematics curriculum were guaranteed by the table of specification. After selecting the t-test items, the experts validated the instrument with regards to content and construct. The instrument was pilot-tested with a population of similar characteristics. Data obtained was analyzed using a split-halt method which yielded a reliability estimate index at .89, an indication that the MAT is reliable for use in data collection. Research questions were answered using mean and standard deviation tools; Analysis of covariance (ANCOVA) test-statistic was adopted in testing the null hypotheses at $p \leq .05$ significant level. Pre-test scores were used as covariate measures. Retention was considered to have manifested when the difference in the mean performance of students exposed to PT differs from those exposed to PPT is in favor of those in PPT (gain scores).

Procedures: Students were asked to verify that: (i) angle in a minor segment of a circle is obtuse angle; (ii) angle in a major segment is an acute angle; (iii) the sum of a triangle equals 180 degrees. The students in the experimental group were trained on how to practically use cardboard papers (of different colors), folding, cutting and pasting activities to do the verification. Other materials used in the process include protractor, pair of the compass, ruler, gum, carbon paper and pencil. Mensuration and geometry are among the topics in senior secondary schools National mathematics curriculum. They were used to tailor practical work activities. Teachers who were trained by the researcher in the 6 sampled schools were co-opted as research assistants. Thereafter, the teachers administered MAT to the research subjects as a pre-test and the result was used as a model covariate measure. The teacher quality variable was controlled by the researcher by giving equal training to teachers used in both groups. The regular class teachers taught experimental group A with practical work instructional approach and lesson plan. Control B was taught also by their regular teachers in each of the sampled schools with lesson plans but, without any practical work activity. The experimental and control groups were taught the mensuration and geometry topics from senior secondary school National mathematics curriculum (FRN, 2013).

4. Results of the Study

The results were presented as follows:

Research Question 1: What is the mean difference between the mean achievement test scores of students taught mathematics using PWIA and those taught with the conventional approach?

Table 1: Descriptive Statistics of Experimental (E_1) Groups Taught with PWIA) and Control (C_1) Group (those Taught with Conventional Method) in Pre-Test, Post-Test and Post-Post Tests

	Studied C & E Group	N	Mean	SD	Std. Error Mean
PWIA MAT Pretest	Experimental (E_1)	63	41.0251	17.6477	1.32864
	Control (C_1)	70	42.1175	16.2103	1.10531
PWIA MAT Posttest	Experimental (E_2)	63	62.5463	15.3106	1.2409
	Control (C_2)	70	44.1318	15.6938	1.01034
PWIA MAT post-post test	Experimental (E_3)	63	64.9987	14.2081	1.04872
	Control (C_3)	70	62,7591	15.1638	0.97544

From table 1 above, the pre-test mean (E_1) group was 41.03 while that of the control (C_1) group was 42.12, suggesting that there is no significant difference observed between the two groups at this level. Change of smarter students in the control group showed a mean difference of 1.09. The manipulation enables the students to gain achievement increases in the post-test (E_1 = 62.55, C_2 = 44.13) indicating that some learning was going on with the control group, but a greater mean score increase occurred with the experimental group (mean difference between (E_1 and E_2 = 21.52). The post-post-test was to observe how much the students retained information with regards to the use of PWIA in mathematics learning which reported a mean score of E_2 = 65.0; and C_2 = 62.76 with a mean difference of 2.24 between the control and experimental groups.

Ho_1: There is no significant mean difference between the mean achievement test scores of students taught mathematics with PWIA and those taught with the conventional approach.

Table 2:

Source of Variation	Type III Sum of Squares	DF	Mean²	$F_{cal.}$	Sig.	Partial Eta²
Corrected model	27115.801[a]	2	13557.901	303.356	.000	.715
Intercept	3031.884	1	3031.884	67.838	.000	.286
PWIA MAT Pretest	26001.053	1	26001.053	581.770	.000	.702
Studied groups	2103.721	1	2103.721	47.070	.000	.211
Error	5810.112130	44.693				
Total	259148.000	133				
Corrected Total	3704.202	132				

a. R Squared = .715 (Adjusted R squared = .712)

Table 2 tested the hypothesis which revealed that there was no significant mean difference between the mean of control and experimental groups as a way to show that the use of PWIA impacted upon the students' achievement on the mathematics MAT test. Analysis of covariance (ANCOVA) revealed $F(1, 130) = 47.070$, $p \leq .05$, $n^2 = .21$. This shows that there was a significant mean difference between the mean achievement test scores of the experimental group and the control group in favor of the experimental group. It could be deducted from the table that the significant mean difference in the achievement of students in E_2 and C_2 was accounted for by the PWIA used, since the mean score of the pre-test was not significantly different between the groups, but the post-test showed a significant difference.

Research Question 2: What is the mean difference between the mean achievement test scores of males and females students taught mathematics with PWIA?

Table 3: Gender Group Statistics of Participants' PWIA Performance

	Gender	N	$\bar{x}$	S.D	S.D. Error of Mean
PWIA MAT Pre-test	Male	59	55.0144	8.84405	0.23124
	Female	74	51.5833	16.7333	1.00211
PWIA MAT Posttest	Male	59	59.4314	10.00531	0.38648
	Female	74	56.1550	15.35128	0.84264
PWIA MAT post-post test	Male	59	64.0074	11.000201	0.51103
	Female	74	59.9122	15.61052	0.85705

Table 3 above showed that mathematics achievement of males students taught using PWIA differs significantly different from the achievement of females taught mathematics using a conventional approach. More so, the study showed that male students consistently outperformed the female students in the practical work teaching approach (PWIA) experiment as shown in table 3 above. Table 3 clearly indicated that the mean achievement score and standard deviation of male participants exposed to treatment recorded 59.43 and 10.01 respectively, while those of the female counterparts were 46.16 and 15.35 as mean and S.D. scores respectively. The mean difference between males and females students was 3.27 in favor of the male students, registering lower than the mean difference in the pre-test 4.43. This result indicates that the post-test mean difference among gender categories might not have shown as a result of the PWIA. The researcher noticed that this difference was established from the onset in the pre-test mean scores as can be deduced from Table 3 above (55.0144 – 51.5833 = 3.41 in favor of males). When ANCOVA statistic was customized for these mean differences, it was discovered that the differences were as a result of differences in mathematics cognitive ability and not treatment with PWIA. Therefore, the researcher did not make further analytical interpretations with regards to gender differences.

Research Question 3: What is the mean difference between the mean retention test scores of students taught mathematics with PWIA and those taught with the conventional approach? From table 1 above, the post-test was to observe how much the students retained information with regards to the use of PWIA in mathematics which reported a mean score of E_3 = 65.0; and C_3 = 62.76 with a mean difference of 2.24 obtained between the control and experimental groups.

Table 4: Tests of Between-Subjects Effects of PWIA on the Students' Dependent Variable PWIA Mat Posttest

Source	Type III Sum of Squares	DF	Mean^2	$F_{cal.}$	Sig.	Partial Eta^2
Corrected model	26113.153[a]	2	13056.577	469.526	.000	.815
Intercept	1003.922	1	1003.922	36.102	.000	.173
PWIA MAT Posttest	25237.321	1	25237.321	907.556	.000	.810
Studied groups	602.413	1	602.413	21.663	.000	.143
Error	3615.718	130	27.808			
Total	310141.000	133				
Corrected Total	21085.218					

a. R square = 815 (Adjusted R square = .183)

Table 4 shows the ANCOVA results of students' retention gain scores on the mathematics test. The table shows that the mean retention test scores of students exposed to experimental treatment differ significantly from those in the control group. The significant mean difference in retention of experimental and control subjects was indicated $F(1, 130) = 21.66$, $P \leq .05$, $\eta^2 = .14$ which shows that there is a significant mean difference between the mean retention scores of the studied control and experimental groups.

Discussion

The researcher did not presume that he controlled all the extraneous variables strictly. Students in the control experimental group could have interacted after school hours and shared experiences with the research process as natural to their age bracket. The mean score of the control group in C_1 at the pre-test was slightly higher than that of the experimental group in E_1. At the post-test, as shown in Table 1, the E_2 group gained a high mean increase. The researcher noted that at the post-post-test, the C_3 and E_3 groups slightly differed in their mean scores, recording a lower mean increase than between C_2 and E_2. This could be attributed to the after-school interaction of groups A and B. Research question one sought to determine the mean achievement test scores of students taught with the conventional approach. Students exposed to the experimental group gained higher mean scores more than their counterparts in the control group with a mean difference of 18.41 in the post-test. This finding suggests that the practical work instructional approach is effective in teaching and learning mathematics because it improves students' performance and retention in mathematics. This finding is in agreement with what BlogSpot (2018) and Samanta & King (2018) who all

demanded that activity-based method should be used in teaching mathematics because it makes the teaching of mathematics practical and experiential (FRN, 2013).

In the research question, two one sought to determine the impact of PWIA on males and females students' achievement in mathematics. It was found that males students recorded mean gain achievement scores more than their female counterparts across the three tests (pre, post and post-post). ANCOVA test statistic was computed to partial out the possible effect of existing cognitive ability differences; because of that need, the researcher concluded that the gender differences could not have resulted from manipulation of the PWIA use in instruction. This result also indicated that when students were exposed to PWIA, they shared equal achievement gain consistently during the process, from pre-test to post-post-test. This finding is in agreement with an earlier report of Onyeka and Charles-Ogan (2018) who reported that male students in the experimental group performed better than their female counterparts. However, the finding disagrees with the findings of Unodiaku (2018), who reported that male and female students shared equal strength in mathematics tests. Yet more, this finding is also supported by Jane and Janet (2016); Olasehinde and Olaltoye (2014); and Unodiaku (2013) who all reported that male and female students exposed to mathematics tests performed equally.

However, Unodiaku (2018) found that males performed better than females when exposed to an origami-based instructional model approach which is activity-based**.** Therefore, when the practical work teaching approach is built into mathematics instruction, all learners will benefit and aptitude for mathematics interest will develop. More so, the retention capabilities of the learners will be increased handsomely as the mean difference in retention scores between males and females students was 4.095 in favor of the male students. The researcher ignored this difference as possible error variance from the chance of cognitive ability since the difference was established from the onset in the pre-test mean scores to post-post-scores. This finding is also aligned with the earlier assertion by Ndubuisi and Ekwueme (2018); and Olosunde and Olaleye (2010) who all reported that boys performed better than girls in mathematics achievement tests. More so, it is aligned with the urgent call of FRN (2013) to infuse an activity-based approach in teaching mathematics, because it makes mathematics teaching and learning practical and experiential, and hence is most likely to induce improved learning and retention, and minimize or eliminate the gender achievement gap in mathematics and science, and more critically can give room for poverty reduction and self-reliant nation.

5. Conclusion and Recommendations

The present study has shown that the practical work instructional approach is capable of enhancing the mathematics performance of secondary school students. This is so insofar it has impacted on students' academic performance in mathematics learning in the research. The mean difference of 2.45 between the PT and PPT scores for group E clearly indicates that some retention also occurred during the PWIA experiment. When the model of ANCOVA computation showed a significant difference in the mean performance of males and females at the pre-test trial level, it became obvious that boys and girls did not possess equal mathematics ability which caused the researcher to stop further inquiry with regards to gender differences. Rather, the researcher focused on how each gender category improved from one trial to another during the experiment. Therefore, the practical work instructional approach is capable of eliminating unequal performance in mathematics tests between males and females learners if greater retention is given to the females learners. Obviously, the practical work instructional approach is effective in retention capability in mathematics learning. Hence, the enhanced performance of students in mathematics in schools can make Nigeria achieve the noble objectives of the desired.

Recommendations/Suggestions: Based on the findings of the study, the researcher makes the following recommendations/suggestions:

- The study indicated that the practical work instructional approach is effective in training students in the acquisition of mathematics skills necessary for entrepreneurial competency; providing equal footing for males and females students. PWIA is therefore recommended to teachers to adopt and adapt it for use in the teaching of mathematics for the enhanced achievement of the students on the subject.

- It is suggested that the Government (local, state and federal) should, therefore, organize workshop training for mathematics teachers as well as the inclusion of practical work instructional approach in the teacher-trainee mathematics program.
- It is suggested that government should ensure that authors of lower basic mathematics textbooks include practical works, methods/strategies and materials to be used to teach mathematics particularly PWIA, as instructional methods while writing mathematics textbooks.
- It is also recommended to examination bodies endeavor to include questions on practical works in their assessment of students.
- It is suggested that Education Agencies, Mathematics Association of Nigeria (MAN), Science Teachers' Association of Nigeria (STAN), among others could provide sponsorship opportunities for mathematics teachers to be trained in PWIS use as a way to facilitate the learning of the subject for entrepreneurship development and sustainability in Nigeria.

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Enterprise Resource Planning Tools Management in Private Higher Education in South Africa

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Abstract: In this research on Enterprise Resource Planning Tools Management in Private Higher Education in South Africa, the study objective was to determine critical issues influencing Enterprise Resource Planning (ERP) tools selection in academic management in Private Higher Education Institutions (PHEIs) in South Africa. A mixed-methods (qualitative and quantitative) research methodology was used to triangulate the results of the research from an interpretive position. The research analyzed and reported on subjective and quantitative data to ascertain knowledge about the participants' recognition of critical issues affecting the management of ERP tools in academic management in PHEIs in South Africa. In this study, the following groups of participants were purposefully sampled: students, lecturers and management staff working in the three PHEIs in Gauteng. The study found that academic attainment in PHEIs could be enhanced through ERP tools management in ICT integration. The research outcomes suggest that there is enhanced coaching and students' personal interactions through online conference tools, a practice that may be backed up and carry the same weight and recognition as physical learning contact hours. Issues of integration in the selection of any robust, dynamic PHEI tools may call for a firm's financial readiness and company-wide consultations with potential users of the system. Any HE ERP system that does not have a student portal, without integrated online issues of applications, checking of results, enhancement of teaching and learning but partly integrating one or two departments in isolation to others, may not be considered fit or robust as a higher educational ERP tool.

Keywords: *Academic attainment, Private Higher Education Institutions (PHEIs), Enterprise Resource Planning (ERP) tools, Information and Communication Technology (ICT); Higher Education (HE).*

1. Introduction

Enterprise Resource Planning (ERP) is described as the ability to convey an incorporated suite of business applications. ERP tools share a typical procedure and information model covering wide and significant operational start to finish forms. Examples are found in the areas of accounting, human resources management, production, administration, distribution and supply chain networks.

Enterprise Resource Planning Systems (ERPs): ERP applications mechanize, robotize or automate and support an extent of administrative and operational business forms over different endeavors, including a line of business, Customer Relationship Management (CRM), managerial and asset administrative functions of a business. ERP establishments are expensive and complex endeavors and some firms battle to characterize or depict the business benefits thereof. ERP benefits, as categorized by (Gartner, 2019), follow as an impetus for business advancement; a stage for business process proficiency; a process institutionalization vehicle; and Information Communications Technology (ICT) as a cost-saving channel.

The Research Problem: According to (Debrosse-Bruno, 2017), ERPs present an organizational administration issue for various enterprises, including Private Higher Education Institutions (PHEIs), because they are expensive to establish and normally neglect to meet foreseen desires because of the sort of tasks that ERPs support. The importance of discoveries is hoped to understand the research inquiries of the goals of this study. The audit of writing as an auxiliary information source was likewise viewed as important to expand the comprehension of Enterprise Resource Planning tools management in Private Higher Education in South Africa: critical issues influencing Enterprise Resource Planning tools in scholarly administration within the inquiry of a contextual examination, to explore and determine the inner and outer factors that influence overseeing of ERP instruments for coordinated administration frameworks. The study aimed at developing and recommending a system within best practices towards continuous improvement.

Importance of Tools Management: The use of Enterprise Resource Planning tools Management in Private Higher Education is currently dominating discourses on how to attain greater efficiencies and improved

outcomes in education in South Africa. It is for this reason that this study seeks to determine the issues influencing ERP tools management in PHEIs.

The History of ERP and Evolution: ERP providers and fashioners must consider client needs and concerns in the planning of ERP bundles. Understanding client qualities and their communication will prompt better advantages. For instance, when ERP clients have little computer access, framework fashioners ought to put more into making the frameworks less demanding to use to encourage more framework effects and advantages. "On the development of the Enterprise Resource Planning Systems (ERPs)", (Abdullah & Babaseheb, 2017) postulate that ERP has come a long way and has undergone various stages of transformation. The first stage was in the mid-twentieth century in that the different offices inside associations used to work autonomously. These offices were frequently named practical storehouses. Normally, frameworks were denied the advantages of coordination. The "advancement of ERP frameworks nearly took after the significant improvements in the field of Pocket Computer (PC) equipment and programming frameworks." Likewise, on account of the immense multifaceted nature of business capacities and changing of aggressive conditions, associations began hunting down new innovations to satisfy their capacities or necessities. Along these lines, from 1960 upwards, "most associations planned, created and actualized concentrated figuring frameworks, generally computerizing their stock control frameworks, utilizing stock control bundles".

This was the original processing framework brought together. Additionally, the second era was Material Prerequisites Arranging or Material Requirements Planning (MRP) frameworks, which were created in the era of 1970 and included principally arranging the items or parts necessary as indicated by the main generation plan. The third era of the new programming frameworks called Assembling Assets Arranging (MRP II) was presented in the 1980s with an accentuation on streamlining fabricating forms by integrating the materials with generation prerequisites. MRP II included territories, for example, shop floor and dissemination administration; venture administration; human assets and designing". Furthermore, the fourth era was Endeavour Asset Arranging (ERP) frameworks, which initially showed up at the end of 1980 to the beginning of 1990, with the intensity of coordinating business-wide operations. Given the technological advancements of MRP and MRP II, ERP frameworks coordinate business forms, including all capacities as assembling, circulation, bookkeeping, budgets, human asset administration, venture administration, stock administration and support, transportation, giving availability, perceivability and consistency over the Enterprise. As reported from 1990 to date, ERP merchants or Providers have included more modules and capacities bringing forth the expanded ERPs.

ERP Awareness: Regarding expanded ERPs, as revealed by (Abugabah, Sanzogni, & Alfarraj, 2015), in Enterprise Resource Planning (ERP) Frameworks, framework quality, undertaking innovation "fit and data quality are the essential factors that prompt better end-client" observation. This confirms the propriety of expanding data framework models as a valuable method to give all the more ground-breaking bits of knowledge to client perspectives and framework effect. Even though the researched factors clarified a huge segment of the fluctuation in client recognition, there is a part of the difference that remains unexplained. There has been a general absence of mindfulness reported about the significance of assessing ERP frameworks from a client's point of view. The primary focal point of past investigations was either on basic components and usage issues or client acknowledgment and fulfillment. In the researcher's view, with the dynamic changes in organizations to adapt to expanding requests in consumer loyalty and undertaking development, PHIs are embracing virtual institutions. Hence this study underscored the significance of this issue in exploring critical issues influencing_ERP tools management in higher education administration. As highlighted from a review of general literature accompanying this study, authors have announced that it was of principal significance.

To build up a proof-based approach to the utilization of ERP models inside ERP administration's regularly evolving region. General assessments on post-ERP execution were urged to happen frequently for recognizable proof of non-conformists and towards constant change. Crafted by the previously mentioned authors, it is recommended to the Specialist to be watchful for extra factors that could affect ERP device or tools administration. Moreover, with respect to the plan of a coordinated structure and advancement of proper procedures as a progressive tool other than existing quality models in administration frameworks,

observational investigations that came about gave a head start to future research for a more successful combination in ERP administration. In light of the above perspective, there was a hypothesis that there ought to be a careful readiness of an aggregate quality administration data framework or Total Quality Management Information System (TQMIS) on current practices in ERP administration or principal innovation, emphasizing fundamental hardware for access to the web and the system framework. Relating to TQMIS, a contention was introduced that the apparent successful ERP administration utilized an integrative approach intending.

To accomplish an adjustment or balance amongst certain key institutional components the writings above demonstrate that for the last couple of decades, advanced education establishments have been open to the solicitations of changed overall business conditions to upgrade their suitability. The motivation for this study was to assess the execution of an undertaking's asset arranging (ERP) structure in training and the related points of interest, with an accentuation on undergraduate students' execution, while applying a framework application item course of action.

2. Literature Review

This review of literature on dissected accessible ERP frameworks was conducted to address this study's research questions and critical concerns. The motivation behind this exploration or the purpose of this writing audit was to determine and build knowledge around critical issues influencing ERP tools management in PHEIs in South Africa.

Review of Literature on Previous Empirical Studies

Use of Models in the Integrated ERP Management System and their Applicability: Findings from previous studies by (Peng & Miguel, 2017), (Schniederjans & Yadav, 2013), (Alhirz & Sajeev, 2015), reported that it was of paramount importance to establish an evidence-based approach in the use of ERP models within ERP management's ever-changing area. Regular evaluations on post-ERP implementation were greatly encouraged to be taking place regularly for the identification of misfits and towards continuous improvement. The work of the aforementioned authors suggested to the Researcher to be on the lookout for additional factors that could have an influence on ERP tools management. The study sought to explore the challenges influencing the managing of the ERP tools currently in use in the selected PHEIs. In agreement with DeLone & McLean's Model (the Information Systems (IS) in general), the Foundations Systems Approach was used by (Somerville & Mirjamdotter, 2014), to study the collaborative information approaches reflecting knowledge creation and experiences through transferrable learning capabilities in an organization. The systems approach indicated that sustainable continuous learning in an institution emanates from collaborative practices and system functionalities.

As applied to this study, this theory held that the domain knowledge transfer was to be at the center of user experiences in the ERP system, with the view of not just looking at the technological fit and information quality, but also post-ERP implementation phase user experiences. This Foundation Systems Approach provided an opportunity for exploring insights into user aspects and ERP tools management for integrated activities. Consequently, the Systems thinking in assessing individual capacities reflected within DeLone & McLean's theory as applied by (Jaradat, 2014), extrapolating the spawn and lagging brought about as a result of exponential technological advances, brought an understanding of the methods that bridged such a gap or divide. (Abugabah, Sanzogni, & Alfarraj, 2015), in tandem with (Jaradat, 2014), showed that most studies in ERP systems focused on factors that affect ERP implementation in terms of user acceptance and satisfaction, with less emphasis on antecedents like user groups and their computer knowledge experiences within the system. As such, this area presents a gap in the study in investigating the users' perspective and awareness of ERP tools management. Furthermore, the ERP systems in relation to DeLone & McLean's model have confirmed that there are few conceptual.

Theoretical frameworks in place to guide the implemented ERPs, hence the application of IS general theories ((Kalema, Olugbara, & Kekwaletswe, 2014). Success Factor Theory, as developed by (Kalema, Olugbara, & Kekwaletswe, 2014), brought a cross-impact analysis on "a wide range of factors that influence the success of ERP systems" in African Universities. This theory indicated that factors impeding success were closely

examined within the Integrated Tertiary Software (ITS) system in deriving what constituted successful implementation and the use of ERP systems. The cross-impact analysis factors were presented as being complex and costly. At the center of IT'S are the daily use and perceptions of stakeholders of the ERP system. As applied to the research, this presented a gap in exploring the critical factors influencing ERP tools management. The research also proposed to draw on the premise that there was a recommendation for the consideration of indirect relationships, demanding a further investigation in specific areas within the cross-impact analysis of the ERP system (Kalema, Olugbara, & Kekwaletswe, 2014). Generally, Venture Resource Planning (Enterprise Resource Planning usage had difficulties with a specific end goal to expand the execution (Wijawa, Kosala, Meyliana, & Prabowo, 2017, p. 513). The motivation behind the examination was to propose an elective approach for the ERP framework, with a specific end goal to improve the association execution.

The technique for the approach was a Systematic Literature Review (SLR) for building up a spry (agile) structure for an ERP framework that included 54 papers for inquiry. The examination discoveries uncovered a coordinated structure as an instrument for a more improved ERP framework. The exploration propelled data from different analysts and practices to build up a deft structure for ERP framework as an elective arrangement "keeping in mind the end goal to upgrade the execution and expanding upper hand of associations" towards business competitive advantage. ERP Agility was clarified as the ERP device territories of cost, quality, reliability and adaptability that went past the capacity to react quickly to any unforeseen changes in the business condition (Wijawa, Kosala, Meyliana, & Prabowo, 2017, p. 513). Furthermore, (Babaian, Xu, & Wendy, 2017), demonstrated that few ongoing investigations of ERP framework interfaces have affirmed that their poor ease of use blocks laborer profitability, despite the enormous speculations that organizations make in supporting and preparing clients or users. Ease-of-use challenges emerged from the unpredictability of ERP frameworks, which were planned as a general instrument for plenty of authoritative practices and settings. Figuring out how to work inside an unreasonably tremendous landscape of ERP assignment pages and parameters was a noteworthy test for most ERP clients.

The proposed arrangement in this study conducted was dependent on the framework itself to share errand and process data, keeping in mind the end goal to direct clients through learning and playing out their business assignments with the framework. This point of view emerged from utilizing the human–PC joint effort way to deal with the plan of User Interfaces, which were applied as a directing system for the research. This research displayed two interface segments for giving ERP framework clients assignment and process direction: Computerized Playback and Intelligent Process Representation. The oddity of approach originated from utilizing the historical backdrop of past cooperation's to progressively make enlivened exhibitions out of assignment interfaces and to give an intuitive graphical guide to the present procedure being dealt with by the client. The above research presented an opportunity for PHEIs to explore how ERP practices, amongst other factors, influenced ERP agility within the ERP tools integration. Regarding ERP tools, Quality Management had picked up in ubiquity chiefly because of expanding client cognizance of value and developing universal focused weight with the expanding need to consider the developing requests of the clients and to adapt to increasing rivalry. The quality introduction was the fitting method to stay focused.

The absolute, most basic factor required for the survival and development of an association is quality. This had turned out to be significantly more imperative in extending worldwide commercial centers, confronting real difficulties through rivalry amongst players within and through expanded clients' desires. Organizations giving quality items and administration had increased their aggressive edge and more noteworthy pieces of the overall ERPs. Step by step, the number of instructive establishments was expanding and the vast majority of them were being overseen by private administration. As benefit was their genuine concern, part of the value was being disregarded. Today, higher instructive Institutions are confronted with worldwide rivalry and a ton of issues. For example, low graduation rates, higher drop-out rates, less employability and so forth. Instructive associations must adjust quality approaches to enhance the nature of advanced education. This study looked at the integrative models or frameworks and their applicability in PHE1s. The expansion of advances was changing economies from various perspectives. This was especially valid in the purchaser confronting enterprises where the development of computerized administrations was empowering novel offers, nearer buyer connections.

More prominent mechanization of customer confronting business forms (AIS e Library, 2017). Applied to PHEIs, there was an opportunity to explore the ERP tools integration within the applicable frameworks. New computerized benefits in customer confronting associations offered novel offers, nearer buyer connections, and higher mechanization of shopper confronting forms. Changing to completely advanced administrations required an association to get particular capacities. This article exhibited an association's ability to test its present capacities and distinguish gaps. Two top-to-bottom contextual investigations exhibited the utilization of the model and recognized the capacities in pressing need of change. The suggestions were worked around four situations for utilizing the model. The reference to the model demonstrated the possibility for evaluating the condition of shopper confronting advanced administrations. Customer Relationship Management (CRM) is referred to as Comprehensive Academic Management (CMMI) for administration and Advanced Customer Relationship Management System (CMMI-SVC). It was an individual from the ability development show combination (CMMI) group of process level change and examination programs and portrayed great practices in 24 process regions. For example, in prerequisites administration, limit.

Accessibility administration and hierarchical process definition. CMMI-SVC gives general direction on the advancement of customer relationship management systems and associated benefits, yet needs particular bearing for the outline of computerized administrations. For instance, it addresses overseeing limits without talking about the particular innovation-related abilities of advanced administrations, for example, client information administration (Wulf, Mettler, & Brenner, 2017). From the above, the abnormal state of variety in the degree of advanced abilities proposed organizations confront impressive difficulties in building up the essential transformational capacities. These difficulties incorporate constrained access to ability; an absence of business understanding and hierarchical dexterity; the non-appearance of a trial mentality; and wrong Information Technology (IT) frameworks. Managers looking for help on the best way to advance capacities and needing to gain from the gathered encounters of others routinely swung to reference models that depicted basic abilities and gave examples of how those capacities advanced after some time. Such models were extremely famous because they empowered organizations to survey their present state and recognize the future states for which they yearned for. The models were regularly scrutinized for overlooking an association's situational setting and for producing a bureaucratic mentality, which tended to block as opposed to empowering development.

Relating to PHEIs, the above examination featured the need to take a gander at the utilization of models in the coordination of ERP administration frameworks towards scholastic achievement. As shown by (Khan, et al., 2017), firms have a place with social groups that are specialists in making recent information from conditions. Learning that is produced from past involvement and conditions may influence an association's procedure decidedly. To prepare learning osmosis better, it requires solid initiative capacities that can perceive information from conditions in the feeling of chance and danger. In this story, the impact of absorptive limit (AL) and predominant rationale (PDR) are examined regarding big business asset arranging (ERP). Dynamic Capacities (DC) of the best directors to keep the learning from grassroots and absorb it as shown by the requirements that enhance a company's venture asset arranging (ERP). The fundamental concentration in the examination was information and how top-level supervisors utilize routine learning to get future advantages for their firms. The model was figured from past writing that demonstrates the impact of absorptive limit, its subsets and predominant rationale and its measurements on ERP osmosis. For this investigation, the examination was about Chinese firms in Hefei City, Anhui territory in China.

Hefei is one of the quickest creating and developing financial centers in China. Workers from the top-level were the aim of gathering data in this research. The outcomes showed that the absorptive limit and overwhelming rationale affected ERP in Chinese firms. These did not just build the profitability and execution of the firm, but additionally helped in the designation of assets and basic leadership procedures to remain in the dynamic market and contradict any sort of dangers. The outcomes showed a positive connection between every one factor. This investigation from the Chinese firms from the area of Anhui might be applied to PHEIs in South Africa in discovering systems that may improve the advantages in the ERP apparatuses administration inside the coordinated condition. Consequently, (Awa, Ojiabo, & Orokor, 2017) presented an advancement affiliation condition referred to as the Technological Organizational Environment (T-O-E) framework in which the association amongst the appointment and the factors inside the settings of development, affiliation, condition and task were authentically maintained. However, some had negative

coefficients. T-O-E logical characterization is seen to acknowledge effective scholarly honor, yet it occasionally maintained unmistakable errors and individual factors. Regardless of how errand and individual settings had been freely tended.

To by Technological Task Development Fit (TTF) and bound by the theory of Affirmation and Usage of Advancement (Unified Theory of Acceptance and Use of Technology, UTAUT) independently, the explanation behind this paper was to supplement and besides grow the T-O-E's bits of learning by planning TTF and UTAUT frameworks and making and precisely testing a 12-factor structure that crosses five settings. The system of the approach used was reviewing data that was generally accumulated from six get-togethers of little organizational attempts with strong errands in Port Harcourt, Nigeria. The technique for assessing was purposive and used the snowball method, while the examination included found out the likelihood of slide-back. It was uncovered that the association amongst gatherings and the segments inside the settings of advancement, affiliations, conditions and undertakings were genuinely maintained. However, some had negative coefficients. For a particular setting, social factors had a genuinely essential negative coefficient. Yet a ravenous drive was not quantifiably maintained. The study conducted is confined by its extension. Along these lines, extended it requires data to apply the disclosures to various regions/wanders.

Factor in the utilization and post-apportionment stages and business-to-business gatherings to produce a more merged and widely inclusive determination framework. The disclosures bolster dealers and system makers to place more premiums on progressive and undertaking factors than on mechanical, regular and individual factors, and to make instructed and promoted programs that would intrigue certified and potential adopters and make them progress in the unwavering quality venturing initiatives (Awa, Ojiabo, & Orokor, 2017). This paper included creating a research development gathering as it used factors inside the T-O-E, TTF and UTAUT frameworks to clear up the apportionment of progressions and to set up the shrouded associations amongst T-O-E factors in planning other profitable structures. The confinements and disclosures from this study understand an open entryway, enabling the change and usage of a framework in regulating ERP courses of action or instruments in private higher education. (Ruivo, Oliviera, & Mestre, 2017), created and tried a hypothetical model to gauge the effect of big business asset arranging (ERP) and client relationship administration (CRA) frameworks and directing connections of framework and process mix on business esteem. ERP and CRA frameworks were broken down "with the asset-based view hypothesis and estimated by their effect on business esteem, bearing in mind the control of framework and process joining.

The model was tried and broken down with information gathered by Microsoft from firms that have, embraced both ERP and CRA frameworks in their association. The ERP framework was observed to be a vital resource for business esteem. However, CRA frameworks' effect on business esteem was observed to not be noteworthy. Framework incorporation as an arbitrator of the ERP or CRA framework was observed to be not critical, but rather had a positive and noteworthy effect on business esteem. For process reconciliation, the examination found that it was critical while directing the CRA framework variable. The model showed that the directing effects of the framework and process incorporation were essential factors for understanding the joint business estimation of ERP and CRA. Embracing an ERP framework and guaranteeing framework reconciliation had an immediate effect on business esteem. For a CRA framework to positively affect business esteem, process combination with ERP framework must be guaranteed. This research gave additional information on how ERP and CRA frameworks, utilized together, may decidedly affect an incentive from IT ventures, and how framework reconciliation and process mix gave business esteem. The above empirical study by (Ruivo, Oliviera, & Mestre, 2017, p. 8) provides the impetus to explore the incorporated ERP instruments in private higher schooling towards academic excellence. The next section looks at current practices in ERP tools management.

Current Practices in Place to ERP Management: Findings by (Srima & Wannapiroon, 2013), (Tabbara, 2016) & (Al-Mashari, 2017) postulate that there should be a thorough preparation of Total Quality Management Information System (TQMIS) in current practices in ERP management in terms of principle or fundamental technology, placing a focus on basic equipment for access to the Internet and the network system. The above authors argue that the perceived effective ERP management uses an integrative approach, aiming to achieve a balance amongst certain key institutional elements. The findings in this section were pertinent to this research in that there was the regard of network systems and Internet connections at the

heart of the dominant technology. This resonated well in giving an interesting reason to exploit the gaps in ERP tools management misfits. It is shown that academic associations spend a great deal of cash, time, and assets on big business framework (ERP) execution. However, they regularly do not understand the normal advantages of these mind-boggling frameworks. There was a gap in the literature in giving adequate knowledge on the usage procedure in terms of how ERP devices may affect or add to a culture change.

The reason for the exploration, led by (Skoumpopoulou & Waring, 2017, p. 1), was to address the gap in the ERP writings around culture by investigating the usage that was attempted in an expansive UK college. This examination added to the advanced education ERP writing through an inside-out investigation of an ERP Key Data Innovation Administration (KDIA) execution by a college "in the UK. The investigation was attempted over a three-year time-frame, where one creator was located within the association. Utilizing a social examination system, the broad rich information was broken down, and the results showed KDIA has affected the way of life of the college. The innovation's inflexible structure has forced many progressions that had not been foreseen. ERPs have as of late developed in the higher education institutions where they are planned to help the administration of undergraduate information and give vital administration data. Although there are many studies that have researched imperative parts of the execution of ERPs, one region that seems to have been 'under-looked into' is how these frameworks are embroiled in culture change inside associations. The after-effects of this investigation would empower administrators and additionally IT masters to increase rich bits of knowledge.

In to tools or solutions management in the PHEIs to utilize this learning for future usage. Regarding the above, it may arguably be seen that PHEIs had to re-look at their internal cultures. As explained by (Kasemsap, 2018) in the study directed, there was a disclosure review of learning exchange; information exchange, work portability, and work assorted variety; learning exchange and backup points of view; hindrances to information exchange; information exchange and absorptive limit; learning exchange and information securing; learning exchange and virtual groups; and the propelled issues of learning a move in current associations. Exchanging information was a continuous movement of picking up, changing and making strides. At the authoritative level, information exchange shows itself through changes in the learning of a unit. Best learning exchange endeavors effectively include both the wellspring of the information and its recipients. Setting up execution desires for the individuals who will utilize the learning further tests the estimation of the exchange. Institutions considering or utilizing information exchange forms ought to persistently assess their web-based life status. The advantages of information exchange for working environments incorporate increments in efficiency, speed, readiness, benefits and development.

In PHEIs, this research exhibited a superior chance to explore routes in how ERPs might be utilized as a social center-point in the production of information that might be regarded as profitable towards the grant of research, like campus distributions center-points inside and across the board ERP frameworks, guided by the ERP tools administration frameworks, other than simply utilizing ERPs for ordinary regular learning connections or correspondence. To support the ERP business execution in HE above and amidst different procedures cross-wise over three areas, a university administration framework that was not up and coming and a loss of learning on account of statistic changes and undocumented conflicting procedures, Jade College of Connected Science executed a grounds administration framework created by Hochschul Information's Framework. This framework incorporated a coordinated reference show for forms that were identified by the administration team. The college needed to utilize basic norms and required a guide given best practices. Actualizing business process administration gave a chance to report, institutionalize and unify forms within their respective areas (Buhrig, Schoormann, & Knackstedt, 2018, pp. 577-592). Usage of the Campus Administrative framework and reference forms was organized in steps that could be portrayed.

Utilizing a Business Procedure Administration life cycle display that spreads initialization of ERP; process distinguishing proof; a process of revelation; process investigation; process upgrade; process execution and process checking. Every one of these means was specifically identified with the utilization of Hochschul Information's Framework reference model across the board to gain proposals given best practices. Both expected and surprising outcomes were acquired from the execution of the Campus administration framework, exemplifying the institutionalization of procedures crosswise over three areas was enhanced by embracing best practices, and inward workshops to institutionalize procedures. This fortified Jade College's

general camaraderie or unity of direction. Singular boundaries to utilizing process models and process documentation were decreased and a Business Procedure Administration steady culture was created to such an extent that a few offices started to report different procedures and to consider the usage of a more extensive Business Process Administration division. Five essential exercises were found amidst the venture. For example, situating existing arrangements like process reference models that bolstered the initialization of new undertakings and institutionalization restricted the included partners' imagination. Rules for reliably archiving the usage's advance were essential to effortlessly give important data to all partners constantly.

Incorporating significant partners into the procedure empowered the norms over various areas to be resolved, and restricted venture assets were considered with a specific end goal to design appropriate and attainable activities (Buhrig, Schoormann, & Knackstedt, 2018). The above proposals continuing from the examination above presented a gap to investigate current practices into private advanced education ERPs. As indicated by (Comuzzi & Parhizkar, 2017), ERPs are difficult to keep up with since they insert an expansive part of authoritative information and assignments which are frequently interwoven and exceptionally related. The explanation leading the investigation proposed a strategy for ERP present execution change administration to help business experts amidst perfective support. The approach drew parallel with building change administration and considered the means of mapping the conditions amongst ERP apparatuses; understanding the gradually expanding influences of progress and characterizing measurements to evaluate and survey the effect of progress. The strategy was explained on account of ERP frameworks, for which a device had additionally been actualized and assessed by ERP usage specialists. Specialists decidedly assessed the proposed system. General outline standards to substantiate the procedure on account of frameworks other than ERP had been inferred.

While existing ERPs change administration procedures helped to distinguish the requirement for change, the proposed strategy was said to structure the change procedure, supporting the errand of perfective upkeep proficiently. Stemming from the examination above, there was a chance to continue exploring ERP current practices in PHEIs towards better ERP tools arrangement administration. The investigation by (Thennakoon, Bandara, French, & Mathiesen, 2018, pp. 487-500) illuminated that there was a wide assertion that ERP arrangement, people from all levels of a relationship in-process organization “activities and process” accepting was a vital supporter of the accomplishment or dissatisfaction, and viability of business process organization (BPO). BPO getting ready was given in all BPO exercises and incorporated the wander of critical budgetary, human, information and diverse resources. In any case, little research had focused on this domain. In this way, there was nonattendance of bearing for a relationship in driving worth, including BPO getting ready. The inspiration driving the examination was to merge the current disseminated data on BPO getting ready as an unmistakable composition study to depict the present work.

Recognize gaps and propose a program of work for what was to come. A sorted written work overview was directed to grasp the present status of composing planning in the space of BPO. Upon a fundamental review of ninety appropriations, 64 creations, dispersed between 1994 and 2015, were isolated and investigated considering their criticality to answer the examination question composing of planning people for BPO. This examination proposed an investigation “design in light of this. A Grounded Theory coding approach was used, where NVivo 10 was used as a gadget to help the examination. 234 codes addressing rising subjects were inductively perceived from the data. These codes were moreover broken down, achieving eight focus subjects identifying with getting ready in the Business Process Management (BPM) setting. The study displayed an unmistakable illustrative outline of the back-and-forth movement status of research in BPO, recognizing gaps in the written work and demonstrated a research inspiration that reinforced a call for action. The study above presented a gap that explored the present practices within the ERP tools arrangements administration in PHEIs.

Lessons Learned

ERP as “Software as a Service (Saas)”: In terms of the developments or the expansion of ERP instruments and the administration thereof, the more noteworthy commitment was from the ERP-appropriated condition (clients) instead of simply getting arrangements on the web or somewhere else. It was this reality that the study investigated. ERP was viewed as one of the spaces as a Software as a service (Saas) inside distributed

computing (Elmonem , Nasr , & Gheith, 2017). As stipulated by (Yatika & Hasija, 2017), within the integrated ERP management system, the expanded rivalry had persuaded numerous senior chiefs in assembling associations to assess their focused techniques and assembling hones with the point of enhancing hierarchical execution. Endurance in an engaged space has reliably been a test in the cutting edge of technology. In these days of globalization, advancing or progressing digital firms think that it is difficult to endure competition, except if they have a competitive advantage. The experimental proof proposes that competent administrations of a high caliber will out-perform the opposition advantages and increase the market entrance rate.

3. Methodology

The Method Applied: A mixed-method was used to triangulate the results as "all methods individually are flawed, but these limitations could be mitigated through mixed methods research, which combines methodologies to provide better answers to research questions (Turner , Cardinal , & Burton, 2017, pp. 243-267). (Cresswell, 2018) agrees with (Sekaran & Bougie, 2018, p. 256) by stating that the "Mixed methods techniques are a way to deal with requests, including gathering both quantitative and qualitative information, incorporating the two types of information, and utilizing particular plans that may include philosophical presumptions and hypothetical systems. The central presumption of this type of request is that the mix of subjective and quantitative methodologies gives a more total comprehension of an examination issue than one approach" alone. The study utilized multiple sources of data collection in a mixed manner, such as the use of interviews and a focus group (in-depth interviews) in qualitative investigations. In using a survey as a quantitative method, the questionnaire was administered to 100 participants as the sample size, comprising students, lecturers and management staff out of a population size of 10500 participants.

4. Results and Discussion

Findings of the study on ERP tools management in Private Higher Education in South Africa, In comparison with previous studies. It may be considered paramount that a PHEI establishes robust, dynamic, agile and versatile ERP tools that may be easily punctuated or added to existing tools within the ERP integration of tools. In this way, it may become simple for the company to adjust in many areas in managing and controlling security features in the ERP tools. One example may be that of finances, which may not allow students that owe fees to the institution to access their student account with academic information. When private institutions do go that route, of complete HE ERP integration, it might be helpful to sustain an HEI's competitive advantage.

5. Conclusion and Recommendations

Regarding ERP tools, Quality Management had picked up in ubiquity chiefly as a result of expanding client cognizance of value and developing universal focused weight with the expanding need to take into account the developing requests of the clients and to adapt to increasing rivalry. The quality introduction was by all accounts the fitting methodology to stay focused. The absolute, most basic factor required for the survival and development of an association is quality. This had turned out to be significantly more imperative in extending worldwide commercial centers confronting real difficulties through rivalry amongst players within and through expanded clients' desires. Organizations giving quality items and administration had increased their aggressive edge and more noteworthy pieces of the overall ERPs. Step by step, the number of instructive establishments was expanding and the vast majority of them were being overseen by private administration. Today, higher instructive institutions are confronted with worldwide rivalry and a ton of issues. For example, low graduation rates, higher drop-out rates, less employability and so forth. Accordingly, instructive associations must adjust quality approaches to enhance the nature of advanced education.

This study looked at the integrative models or frameworks and their applicability in PHE1s. In turn, the expansion of advances was changing economies from various perspectives. This was especially valid in the purchaser confronting enterprises where the development of computerized administrations was empowering novel offers, nearer buyer connections and more prominent mechanization of customer confronting business forms (AIS e Library, 2017). Applied to PHEIs, there was an opportunity to explore the

ERP tools integration within the applicable frameworks. It may be considered paramount that a PHEI establishes robust, dynamic, agile and versatile ERP tools that may be easily punctuated or added to existing tools within the ERP integration of tools. In this way, it may become simple for the company to adjust in many areas in managing and controlling security features in the ERP tools. One example may be that of finances, which may not allow students that owe fees to the institution to access their student account with academic information. When private institutions do go that route, of complete HE ERP integration, it might be helpful to sustain an HEI's competitive advantage.

Way Forward to Cope the Challenge: The study recommends that there may be a need for HE departments that are stakeholders or those that assist PHEIs to help in the formulation of a standardized HE ERP architectural system that may meet most needs of the PHE ERP tools. ERPs that are found in the market as already configured Learning Management Systems (LMS) may be expensive to buy and manage by many PHEIs. A standardized system may be easy to manage and supervise within a certain policy. The standardized ERP is not to be enforced upon PHEIs, but should be a matter of choice in adopting it or not. Private higher education institutions may integrate or have their own parallel ERP systems to the standardized one. Having education ERP tools with a vibrant website may be considered a competitive bid by many potential customers or students, a place to enroll with. Vibrant PHEI ERP tools with a dynamic HE website may be perceived as the online university of the moment by numerous potential clients.

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The Economics of Higher Education in Nepal: Developing a Sustainability Plan

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Abstract: Nepal universities are in a delicate transition now. The enrolment of students is not encouraging; rather it is declining over the years particularly in public universities. Consequently, the outflow of Nepalese students has got momentum over two decades; and nearly a half-million Nepalese students are currently enrolled in foreign universities. The quality education in Nepalese universities is crucial for the return as well as the significant inflow of Nepalese students in the universities of their homeland. However, higher education requires a sustainability plan particularly for the resource generation and promotion of scientific research/publications. Long-term vision, mission, and strategic measures are particularly lacking in Nepal universities. This requires setting objectives and attainable milestones along with specific strategic measures and financial planning that are missing now. The contribution of this paper is twofold. First, it proposes a monitoring framework in the form of a regression model to use as a tool and observe the improvement in higher education in the country. Secondly, it has proposed a typical Sustainability Plan considered appropriate to Nepal; however, it might be equally replicable to other universities of the developing world. Moreover, it has also suggested measures to make such a plan a success.

Keywords: *Higher education; Sustainability Plan; Enrolment; Universities.*

1. Introduction

Along with the advent of democracy in 1951 AD, a number of public as well as community colleges were opened in Nepal. By 1965, five public colleges enrolled a total of 5,000 students and 51 community colleges associated with 10,000 students. The first university in Nepal, Tribhuvan University (TU), was established in 1958. The year 1971 witnessed the nationalization of all community colleges and they became part of TU. Up to the beginning of the 1980s, Tribhuvan University was the single choice for higher education in Nepal. The need for multiple universities appeared thereafter to address the problem of a highly bureaucratic and centralized system of Tribhuvan University. Universities in Nepal enjoy significant autonomy in their operation. Academic programs of bachelor's degree and above are regarded as higher education in Nepal. The duration of the bachelor's program varies from three to five years whereas the master's level runs for two years. Some universities also run Post-Graduate Diploma programs; the duration of them is not uniform. Currently, associated with 11 universities and six autonomous academies/institutions equivalent to the deemed university, 1425 campuses are in Nepal. These colleges are of three types: constituent, community, and private ones. The latter two are called affiliated campuses. Constituent campuses receive public funding and universities oversee their academic, administrative and financial management. Affiliated campuses do not receive public funding and universities are responsible.

Only for the supervision of their academic programs and examinations, community colleges receive a very small amount of financial support for capital costs from the government through the University Grants Commission (UGC) (World Bank, 2007). About 423,996 students enrolled among 11 universities in Nepal as of 2018, of which 79 percent are in TU. On behalf of the government, the Ministry of Education (MOE) is responsible for the operation of the tertiary education system in Nepal. However, BP Koirala Institute for Health Sciences (BPKIHS), National Academy of Medical Sciences (NAMS), Patan Academy of Health Sciences (PAHS), and Karnali Academy of Health Sciences (KAHS) all report to the Ministry of Health (MOH); the latter makes the fund flow to these health institutions. University Grants Commission (UGC) makes the fund flow as well as the monitoring of higher education provided by the eleven universities in Nepal. In addition to the significant support from the government of Nepal (GoN), the UGC has also received financial and technical assistance from the World Bank. It is going to accomplish the current phase (2015-2020) of the support by June 2020. The Higher Education Reform Project (HERP) under the financial support from the World Bank is crucial in the transformation of Nepal universities. Despite the constant support from the national government and multilateral development institutions, the quality of Nepalese higher education is not

improving as expected. This paper is an attempt to develop a scenario of how the support should look like from 2020 onward.

More specifically for the period 2020-2025 to make Nepalese higher education competitive in the global market and supportive to fulfill the domestic requirement as well, educational planning deem necessary. In the backdrop of this situation, the objectives of this paper are two-fold. First, it makes an intensive review of the existing scenario of higher education in Nepal including both teaching and research components followed by its human resources and organizational structures. Secondly, it proposes a sustainability plan for the coming five years that will be a workable and productive one. Third, the paper proposes some strategic measures for immediate action that will be crucial to Nepal's higher education reform. To attain the objectives of the paper, the rest of the paper is organized as follows. Section 2 reviews the current scenario of the higher education system in Nepal including the fund flow mechanism through the University Grants Commission (UGC). Section 3 proposes a Sustainability Plan for the reform of Nepal's higher education. The paper concludes and recommends some strategic measures for immediate action in Section 4.

2. The Current Scenario

The higher education theories and models draw applications of theories in economics, sociology, humanity, anthropology, political science, psychology and several other disciplines (Toutkoushian & Paulsen, 2016). However, our concern here is to have some glimpse from a more economic perspective. We study the level of human resources in Nepalese universities, the financial and human resource management, and the long-term planning of Nepalese higher education. More specifically, we focus on the demand and supply responses of the higher education system with reference to the country scenario of Nepal, the comparative static approach in understanding its dynamics, and the pathway for its reform. In Nepal, higher education refers to the academic programs beyond 12 years of education. Previously, 11th and 12th-grade education programs were also in the university and were parts of higher education. However, these two grades are now shifted to higher secondary level. Now university-level higher education, therefore, includes undergraduate programs, master's programs, post-graduate diploma programs, MPhil and Ph.D. research. At present, altogether eleven universities exist in Nepal; they are Tribhuvan University (TU), Nepal Sanskrit University (NSU), Kathmandu University (KU), Pokhara University (PokU), Purvanchal University (PU), Lumbini Buddha University (LBU).

Far Western University (FWU), Mid-Western University (MWU), Agriculture and Forest University (AFU), Nepal Open University (NOU), and Rajarshi Janak University (RJU) are regional universities. Moreover, four autonomous academic institutions are also providing higher education in Nepal – National Academy of Medical Sciences (NAMS), BP Koirala Institute of Health Sciences (BPKIHS), Patan Academy of Health Sciences (PAHS) and Karnali Academy of Health Sciences (KAHS). Nepal Open University (NOU) and RJU (Rajarshi Janak University) are two newly opened universities. As mentioned earlier, Nepal universities have two types of campuses: constituent campuses – campuses directly managed including financial management by the concerned university; and affiliated campuses –whose academic programs are affiliated to a particular university. However, in the case of the latter, the administration and financial management are either by private individuals/organizations (private campuses) or by local community stakeholders (community campuses). The academic activities of both types of campuses are governed by the rules and regulations of the concerned university. There were all together, 1425 campuses in the year 2017/18 (137 constituent, 508 community, and 780 private campuses) with 423,996 students enrolled in different academic programs in higher education. Likewise, 9269 faculty members are working in eleven different universities.

The campuses follow the courses designed by the affiliated universities and examinations are conducted and processed by the Office of the Controller of Examination (OCE) of the respective university. The academic calendar for student enrolment, schedule of exam, the publication of results, courses offered and class hours may vary from one to another university. The sustainability plan requires contributing to attaining Sustainable Development Goals of the United Nations to be attained by the year 2030. More specifically, no geographic, ethnic, and gender discrimination to all levels of education has been envisaged. The institutions of higher education are at present providing courses on science and technology, education, management, social sciences and humanities, law, engineering, forestry, medicine, agriculture and animal sciences, Ayurveda and Sanskrit. They run their academic programs with annual or semester systems at the bachelor, master, M. Phil.,

and Ph.D. levels; but some universities also offer programs such as post-graduate diploma (PGD). Depending upon the stream and subject, bachelor level programs are of three to five years duration; whereas master level programs of two years, and PGD and M. Phil. courses generally of 1½ years (UGC, 2017, p. 45). Student number in Nepal universities has marginally grown during 2010/11 – 2017/18, by 16,062 (3.94%) (Table 1 and 2).

Table 1: Student Enrolment in Nepal Universities in Academic Year (A.Y.) 2010/11

University	HE Enrolment	Share in HE Enrolment, %	PCL Enrolment	Share in PCL] Enrolment, %	Others Enrolment	Share in Others Enrolment, %	Total Enrolment	Share in Total Enrolment, %
BPKIHS	1,072	0.3	120	0.6	0	0.0	1,192	0.3
KU	9,658	2.4	79	0.4	0	0.0	9,737	2.3
LBU	33	0.0	0	0.0	0	0.0	33	0.0
NAMS	203	0.0	0	0.0	0	0.0	203	0.0
NSU	1,798	0.4	1345	7.1	802	17.4	3,945	0.9
PAHS	60	0.0	0	0.0	0	0.0	60	0.0
PokU	16,666	4.1	0	0.0	0	0.0	16,666	3.9
PU	24,726	6.1	0	0.0	0	0.0	24,726	5.7
TU	353,718	86.7	17485	91.9	3,804	82.6	375,007	86.9
Total	**407,934**	**100**	**19029**	**100.0**	**4606**	**100.0**	**431,569**	**100.0**

Source: (UGC, 2012).

Note: The proficiency certificate level (PCL) phased-out from the university level after 2010/11 and was shifted to higher secondary school level; therefore, only the first column from Table 1 is comparable to the total enrolment as presented in Table 2. A.Y. is for Academic Year.

Table 2: Student Enrolment in Nepal Universities in A.Y. 2017/18

University	Male	Female	Total	Share
AFU	1,357	621	1,978	0.47
BPKIHS	183	178	361	0.09
FWU	1,840	1,846	3,686	0.87
KAHS	-	30	30	0.01
KU	9,554	8,388	17,942	4.23
LBU	496	209	705	0.17
MWU	1,907	1,317	3,224	0.76
NAMS	130	311	441	0.10
NOU	519	74	593	0.14
NSU	3,136	606	3,742	0.88
PAHS	195	345	540	0.13
PokU	17,134	12,285	29,419	6.94
PU	12,826	13,302	26,128	6.16
RJU	34	47	81	0.02
TU	151,704	183,422	335,126	79.04
Total	**201,015**	**222,981**	**423,996**	**100**

Source: (UGC, 2017).

Even the marginal growth of the number of enrolment in Nepal universities is attributed to the undergraduate programs (Table 3 and 4). In post-graduate programs, however, the number of students has declined during 2010/11 – 2017/18. During this period, the number of post-graduate students has declined by 16,899 (22%).

Table 3: Student Enrolment in Different Level of Study/Research Programs in A.Y. 2010/11

Level	University																			
	BPKIHS		KU		LBU		NAMS		NSU		PAHS		PokU		PU		TU		Total	
	F	Total	F	Total	F	Total	F	Total	F	Total	F	Total	F	Total	F	Total	F	Total	F	Total
Bachelor	321	821	3,505	8,001	0	0	35	35	251	1,389	18	60	4,871	14,996	8,950	21,556	128,591	284,910	146,542	331,768
M.Phil.	0	0	27	187	0	0	0	0	0	0	0	0	11	81	0	0	127	237	165	505
Master	123	251	525	1,330	0	0	59	168	17	286	0	0	532	1,559	802	3,149	21,512	68,291	23,570	75,034
PGD	0	0	37	57	0	0	0	0	0	0	0	0	15	30	4	21	4	11	60	119
Ph.D.	0	0	10	83	1	33	0	0	10	123	0	0	0	0	0	0	37	269	58	508
Total	**444**	**1,072**	**4,104**	**9,658**	**1**	**33**	**94**	**203**	**278**	**1,798**	**18**	**60**	**5,429**	**16,666**	**9,756**	**24,726**	**150,271**	**353,718**	**170,395**	**407,934**

Source: (UGC, 2012).

Table 4: Student Enrolment in Different Level of Study/Research Programs in A.Y. 2017/18

Level	Male	Female	Number of Students	Share
Bachelor	168,857	195,872	364,729	86.02
PGD	43	98	141	0.03
Master	29,773	26,531	56,304	13.28
M. Phil	758	158	916	0.22
PhD	1,584	322	1,906	0.45
Total	**201,015**	**222,981**	**423,996**	**100**

Source: (UGC, 2017).

Not only the number of students, but the number of teachers also declined in Nepal universities. During the period between academic years 2010/11 to 2017/18, the number of teachers has declined by 39.6 percent (Table 5 and 6).

Table 5: Number of Teachers in Different Universities in A.Y. 2010/11

University	Campus Type	Professors		Readers/Associate Professors		Lecturer		Assistant Lecturers		Others(Including Instructors)		Total	
		Female	Total	Female	Total	Female	Total	Female	Total	Female	Total	Female	Total
BPKIHS	Const.	na	52	na	26	na	66	na	na	na	39	na	183
KU	Const.	na	33	na	na	na	171	na	na	na	137	na	341
NAMS	Const.	na	43	na	35	na	42	na	na	na	22	na	142
NSU	Const.	na	65	3	130	39	520	0	15	0	40	42	770
PAHS	Const.	na	17	0	21	0	47	0	0	0	0	na	85
PokU	Const.	na	5	0	8	0	64	0	31	0	8	na	116
PU	Const.	na	na	0	na	0	31	0	4	0	14	na	49
TU	Total	48	589	405	2,082	423	5,242	12	3,326	392	2,440	1,280	13,679
	Comm.	na	119	0	210	0	2,748	0	3,219	0	176	na	6,472
	Const.	48	470	405	1,872	423	2,494	12	107	392	2,264	1,280	7,207
Grand Total		**48**	**804**	**408**	**2,302**	**462**	**6,183**	**12**	**3,376**	**392**	**2,700**	**1,322**	**15,365**

Source: (UGC, 2012).

Table 6: Number of Teachers in Different Universities in A.Y. 2017/18

University	Professor	Reader	Assistant Prof	Lecturer	Asst. Lecture	Teaching assistant	Total
AFU	33	32	na	57	na	na	122
FWU	9	11	na	71	18	na	109
PU	0	11	na	35	13	15	74
KU	29	52	110	166	na	31	388
LBU	3	2	na	8	10	na	23
PokU	5	8	na	120	na	na	133
TU	688	1990	na	3853	1061	na	7592
MWU	na	4	na	124	na	na	128
NSU	38	114	na	299	33	na	484
PAHS	27	22	53	95	19	na	216
Total	**832**	**2246**	**163**	**4828**	**1154**	**46**	**9269**

Source: (UGC, 2017).

The overall trend in Nepal universities as shown by tables from 1 to 6 reveals that the number of teachers and post-graduate students is declining over the past several years. Up to the undergraduate level, the number of students is marginally growing. The student-teacher ratio is also declining overall; however, it has a varying trend across universities. In Tribhuvan University and BP Koirala Institute for Health Sciences, it has declined; however, in the case of others the ratio has increased (Table 7 and 8).

Table 7: Student-Teacher Ratio in 2010/11

University	Student - Teacher (Including Instructors)	Student – Teacher (without Instructors)
BPKIHS - Constituent campuses	7	8
KU- Constituent campuses	11	18
NAMS- Constituent campuses	1	2
NSU- Constituent campuses	3	4
PAHS- Constituent campuses	1	1
PokU- Constituent campuses	10	11
PU- Constituent campuses	18	25
TU- Constituent campuses	22	31
All- Constituent campuses	19	26

Source: (UGC, 2012).

Table 8: Student-Teacher Ratio in 2017/18

University	KAHS	MWU	PAHS	FWU	BPKIHS	AFU	NAMS	NOU	RJU	NSU	LBU	KU	PU	PokU	TU
Students	30.0	3,224	540	3,686	361	1,978	441	593	81	3,190	192	7,806	2,607	2,080	110,615
Teachers	na	128	216	109	208	122	205	na	na	484	23	388	74	133	7,592
	na	25.2	2.5	33.8	1.7	16.2	2.2	na	na	6.6	8.3	20.1	35.2	15.6	14.6

The student enrolment, students in post-graduate studies, number of teachers, the student-teacher ratio are the basic indicators to signal where the Nepal universities are heading to. We draw some problems in Section 5 and recommend some strategic measures for the proposed action plan to address them.

3. Methods: Developing a Sustainability Plan

Formulation of the sustainability plan in higher education is crucial in many countries. In the Canadian system, campus-level sustainability plans exist within the broader country-level educational plan (Lidstone, Wright, & Sherren, 2015). Based upon the review of major indicators pertinent to the higher education system, this study considers the importance of two major elements is the reform of higher education to be captured in Sustainability Plan: Mission, Values, and Goals set for a planning period, and the development of an index for monitoring the progress over time. Section 3.2 proposes the mission, vision, and values that Nepal universities should follow in the next phase of their higher education reform. This paper proposes a model to measure the scale of educational reform and the relative strength of different variables in this regard. This is explained with the help of the following equation:

$$UII_u = \beta_0 + \beta_1 EU_u + \beta_2 \sum_{r=1}^{4} EG_{ui} + \beta_3 STRU_u + \beta_4 \sum_{i+1}^{4} STRG_u + \beta_5 GPS_u + \beta_6 GPF_u + \mu_u$$

Where, u refers to university β_0, β_1, β_2, β_3, β_4, β_5 and β_6 are the coefficients of regression. UII refers university improvement index. EU and EG mean enrolment rates in undergraduate and graduate programs, respectively. STRU and STRG are student-teacher ratios in undergraduate and graduate programs, respectively. GPS and GPF mean grants per student and grants per faculty members, respectively.

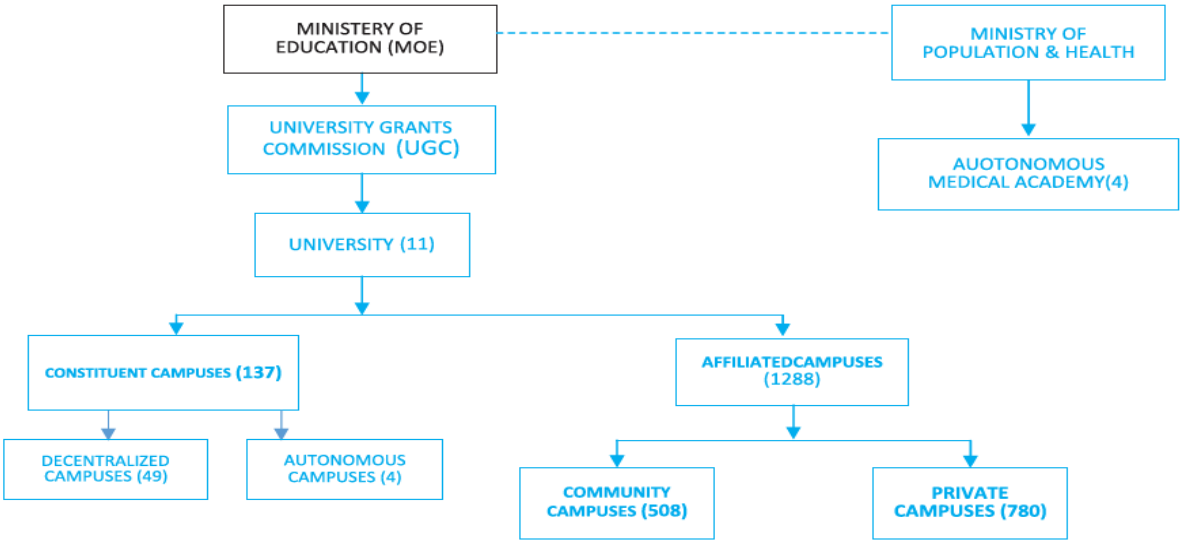
It includes the graduate programs: bachelors, masters, Ph.D., and post-doctoral; therefore, it ranges from 1 to 4. μ is the error term. β_1, β_2, β_3, β_5 and β_6 are expected to bear positive relation with EII because they are supposed to contribute to university ranking positively; whereas $\beta_5$is expected to bear negative relation with UII. It is because when the student-teacher ratio is low in higher education, student-teacher collaborative research might be more productive because of frequent interaction. However, the opposite is true in the case of the undergraduate scheme where a higher student-teacher ratio signals a bigger university with more attraction of students. The variable EII requires interpretation. This is the ratio of the number of universities in the world ranking to the rank number of the university under consideration. Therefore, the lowest ranking university has an EII value of 1 and the highest rank university has an index equal to the number of universities included in the ranking. Implementation of this model requires systematic time-series data that lacks in the case of Nepal universities. Therefore, we use some basic indicators in Section 3 to see the performance of Nepal universities and assess the trend of higher education in Nepal. However, the development of a proper database is warranted to see the improvement of higher education over time in line with the variables included in the model presented above.

Mission, Values and Goals: University Grants Commission (UGC) needs to prepare the action plan for the next phase of higher education reform. This paper has proposed a five-year Sustainability Plan (2020-2025) with a clear mission, values, and goals. Furthermore, this should follow some strategic approaches to progress towards attaining its mission and goals. This section presents a model with some insights into this endeavor. The mission of the sustainability plan should be to "strengthen market relevance and quality education, boost collaborative research and innovation, and enhance equitable access to underprivileged groups." Nepalese economy is intended to follow socialistic orientation as guided by the constitution; therefore, an inclusive approach of education in every sector of the country is the part and parcel of the overall development trajectory of the country. Higher education is also not an exception in this regard. The values behind it should be meant as the education for all.

Institutional Reform of UGC: University Grants Commission (UGC) is the channeling source of the public sector funds to provide Nepal universities. UGC primarily receives funds from the Ministry of Education on behalf of the government and distributes them to 11 different universities; however, four autonomous medical academies receive grants from the Ministry of Education via the Ministry of Population and Health. The cleaning and security services should be contracted with professional and private support companies.

Universities have constituent campuses and affiliated campuses; both of them receive grants from the respective university.

Figure 1: Organogram of the Fund Flow Mechanism through UGC

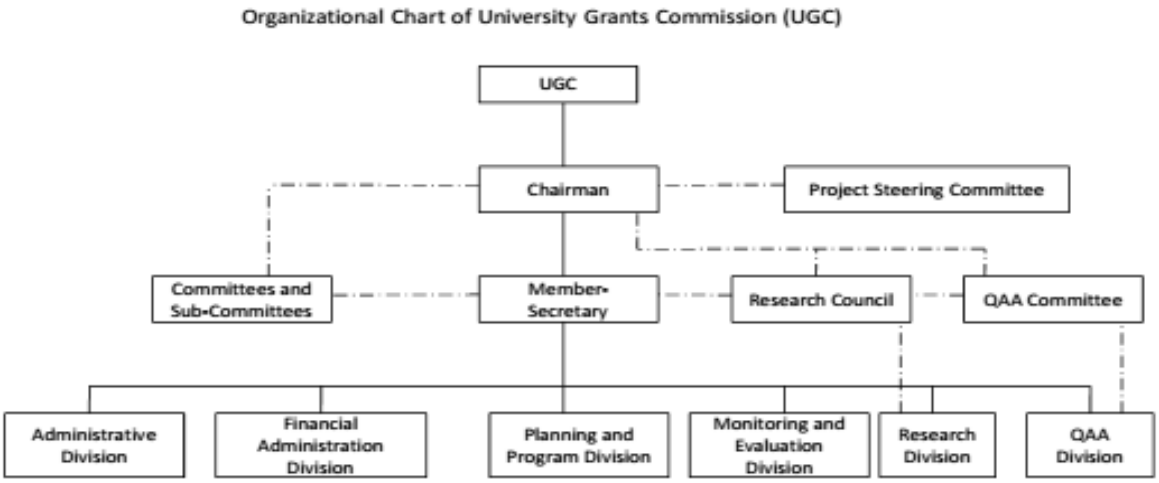


Source: (UGC, 2019, p. 46).

A sustainability plan requires addressing organizational change for sustainability reporting, (Ceulemans, 2015). This is a global practice. Here we discuss whether we need to have changes in the organizational structure of UGC in this regard.

Leadership and Management: UGC has a Chairman and Project Steering Committee; they are supported by Research Council, QAA (Quality Assurance Agreement) Committee, and other committees/sub-committees. Member secretary makes co-ordination of them. These councils, committees, and sub-committees have six different divisions: Administration, Financial Administration, Monitoring and Evaluation, Planning and Program, Research, and QAA. The organogram of the UGC is as shown in Figure 2.

Figure 2: Organogram of UGC



Source: UGC, Research Division.

The leadership and management structure of UGC looks to have all constituents in the system. This is suggested to remain the same in the next phase of the sustainability plan (2020-2025) as well.

Staffing: The commission had the provision of 31 regular staff; 16 of them are administrative staff and 15 technical/professional staff. All these positions have been fulfilled now. However, the commission has yet to recruit two-second class officer level staff; these two officer positions were created in the year 2096/97 but they still remain vacant. Human resource management should not only follow the plan but also the planning. The number of professional and technical staff requires an increase in the next sustainability plan whereas the number of administrative staff, particularly the office assistants should decline. The cleaning and security services should be contracted with professional and private support companies. A system should be developed to take contractual services from the service provider companies rather than recruiting individual staff for security service, maintenance of office equipment, gardening, cleaning, etc. This not only improves professionalism in the work environment but also reduces the long-term financial responsibility of the institution.

Roles and Responsibilities: Research Division, and Monitoring and Evaluation Division of UGC require strengthening with additional manpower. The Planning and Program Division may also require more senior level professional staff but this division's deliverables can also be enhanced by the intermittent involvement of the experts who can be recruited by out-sourcing. The monitoring and Evaluation Division is expected to establish regular monitoring and evaluation system in UGC and will work as a focal point to coordinate with the constituent and affiliated campuses. This will develop a systematic database of the campuses regarding the physical as well as human resources. A task force formed by the Ministry of Education (MOE) in the year 2012/13 recommended a total of 42 staff in the UGC, including both administrative and technical streams. Currently, UGC contains altogether 31 staff even after eight years. The relevance of the remaining 11 positions (proposed) needs to get reviewed. Upon necessity of them, the recruitment process should be initiated as soon as possible. For the proposed positions, the task force recommending different positions should also provide the job description as well; see also (MOE, 2012).

Systems, Process, Procedures of Fund Flow: KU, PokU, PU do have a relatively large number of students and faculty members next to TU. Therefore, they should have a formula-based grant flow system in place of the current traditional system. The formula-based fund flow system will be based on some basic parameters to determine the scale of the grant. Financial Administration Division might go further to boost campuses in receiving package support who want to go for the status of autonomous institutions. The expenses in transition must be met by the support from UGC.

4. Planning, Expenditures and Expected Results

Universities of Nepal receive financial support from the Government of Nepal (GoN) through the Ministry of Education and it is channelized via the University Grants Commission (UGC). It associates the financial resources both from the GoN and international development partners. However, the medical academies receive financial support for higher education and research directly from the Ministry of Health and Population. The grant every university receives depends on the size of the university, more specifically the number of students, faculties, nature of research, required physical facilities, among others. University Grants Commission annual report provides annual expenditures, number of student enrolments, teachers, the student-teacher ratio, and research support expenses per student and teacher. However, it lacks systematic release of the data in successive years.

Currently, the online report exists for the year 2007/08, 2010/11, and 2017/18 only. Consequently, the systematic analysis of the major indicators has become cumbersome and sometimes likely to be misleading. Available statistic from the year 2001/02 onward shows the growth rate of an annual budget to higher education fluctuating significantly. It fluctuated widely within the range of -12 percent to approximately +34 percent during 2001/02-2011/12 despite monotonic growth of the number of students and teachers in the universities for several years (Section 1.2). Should the figures are converted into a constant price with reference to a base year; the fluctuations would be further wider. However, in nominal terms, the overall grants are growing from 2003/04. At the current price level, the annual grants to all universities have

reached Rs. 9310, millions for the year 2017/18. The current five-year plan (2015-2020) is unavailable to individuals and researchers; therefore, an assessment of the success of the current plan that is under operation is yet to be conducted.

Expenses and Funding Sources: UGC has been providing research funds to universities, campuses and the faculty members as a part of the Higher Education Reform Project (HERP). Research funds are categorized as Ph. D. and M.Phil. fellowship, small research development and innovation grants, thesis preparation support for persons with disabilities, travel grants for participating in international conferences, support for conducting capacity development programs/training/seminars, partial support for Ph. D. fellows, Master's and M. Phil. thesis preparation support and faculty research grants. The government of Nepal has allocated 1.29 percent of the total budget for research and development in different sectors for the fiscal year 2076/77 (2019/20). The major breakdown of this budget was as follows:

· General research and development service for the federal government: Rs 198,810,000
· Research and development in Economic affairs: Rs. 2,043,000,000 for federal and Rs. 3,500,000 for province
· Research and development for environment protection: Rs. 3,974,000,000
· Research and development for health: Rs. 11,039,800,000
· Research and development for culture and religion: Rs. 62,200,000
· Research and development for education: Rs. 17,300,000
· Research and development for social protection: Rs. 773,700,000

For education, science and technology, the budget increased to Rs.163.76 billion. Total budget of UGC for the coming five years has been projected to be US$[1] 1,100 million. This consists of contributions by the government (93%) and the grants from the International Development Association (IDA) of the World Bank (7%), (UGC, 2019). However, the expenditures will follow two-pronged strategies: Results-Based Financing for Reforms and Expenditure Based Financing for Program Management. Results-Based Financing for Reforms refers to expenditure based on the actual expenditures that occurred in achieving given outputs. Therefore, every single Rupee spent under reform is associated with particular output. On the other side, Expenditure Based Financing for Program refers to the financing to every component of the program based on the size of the availability of the total budget. A summary of the proposed expenses and funding sources are as follows:

Support National Program
Total Financing size (5 years) : US$ 1,100 mil
Government : US$ 1,020 mil
Proposed IDA Contribution : US$ 80 mil
Funding Modality : Results-Based Financing for Reforms
: Expenditure Based Financing for Program Management
Implementing Agency : University Grants Commission/MOEST
GON-WB Project Signing (Expected) : November 2020

Scenarios and Projections: This section makes a summary of the sustainability plan of UGC in Nepal in the past years which will make a background to set the realistic targets in the next phase (2020-2025) of the sustainability plan that will be discussed in the next section.

Teaching: The general trend and existing scenarios of the higher education in Nepal can be summarized with reference to some indicators. Education Information Management System (EMIS) reports are either not published annually or not annually made available to the public. More importantly, the measurable and available indicators are enrolment in higher education, the number of post-graduate (masters, PGD, MPhil, and Ph.D.) students, numbers of teachers, student-teacher ratio, total grants, and net public expenditure per student. The trends of these indicators over the years are as presented in Table 9.

[1] I US$ ≈ 116 (January 2021).

Table 9: Existing Trend in Nepal's Higher Education

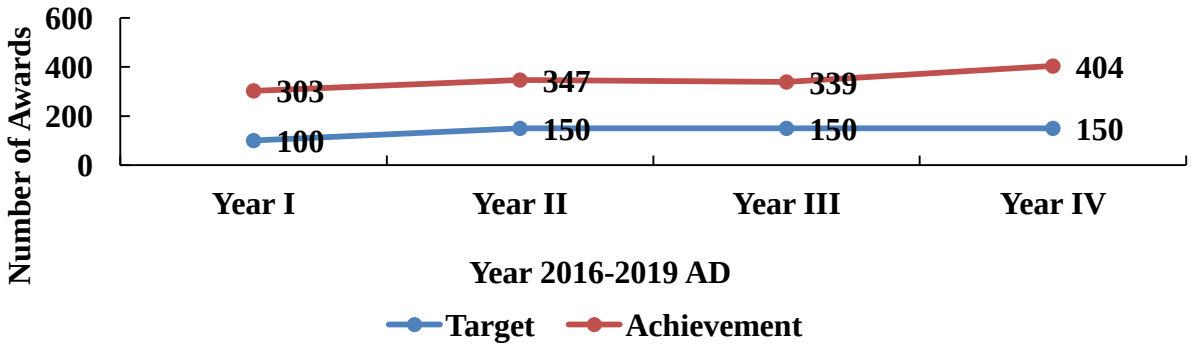
Indicators	2010/11	2017/18
Enrolment in higher education	407934	423996
Masters, PGD, MPhil, Ph.D. students	76166	59267
Number of teachers	15365	9269
Student-teacher ratio	26	14.14
Total grants		9.31 billion
Net public expenditure per student (in Rs.)	12481.6	NA

Source: Author's compilation from different sources including (The British Council, 2019).

Table 9 shows the discouraging trend of major indicators in Nepal's higher education. Students' enrolment in higher education has grown just by 3.94 percent during seven years (2010/11-2017/18), 0.56 percent per year. More specifically, even this dismal growth is concentrated in undergraduate enrolment; the enrolment in Masters, MPhil, Post-Graduate Diploma, and Ph.D. has rather declined by 22 percent in seven years, more than three percent annually.

Research and Publications: Despite the deterioration in teaching components, research and publication endeavors are rather improving in Nepal with grants from UGC. The number of M.Phil & Ph.D. grants are increasing over the years. Furthermore, the number of research articles published in peer-reviewed journals is also increasing in successive years. UGC provides three different research awards: small mini research grants to individual faculty members, faculty research, and collaborative research. The total awards granted in the last four years far exceed the target (Figure 3).

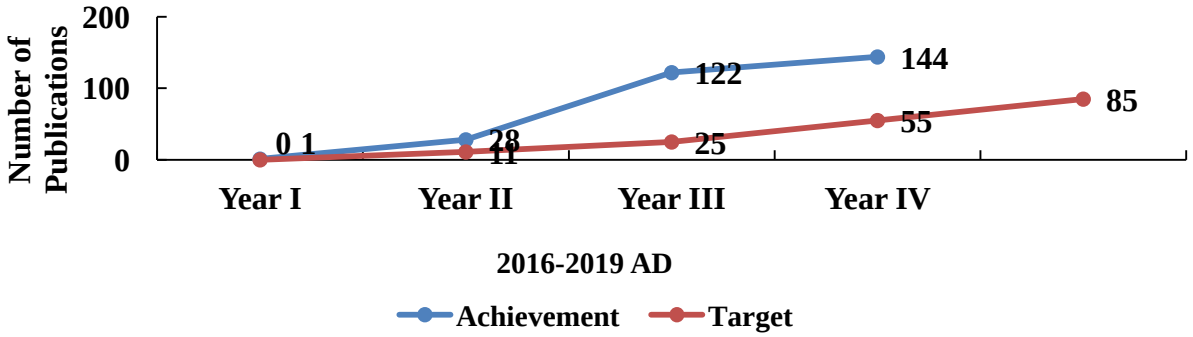
Figure 3: Research Projects Awarded



Data Source: Research Division, UGC, 2019.

The rise in the number of research awards in successive years has a corresponding impact on the number of scientific publications (Figure 4).

Figure 4: Number of Publications by Award Recipients



Data Source: UGC, Research Division.

Note: The figure for 2019 refers up to July only. The existing trend shows that achievements for the year 2020 will also be higher than the target. The figures for 2020 are yet to come.

Milestones and Timeline: It is suggested to make Nepal's higher education in standards of the South Asian average by the end of the second phase of the Higher Education Reform Project (HERP), i.e. by 2025. Three major milestones to be achieved within this timeline are proposed as follows (Table 10):

Table 10: Milestones Proposed for 2025

Indicators	Currently	Proposed level by 2025
Public sector spending on higher education (% of GDP per capita)	25.4	40.2+
No. of universities in Nepal within top 1000 universities in the world	1	5
Cost of 1GB of mobile data to every student in Nepal universities (in US$)	2.25	1.0+

Data Sources: Current figures from The World Bank, UNESCO Institute for Statistic, Times Higher Education, and UNESCO. Proposed figures are the author's estimation based on South Asian standards.

Note: + South Asian standard. The improvements in the higher education system in Nepal should be gauzed with reference to these basic milestone indicators.

5. Findings and Strategic Recommendations

Findings: Nepal's higher education faces several problems. More importantly, there remains poor alignment of higher education with labor market needs. "Quality Assurance" and "Quality Enhancement" in higher education with reference to the need of the labor market deem necessary in this regard. The declining number of students and faculty members in Nepal universities is the major challenge now. Although the number of undergraduate students is marginally growing over the years, the problem is more severe in post-graduate education. As of May 2019, over 300,000 Nepali students are studying abroad in various universities; their concentration is more in Australian, and Japanese universities followed by Chinese, US, Indian, and European universities. Moreover, according to the Foreign Education Department in the Ministry of Education, the number of Nepalese students who have received permission of going abroad for higher education has reached 323,972 by May 1999 (NepaliSansar, Online Media, 2019). The number of emigrant Nepali students, when compared with the number of students enrolled in Nepal universities, shows that over 41 percent of Nepali students are studying abroad and less than 59 percent in Nepal universities. When the number of students who have received permission to study abroad is also considered as abroad students, the former significantly exceeds the number of students in Nepal universities and; the ratio becomes 60:40. The number of Nepali students going abroad in private fund got momentum from the year 2011/12. That year witnessed 10,354 students going abroad and the figure reached 56,216 in the year 2017/18.

In current years the number of students going abroad for higher education has increased annually by approximately 10,000. This alarming trend has not only caused erosion of the number of students from Nepal universities but has also caused a significant outflow of foreign exchange of the country. During the last six years over NPR 600 billion have flown out from the country (more than one-fifth of its current GDP), NPR 40 billion in the fiscal year 2018/19 alone (NayaPatrika and Nepali Times, 23 July 2019). Governance and regulatory framework is rather a week in Nepalese higher education. University's highest authority gets an appointment with political affiliation. It is quite common in Nepalese public universities. This tendency, thereafter, moves downward for the appointment of deans, department heads, and the heads of various divisions in the universities. Furthermore, student organizations are quite strong in affiliated campuses of public universities; they are the sister organizations of respective political parties. This makes group meetings and mass gatherings quite frequent with lots of disturbances in running the lectures. Moreover, classes are more of lecture types and fewer workshops are organized. Research and innovation are rather weak in Nepal universities. Teachers with long years of services despite the lack of research and innovation

have a high chance of getting promotion compared to faculty members with strong research, innovation, and publication performance during a short span of time. The promotional activities are, therefore, more hierarchical rather than based on academic merits and excellence.

Strategic Recommendations: Higher education reform in Nepal requires several strategic measures. Reforms are warranted in four major fronts: teaching, research, institutional, and fund flow system. This section enumerates some of them.

- The sustainability plan provides due emphasis to market relevance and quality of education with its assessment. The mismatch between the market requirements and the quality/skills of the graduates needs to be mitigated gradually.
- Academic and scientific papers published in peer-reviewed international journals should be the major criteria of the recruitments and promotion of the faculty members. Fast track promotion and recruitment system should be strictly implemented in every department/faculties based on the international standard/norms fulfilled by the faculty members. More specifically, this should be a professor's and associate professor's level. The recruited faculty members should be provided with the responsibilities of winning competitive grants at least once in every academic year followed by a scientific publication. This will help upgrade the universities in global university ranking.
- Excellence-based faculty recruitment should get emphasis. So far, the recruitment of the faculty members gives undue importance to the longevity of the services they have rendered to the universities. Emphasis should be on the academic merit-based recruitment system. It is recommended to dissolve the Service Commission in the universities whose works can be more politically-biased as history shows. Faculty recruitment should be by the department or graduate school itself. A committee of senior professors including some foreign university professors would review the publications, make the evaluation, and make a recommendation for the recruitment/promotion. In the case of the administrative staff, the Human Resource division of the respective university can follow the university-specific system in collaboration with the Public Service Commission of the country.
- Age limit to the promotion or recruitment of the faculty member should be completely removed so long as s/he is below the retirement age.
- The courses in every academic program require revision regularly based on their market relevance, the scope for employability, and required skills in the market. It will boost institutional quality enhancement activities.
- The age barriers in the entry and promotion of faculty members should be completely removed so long as s/he is below the retirement age. The evaluations should be completely based on academic merits rather than the age and longevity of the services. The involvement of foreign university professors should be an integral part of the evaluation/recruitment process. It will gradually scale-up the academic excellence of the university to international standards.
- Subsidies are warranted to provide mobile data to the students/researchers in the universities and their constituents as well as affiliated campuses. This will substantially reduce the cost of education materials to the students on one hand and students will have recent educational products on the other.
- The research award schemes established by UGC in the form of three different grants have proved to be very effective. It has a significant positive impact on publications in refereed journals. The schemes are recommended to continue in the proposed model as well.
- Data management and information system require strengthened. Universities will develop their network servers to connect their entire constituent, private, and community campuses.

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Lecturer Perceptions of General Education in Enhancing Self-Efficacy of Accounting Students

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Abstract: The research paper aims to obtain the perceptions of lecturers on the influence of General Education in enhancing the Self-efficacy of accounting learners. Interviews with lecturers from Durban University of Technology (DUT) and Mangosuthu University of Technology (MUT) were conducted to tap into their views on the aspect of General Education and establish any impact on learners' Self-efficacy. The researcher has observed, over many years of lecturing experience at the university that some learners are eager to learn and can address new tasks, while others appear uninterested or unmotivated. Many learners display a high degree of faith in their skills, while others appear uncertain of themselves. The question then arises: What strategies can a classroom teacher or lecturer use to increase learners' confidence to learn new material? There is an opportunity for the improvement of General Education skills that can enhance learner performance. Hence, the main strategy would be to incorporate General Education Modules into the curriculum. Similar to General Education skills, there is also a lack of Self-efficacy in current learners. Further attention must be devoted to General Education skills, as these are essential. Moreover, these skills appear to be very poor amongst current learners and respondents believed that Self-efficacy could have a positive effect on the academic performance of learners. Methods for enhancing Self-efficacy reveal that the main strategies should revolve around innovative teaching, learning and research methods; increasing skills development such as critical thinking and computer skills; and promoting more Self-efficacy based workshops and programs.

Keywords: *Financial Accounting, Critical Thinking Skills, General Education Skills, Management Accounting, Self-efficacy.*

1. Introduction

The Department of Basic Education (2014: 109) indicated that the level of pass achieved by learners in Mathematics increased between the years 2011 and 2013. There was also a sharp drop in the pass rate in 2014. The percentage of those candidates who passed Mathematics at 40 percent increased from 30.1 percent to 40.5 percent between the years 2011 and 2013. There was also a decrease in the year 2014 to 35.1 percent for candidates who passed Mathematics at 40 percent. Moreover, there was a decrease in the number of candidates writing Mathematics from 241 509 in 2013 to 225 458 in 2014. The 5.4 percent drop in candidates who passed Mathematics at 40 percent and the declining number of 16 051 learners writing Mathematics 2014 remains a great concern. Similar scenarios persisted in Mathematical Literacy. Taylor, Van der Berg and Mabogoane (2012: 20) suggested that grade 6 language teachers did not score well on the SACMEQ reading exam. NEEDU (2013) notes the most striking aspect as that being 72% of the three best learners in each class studied were reading below the average grade 2 student benchmark and 22% were on or below the weak level.

Ramos (2010: 31) postulates that reading strategies and writing skills have a strong connection. Such results show that reading strategies are valuable predictors of writing abilities. The University of Central Arkansas (2018) indicates that General Education has six skills areas. These focus areas are: **(i)** Written Communication; **(ii)** Critical Thinking; **(iii)** Oral Communication; **(iv)** Information Technology; and **(v)** Quantitative Analysis and Researching. According to Greer (2012), General Education helps learners to achieve a synthesis of oral and written communication, physical and natural sciences, humanities, arts and social sciences, fitness and wellness skills, comprehension and knowledge. It is a comprehensive collection of learning experiences organized through subject disciplines to provide the requisite skills and information to work in society. Washington State University (2019) notes that General Education is important to operate well in the workforce and it promotes the incorporation of the planned careers of learners in wider, more inclusive and multiple contexts. Exposure to the different beliefs, viewpoints and cultural practices is valuable

training for the kinds of work that college graduates do. This experience will greatly enrich their understanding of the context and significance of careers.

Siegle (2000) defines Self-efficacy as a judgment of an individual on being able to perform a particular task. Self-efficacy refers to the "I can" or "I can't" creed of a learner. Self-efficacy and self-esteem are distinct. Siegle (2000) claims that, unlike self-esteem which represents how learners feel about their worth or importance, Self-efficacy represents how positive learners are about particular tasks being carried out. The researcher also posits that Self-efficacy is unique to the task being attempted and that high Self-efficacy in one field does not correlate with high Self-efficacy in another. For example, high swimming confidence would not equal high baseball confidence or high Mathematics Self-efficacy does not naturally follow high spelling Self-efficacy, for comparative purposes. It has been found that Self-efficacy beliefs have certain shifts in the success sense of a student, interfere with self-regulated learning processes and arbitrate the academic achievement of learners (Zimmerman 2000). Self-efficacy is an important motivational concept, which according to Gist and Mitchell (1992) affects individual decisions, goals, emotional responses, commitment, coping and resilience. The authors further argue that Self-efficacy changes because of learning, experience and feedback. The construct of Self-efficacy has received increasing empirical attention in the organizational behavior literature.

Gist and Mitchell (1992) claim that it is easier for people who believe they will do well on a mission than for those who believe they will fail. Improvements in Self-efficacy are correlated with bona fide improvements in the level of skills. However, additional understanding of efficacy arises through shifts in temperament, motivation, and the mission itself. General Education will empower learners to be more self-reliant while studying. Zimmerman (2000) argues that Self-efficacy has proven to be sensitive to changes in learning methods especially those involving greater self-regulation and predictive outcomes of achievement. The research paper envisages that the Self-efficacy level of learners who undertake the General Education Modules will be higher than before the introduction of the modules. General Education will enable the student to have more confidence in themselves when dealing with quantitative analysis, problem-solving; critical and creative thinking; written and oral communication; information and technological literacy; teamwork and ethical deliberation, enabling them to be more successful in the Accounting environment. The findings from the interviews will establish the degree of the relationship between the General Education Modules and Self-efficacy and the influence thereof on the academic performance of accounting learners. The findings will positively contribute to the university's learner pass rate and ultimately government funding.

2. Literature Review

Socio-Economic Status: The present section addresses issues regarding socio-economic challenges experienced by many learners and the impact thereof on their quality of education. It also addresses the link between the socio-economic status of students and education; the significance of socioeconomic status for higher learning; and the characteristics of better functioning schools. The section includes an overview of the socio-economic status of other African countries.

Overview of Socio-Economic Status: Corrigan (2009) of the South African Institute of International Affairs points out that socio-economic development issues have been identified in six African countries that have received Country Evaluation Reports from the African Peer Review System (APRM), namely Ghana, Rwanda, Kenya, Algeria, Benin and South Africa. All these countries have gone through difficult phases in the relatively recent past. Corrigan (2009) states that the APRM Country Evaluation Report indicates that inequality, land access, inadequate education systems, gender discrimination and poor healthcare systems are common problems amongst these countries. In an article titled 'How does socio-economic status impact on educational outcomes in South Africa?', the University of South Africa (UNISA) (2012) reports that an independent researcher indicated that nearly 75% of all South African children are trapped in poverty and the lack of financial and social capital causes them to go to poorly performing schools.

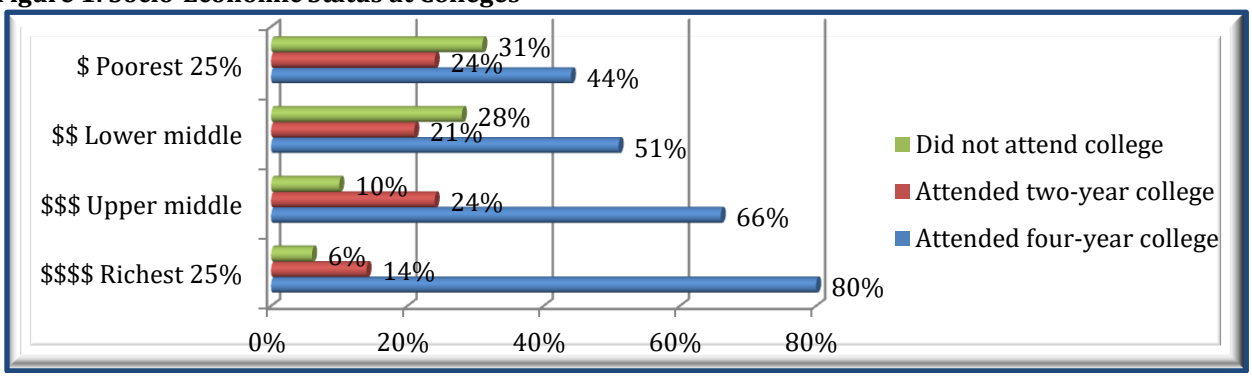
Socio-Economic Status and Education Relationship: The standard and quality of education that an individual receives is a contributing factor to the number of prospects that are available to the individual. The increase in educated individuals will contribute positively to higher levels of labor development. Education is a key factor in a country's socio-economic advancement and plays a key role in developing human capabilities

and speeding up economic growth through a society's awareness, abilities and innovative power (Kiani 2015). Kiani (2015) also believes that the positive effects of education include declining poverty and inequality, improving health status and good governance in socio-economic policy implementation. The lack of meaningful schooling and urban representation in committee membership and office holding leads to reduced involvement in growth programs at the advanced levels (Imoh, Nwachukwu and U-James 2009). Wall, Pettibone and Kelsey (2005) postulate that socio-economic standing has a substantial influence on a person's level of involvement related to community engagement, as well as a person's education standards and income. Angba, Adesope and Aboh (2009) highlight that as a person attains a higher education standard, the attitude of the person towards involvement in community development is likely to increase constructively. Oladipo and Adekunle (2010) believe that people with high educational achievement are generally fast to adopt innovation and that there is a positive connection between both the standard of education and people's cultural-economic position in society. With the cost of a four-year tertiary education increasing rapidly, affordability has become a major obstacle for equally intelligent and deserving learners.

Higher education has provided sufficient proof of its viability over time and of its capacity to adapt and bring about change and development in society. Society has increasingly become more knowledge-based because of the scale and pace of change so that higher learning and science now serve as critical components of individuals', societies' and nations' political, socio-economic and environmentally sustainable growth (UNESCO 1998b: para. 3 line 1). The most essential part of the debate involves study quality and whether or not this works adequately for the various inputs that might complicate the interpretation of resources. Taylor and Yu (2009) argue that people with higher educational accomplishment and high socioeconomic status are much more inclined to become active in the school group, thus expanding the sense of duty of the school staff towards the parents and contributing positively to the school standard. Several other studies have also shown that parents with a good education history may have a detrimental impact on the education of their children. For example, the statistical models may not adequately account for other inputs that affect student achievement such as the nature of family inputs. The estimates may then erroneously assign the higher student achievement because of better family aspects as compared to some of the school characteristics (Hanushek and Woessman 2007).

Socio-Economic Status on Higher Learning: According to Landy (2012), for high school students who score in the top 25th percentile on standardized tests, the socio-economic background remains the most important indicator of whether they will go on to achieve college graduation. Landy (2012) points out that high-scoring learners from a poor socio-economic background, according to the 2010 Century Foundation survey, were only around 50 percent likely to attend a four-year college as their wealthier peers, but five times more likely to attend no college at all. Landy (2012) notes that the research conducted by the company found that 74 percent of students in highly selective colleges come from the wealthiest socio-economic market, while only three percent come from the bottom fourth. Data from the United States Department of Education indicate that learners who score in the top 25 percent on standardized tests do not have equal opportunities to pursue secondary education (Landy 2012). The author further states that data indicate that learners from rich socio-economic backgrounds are more than 80 percent more likely to attend a four-year college program than their peers from a poor socio-economic background. Learners from a poor socio-economic background are five times more likely to experience no college at all, as shown in Figure 1 on socio-economic status. Landy (2012) believes that it is socio-economic factors and not the wealthiest learners that dominate selective colleges simply because they are the smartest.

Figure 1: Socio-Economic Status at Colleges



Source: Landy (2012). Adapted.

Analysis of Socio-Economic Status: When learners start discovering drawbacks in educational opportunities, they may expose a collection of shortcomings, such as failure to engage in community development, programs. A greater literacy level is also one of the key contributing factors to favorable attitudes towards involvement in developmental programs. The quality of a country's education system plays a crucial role in providing a way out of poverty. Literacy and numeracy empower learners to participate in society meaningfully. Learners from poor family backgrounds face an educational disadvantage during their schooling, and socioeconomic status in large measure influences educational outcomes, which then, in turn, decide the socio-economic status of the next era. Data from the United States Department of Education indicates that learners who score in the top 25 percent on standardized tests do not have equal opportunities to pursue secondary education and that learners from rich socio-economic backgrounds are more than 80 percent more likely to attend a four-year college program than their peers from a poor socio-economic background. Finally, as some researchers pointed out, the wealthiest learners dominate selective tertiary institutions not because they are simply the most intelligent but socio-economic dynamics also play an important role in the choices of tertiary institutions by parents.

General Education Policy and Procedures of DUT: In an email communication on 05 December 2014, the then Vice-Chancellor of DUT, Professor Ahmed Bawa pointed out that in 2015, the institution will carry out its first experiments with the new General Education curriculum elements. The rollout would take place effectively in 2016 and DUT will have a year to prepare for this launch. According to the then Vice-Chancellor, the rollout was effective in 2016, but the new Management Accounting curriculum only began in 2019. The current study began in 2015 in anticipation that General Education modules will begin in 2016 but the late start of the new curriculum in 2019 has led to a four-year delay in the study. In the same email communication, the Vice-Chancellor also indicated that the new curriculum will be the signature of DUT and would ensure that DUT graduates be provided with a more holistic education curriculum, thereby ensuring that they are not simply trained for the job market but also acquire a more holistic approach to education. The Vice-Chancellor further maintains that the inclusion of the General Education component will change the nature of education within the institution. General Education will be part of a process for the formation of the entire undergraduate program from first to final year and may also be included as stand-alone modules or be embedded within program or faculty modules.

General Education Guidelines: Senate approved curriculum renewal at DUT concerning General Education on 29 August 2012 with the intention of implementation in January 2015. Kift (2008) highlights the importance of developing globally portable people so that they can effectively participate in information generation and management in an increasingly assorted and globalized place of work. For this purpose, curricula and pedagogy design must prepare students for jobs while simultaneously preparing them for vital citizenship in a developing and unstable democracy (DUT 2012: 1). According to DUT (2012: 1), all its graduates after completing the program should be proficient in the following categories:

i. Strong competencies and skills like:

- Literacy of knowledge;
- Oral and written communication;

- Numerical competence; and
- Technology applications.

ii. Innovation, comprising:
- Entrepreneurship; and
- Management.

iii. Social Responsibility, comprising:
- Multiplicity; and
- Critical and engaged citizenry embedded in a local and global context.

iv. Human Development, comprising:
- Self-awareness; and
- Lifelong and self-directed learning.

v. Wide knowledge of the discipline and/or career they select, as well as:
- Acceptable discipline or technical approach to the development of information; and
- Adaptability to the workplace.

General Education Objectives: DUT (2012: 2) states that the General Educational policy priorities shall be to:
- Create a learner-centered learning environment incorporated into the local context;
- Train students for a dynamic and increasingly competitive global work world; and
- Nurture dedicated and vital citizenship in an evolving and vulnerable democracy in a constantly evolving world system.

General Education Model and Outcomes: Bourke, Bray and Horton (2009) believe that there are three models for the delivery of General Education. The first is the Core Model, which is very restrictive and requires learners to complete a prescribed set of common modules. The second is the Distribution Model, which permits greater learner choice from the different approved categories. The third is the Decentralised Model, where the faculty or department agrees on the General Education requirements for their courses.

General Education Model: According to DUT (2012: 3), the university has a combination of Core, Distribution and Decentralised models.

General Education Outcomes: DUT (2012: 3) highlights that learners can build and improve skills in information, abilities and approaches through their involvement in General Education in the context of their institutional studies through the following:
- Theoretical and practical skills, as well as written and oral communication skills in English, Mathematical and/or quantitative reasoning, analytical and rational analysis and applications of technology;
- A creative and imaginative program;
- Empathy and diversity recognition in a national and global sense;
- Public accountability, as well as physical and moral knowledge and ethical thinking in resolving multifaceted social issues and problems;
- Individual development; and
- Integrative approaches for learning through general and selected fields of study.

General Education Components: The guiding principles for DUT's General Education include the following:
- The General Education section will include 30 percent of the actual overall credits of an undergraduate program and that the 30 percent comprises the following:
  - 10 percent will be institution-wide and that is external of the home faculty and academic section
  - 10 percent will be faculty-based
  - 10 percent will be program-based;
- The management and allocation of credits are to follow the Curriculum Renewal Project requirements from the Centre for Quality Promotion and Assurance. The General Education Modules include at least eight credits and may rise in multiples of four;
- The General Education component will be made up of:

  - Mathematics and/or quantitative reasoning
  - Writing-intensive modules
  - 2-4 modules on KZN;

- General Education will be innovative and have an excessive impact on teaching and learning methods, together with:
  - community commitment and
  - technology in teaching and learning;
- Assessment plans will comprise the measurement of General Education outcomes;
- Assessment plans will provide for the validation of exemptions and Recognition of Prior Learning;
- General Education themes will be associated with the results and graduate aspects;
- A group of General Education optional modules will become accessible for learners to select from;
- A comprehensive structure and a series of both obligatory and/or optional modules are to conclude in capstone learning proficiencies; and
- Permanent academic staff will oversee General Education (DUT 2012: 3).

DUT (2012: 5) highlights that the Cornerstone module will comprise 12 credits and will be compulsory for all DUT first semester undergraduate learners. The cornerstone module will comprise writing, reading, communication, language, quantitative reasoning, technology applications (including online learning/eLearning), human and social sciences.

General Education Themes: DUT (2012: 5) reports that the themes playing a significant role in General Education will include:

- Sustainability of the environment;
- History, politics, economics and philosophy;
- Beliefs and the general public;
- Work readiness;
- Entrepreneurship;
- Personal improvement; and
- Physical condition and wellness.

The above themes will form the basis for the entire undergraduate curriculum from the first to the final year and can be used as stand-alone modules or integrated with program or faculty modules, as well as providing elective modules of eight credits each. A learner must choose from the themes a total of three components for a 3-year program and four components for a 4-year program, for the General Education portion of 10 percent. The modules should be from outside the faculty where the course has been undertaken.

Self-Efficacy Role: Nearly everybody can decide on objectives that they would like to achieve, aspects they would like to improve upon and things they would like to accomplish. Nevertheless, most people do know that it is not as easy as people think to initiate such schemes into effect. Bandura and several others investigated and found that the Self-efficacy of a person plays a critical role in the way to manage goals, tasks and challenges. Bandura and others have researched and found that an individual's Self-efficacy plays a key role as to how to manage goals, tasks and challenges. Cherry (2018) highlights that those learners who have a robust awareness of Self-efficacy:

- Vision thought-provoking difficulties as responsibilities to be grasped;
- Mature a deep sense of the attention in the actions in which they take part;
- Develop a deeper understanding of their desires and behaviors; and
- Make progress speedily from hindrances and displeasures.

Cherry (2018) also believes that those learners with a fragile common sense of Self-efficacy:

- Evade thought-provoking errands;
- Assume that problem activities and circumstances are beyond their ability;
- Concentrate on moral weaknesses and negative consequences; and
- Extremely quickly run the risk of losing trust in personal skills.

Besides, learners with elevated Self-efficacy tend to absorb and gain beyond persons with little Self-efficacy, even whilst the real skill rates are alike (Ormrod, 2008). The next section explains the sources of Self-efficacy.

Self-Efficacy Sources: In attempting to increase the Self-efficacy of learners, it is firstly important to identify and understand its sources. Cherry (2018) suggests that early childhood Self-efficacy continues to grow as youngsters cope with an extensive range of encounters, activities and circumstances. Nevertheless, Self-efficacy improvement did not necessarily conclude throughout early phases but continues to expand throughout entire lives as people gain new talents, interactions and the ability to understand (Cherry 2018). The sources of Self-efficacy stem from the learner's variety of experiences throughout their life. The primary research focus of Bandura's early work was on the tendency and ability of learners to understand and adjust their actions by vicarious interaction and social modeling, instead of by actual experience.

Bandura (1994) advocates that Self-efficacy beliefs are formed according to how people perceive the feedback they receive from four sources:
i. Past Performance (Bandura claims that one of the most powerful ways to build a clear sense of success would be through interactions of mastery);
ii. Modelled Behaviour;
iii. Social Persuasion or Feedback from others; and
iv. Physiological Responses.

Self-Efficacy Dimension Theory (Management Accounting): Self-efficacy judgments vary on three individual but interconnected dimensions. The measurement of Self-efficacy relates to these interrelated dimensions. The dimensions referred to are magnitude, strength and generalizability. The current section explores the impact of these three dimensions of Self-efficacy on Management Accounting. Management accounting Self-efficacy means assessing the ability to evaluate information correlations and then use historical patterns to forecast and direct business judgments. Management Accounting is concerned with historical data or information and utilizing the information to make judgments of what must transpire in the future. Moreover, it is not about not only simply collecting information or data, but rather includes formulating conclusions; defining and managing risks; evaluating information and using it for business decisions; planning and budgeting (e.g. compiling written statements or reviewing financial information).

Magnitude: The Management Accounting Self-efficacy magnitude can point towards the level of capability expected to work under pressure, working to deadlines, working long hours and heavy responsibilities. Hence, mistakes in the Management Accounting sphere can be very costly to the organization. Therefore, learners with a high magnitude of Self-efficacy in Management Accounting may tend to consider themselves as capable of performing more challenging management tasks compared to those with lower Self-efficacy judgments. Put another way, the magnitude of Self-efficacy in Management Accounting could be determined in terms of the levels of support needed to execute a task. Students with a higher degree of Self-efficacy in Management Accounting could consider themselves confident in functioning independently with less support and guidance than those who have less Self-efficacy judgments.

Generalisability: Self-efficacy generalizability reflects on the degree to which the judgment is limited to a particular domain of activity as indicated by Bandura. Within the Accounting context, these domains may well be considered to reflect analytical, advisory, decision-making and soft skills of trained management accountants. As a result, learners with a high degree of Management Accounting Self-efficacy generalisability will be able to use a wide range of skills competently. The range of skills is namely in Identifying and Managing Risks; Analysing Information (using it to make business decisions); Planning and Budgeting. However, those with low Management Accounting Self-efficacy generalisability would perceive their capabilities as limited to particular aspects of Management Accounting.

Strength: The strength of Management Accounting Self-efficacy judgment relates to the level of trust about the decision, or the confidence that a learner has regarding their ability to perform the various tasks as discussed above. Thus, not only would learners by way of high Management Accounting Self-efficacy perceive themselves as able to accomplish more challenging tasks (high magnitude), but the learners would demonstrate better confidence about their ability to successfully perform each of the activities.

Self-Efficacy Assessment Processes and Relationship Model: The philosophy of Self-efficacy refers to the classification of four types of variables involved in the production of Self-efficacy: enactive mastery; vicarious experience, verbal persuasion; and physiological excitement. The three assessment methods used to measure Self-efficacy can assess the degree of Self-efficacy that actually affects the outcomes of learners' success.

Assessment Processes: The three Self-efficacy evaluation processes are activity criteria analysis, knowledge attribution analysis and personal and situational resource evaluation. The discussion regarding the three assessment processes together with their association with Self-efficacy follows.

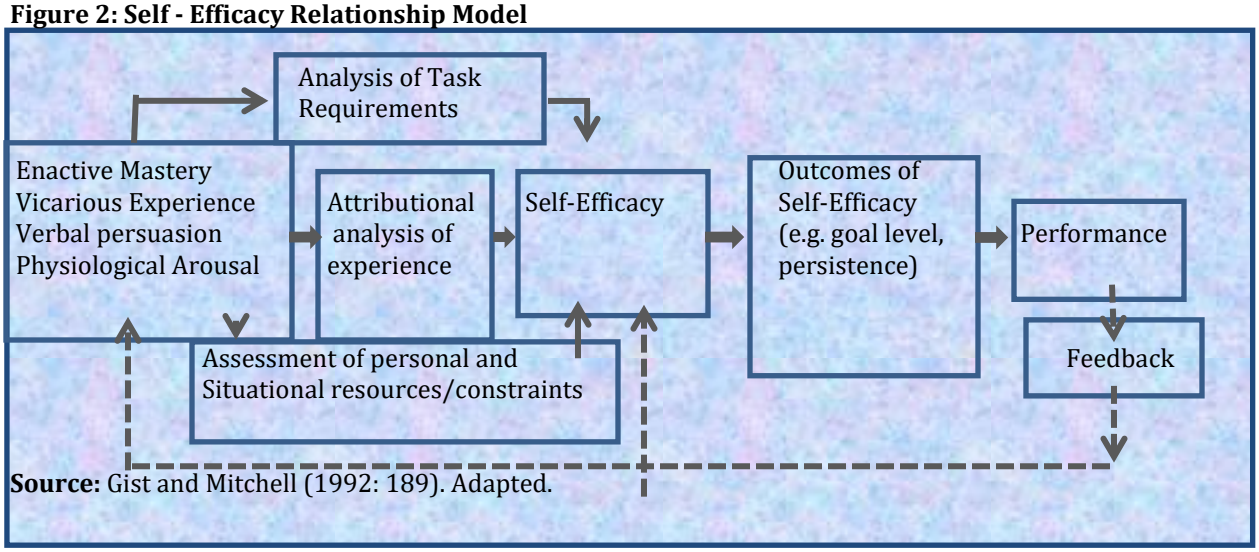
Analysis of Task Requirements: The performance required at different levels will depend on a learner's strength of mind. An analysis of task requirements produces judgments about what it will take to perform at various levels (Gist and Mitchell, 1992). The researchers highlight that when a learner is considering a responsibility of making a market prediction, he/she may acknowledge the degree to which mathematical skills like those of statistics are required to perform well, and the time required. Significantly, a learner attempts to identify and organize the distinctive information clues made available by the four types of experience. Accordingly, the activity analysis should be well described whenever the work is unique or even just discovered. The tasks that were performed personally and frequently by individuals in the past, then those individuals are likely to rely more heavily on their understanding of the causes of earlier performance levels (Gist and Mitchell, 1992).

Attributional Analysis of Experience: Gist and Mitchell (1992) point out that attributional analysis involves a learner's judgment about why such an accomplishment level took place. Even though individual experiences may perhaps make available the robust data for attributional scrutiny, causal information from experiences such as persuasion or modelling can also be gathered (Gist and Mitchell, 1992). The researchers indicate that learners may determine the appropriate skills and personality traits adopted by lecturers or peers in the performance of a task by calculating the extent to which certain skills are identical to their own and by inferring the magnitude of their commitment versus the ability required to produce a comparable result.

Assessment of Personal and Situational Resources: Gist and Mitchell (1992) emphasize that a person's evaluation of private and situational supplies relates to an individual's consideration of personal and situational factors. Personal factors may include such items as skill level, anxiety, motivation and energy available, while situational factors may consist of features, for instance conflicting requests and distractions (Gist and Mitchell 1992).

Self-Efficacy Relationship Model: The four types of factors exercised in the improvement of Self-efficacy are enactive mastery (personal attainments); vicarious experience (modelling), verbal persuasion and physiological arousal (e.g. anxiety) provide specific information clues. Figure 2 illustrates a simplified overview of the four types of factors used in the growth of Self-efficacy and the three categories of assessment relationship procedures of Self-efficacy. The focus is on the judgments and information groups before the efficacy assessment and the consequences of efficacy beliefs, for example, the goals are not the principal interest of Figure 2. The three forms of evaluation methods give the impression that they are involved in forming Self-efficacy. Gist and Mitchell (1992) stress that even though the three evaluation processes are distinct, progression through them may occur repetitively, and the relative importance within each method may be influenced by the complexity of the assignment itself or through the magnitude of previous experience with those of the challenge. The assessment procedures will produce knowledge data that could be used in a summary level decision process that determines Self-efficacy that is orchestration ability estimation (see Figure 2). Bandura (1988) highlights that self-appraisal is a process in which various sources of information are evaluated and integrated to form self-efficacy, and that the comparative valuation of information may differ across domains of functioning and situational environments.

Figure 2: Self - Efficacy Relationship Model



Source: Gist and Mitchell (1992: 189). Adapted.

Analysis of Self-Efficacy Assessment Processes and Relationship Model: The theory of Self-efficacy regarding the alignment amongst the four factors for advancing Self-efficacy and the three valuation procedures required to understand Self-efficacy will decide on the level of Self-efficacy that absolutely affects the learner's performance results. In the first two valuation procedures, job prerequisites and attributional assessment of involvement provide the required standards to perform meticulously on a job with an aptitude and motivational factors. The third assessment takes into account the personal and situational components. The assessment processes are a significant tool used in deciding the level of Self-efficacy.

Theoretical/Conceptual Framework: The current study gives rise to the use of empirical data produced from individual interviews used to produce semi-empirical data that do not fall under positivism. In this way, features of both the positivist and post-positivist opinions come into existence. It is likewise imperative to affirm and not to disregard the Critical Theory as its purpose is to build better and fairer situations and an equal opportunity culture in which individuals and combined freedoms are obligatory. For the most part, the disparity in the conceptual frameworks poses the issue of whether a particular form of analysis or more than one approach is utilized to answer the study. The research issue is complicated, together with the survey questions and the associated research goals. For this study, qualitative data were thus favoured. The synthesis of research methods has resulted in this work adopting a realistic stance (Creswell and Plano Clarke, 2011). The reason for supporting a pragmatic research paradigm is that this particular position considered 'as the philosophical partner of mixed-method research', provides a sustainable solution to complicated research challenges and affords a pragmatic, primary point of alignment with post-positivism as well as interpretivism (Johnson, 2004). Figure 3 illustrates the proposed theoretical model underpinning the present study. An in-depth analysis incorporating the study's problem statement and the proposed theoretical model underpinning the current research follows thereafter.

Figure 3: Proposed Theoretical Model Underpinning the Study

Source: Self-generated

3. Methodology

Research Design: The current research paper made use of a qualitative methodology.

Sampling Design: The target population considered for the current study were all DUT and MUT Management Accounting lecturers.

Sampling Techniques: A census survey was considered to be a more appropriate method and relevant to the present study.

Data Collection Method: Interviews (qualitative method) with lecturers from the Department of Cost and Management Accounting at DUT and MUT were conducted.

Data Analysis: The following techniques were utilized to arrive at the finalization of the qualitative results: Word Clouds, Cluster Analysis, TreeMaps, Word Trees, and Hierarchy Charts.

4. Findings and Discussion

The interpretation of data has been split-up into the following three key themes:

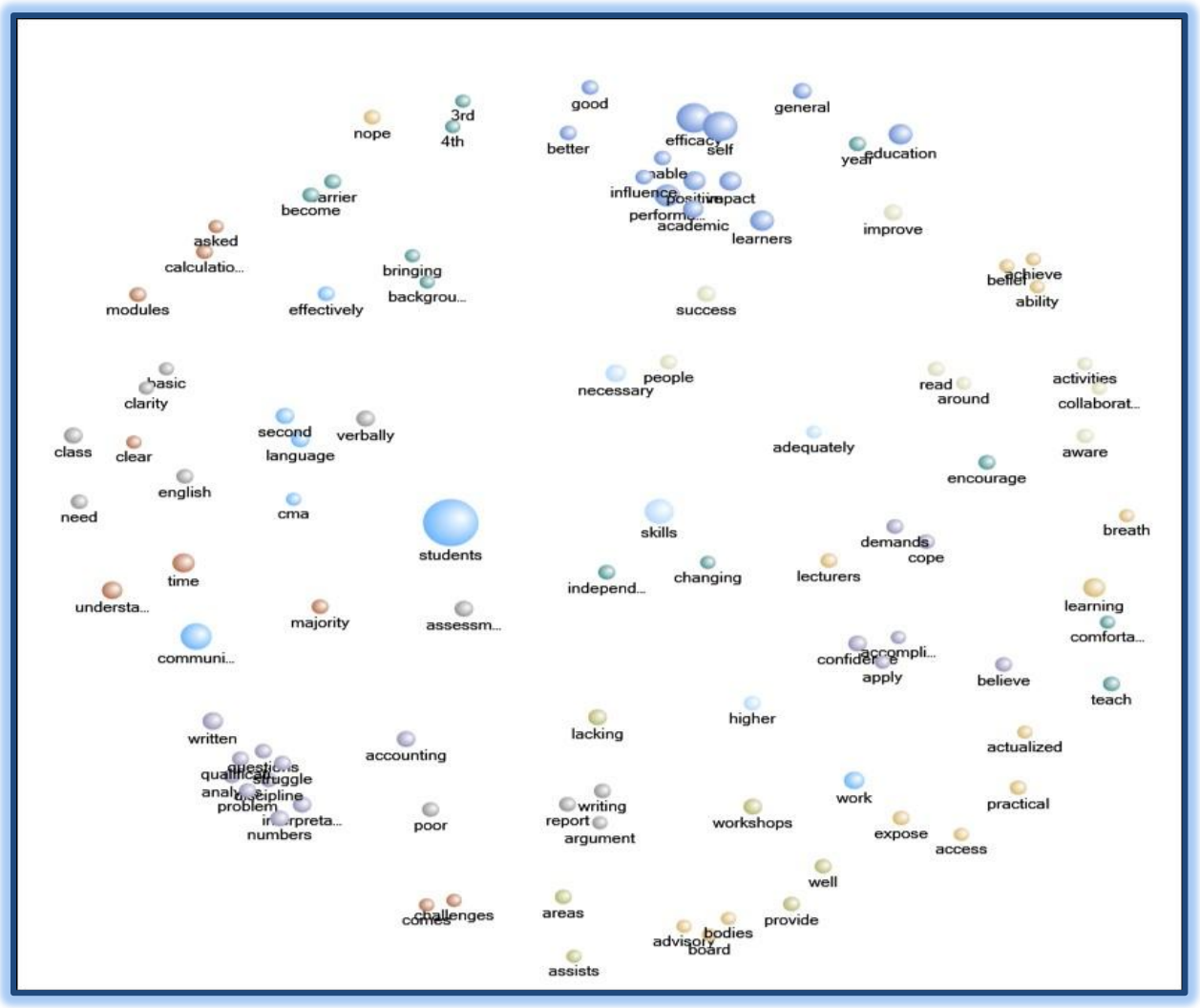
A. Self-efficacy,
B. General Education Skills and
C. Challenges.

Self-Efficacy Theme: Self-efficacy was a primary theme, informed by the following four sub-themes:

- Current Self-efficacy Ability,
- Effectiveness of Communication Skills,
- Self-efficacy vs Academic Performance and
- Other Methods to Improve Self-efficacy.

The discussion on each sub-theme is unpacked below. Figure 4 reflects the cluster analysis of the Self-efficacy theme.

Figure 4: Self-Efficacy Cluster Analysis



Current Self-Efficacy Ability: The analysis and interpretation of the data regarding the status of Self-efficacy of learners' ability revealed the following results.

Lack of Self-Efficacy: The majority of respondents believed that learners lacked Self-efficacy, as was determined from the following factors:

Rural Areas: The majority of students came from rural areas with little to no exposure or Self-efficacy abilities.

i. Needs to Be Developed over Time: Self-efficacy needed to be developed over time, and could only be done at the tertiary level.
ii. Dependant on Lecturers: Learners were too dependent on lecturers and lacked their own abilities to learn on their own.
iii. Communication Skills: Learners did not have proper/effective communication skills, which posed a barrier to Self-efficacy abilities
iv. English Vocabulary: Learners were deficient in simple English vocabulary.

Presence of Self Efficacy: No more than 20% of the respondents believed that there was some degree of Self-efficacy, which was determined from the following:

i. Senior Learners: It was only evident in final year and/or postgraduate learners;
ii. Innate Ability: Some learners had innate abilities to achieve their goals; and
iii. Curriculum Coverage: The curriculum did cover Self-efficacy to some degree.

Effectiveness of Communication Skills: The results of those researchers confirmed the current research findings where most respondents reported that learners lacked effective communication skills in the following ways:

Written Skills: Written communication skills appeared to be poor in learners. One respondent mentioned that especially in the Accounting discipline, written communication is a problem due to it being a numbers-based qualification, which poses a struggle for learners to apply written interpretation. As highlighted by the respondent: L12: *"Written communication is a big problem in the Accounting discipline. Because this is a primary number based qualification, learner really struggle with the interpretation and analysis questions".*

Senior Learners: It appears that primarily senior learners, such as the 3rd and 4th year as compared to those at lower level learners have more effective communication skills.

Report Writing: Two respondents asserted that report-writing skills are very poor and one respondent described it as pathetic. As highlighted by respondents:
L1: *"No they don't. With regards to assessments, their report writing is very poor".*
L12: *"Students cannot put an argument down in writing and their reporting skills are pathetic".*

Language: A majority of the learners are second-language English speakers. This poses a challenge to effective communication skills and their ability to grasp what is being mentioned. This makes lecturers continuously repeat themselves. As highlighted by respondent L5: *"CMA students are not able to communicate". "The majority of our students are English second language students".*

Interpretation: Two respondents asserted that the interpretation and analysis skills of learners are very poor, especially when it comes to numbers.

Expressive Verbal Skills: The majority of the learners cannot express themselves verbally, except those that went to the more advantaged (Model C) schools. As highlighted by the respondent: L12: *"Very difficult for students to express themselves verbally. Students who went to Model C schools find it easier to communicate verbally.*

Self-Efficacy vs Academic Performance: The literature review findings of Bandura and others was evident, in the current study findings in the following ways:

Work Independently: Learners will be able to work independently and know the academic expectations of them in their coursework.

Positive Link between General Education Skills, Self-Efficacy and Performance: Self-efficacy can improve academic performance, as General Education skills would enhance the efficiency and skill levels of learners to be able to manage their academic program. Many respondents were confident that Self-efficacy would enhance academic performance.

Enhance Understanding: Self-efficacy will enhance the understanding capabilities of the learner when it comes to their work and it can improve academic performance.

Confidence: Self-efficacy will contribute to building the confidence levels of learners, which will play a role in improving academic performance. As pointed out by respondents: L2: *"Firstly if they have confidence in their lecturers and should always apply the concept in real-life situations and curiosity about cost accounting".* L3: *"Students lack the confidence to cope with the intellectual demands of the program".* L10: *"If the learners don't have the confidence to pass, then possibly they would drop out. They have to believe in themselves to be able to accomplish their dreams".*

Other Methods to Improve Self-Efficacy: The methods mentioned by respondents to improve the Self-efficacy of learners were highlighted in the followings ways:

Workshops and Programmes

i. Workshops: Specialised workshops such as communication workshops and work-preparedness workshops could assist in enhancing Self-efficacy in learners; and
ii. Mentorship Programme: One institution did have a mentorship program to assist learners with Self-efficacy.

Teaching, Learning and Research: The methods of improving Self-efficacy when it came to Teaching, Learning and Research included the following:

i. Practical Internship-Experience/WIL: Learners ought to be exposed to practical experience or work-integrated learning (WIL), which will enable learners to see how their knowledge and skills fit into a real-world setting. As pointed out by respondents:
L3: *"Perhaps hand-on skills and internships/practical/scenario oriented learning"*.
L6: *"To ensure the knowledge gained is actualized".*
L12: *"Students can be exposed to Work-integrated learning".*
ii. Platforms for Research: There should readily available platforms for research, such as open access labs where learners can practice their research.
iii. Innovation and Creativity in Teaching: There has been a shift in how teaching and learning occur.
Therefore, the institution should look at innovative teaching methods that are creative and engaging/interactive for learners. Innovation and Creativity in Teaching can be achieved by the following:

Collaborative Learning: With the above, collaborative learning can improve Self-efficacy. As indicated by a respondent: L3: *"Pedagogies such as collaborative learning and inquiry-based activities can also improve* Self-efficacy*".*

Change of Assessment Style: Independent learning must be encouraged and facilitated by changing the style of how lecturers assess learners.

Skills and Abilities: Skills and abilities needed to be developed in the following areas:
Critical Thinking: Learners needed to be developed in critical thinking skills that can support their Self-efficacy.
i. Computer Literacy: Computer literacy skills have to be emphasized and developed.

ii. Promote More Reading: Learners should be encouraged to read more to gain knowledge, other than that in the classroom. As outlined by the respondent: L2: *"Encouraging the culture of reading. More successful people read a lot and are aware of what is happening currently in the economy and the world around".*

Motivational Speakers: Using motivational speakers can be of significant value to encouraging learners to build Self-efficacy skills. As indicated by the respondent: L12: *"Bringing in experts from second language backgrounds who have now become speakers and writers (people who have overcome the barriers sharing their success stories)".*

Monitoring and Evaluation: Monitoring and evaluation can be very important in improving Self-efficacy. It is therefore essential to carry out the following:

i. Monitoring of Progress-General Education Skills: After the implementation of General Education skills, learners' progress needs to be monitored and tracked. This can determine if it is working and contributing to Self-efficacy.
ii. Evaluation of Outcomes: With the above, the evaluation of outcomes for general education skills to determine if they are contributing and this will allow room for improvement.

Advisory Boards: One respondent asserted that advisory boards be created and maintained with industry. As highlighted by the respondent: L9: *"Maintain an advisory board with Industry and higher professional bodies".*

General Education Skills Theme: General Education skills became another prominent theme of the study. The theme was informed by the following sub-themes:

- Equipped with the necessary General Education skills;
- General Education skills vs academic performance;
- General Education skills vs Self-efficacy; and
- Improvement of General Education skills vs learner performance.

Figure 5 reflects the word cloud analysis for General Education.

Figure 5: General Education Skills Word Cloud Analysis

Equipped With the Necessary General Education Skills: The findings of the current study on the aspect of whether learners are currently equipped with General Education skills revealed the following:
Equipped: Only 20 % of respondents believed that learners were equipped. This was attributed to the following:

i. Language Centre: One institution (MUT) had a language center that learners attended 3 times a week.
ii. Computer Lab: One respondent asserted that the institution had a computer lab. It can be interpreted that a computer lab did enhance computer skills.
iii. Community Projects: One respondent indicated that their institution ran community projects such as ENACTUS, which entailed community empowerment activities, requiring learners to have the skills needed to run the project. These skills included the following:

Research: Researching ideas before implementation.

Proposals and Funding: Writing and presenting funding proposals.

Compete Nationally: Learners compete in ENACTUS projects nationally. Hence, they must have skills for this.

Not Equipped: A majority of respondents believed that learners were not equipped with General Education skills, due to the following reasons:

i. Teaching Approach and Methods: Developing General Education skills are dependent on the teaching, learning and assessment strategies of teachers/lecturers. If they are not effective in such, then this will hinder General Education Skills in learners.
ii. Poor Pass Rate: Poor pass rates indicate a lack of General Education skills.
iii. Interpretation: Learners have difficulties in interpreting questions, which implies a lack of General Education skills.
iv. Fearful of Self-Learning: One respondent made an important point that learners are fearful of learning due to them lacking a majority of the General Education skills. One assumes that learners are aware of such skills due to living in the digital age, but they are not.
v. Expressive Writing Skills: Learners cannot express themselves via written skills.
vi. Disadvantaged Backgrounds: Learners who come from disadvantaged backgrounds are the most affected by the lack of General Education skills, which is evident in them.
vii. Difficulties in English: Learners generally struggle with the English language due to it not being their first/home language. Hence, even whilst General Education is available in the curriculum to some degree, learners still battle to learn about it due to their poor proficiency in English.
viii. Curriculum Intervention Needed: More curriculum intervention is crucial to harness and develop General Education skills in learners. As highlighted by respondent L5:
"No, they are not adequately prepared with the necessary general education skills". "The curriculum needs to address these skills, as they are not merely developed by maturation. They are developed with practice".
ix. Computer Literacy: Many learners are not computer literate when they enter the campus, which hinders their progress.

General Education Skill vs Academic Performance: The above sub-theme examines the impact of General Education skills on academic performance. The following was uncovered regarding the impact of General Education skills on academic performance:

Application of Theoretical Knowledge to the Real World: The above was a major factor whereby General Education skills would enable learners to think and apply their theoretical skills to the real-world environment. This becomes a constituent of academic performance combined with practical workability. As expressed by respondents: L3: *"Quite germane to their accounting role as numbers have to be transformed to consumables for the end-users".*
L5: *"The General Education skills have a positive influence on academic performance. It helps with the application of theoretical knowledge of the modules".*

L10: *"The skills go hand in hand with the qualification because when the learners get into the workplace they will also need to have these skills".*

Holistic Success: General Education skills are important for holistic success, which includes the academic environment, business world and life in general.

Enhance Academic Success: The success of academic modules can get better as learners will ascertain how to cope with modules and the course as a whole. As pointed out by respondents: L11: *"They are very important aspects which a learner would need to be successful in their modules and the course as a whole. Lacking one of the skills listed above may impact negatively on a student's academic success".* L13: *"Teaching learners these skills is important as it helps them cope with their courses better".*

Build Confidence and Capacity: General Education skills not only have the potential to enhance academic performance but also contribute towards building confidence in learners. This can promote entrepreneurial capacity in KwaZulu-Natal, especially seeing that they are CMA learners.

Skills for Digitalised Environment: Skills such as report writing, analysis and information evaluation are important, especially in the current digitalized environment. As highlighted by the respondent: L7: *"They are very important as we need such skills in writing up reports, analyzing, quantifying and evaluating information which is presented in a digitalized environment".*

General Education Skill vs Self-Efficacy: The sub-theme examines the impact of General Education skills on Self-efficacy and the following was uncovered:

Writing Skills: Writing skills would improve through General Education.

Think More Independently: General Education skills would enable learners to think more critically and independently.

Accounting Skills Dependent on General Education Skills: One respondent asserted that the delivery of accounting skills was dependent on General Education skills.

More Competitive: General Education skills will stimulate critical thinking, which also allows learners to become more competitive.

Enhance Teaching and Learning Processes: One respondent made an interesting point, whereby General Education skills would benefit both the teaching and learning process. The learner would be able to understand teaching content better, which would make the teaching process smoother.

Enable Understanding: General Education enables learners to understand their courses and the questions presented to them.

Confidence and Creativity: General Education will promote more confidence and creativity in learners, which could improve their employability options.

Communicate Effectively: Communication skills would get better and it would make learners communicate more effectively.

Application of Knowledge: General Education skills will enhance Self-efficacy when it comes to learners applying knowledge gained at a practical level and in general. As indicated by the respondent: L6: *"Yes. I think it will enhance the learners' efficacy. Knowledge and its right application are the needed ingredients to enhance the learner's* Self-efficacy *as it re-orientates the learners on having a paradigm shift from the norms".*

Improvement of General Education Skill vs Learner Performance: The above sub-theme examined how General Education skills can be improved to enhance learners' performance. The respondents highlighted the following:

Incorporate General Education Skills into Core Curriculum Modules: The majority of respondents indicated the need for integration of General Education skills into the core curriculum. The integration of General Education skills is supported by the following responses from respondents:
L5: *"Incorporating general education skills into the core curriculum".*
L6: *"Incorporate general education skills into the curriculum".*
L7: *"They should introduce general education in terms of assessment, and it should be incorporated in the modules, not as a standalone. Integrate it within the module".*
L9: *"Incorporate General Educations skills in the modules/subjects".*
L10: *"Introduce such skills into the CMA program".*

Programs, Courses and Classes: The building on curriculum integration emanated other suggestion of more programs, courses and classes. The suggestions are separated into the following:

i. Short Courses – Elective: Provide short courses. This should be an elective for those learners that may require it and it should be free. This will improve the uptake of the course.
ii. Re-Curriculated Programmes: General Education skills will be a part of the re-curriculated programs and it will serve to address the lack of current skills.
iii. More Workshops: There will be more General Education skills-based workshops hosted.
iv. Language Skills Class: Classes addressing language skills be hosted and learners should attend these at least twice a week.
v. Extra-Curricular Activities: General Education skills can come into being through extra-curricular activities. Respondent L14 made a good point about being more creative in improving General Education skills through creative extra-curricular activities such as games and talent shows.

Learners' Responsibility in Education: One respondent asserted that learners also needed to take responsibility for their education to improve themselves, their families and address societal ills. As corroborated by the following reactions from respondent L9:
"Learners need to take pride in their academic life".
"Strive to better themselves and their families".
"This improves the country's education skills"
"Eradicate unemployment, crime".

Content Analysis of Curriculum: The curriculum needs to be evaluated and analyzed in terms of General Education content, as asserted by respondents. This will enable an improvement of the curriculum. As validated by the respondent: L3: *"I should think a solution to this should be based on the content analysis of DUT's curriculum in this area". "Until you review DUT's curriculum contents as suggested in Q5 above as to whether or not it's adequate, then the way forward in terms of improvement can be clearer. In any case, there will always be room for improvements, whether good or bad".*

Application of Theory and Practice: As part of General Education, learners need to be exposed to the industry so they can see how their theoretical knowledge will fit into the practical working world. As indicated by respondents: L2: *"Yes I believe if we take our learners to these manufacturing industries they will have a better understanding of what we teach them. For instance process costing, job costing systems".* L12: *"The GE skills will help with the application of theory and the analysis thereof".*

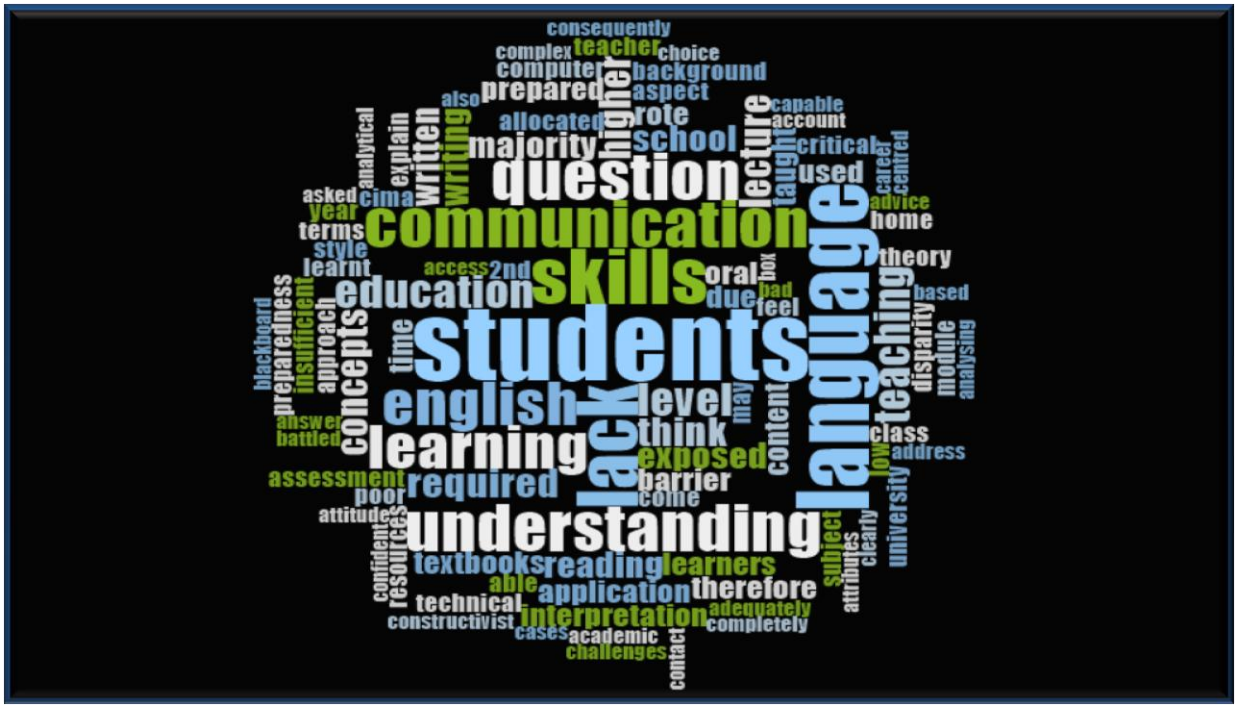
Teaching Learning Development Committee Support Unit (TLDC): One institution had a TLDC support unit to support learners and staff on General Education skills. This unit was important when it came to:

i. Prepare Learners For the Workplace: It equipped and prepared learners for the workplace.
ii. Build Learners' Confidence: TLDC **b**uilt learners' confidence and allowed them to express themselves.
Challenges Theme: Unfortunately, as with many initiatives and innovations, challenges do exist. The theme is, therefore, informed by following the sub-themes:

- Barriers to learners' success and
- Difficulties in the interpretation of questions.

Figure 6 illustrates a word cloud analysis of challenges to learners' success in Cost and Management Accounting.

Figure 6: Word Cloud Analysis of Challenges



Barriers to Learners' Success: The barriers to learners' success in Cost and Management Accounting included the following:

Teacher and Learning-Centred Barriers: It was important to note that 'teacher and teaching' related barriers to learners' success surfaced from the results. These were:

i. Time for Teaching and Learning: Module time of 4 hours per week can be insufficient for deep learning and the application of theory to practice. As validated by the respondent:
L12 *"Allocation of time/periods for learning and teaching and assessment. Most modules have 4 hours per week, but I feel that more time should be allocated for deep learning and the application of theory to take place".*
ii. Teaching Approach and Methods: The current teacher-based approach and methods of teaching need to be improved. There need to be more constructive and creative approaches. Furthermore, interactive e-learning approaches are required and the current Blackboard e-Learning systems are ineffective. As indicated by the respondents:
L5: *"The emphasis is on a teacher-centered approach as opposed to a constructivist approach school level."*
L12: *"Lecture-based teaching. Blackboard is purely a repository for content".*
L12: *"The notional hours and contact hours are not explicit for the learners".*
L12: *"A variety of teaching methods and learning styles should be taken into account".*
L13: *"Some lecturers do not explain concepts clearly enough".*
L14: *"Teaching style".*
i. Teacher Confidence Levels: Lecturers are also not confident in teaching due to their own levels of education, which makes it difficult for learners to understand their courses.
ii. Lack of Competent Teachers/Lecturers: In light of the low level of teacher education, this adds to inexperienced lecturers who cannot teach well. **Silo Teaching:** There seems to be a silo effect of teaching within the department.

iii. Lack of Assessments towards Creativity: Learners needed to be stimulated to think and learn creatively, however currently, there is a lack of assessments from lecturers that require learners to think critically and creatively.
iv. Lack of Application: Lack of application to concepts and formulae taught could also be stemming from teachers' lack of ability to show such application.
v. Integration- Foundation vs Higher Level: One respondent made a key point that there was a lack of integration of content between the foundation and higher-level subjects. It means that more integration is required so learners can see the trajectory of how their foundation skills play a role as they transit to higher levels of study.

Social-Environmental-Attitudinal Factors: The results mentioned below are summarised and emanate, as they were interrelated:

i. Attitude towards Learning: Attitude towards learning is low amongst learners.
ii. Career Choice: Some students were in the wrong career and therefore experiencing challenges.
iii. Environmental Factors: The university environment and university infrastructure seem to be posing challenges to learners.
iv. Thinking at a Higher Level: Learners do not seem to be exposed to critical thinking and higher levels of thinking, considering that they are in higher education.
v. Maturity: (no real explanation was given, but perhaps this can be related to low levels of maturity amongst learners).
vi. The disparity in S.A Education System: Learners' under-preparedness was associated primarily with the disparity in the South African education system. This relates to learners from poverty and disadvantaged backgrounds that went to disadvantaged schools. As highlighted by respondents:
L5: *"The disparity in the SA education system is a major barrier as the majority of our learners come from a disadvantaged educational background. Consequently, the majority of our learners are inadequately prepared for higher education".*
L5: *"Disparity related to quintile ranking".*
L14: *"School background".*
L14: *"Poverty".*
vii. Transition- High School to Tertiary: Learners did not seem to have mentality transitioned from the schooling level to the higher education level.
viii. Time Management: There was no real explanation given, but perhaps this can be associated with the poor time management skills of learners.
ix. Language - This was the main barrier as most learners were not first language English speakers.

Skills and Literacy: The learners were lacking/under-developed in the areas themselves, which became barriers to success, as evidenced by the findings below:

i. Communication Skills - Oral and Written: A number of respondents ranked oral and written communication skills as severely lacking, especially for students at a higher education level. As highlighted by respondents:
L5: *"Under preparedness for higher education in respect of graduate attributes such as communication skills in oral and written persuasion".*
L6: *"Lacking communication skills (Reading, writing and understanding)".*
L11: *"Lack of communication skills".*
L12: *"Written and oral communication skills".*
ii. Reading and Writing Skills: Learners lacked the academic reading and writing skills.
iii. Numerical Skills: There was a deficiency in numerical skills amongst learners.
iv. Mathematical Literacy: A deficiency in Mathematical Literacy was noted.
v. Computer Skills: Learners lacked proficiency in computers due to minimal to no exposure. As highlighted by the respondent: L10: "*Students are not proficient in computers. They are not exposed to any form of P.C. yet are required to know all aspects of a P.C".*

Resources: There is a lack of/barriers in terms of resources that hinder learner success, which include:
i. Lecture Rooms: lecture rooms are crowded.
ii. Finance: (no real explanation given, but perhaps this can be related to learners' financial situation).
iii. Educational Resources: There seems to be a lack of educational resources for learners. The following were noted:

Textbooks and Stationery: There seems to be a lack of textbooks and stationery. When it came to textbooks, there was a lack of textbooks that were CIMA orientated. As highlighted by respondents: L3: *"Insufficient textbooks that explain CIMA principles".* L4: *"Insufficient questions (from CIMA textbooks) by lecturers for use as class practice questions".*

Quality of Study Materials: The overall quality of study material was poor which posed a barrier to learners' success.

Access to Computers and Facilities: Students have limited access to computers and printing facilities.

Lack of Understanding and Interpretation: Learners lack the ability to understand what is required from them at a higher education level, as well as the complex concepts of their modules.

Industrial Non-Familiarity: Students are not familiar with the industry environment related to the applicability of their studies.

Difficulties- Interpretation of Questions: Similar to barriers, it was important to establish the factors that cause difficulties when it came to learners interpreting questions posed in class. These factors included:

Language: As previously emphasized, language remains a primary difficulty. It relates to the following:

English Not First Language: Students struggle with interpreting and analyzing questions due to English not being their first/home language.

Technical Language: Learners do not understand technical subject language as well, which hinders their progress.

Communication Skills: As emphasized, learners lack communication skills, especially at the first-year/entry-level. Furthermore, it is perceived that the communication module at the first-year level is too generic and basic and does not address the problems with written and oral communication skills.

Rote-Learning: Learners stick to memorizing and/or by rote-learning due to a lack of understanding of questions. Rote-learning at the tertiary level is not recommended, especially for practical subjects.

Differentiating Skills: Learners lack the skill of differentiating key points from the questions asked.

Interpretation and Analytical Skills: Learners lack the ability to interpret questions. Furthermore compounding the issue is the fact that the learners are not familiar with the basics of the English language. Learners do not understand terms and synonyms used in examples. As highlighted by the respondents: L12: *"The terms in the questions may be synonyms of the terms used in class, but because of communication barriers, they are lost. They then feel that it is concepts that were not taught".* L14: *"Students lack analytical skills when reading and interpreting the questions".*

5. Conclusion and Recommendations

Results imply that there is currently a severe lack of General Education skills in the current learners, which needs attention. The results further imply that General Education skills can have a positive impact on academic performance, as per the factors listed. It can also have a positive impact on Self-efficacy (as per factors shown). Similar to General Education skills, when it came to Self-efficacy, there is also a lack of such in

current learners. Communication skills seem to be very poor amongst current learners, which needs addressing because respondents believe that Self-efficacy can have a positive effect on the academic performance of learners.

Recommendation: There is room for improvement for general education skills that can enhance learner, performance. Hence, the main strategy would be to incorporate General Education skills into the curriculum. The methods in improving Self-efficacy should revolve around innovative teaching, learning and research methods; increasing skills development such as critical thinking and computer skills; and promoting more Self-efficacy based workshops and programs, amongst the other factors shown.

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Influence of Brand Credibility, Satisfaction and Quality on Brand Equity in Non-Conventional Health Industry

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Abstract: Consumer perceptions of quality, satisfaction, and brand credibility are critical ingredients for developing healthy brands with high value in a competitive market. However, few authors have looked into the brand credibility`s intervening role in the effect of quality and satisfaction on brand equity in the non-conventional health industry. Hence, this paper sought to evaluate the mediating role of brand credibility in the effect of quality and satisfaction on brand equity in the non-conventional health industry. A covariance-based structural equation model was the analytical tool employed to evaluate the hypotheses stated in this paper. Data were gathered from 265 customers using a systematic sampling technique. The research confirmed that brand credibility contributes partially to the impact of quality on brand equity and completely to satisfaction on equity in the non-conventional health industry. Accordingly, this paper contributes to expanding the current brand management literature by demonstrating the brand credibility`s intervening role in the path between satisfaction, quality, and equity, particularly in the non-conventional health industry. This paper also adds to the brand manager`s knowledge of how to build and harness credibility, quality, and satisfaction to increase brand equity in the non-conventional health industry.

Keywords: *Customer Satisfaction; Brand Credibility; Brand Equity; Perceived Quality; Herbal medicine.*

1. Introduction

In recent years, herbal medicines have gained much attention worldwide due to their widespread consumption alongside modern healthcare delivery drugs. Herbal medicinal products relate to processed or raw plant materials and herbal medicinal products with therapeutic or human benefits obtained from one or more plants (WHO, 2007). WHO (2008) reported that roughly one-third of the residents in the industrialized world had patronized complementary or alternative medicine once in their lifetime. Research also revealed that more than half of the people in emerging countries still use herbal therapies to treat their ailments (WHO, 2011). It has also been estimated that approximately 80% of Ghanaians depend on herbal medicines to treat diseases and illnesses (UNDP, 2007). Broadly, herbal medicinal products are used to combat minor sicknesses, manage chronic diseases, and maintain health fitness (referenced by Naresh & Reddy, 2016). Identifying the increasing demand for herbal medicines in the Cape Coast metropolis, non-conventional health practitioners have adopted diverse product and process innovations. The product innovations are explicitly seen in the manufacturing of assorted herbal medicines such as tablets, capsules, creams and mixtures. Those operating on a large scale employ various modern manufacturing equipment such as tube-filling machines to package creams, devices for bottling liquid preparations with complete seals, semi-automated capsule-filling machines for capsules, and labeling machines (Essegbey, Awuni, Essegbey, Akuffobea & Mica, 2014). The manufacturing and sale of plant medicinal products in Cape Coast are currently overseen by the Food and Drugs Authority (FDA) and the Traditional Medicine Practice Council (TMPC). The herbal medicinal products are retailed as non-prescription medications at pharmacies, over-the-counter medicine stores, herbal stores and clinics operated by non-conventional health practitioners (WHO, 2011; Essegbey et al., 2014).

The proliferation of herbal therapies in the metropolis has given rise to stiff competition resulting in abysmally low prices and hence, a reduction in profit in the industry. It has also been emphasized that favorable perceived brand quality, high level of brand credibility, and satisfied customers can increase brand equity in the market (Ameri & Behnam, 2014; Shamim & Butt, 2013; Pappu & Quester, 2006; Yoo, Donthu & Lee, 2000). Increased brand equity can create a platform for non-conventional medicine firms to insulate themselves against competitive pressures and entry of rival firms, charge a premium price, endure a marketing crisis and gain a competitive advantage to survive in the industry (Farquhar, 1989; Aaker, 1992). Although the importance of perceived quality, brand credibility, and customer satisfaction to OBE has received much attention (e.g., Ameri & Behnam, 2014; Shamim & Butt, 2013; Pappu & Quester, 2006; Yoo et

al., 2000), there is scanty or no investigation on the brand credibility`s intervening role in the effect of quality and satisfaction on brand equity, especially in the non-conventional health industry. Therefore, this paper aimed to examine the intervening role of brand credibility in the impact of quality and satisfaction on the value of the brands in the non-conventional health industry in Cape Coast. This paper, therefore, extends the current brand theory by bringing to fore the intervening role of brand credibility in the effect of brand quality and satisfaction on equity, particularly in the non-conventional health industry. Besides, this study equips the brand managers with knowledge about building and harnessing brand quality, satisfaction, and credibility to enhance the value of the brands in the non-conventional health industry in the Cape Coast metropolis.

2. Literature Review

Brand Equity: A brand with high equity is recognized as one of the enduring and strategic assets because it provides a long-term cash flow for a firm. Brand equity has been defined as an increased value offered by branding to an offering (Farquhar, 1989). In the author`s view, healthy brands with high equity create a competitive advantage, resistance to competitive actions, premium price, a barrier to entry of rival firms, and power to survive during marketing crises, such as a change in tastes. Research also found that brand equity positively affects customers` readiness to pay a higher price, word-of-mouth behavior, and repeat purchases of financial services products (Rambocas, Kirpalani & Simms, 2018). In general, the brand equity concept has been studied in three different viewpoints, namely financial, customer and employer-related approaches. The financially-based view explicitly evaluates a brand's value for accounting purposes, mergers, acquisitions and divestiture (Keller, 2013). Consequently, brand equity relates to the incremental cash flow realized from selling a branded product exceeding its unbranded version (Simon & Sullivan, 1993). In this perspective, brand equity is considered an asset that a firm can sell and buy.

On the other hand, employer-based motivations look at brand equity in terms of human resource perspective and relate to a set of functional, economic, and psychological values provided through employment and are identified with the employed company (Ambler & Barrow, 1996). Lastly, customer-based brand equity (CBBE) indicates the differential outcomes of brand knowledge on consumer responses due to its marketing campaigns (Keller, 2013). The strength of a brand is manifested in what customers have stored in their minds about the brand. Guided by the associative network memory framework, brand knowledge underlies the customer-based brand equity (CBBE) and relates to the brand node in memory with different associations attached to it. The brand knowledge comprised brand awareness and image, which are considered the primary sources of CBBE. Thus, CBBE occurs when a brand demonstrates a high level of awareness and strong, positive and distinctive associations (*ibid*). Aaker (1996) also viewed brand equity as a package of assets and liabilities attached to a brand that decrease or increase the product's value to a business and its customers. However, Yoo et al. (2000) extended Aaker's framework by creating a separate construct known as overall brand equity (OBE) to indicate each dimension's contribution to brand equity. In their view, OBE refers to the difference in the buyer`s decision to choose between a branded product and its unbranded type.

Research Hypotheses

Customer Satisfaction: Developing greater satisfaction is regarded as one of a business's core objectives because it creates a platform for successful customer retention. Customer satisfaction looks at the degree to which a product`s performance matches or surpasses a customer`s expectation (Ferrell & Hartline, 2011; Lovelock & Wirtz, 2016). Alternatively, Kotler and Keller (2012) defined customer satisfaction as a degree of contentment or displeasure resulting from comparing a product's perceived performance to expectations. Customer satisfaction stems from the customer`s post-purchase judgment of a product or service. The expectancy-disconfirmation framework has been the basis of determining customer satisfaction. This model suggests that consumers develop a product`s performance expectations before purchasing a product or service. Consumers then compare the product's perceived performance during and after consumption to their expectations (Lovelock & Wirtz, 2016). If the perceived performance falls short of, matches or exceeds expectations, negative disconfirmation, confirmation and positive disconfirmation occur, respectively. In other words, if the customers` perceptions of product performance are in line with, worse and better than as it is anticipated, the customers are satisfied, dissatisfied and delighted, respectively.

Customers' expectations arise from past purchase exposures, advice from friends and associates, and marketers and competitors' activities (Kotler & Keller, 2012). Greater satisfaction is linked to customer loyalty, repeated purchases, positive word-of-mouth, premium price, increase in the volume of purchases and less customer switching behavior (Kotler & Keller, 2012; Ferrell & Hartline, 2011). Prior research also highlighted that customer satisfaction significantly influences repeated patronage, intention to pay a premium price, and word-of-mouth (Ranaweera & Prabhu, 2003; de Matos & Rossi, 2008; Rambocas et al., 2018). Studies also reported that customer satisfaction directly impacts brand credibility (Ursula, Rebekah, Syed & Gary, 2016) and OBE (Pappu & Quester, 2006). Hence, the hypotheses postulated are:
H1**:** *There will be a significant and direct relationship between customer satisfaction and brand credibility.*
H2: *There will be a significant and direct relationship between customer satisfaction and brand equity.*

Perceived Quality: Enhanced perceived quality is acknowledged as a strategic goal of most firms because of its direct contribution to profitability. Quality has been defined by different professionals as "fitness for use", "conformance to requirements", and "freedom for variations" (Kotler & Keller, 2012). Perceived quality has been described as perceptions of a product`s total superiority compared to its stated use and a set of alternatives (Aaker, 1991). Zeithaml (1988) also viewed perceived quality as the customer's assessment of a product`s total excellence. However, perceived quality is quite different from similar quality concepts such as objective quality, manufacturing quality and product quality. Objective quality reflects the degree to which a product offers excellent service, whereas manufacturing quality indicates conformance to the industry`s requirements. Product quality is described as the character and amount of ingredients, services and attributes used (Aaker, 1991). The author believes that objective quality should be improved to strengthen the perceived product quality.

Perceived quality is typically based on the underlying elements such as performance, reliability, durability, serviceability, fit and finish, features, and conformance to the specification (*ibid*). Aaker (1992) also asserted that high perceived quality significantly enhances market share, line extensions, brand differentiation, premium price, and overall profitability. The author further suggested that increased perceived quality reinforces customer satisfaction and brand equity. Studies also show that perceived quality directly affects satisfaction (Bilal & Malik, 2014), brand equity (Yoo et al., 2000; Oppong & Phiri, 2018), and brand credibility (Rizwan, Javed, Aslam, Khan, & Bibi, 2014). Hence, the hypotheses formulated are:
H3: *There will be a significant and direct relationship between perceived quality and customer satisfaction.*
H4**:** *There will be a significant and direct relationship between perceived quality and brand credibility.*
H5: *There will be a significant and direct relationship between perceived quality and brand equity.*

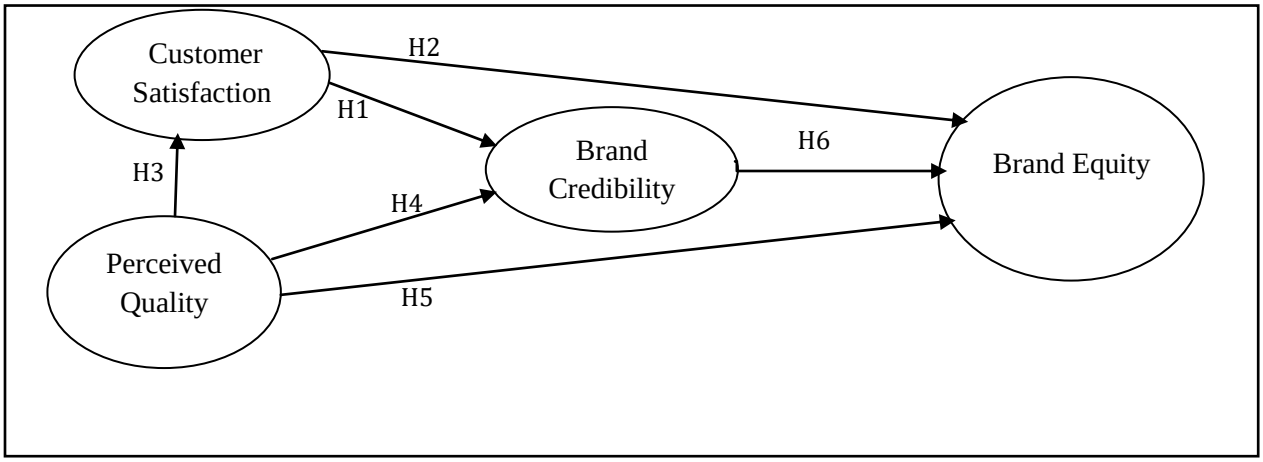
Brand Credibility: Credible brands are considered vital assets of an organization because they positively influence consumer brand choice and loyalty. Erdem and Swait (2004) explained brand credibility as the believability of a brand`s product position message, which requires continuous delivery of its promise. According to the authors, brand credibility entails expertise and trustworthiness. Trustworthiness relates to the brand`s readiness to meet its intended use, whilst expertise looks at how capable it is in delivering its promise. Alternatively, Keller (2013) described brand credibility as the degree of authenticity of the brand and encompassed expertise, attractiveness and trustworthiness. The brand`s trustworthiness and expertise are the combined effect of a firm`s previous and present marketing activities and strategies (Erdem & Swait, 2004). In their view, credible brands can be developed and shaped by increasing the brands` investments and providing consistency and clarity of marketing strategies and activities to assure consumers that the brand`s information is true and reliable and that the promise is fulfilled. Consequently, consistency, clarity and brand investments underlie the concept of brand credibility.

The significant role of credible brands is heightened in a market where imperfect and asymmetric product information exists, which leads to high consumer information acquisition costs and perceived risks. Therefore, a credible brand offers value to customers by reducing the information cost and perceived risks, thereby enhancing the product's expected utility. A credible brand can also strengthen brand equity by generating positive attribute perceptions (Erdem & Swait, 1998). Past studies also show that brand credibility has a significant positive effect on brand equity (Erdem & Swait, 1998; Shamin & Butt, 2013). Studies also found that perceived quality and customer satisfaction directly impact brand credibility (Rizwan

et al., 2014; Ursula et al., 2016), and in turn, brand credibility strengthens the OBE (Erdem & Swait, 1998; Shamin & Butt, 2013). Consequently, the hypotheses postulated are:
H6: *There will be a significant and direct relationship between brand credibility and brand equity.*
H7: *Brand credibility mediates the relationship between perceived quality and brand equity.*
H8: *Brand credibility mediates the relationship between customer satisfaction and brand equity.*

Conceptual Model: Here, the conceptual framework offers a graphical explanation of the key constructs and the posited inter-relationships among them (Miles, Huberman & Saldăna, 2014). In this research, customer satisfaction and perceived quality are independent variables, and brand credibility is an intervening variable, while OBE is a dependent variable. The conceptual framework depicted in Figure 1 indicates that satisfaction and quality directly influence brand credibility, and in turn, credibility positively affects equity. Brand credibility means the believability of a brand's product message, which entails trustworthiness and expertise (Erdem & Swait, 2004). Perceived quality measures the perceptions of a product's total superiority compared to its stated use and the alternatives (Aaker, 1991). Moreover, OBE relates to the difference in a buyer`s decision to choose between a branded product and its unbranded type (Yoo et al., 2000). Customer satisfaction also relates to the degree of contentment or displeasure, resulting from comparing the perceived product's performance to expectations (Kotler & Keller, 2012).

Figure 1: Conceptual Model



Source: Developed by the Researcher

3. Research Methodology

The research methodology used to assess the hypotheses posited to address the study's goal is explained below.

Population and Sample: The study`s population comprises approved made-in-Ghana herbal medicines, 26 herbal retail stores and 854 customers who purchase herbal medicinal products for their personal use from the retail stores. The number of herbal retail outlets was obtained from TMPC in Cape Coast, while that of the customers was from the herbal retail stores. Using Krejcie and Morgan's (1970) guide for calculating sample size, the researcher used 265 samples of the customers.

Test Scale Development and Administration: The research participants` perceptions of satisfaction, credibility, quality, and OBE were measured by using a five-point survey questionnaire anchored on 1= strongly disagreed, and 5 = strongly agree. This type of questionnaire was adopted because the data obtained permit statistical analysis, and the findings are much easier to interpret (Creswell, 2014). The indicator items used in this study were obtained from the previous research. The indicator items of brand credibility were from Erdem and Swait (2004), quality from Yoo et al. (2000), and Gil, Andres & Martinez (2007), satisfaction from He, Li and Harris (2012), and Delgado-Ballester and Munuera-Alemán (2005), and OBE from Yoo et al. (2000). The research assistants distributed the questionnaires to the customers in front of the stores through

a systematic sampling method. This technique provides an opportunity to recruit research participants without firsthand information about them in the sampling frame (Malhotra, Nunan & Birks, 2017). The customers were asked first if they had used herbal medicine before to qualify to participate in the study. The purpose was to obtain the customers' perceptions of credibility, quality, satisfaction, and OBE of the herbal medicines sold in the metropolis.

4. Data Analysis and Results

The statistical techniques used to analyze the data collected were descriptive statistics, exploratory factor analysis (EFA), and structural equation modelling (SEM) using SPSS Amos 20.

Descriptive Statistics: Descriptive statistics were employed to present the sample characteristics concerning age, gender, and education. Two hundred and thirty (230) questionnaires were administered to the sampled customers. However, 208 questionnaires were utilized due to the respondent`s invalid responses. The results show that most of the research participants were male, between 26 and 35 years, and had attained secondary education. That is, 104 (50.7%) were male, 81(39.1%) were between 26 and 35 years, and 74 (36.5%) possessed secondary education.

Exploratory Factor Analysis: The EFA aimed to determine whether the scale items employed correlate with their corresponding latent variables. Overall, 17 indicators were used for the EFA through the principal axis factoring, using Varimax rotation procedures. The results in Table 1 reveal that Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy of .818 and Bartlett's Test of Sphericity at $p < .05$, suggesting good EFA (Hair, Black, Babin & Anderson, 2014; Pallant, 2013). Furthermore, the EFA, through the rotated factor matrix, extracted a four-factor model. Factor 1 represents credibility, 2 is OBE, 3 is satisfaction, and 4 is quality. A total of 14 indicators were acceptable because loadings less than .30 and those that cross-loaded with other factors were eliminated (Floyd & Widaman, 1995). The factor loadings ranged between .625 and .926. The four latent variables had eigenvalues above 1.0 and predicted 64.27 percent of the total variance. Besides, coefficient alpha was employed to identify the indicators' internal consistency reliability to eliminate those with low inter-item correlations. The findings in Table 1 suggest that all the latent variables have coefficients above .70, ranging from .812 to .873, providing proof of internal consistency (Tavakol & Dennick, 2011).

Table 1: Results of Exploratory Factor Analysis

Scale Items		Factor 1	2	3	4
BC2	X delivers what it promises	.766			
BC4	X's product claims are believable	.756			
BC3	X has the ability to deliver what it promises	.723			
BC5	Over time, my experiences with X had led me to expect it to keep its promises	.670			
BC1	X has a name you can trust	.625			
BE3	It makes sense to buy X instead of any other brand even if they are the same		.855		
BE4	If another brand is not different from X in any way, it seems smarter to purchase X		.771		
BE2	Even if another brand has the same characteristics as X, I would prefer to buy X		.746		
CS2	I am very pleased with X			.810	
CS3	I am very delighted with X			.772	
CS1	I am completely satisfied with X			.720	
CS4	I am not very disappointed with X			.667	
PQ4	The likelihood that X would be functional is very high				.926
PQ3	X is very reliable				.685
Cronbach`s Alpha		.861	.873	.812	839
Eigenvalues		5.543	2.440	1.660	1.283

Percentage of Variance Explained	32.606	14.350	9.764	7.546
Percentage of Total Variance Explained = 64.27				
KMO = 0.804; Bartlett`s Test of Sphericity: X2 = 1760.203 ; DF = 136; p < 0.001				

Notes: X is the focal brand.

Structural Equation Modelling: The SEM was adopted to evaluate the hypotheses formulated in this paper. This analytical tool was used because the data collected involve unobserved variables measured by multiple indicators. Moreover, SEM is regarded as an efficient and suitable multivariate statistical method for analyzing several equations simultaneously. SEM also accounts for overall model fit and measurement errors linked to each indicator (Hair et al., 2014; Bryne, 2016). Guided by Bryne's (2016) suggestion for conducting C-SEM, the CFA was performed before the path model.

Confirmatory Factor Analysis: The CFA was performed to confirm the results of the EFA. In the CFA, indicators with standardized estimates below .50 were eliminated to support convergent validity (Hair et al., 2014). Hence, a test item of brand credibility and satisfaction was deleted from the analysis. Table 2 presents the CFA results, showing that 12 indicators loaded on the four variables and all the standardized estimates were significant, ranging between .615 and .884, indicating construct validity (*ibid*). The Chi-square test (CMIN= 94.668, df = 48, p = .000) was not acceptable but the rest of the fit measures were admissible. Goodness-of-Fit Index (GFI) = .936; Standardised Root Mean Square Residual (SRMR) = .051; Normed Chi-Square statistic (CMIN/DF) = 1.972; Comparative Fit Index (CFI) = .956; Tucker-Lewis Index (TLI) = .939; Incremental Fit Index (IFI) = .956; and Normed Fit Index (NFI) = .915 proved to be satisfactory (Hu & Bentler, 1999; Kline, 2015; Hair et al., 2014).

Table 2: Results of Measurement Model

Latent Variables	Standardised Loadings	t-values
Brand Credibility		
BC1	.615	— a
BC3	.663	7.612
BC4	.824	8.722
BC5	.809	8.654
Customer Satisfaction		
CS4	.643	— a
CS3	.783	7.492
CS1	.732	7.529
OBE		
BE2	.807	— a
BE3	.884	13.499
BE4	.820	12.738
Perceived Quality		
PQ4	.875	— a
PQ3	.829	7.596

Notes: a = path parameter was set to 1; therefore, no t-values were estimated; all standardized regression weights are significant at p = 0.001 level.

Construct Validity Analysis: Construct validity was determined through convergent validity and discriminant validity. Fornell and Lacker's (1981) criterion and average variance extracted (AVE) were adopted to test convergent validity and discriminant validity, respectively. The results in Table 3 show that all the AVEs exceeded .50, providing support to convergent validity (Bagozzi & Yi, 1988). Besides, the square root of the AVEs exceeded the squared correlations between one latent variable and another, supporting discriminant validity (Fornell & Lacker, 1981).

Table 3: Results of Construct Validity

Latent Variables	AVEs	CS	PQ	BC	OBE
Customer Satisfaction (CS)	.521	.722**			
Perceived Quality (PQ)	.727	.030	.853**		
Brand Credibility (BC)	.538	.081	.153	.733**	
OBE (OBE)	.702	.032	.194	.274	.838**

Notes: AVE = Average Variance Extracted; ** = Square root of AVEs; Off-diagonal estimates measure the squared inter-construct correlations.

Path Analysis: The path analysis was used to test the hypotheses proposed. The results of the path analysis show that the Chi-square statistic (CMIN = 94.668, DF = 48, p = .000) was not satisfactory. However, the CMIN/DF = 1.972; GFI = .936; TLI = .939; IFI = .956; CFI = .956; NFI = .915; SRMR = .051; RMSEA = .069 confirmed the path analysis. The summary of the path analysis is shown in Table 4, which demonstrate that customer satisfaction is directly related to credibility (β = .224, p = 009) at p <. 05, supporting *H1*. However, the direct relationship between satisfaction (β = .015, p = .847) and OBE is not statistically significant and thus, rejecting *H2*. Likewise, quality is directly related to satisfaction (β = .173, p = .049), credibility (β = .352, p = .000), and OBE (β = .278, p = .000) at p < 0.05, confirming H*3, H4* and *H5* respectively. Finally, the credibility positively affects OBE (β = .411, p = .000) at p < .05 significance level. This outcome provides support to *H6.*

Table 4: Results of the Path Analysis

Hypotheses	Structural Relations			Standardized Estimate	C. R.	p-values
H1	Brand Credibility	<----	Customer Satisfaction	.224	2.603	.009
H2	Brand Equity	<----	Customer Satisfaction	.015	.193	.847
H3	Customer Satisfaction	<----	Perceived Quality	.173	1.972	.049
H4	Brand Credibility	<----	Perceived Quality	.352	4.021	.000
H5	Brand Equity	<----	Perceived Quality	.278	3.396	.000
H6	Brand Equity	<----	Brand Credibility	.411	4.574	.000

Mediation Testing: This researcher also investigated the brand credibility`s mediating role in the path between satisfaction and OBE (H7) and quality and OBE (H8). Following Baron and Kenny's (1986) mediational model, which involves; (1) regressing the mediator on the independent variable; (2) the dependent variable on the independent variable; and (3) the dependent variable on both the independent variable and the mediator. The mediational relationships stipulated were tested by using the bootstrap re-sampling approach. The analysis show that the direct relationship between satisfaction (ß = .015, p = .870) and OBE is not statistically significant at p < .05. However, the indirect effect of satisfaction (ß = .092, p = .013) on OBE is significant at p < .05. These results show that credibility completely mediates the path between satisfaction and OBE. More so, the analysis reveals that the direct effect of quality (ß = .278, p = .001) on OBE is significant at p < .05. The data analysis demonstrates that the indirect effect of quality (ß = .163, p = .000) on OBE is significant at p < .05 level. The data analysis shows that brand credibility partially mediates the path between perceived quality and OBE in the non-conventional health market.

Discussion

This paper aimed to determine the role of satisfaction, quality, and credibility in strengthening OBE in the non-conventional health industry. The study revealed that satisfaction contributes to enriching herbal medicines' credibility in the non-conventional health industry. This result concurs with a previous study (Ursula et al., 2016); indicating that increased satisfaction potentially strengthens a brand's credibility. This outcome suggests that customers who were delighted believed that the brand is trustworthy and could deliver its intended purpose in the non-conventional health market. Again, the research confirmed that favorable perceived quality enhances customers` satisfaction with a brand. This outcome confirmed prior studies (Aaker, 1992; Bilal & Malik, 2014), contending that an improved perceived quality significantly increases customers` satisfaction.

Again, consistent with past research findings (Rizwan et al., 2014), this paper found that perceived quality positively affects the credibility of herbal medicines sold in the non-conventional health market. A brand perceived by consumers as of higher quality enriches the brand's trustworthiness and expertise in the market. Besides, the perceived quality was found to have a positive effect on the OBE of herbal medicines distributed in the non-conventional health market. This study's outcome concurs with earlier studies (Yoo et al., 2000; Oppong & Phiri, 2018), suggesting that perceived quality supports OBE. The research also indicates that perceived quality (β = .352) has a greater influence on credibility than satisfaction. Consistent with past studies` results (Erdem & Swait, 1998; Shamin & Butt, 2013), this paper also revealed that brand credibility directly affects the OBE.

In line with a past study (Erdem & Swait, 1998), this paper demonstrates that credibility (β = .411) has a stronger influence on OBE than any other constructs. The study also shows that brand credibility fully mediates the path between satisfaction and OBE and partly contributes to the impact of perceived quality on OBE in the non-conventional health market. Thus, high brand credibility plays a vital role in supporting customers` perceptions of quality and satisfaction, which, in turn, enriches the OBE in the non-conventional health market.

5. Conclusion and Recommendations

Conclusion: This paper aimed to identify the effect of satisfaction, quality and credibility on OBE, and more importantly, the mediating role of credible brands in the path between quality, satisfaction, and OBE in the non-conventional health industry. The study established that quality and satisfaction positively influence the brands' credibility in the non-conventional health market. The paper further points out that perceived quality more significantly affects credibility than satisfaction in the non-conventional health market. The research also revealed that credibility and quality contribute immensely to OBE. However, brand credibility has a more substantial influence on equity than any other variable in this study. More importantly, the study confirmed that brand credibility perfectly mediates the effect of satisfaction on OBE but partly contributes to the role of quality in strengthening the OBE in the non-conventional health market. Therefore, the research concludes that quality, credibility, and satisfaction are essential ingredients of OBE, which can build and manage OBE of herbal medicines in the Cape Coast non-conventional health industry.

Recommendations: The following recommendations are made which have managerial relevance to the strategic decisions of non-conventional health practitioners in the industry. The research established that customer satisfaction enriches herbal medicines' credibility in the non-conventional health market. Therefore, non-conventional health practitioners should increase the customer`s satisfaction to strengthen their credibility in the Cape Coast market. Again, the research pointed out that favorable perceived quality significantly influences customers` satisfaction, brands` credibility and the OBE in the non-conventional health industry. Because of this, the non-conventional health practitioners should channel their efforts to increase perceived quality to support the customers` satisfaction, brands` credibility, and OBE in the market.

This paper also revealed that brand credibility directly affects the OBE in the non-conventional health industry. This paper further demonstrates that credibility (β = .411) has a more substantial impact on OBE than any other constructs. Consequently, non-conventional health practitioners should invest more of their resources to build their brand`s credibility to strengthen their overall value in the market. The study also found that brand credibility perfectly mediates the impact of customer satisfaction on OBE and partially contributes to the effect of perceived quality on OBE in the non-conventional health industry. Realizing the critical role of brand credibility in the impact of satisfaction and quality on OBE, the non-conventional health practitioners should develop and harness brand credibility to reinforce satisfaction and quality to increase OBE in the Cape Coast non-conventional health industry.

Limitations and Direction for Future Research: The non-conventional health market includes in-store and online environments, but data were gathered from only the physical marketplace. Future research should consider both online and in-store environments. The study also looked at the plant medicines produced and packaged by Ghanaian firms, and hence, CAM was not part of the study. Future studies should involve both CAM and non-conventional medicines. The quantitative method was relied on to address this research's goal,

and therefore, future research should look at mixed methods to improve its generalisability. Furthermore, the study considered only processed finished herbal medicinal products. Future research should consider raw herbs and herbal preparations to ascertain the customers` perceptions of quality, brands` credibility, satisfaction, and OBE of the herbal medicines distributed in the market.

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