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TEST Engineering & Management

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Techno- Economic Viability of Briquetting Machine

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ABSTRACT

The establishments of Republic Act 9367 intended to shift the use of ordinary charcoal to "green" charcoal. The researchers of this study responded to this intension by providing charcoal of different shapes made of sawdust and paper waste. This research study was proposed to assess the demand of charcoal in industries within Laguna. Data acquired was coordinated with DTI Laguna. A briquetting machine to be used in the production of this briquette was also provided. Calculation of the number of units this machine can produce and how many units of briquette is needed to breakeven the cost of its operation.

With a total of 85 active industries all over Laguna is still using charcoal to market their goods. These industries are targeted to be the market of this green charcoal. Upon testing and computation, the machine can produce 435, 120 units per year and it is needed to produce 594,525 units to break even

Keywords; Briquette, Briquetting machine, Green charcoal, industry, economy

I. INTRODUCTION

The current trends in technological process and innovation continue, demand for energy continues to increase due to population increase. Philippine statistic Authority projected that the annual growth rate is 1.21 percent that is 142 million by 2045. Table below shows the commercial and industrial users of wood fuels and biomass fuels in the Philippines aside from the household users.

Table 1. Commercial/Industrial Users of Wood fuels and Biomass Fuels in the Philippines

Industry	Description	Geographic Location	Wood fuel Use Patter
Bakeries	Use wood-fired "pogon" or brick oven	Nationwide, most rural bakeries apparently still use wood fuels, many urban bakeries have shifted to LPG	Mostly fuelwood, some charcoal
Restaurants/ Eateries	This category would include tens of thousands of "carrenderias" rarely listed as registered businesses	Nationwide, often located in urban areas near to schools, offices, hospitals, and factories. In rural areas these tend to be concentrated in	Extensive use of both fuelwood and charcoal. Fuelwood often used to cook large batches of food, charcoal to keep food warm for long

		market areas in the municipal center	periods
Barbecue/ Lechon Vendors	Range from sidewalk barbecue vendors to large-scale establishments	Nationwide, more concentrated in urban areas	Mainly charcoal, although some fuelwood might be used to prepare side dishes
Food Processing	Both large-scale and small-scale		

Source: Bensel and Remedio, 2003

This shows that there is a continuous demand in the wood and biomass fuels in Philippines. According to Fuelwood - Final consumption by Country, Energy Statistics Database | United Nations Statistics Division, Philippines has 19540 thousand cubic meter consumption. To cope up with the needs, introduction of "green" charcoal or briquetting is a key factor. The briquetting process is the conversion of agricultural waste into uniformly shaped briquettes that are easy to use, transport, and store. The idea of briquetting is using materials that are unusable, due to a lack of density, and compressing them into a solid fuel of a convenient shape that can be burned like wood or charcoal. The briquettes have better physical and combustion characteristics than the initial waste. Briquettes will improve the combustion efficiency using the existing traditional furnaces, in addition to killing all insects and diseases as well as reducing the destructive fire risk in the countryside.

With the trend in fuel shift, this study will evaluate the techno-economic value of the Briquetting Machine developed by the Mechanical engineering students of Laguna State Polytechnic University. The machine has a 2 horsepower electric motor having a 1720 rpm that serves as the prime mover of the project. Composed of different mechanical parts like hydraulic pump, control valve, pressure gauge, v-belt and hydraulic cylinder. The machine contains a hopper with 3 different molding shapes (cylindrical, hexagonal, and cubical). It can produce a maximum of 6 pieces of sawdust and paper briquette – 6 pieces per shape briquettes 2x2x1.5 inches average dimensions.

Objectives

The main objective of the study is to determine the technical and financial viability of the Briquetting machine. Specifically, the researchers aim to achieve the following:

- a. Identify the demand of the briquettes in the province of Laguna
- b. Identify the number of units to be produced in able to overcome the expenses in utilization of the machine.

Methodology

In this study, techno-economic analysis of the briquetting machine with 3 molding shapes using agricultural products as an input in was used. Comparison of the different shapes of briquette (cylindrical, hexagonal and cubical) in terms of combustion rate and flashpoint will be considered. Economic assessment of the product will be evaluated by identifying the demand and the economic quantity.

Results and Discussion

Table 2. Commercial/Industrial Users of Wood Fuels and Biomass Fuels in Laguna

Industry	Description	No. of Establishment
Bakeries	Use wood-fired "pogon" or brick oven	0
Restaurants/ Eateries	This category would include tens of thousands of "carrenderias" rarely listed as registered businesses	60
Barbecue/ Lechon Vendors	Range from sidewalk barbecue vendors to large-scale establishments	21
Food Processing	Both large-scale and small-scale	4

Source: DTI Philippines

Table 2 shows the commercial users of charcoal/wood fuels in Laguna provided by the Department of Trade and Industry. Out of 85 registered establishment given by the DTI there are 60 registered restaurants, 21 barbeque/ lechon Vendors, 4 Food processing and no bakeries. According to Biofuel Act of 2006 (Republic Act No. 9367), the Act that impose the development and use of renewable energy reduce dependence on imported oil; reduce toxic emissions; and ensure the availability of alternative and renewable clean energy without causing any harm to the natural ecosystem, biodiversity and food reserves of the country. Given this Biofuel Act, the data given above are the target market for the briquettes in Laguna and according to 5Department of Science and Technology (DOST) Forest Products Research and Development Institute (FPRDI), Los Banos, Laguna, that chicken roasting industry in the country would shift to "green" charcoal in cooking their grilled products. In addition to this, according to the data of 6PSA, fuelwood, charcoal and biomass residues were used for cooking and food preparation as reported by majority of the households using these types of fuel.

Ninety-nine percent of the 9.2 million households using fuelwood, 88.1 percent of the 5.7 million households using charcoal, and 86.0 percent of the 3.2 million households using biomass residues used them for cooking and food preparation.

About 10 percent of the households using fuelwood heated or boiled water for bathing. This use was also reported by 6.6 percent of the households using charcoal and 4.8 percent of those using biomass residues.

Both charcoal and biomass residues were utilized for ironing although the former (18.8%) was more widely used than the latter (2.8%).

Almost 14 percent used biomass residue for other uses such as space warming.

Table 3. Calculated Average Values of Hexagonal, Cylindrical and Cubical briquettes.

Shape	Ratio	Combustion Rate	Flashpoint
Hexagonal	20% sawdust, 80% paper	18 min. 8 sec	53.50 secs
Cylindrical	20% sawdust, 80% paper	14 min. 27 secs	1 min. 5 secs.
Cubical	20% sawdust, 80% paper	10 min. 44 secs	1 min. 9 secs.

The briquettes were tested for its ignition time and combustion rate for several times and the values given on the table were recorded. Hexagonal briquettes had the average of 18 mins and 8 secs combustion rate and 53.50 second ignition time, cylindrical briquette has 14 minutes and 27 seconds combustion rate and 1 minute 5 seconds ignition time and cubical briquettes had 10 minutes and 44 seconds combustion rate and 1 minute and 9 second ignition rate.

Table 4. Properties of Briquettes under Pressure of 50 kg/cm²

Shape	Average Height (inch)	Mass (wet) grams	Mass (dry) grams	Volume (cu-in)
Hexagonal	2	79	40	7.74
Cylindrical	2	74	33	5.62
Cubical	2	63	34	5.82

The hexagonal, cylindrical and cubical briquettes undergoing the pressure of 50 kg/cm² had an average of 2 inches, volume of 7.74, 5.62 and 5.82 respectively and 79, 74 and 63 mass when the briquettes are wet and 40, 33, 34 when they are dry.

Table 5. Production Rate of Briquetting Machine in one hour

Trial	Output
1	120 pieces
2	90 pieces
3	144 pieces

Table 5 shows the performance of the machine for 3 trials in an hour. For the first hour it has the capacity of 120 outputs, 90 outputs in the second trial and 144 pieces on the third trial. It has the average of 118 pieces in an hour of operation.

Break – Even Point for the Briquetting Machine

With the formula of $\text{Income} = \text{Expenses}$

Solving for the number of units to be produced to overcome the expenses of the machine

$\text{Income} = \text{Selling price per unit} \times \text{Number of Units}$

$\text{Expenses} = \text{Material Cost per unit} + \text{Energy Cost} + \text{Operators Wage}$

Material Cost = Total Amount of Sawdust + Total Cost of Paper + Project Cost

Total Amount of Sawdust = 20 pesos/sacks × 10 sacks/day × 259 days/year = P51,800

Total Amount of Paper = 8 pesos/kg × 10kg/day × 259/year = P 20,720

Material Cost = 51,800 + 20,720 + 66,840 = P 139,360

Energy Cost = No. of Operating hours × Actual Operation Period × Cost of Electricity per Kw-Hr × Motor's Power Rating = 7 hours/day × 259 days/year × 10.5 pesos/1 kw-hr × 2 hp (.746kw)/ 1Hp = P28,402.458

Operator's Wage = 2 operators × 250 pesos/day × 259 days/year = P129,500

Expenses = P139,360 + P28,402.458 + P129,500 = P297,262.458

To Break Even

Income = Expenses

Let x be the number of Units

$0.5x = 297,262.458$

$X = 594,524.916$ approximately 594,525 units

Annual Production = 1 hopper × 6 pieces/1.5min × 60mins/hour × 7hours/day × 259 days/ year = 435,120 pieces

The above calculation shows the estimated values of number of units to be produced in able to recover the expenses in development of the machine.

Conclusion and Recommendation

In this study, economical evaluation of the different shapes of briquettes were evaluated. Given the demand of briquettes for over 85 Industry that uses charcoal all over Laguna. As a response to the Republic Act 9367, these establishments would shift from ordinary charcoal to "green" charcoal, with that the establishments identified by DTI were the target market for these Briquette. Computing the number of units in order to break even, theoretically it is feasible for the briquette to make it to the market. With 594,525 units estimated units to break even and the machine can produce an average of 435,120 units per year.

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Harmonic Reduction in Five Levels UPFC Using SVPWM

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PhD²

ABSTRACT

This paper proposed real and reactive power controlled by using SVPWM for a five level unified power flow controller (UPFC). The basic control for the five levels UPFC is such that the series converter of the five levels UPFC controls the transmission line real/reactive power flow and the shunt converter of the five levels UPFC controls the five levels UPFC bus voltage/shunt reactive power and the DC link capacitor voltage. In steady state, the real power demand of the series converter is supplied by the shunt converter of the five levels UPFC. To reduced reactive power and total harmonic distortion (THD) by using SVPWM for a five levels UPFC. The SPWM using for five levels UPFC the reactive power demand is 10MVAR and total harmonic distortion (THD) is 9.01% occurred. For this reason SVPWM is proposes to reduced reactive power demand 9.5MVAR and total harmonic distortion (THD) 4.85%. A new SVPWM for a five level UPFC has been designed to limit excessive voltage excursions during reactive power transfers. PSCAD-EMTDC simulation results have been presented to show the improvement in the performance of the five levels UPFC control with the proposed reactive power and total harmonic distortion.

Index Terms: Unified power flow controller (UPFC), Shunt converter, Series converter, Synchronous d-q frame, Space vector PWM, DC link capacitor, PI controller.

I. INTRODUCTION

UPFC is the most comprehensive multivariable flexible ac transmission system (FACTS) controller. Simultaneous control of multiple power system variables with UPFC possessed enormous difficulties. In addition, the complexity of the UPFC control increases due to the fact that the controlled and the control variables interact with each other. UPFC which consists of a series and a shunt converter connected by a common dc link capacitor can simultaneously perform the function of transmission line real/reactive power flow control in addition to UPFC bus voltage/shunt reactive power control [1]. The shunt converter of the UPFC controls the UPFC bus voltage/shunt reactive power and the dc link capacitor voltage. The series converter of the UPFC controls the transmission line real/reactive power flows by injecting a series voltage of adjustable magnitude and phase angle. The interaction between the series injected voltage and the transmission line current leads to real and reactive power exchange between the series converter and the power system.

Under steady state conditions, the real power demand of the series converter is supplied by the shunt converter. But during transient conditions, the series converter real power demand is supplied by the dc link capacitor. If the information regarding the series converter real demand is not conveyed to the shunt converter control system, it could lead to collapse of the dc link capacitor voltage and subsequent removal of UPFC from operation.

Very little or no attention has been given to the important aspect of coordination control between the series and the shunt converter control systems [2]–[15]. The real power coordination discussed in [15] is

based on the known fact that the shunt converter should provide the real power demand of the series converter. In this case, the series converter provides the shunt converter control system an equivalent shunt converter real power reference that includes the error due to change in dc link capacitor voltage and the series converter real power demand.

The control system designed for the shunt converter in [15] causes excessive delay in relaying the series converter real power demand information to the shunt converter. This could lead to improper coordination of the overall UPFC control system and subsequent collapse of dc link capacitor voltage under transient conditions. This is due to the fact that any change in transmission line reactive power flow achieved by adjusting the magnitude/phase angle of the series injected voltage of the UPFC is actually supplied by the shunt converter.

This aspect of UPFC control has also not been investigated [2]–[15]. The SPWM using for five levels UPFC the reactive power demand is 10MVAR and total harmonic distortion (THD) is 9.01% occurred. In this paper proposes real and reactive power controlled by using SVPWM for a five level unified power flow controller (UPFC). The basic control for the five levels UPFC is such that the series converter of the five levels UPFC controls the transmission line real/reactive power flow and the shunt converter of the five levels UPFC controls the five levels UPFC bus voltage/shunt reactive power and the DC link capacitor voltage.

In steady state, the real power demand of the series converter is supplied by the shunt converter of the five levels UPFC. To the reduced reactive power and total harmonic distortion (THD) using by SVPWM for a five levels UPFC. For this reason SVPWM is proposes to reduced reactive power demand 9.5MVAR and total harmonic distortion (THD) 4.85%.

A new SVPWM for a five level UPFC has been designed to limit excessive voltage excursions during reactive power transfers. PSCAD-EMTDC simulation results have been presented to show the improvement in the performance of the five levels UPFC control with the proposed reactive power and total harmonic distortion.

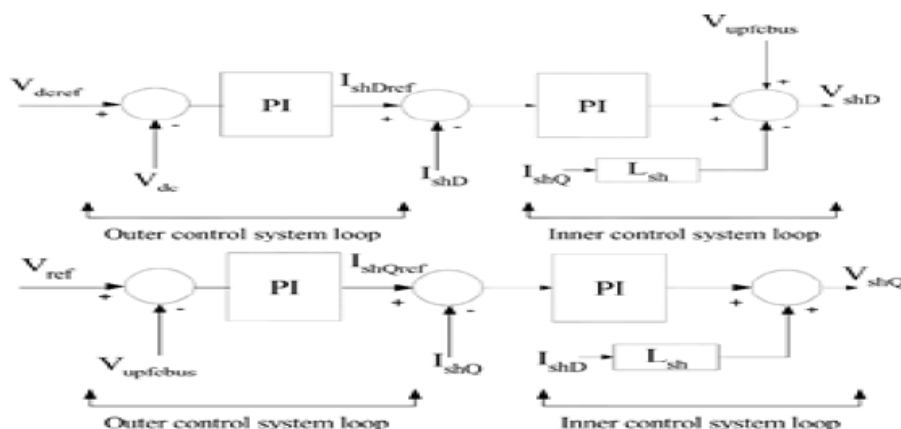


Fig.1. De-coupled D-Q axis shunts converter control system.

II. CONTROL STRATEGY FOR UPFC

A. Shunt Converter Control Strategy

The shunt converter of the UPFC controls the UPFC bus voltage/shunt reactive power and the dc link capacitor voltage. In this case, the shunt converter voltage is decomposed into two components. One component is in-phase and the other in-quadrature with the UPFC bus voltage. De-coupled control system has been employed to achieve simultaneous control of the UPFC bus voltage and the dc link capacitor voltage.

B. Series Converter Control Strategy

The series converter of the UPFC provides simultaneous control of real and reactive power flow in the transmission line. To do so, the series converter injected voltage is decomposed into two components. One component of the series injected voltage is in quadrature and the other in-phase with the UPFC bus voltage. The quadrature injected component controls the transmission line real power flow. This strategy is similar to that of a phase shifter.

The in-phase component controls the transmission line reactive power flow. This strategy is similar to that of a tap changer.

1. BASIC CONTROL SYSTEM

A. Shunt Converter Control System Fig. 1 shows the de-coupled control system for the shunt converter. The D-axis control system controls the dc link capacitor voltage and the Q-axis control system controls the UPFC bus voltage /shunt reactive power.

The details of the de-coupled control system design can be found in [16], [17]. The de-coupled control system has been de- signed based on linear control system techniques and it consists of an outer loop control system that sets the reference for the inner control system loop. The inner control system loop tracks the reference.

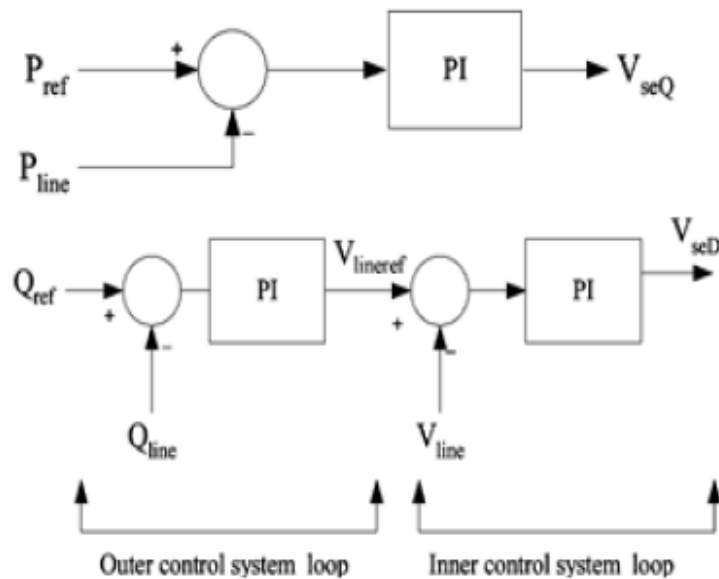


Fig.2. Series converter real and reactive power flow control system.

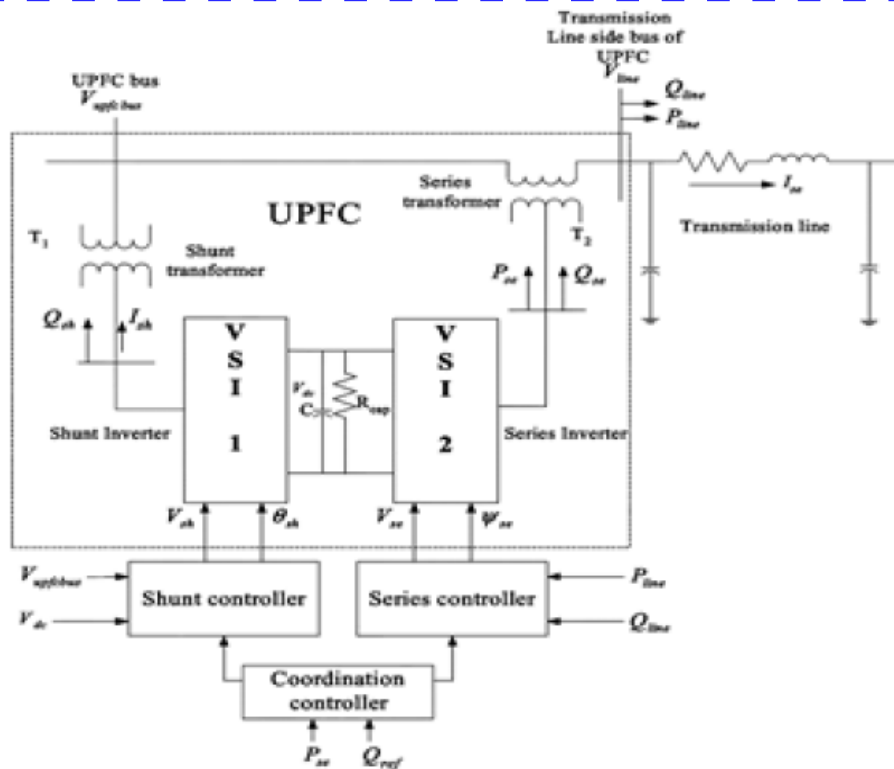


Fig.3. UPFC connected to a transmission line.

B. Series Converter Control System Fig. 2 shows the overall series converter control system. The transmission line real power flow is controlled by injecting a component of the series voltage in quadrature with the UPFC bus voltage. The transmission line reactive power is controlled by modulating the transmission line side bus voltage reference. The transmission line side bus voltage is controlled by injecting a component of the series voltage in-phase with the UPFC bus voltage [18].

III. REAL AND REACTIVE POWER COORDINATION CONTROLLER

A. Real Power Coordination Controller

To understand the design of a real power coordination controller for a UPFC, consider a UPFC connected to a transmission line as shown in Fig. 3. The interaction between the series injected voltage and the transmission line current leads to exchange of real power between the series converter and the transmission line.

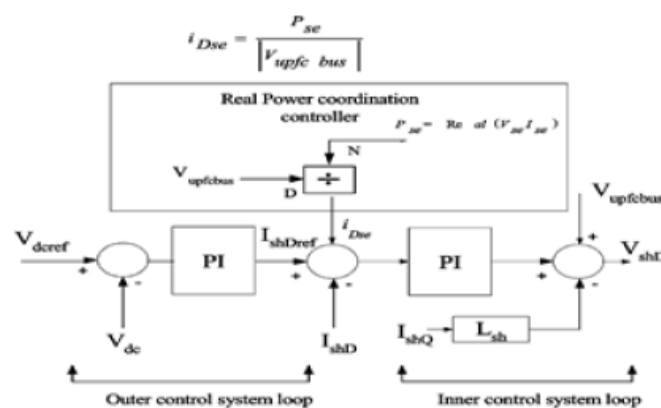


Fig.4. D-axis shunts converter control system with real power coordination controller.

The real power demand of the series converter causes the dc link capacitor voltage to either increase or decrease depending on the direction of the real power flow from the series converter.

This decrease/increase in dc link capacitor voltage is sensed by the shunt converter controller that controls the dc link capacitor voltage and acts to increase/decrease the shunt converter real power flow to bring the dc link capacitor voltage back to its scheduled value. Alternatively, the real power demand of the series converter is recognized by the shunt converter controller only by the decrease/increase of the dc link capacitor voltage .

Thus, the shunt and the series converter operation are in a way separated from each other. To provide for proper coordination between the shunt and the series converter control system, a feedback from the series converter is provided to the shunt converter control system. The feedback signal used is the real power demand of the series converter .

The real power demand of the series converter is converted into an equivalent D-axis current for the shunt converter . By doing so, the shunt converter responds immediately to a change in its D-axis current and supplies the necessary series converter real power demand. The equivalent D-axis current is an additional input to the D-axis shunt converter control system as shown in Fig. 4.

Equation (1) shows the relationship between the series converter real power demand and the shunt converter D-axis current

$$i_{Dsc} = \frac{P_{se}}{|V_{upfc\ bus}|} \quad (1)$$

The real power demands of the series converter is the real part of product of the series converter injected voltage and the transmission line current. Represent the voltage of the bus to which the shunt converter is connected and the equivalent additional D-axis current that should flow through the shunt converter to supply the real power demand of the series converter. As shown in Fig. 4, the equivalent D-axis current signal is fed to the inner control system, thereby increasing the effectiveness of the coordination controller.

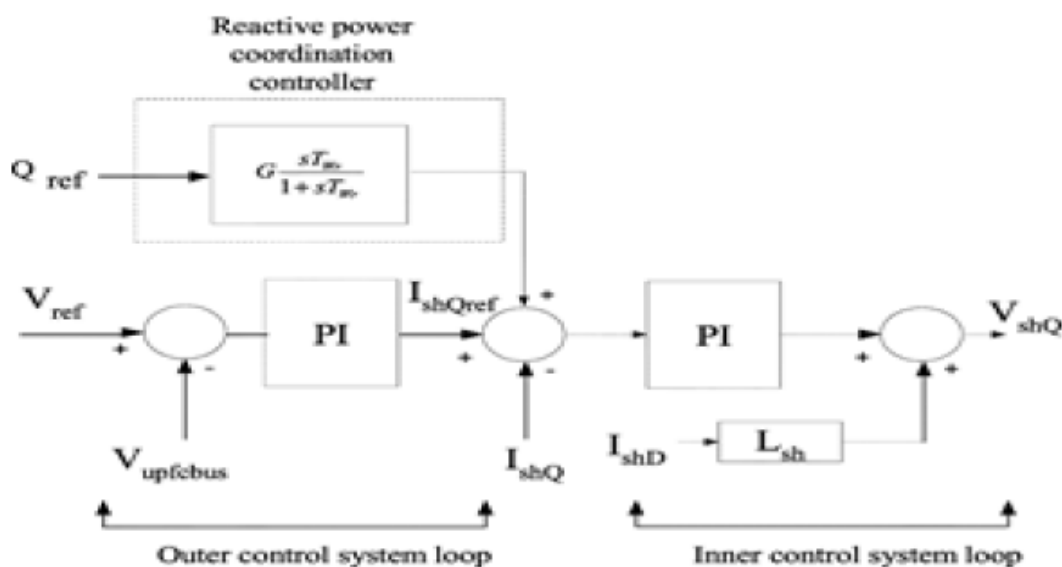


Fig.5. Shunt converter Q-axis controller with reactive power coordination controller

Further, the inner control system loops are fast acting PI controllers and ensure fast supply of the series converter real power demand by the shunt converter.

B. Reactive Power Coordination Controller

The in-phase component of the series injected voltage which has the same phase as that of the UPFC bus voltage, has considerable effect on the transmission line reactive power and the shunt converter reactive power. Any increase/decrease in the transmission line reactive power due to in-phase component of the series injected voltage causes an equal increase/decrease in the shunt converter reactive power [19].

In short, increase/decrease in transmission line reactive power is supplied by the shunt converter. Increase/decrease in the transmission line reactive power also has considerable effect on the UPFC bus voltage. The mechanism by which the request for transmission line reactive power flow is supplied by the shunt converter is as follows. Increase in transmission line reactive power reference causes a decrease in UPFC bus voltage.

Decrease in UPFC bus voltage is sensed by the shunt converter UPFC bus voltage controller which causes the shunt converter to increase its reactive power output to boost the voltage to its reference value. The increase in shunt converter reactive power output is exactly equal to the increase requested by the transmission line reactive power flow controller (neglecting the series transformer reactive power loss). Similarly, for a decrease in transmission line reactive power, the UPFC bus voltage increases momentarily.

The increase in UPFC bus voltage causes the shunt converter to consume reactive power and bring the UPFC bus voltage back to its reference value [20]. The decrease in the shunt converter reactive power is exactly equal to the decrease in transmission line reactive power flow (neglecting the reactive power absorbed by the series transformer).

In this process, the UPFC bus voltage experiences excessive voltage excursions. To reduce the UPFC bus voltage excursions, a reactive power flow coordination controller has been designed. The input to the reactive power coordination controller is the transmission line reactive power reference. Fig. 5 shows the shunt converter Q-axis control system with the reactive power coordination controller.

The reactive power coordination controller is not reduced the total harmonic distortion (THD). For this reason introduced five level SPWM based UPFC [21]. The SPWM using for five levels UPFC the reactive power demand is 10MVAR and total harmonic distortion (THD) is 9.01% occurred. So that the five levels SPWM based UPFC have more THD and conduction losses for these causes using SVPWM for a five levels UPFC.

2. Space Vector PWM Principle of Space Vector PWM

The circuit model of a typical three-phase voltage source PWM inverter is shown in Fig. 6. S1 to S6 are the six power switches that shape the output, which are controlled by the switching variables a , b , c and \bar{a} , \bar{b} , \bar{c} . When an upper transistor is switched on, i.e., when a , b or c is 1, the corresponding lower transistor is switched off, i.e., the corresponding \bar{a} , \bar{b} or \bar{c} is 0. Therefore, the on and off states of the upper transistors S1, S3 and S5 can be used to determine the output voltage.

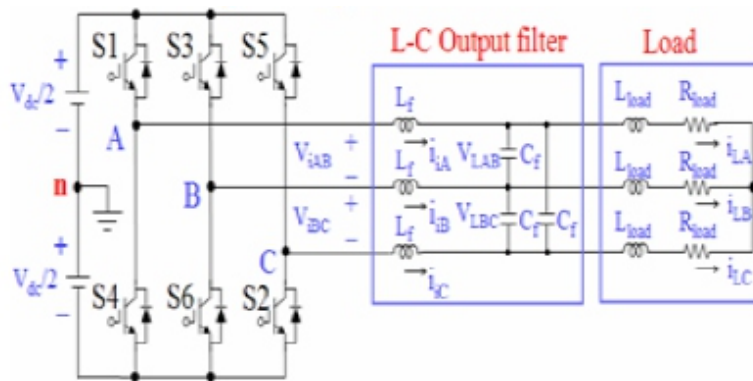


Fig. 6 Three-phase voltage source PWM Inverter.

The relationship between the switching variable vector $[a, b, c]t$ and the line-to-line voltage vector $[V_{ab} \ V_{bc} \ V_{ca}]t$ is given by (2.1) in the following:

$$\begin{bmatrix} V_{ab} \\ V_{bc} \\ V_{ca} \end{bmatrix} = V_{dc} \begin{bmatrix} 1 & -1 & 0 \\ 0 & 1 & -1 \\ -1 & 0 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix}. \quad (2.1)$$

Also, the relationship between the switching variable vector $[a, b, c]t$ and the phase voltage vector $[V_a \ V_b \ V_c]t$ can be expressed below.

$$\begin{bmatrix} V_{an} \\ V_{bn} \\ V_{cn} \end{bmatrix} = \frac{V_{dc}}{3} \begin{bmatrix} 2 & -1 & -1 \\ -1 & 2 & -1 \\ -1 & -1 & 2 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix}. \quad (2.2)$$

In Fig. 6, there are eight possible combinations of on and off patterns for the three upper power switches. The on and off states of the lower power devices are opposite to the upper one and so are easily determined once the states of the upper power transistors are determined. According to equations (2.1) and (2.2), the eight switching vectors, output line to neutral voltage (phase voltage), and output line-to-line voltages in terms of DC-link V_{dc} , are given in Table1 and Fig. 7 shows the eight inverter voltage vectors (V_0 to V_7).

Voltage Vectors	Switching Vectors			Line to neutral voltage			Line to line voltage		
	a	b	c	V_{an}	V_{bn}	V_{cn}	V_{ab}	V_{bc}	V_{ca}
V_0	0	0	0	0	0	0	0	0	0
V_1	1	0	0	$2/3$	$-1/3$	$-1/3$	1	0	-1
V_2	1	1	0	$1/3$	$1/3$	$-2/3$	0	1	-1
V_3	0	1	0	$-1/3$	$2/3$	$-1/3$	-1	1	0
V_4	0	1	1	$-2/3$	$1/3$	$1/3$	-1	0	1
V_5	0	0	1	$-1/3$	$-1/3$	$2/3$	0	-1	1
V_6	1	0	1	$1/3$	$-2/3$	$1/3$	1	-1	0
V_7	1	1	1	0	0	0	0	0	0

(Note that the respective voltage should be multiplied by V_{dc})

Table.1. Switching vectors, phase voltages and output line to line voltages

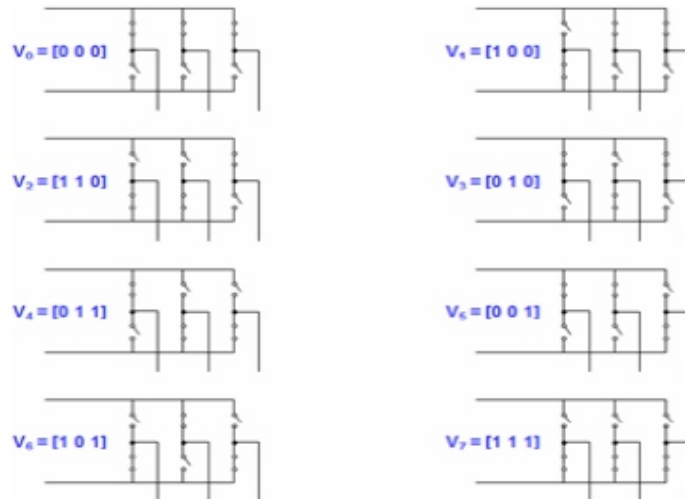


Fig. 7 The eight inverter voltage vectors (V0 to V7).

Space Vector PWM (SVPWM) refers to a special switching sequence of the upper three power transistors of a three-phase power inverter [22]. It has been shown to generate less harmonic distortion in the output voltages and or currents applied to provide more efficient use of supply voltage compared with sinusoidal modulation technique as shown in Fig. 8.

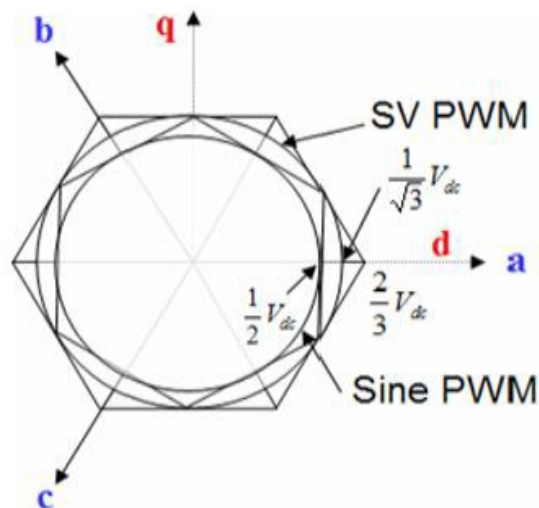


Fig.8 Locus comparison of maximum linear control voltage in Sine PWM and SVPWM

To implement the space vector PWM, the voltage equations in the abc reference frame can be transformed into the stationary dq reference frame that consists of the horizontal (d) and vertical (q) axes as depicted in Fig. 9.

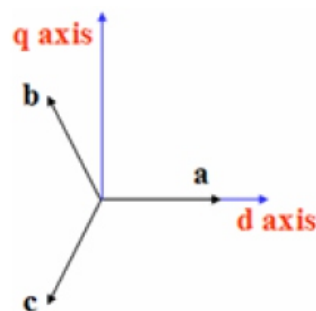


Fig.9 The relationship of abc reference frame and stationary dq reference frame.

As described in Fig. 9, this transformation is equivalent to an orthogonal projection of $[a, b, c]^t$ onto the two-dimensional perpendicular to the vector $[1, 1, 1]^t$ (the equivalent d-q plane) in a three-dimensional coordinate system. As a result, six non-zero vectors and two zero vectors are possible. Six nonzero vectors ($V_1 - V_6$) shape the axes of a hexagonal as depicted in Fig. 10, and feed electric power to the load.

The angle between any adjacent two non-zero vectors is 60 degrees. Meanwhile, two zero vectors (V_0 and V_7) are at the origin and apply zero voltage to the load.

The eight vectors are called the basic space vectors and are denoted by $V_0, V_1, V_2, V_3, V_4, V_5, V_6,$ and V_7 . The same transformation can be applied to the desired output voltage to get the desired reference voltage vector V_{ref} in the d-q plane.

The objective of space vector PWM technique is to approximate the reference voltage vector V_{ref} using the eight switching patterns [23]-[25]. One simple method of approximation is to generate the average output of the inverter in a small period, T to be the same as that of V_{ref} in the same period.

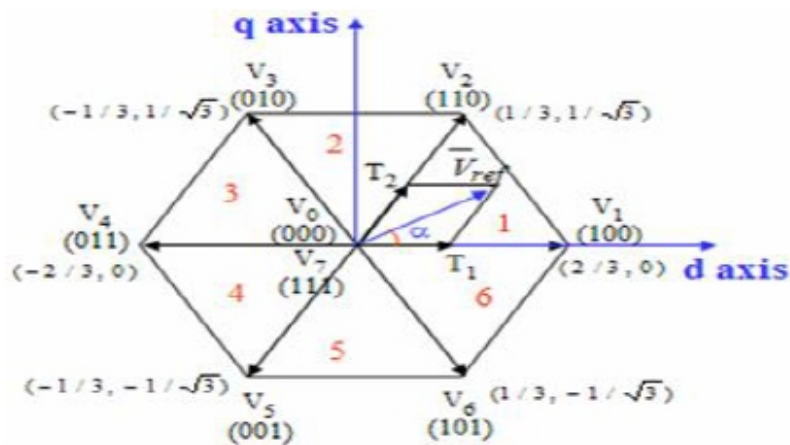


Fig. 10 Basic switching vectors and sectors

Therefore, space vector PWM can be implemented by the following steps:

- Step 1. Determine V_d, V_q, V_{ref} , and angle (α)
- Step 2. Determine time duration T_1, T_2, T_0
- Step 3. Determine the switching time of each transistor (S_1 to S_6)

Step 1: Determine V_d, V_q, V_{ref} , and angle From Fig. 11, the V_d, V_q, V_{ref} , and angle can be determined as follows:

$$\begin{aligned}
 V_d &= V_{an} - V_{bn} \cdot \cos 60 - V_{cn} \cdot \cos 60 \\
 &= V_{an} - \frac{1}{2} V_{bn} - \frac{1}{2} V_{cn} \\
 V_q &= 0 + V_{bn} \cdot \cos 30 - V_{cn} \cdot \cos 30 \\
 &= V_{an} + \frac{\sqrt{3}}{2} V_{bn} - \frac{\sqrt{3}}{2} V_{cn}
 \end{aligned}$$

$$\therefore \begin{bmatrix} V_d \\ V_q \end{bmatrix} = \frac{2}{3} \begin{bmatrix} 1 & -\frac{1}{2} & -\frac{1}{2} \\ 0 & \frac{\sqrt{3}}{2} & -\frac{\sqrt{3}}{2} \end{bmatrix} \begin{bmatrix} V_{an} \\ V_{bn} \\ V_{cn} \end{bmatrix}$$

$$\therefore |\bar{V}_{ref}| = \sqrt{V_d^2 + V_q^2}$$

$$\therefore \alpha = \tan^{-1}\left(\frac{V_q}{V_d}\right) = \omega t = 2\pi f t, \quad \text{where } f = \text{fundamental frequency}$$

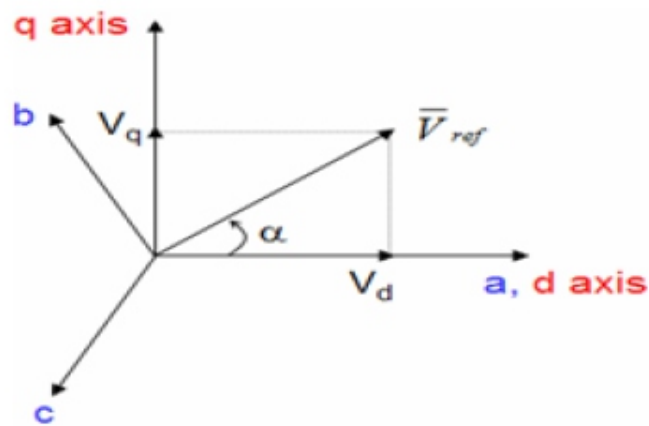


Fig. 11 Voltage Space Vector and its components in (d, q)

Step 2: Determine time duration T_1 , T_2 , T_0 from Fig. 12, the switching time duration can be calculated as follows:

• **Switching time duration at Sector 1**

$$\begin{aligned} \int_0^{T_z} \bar{V}_{ref} dt &= \int_0^{T_1} \bar{V}_1 dt + \int_{T_1}^{T_1+T_2} \bar{V}_2 dt + \int_{T_1+T_2}^{T_z} \bar{V}_0 dt \\ \therefore T_z \cdot \bar{V}_{ref} &= (T_1 \cdot \bar{V}_1 + T_2 \cdot \bar{V}_2) \\ \Rightarrow T_z \cdot |\bar{V}_{ref}| \cdot \begin{bmatrix} \cos(\alpha) \\ \sin(\alpha) \end{bmatrix} &= T_1 \cdot \frac{2}{3} \cdot V_{dc} \cdot \begin{bmatrix} 1 \\ 0 \end{bmatrix} + T_2 \cdot \frac{2}{3} \cdot V_{dc} \cdot \begin{bmatrix} \cos(\pi/3) \\ \sin(\pi/3) \end{bmatrix} \\ &\quad (\text{where, } 0 \leq \alpha \leq 60^\circ) \end{aligned}$$

$$\therefore T_1 = T_z \cdot a \cdot \frac{\sin(\pi/3 - \alpha)}{\sin(\pi/3)}$$

$$\therefore T_2 = T_z \cdot a \cdot \frac{\sin(\alpha)}{\sin(\pi/3)}$$

$$\therefore T_0 = T_z - (T_1 + T_2), \quad \left(\text{where, } T_z = \frac{1}{f_z} \quad \text{and} \quad a = \frac{|\bar{V}_{ref}|}{\frac{2}{3} V_{dc}} \right)$$

• Switching time duration at any Sector

$$\begin{aligned} \therefore T_1 &= \frac{\sqrt{3} \cdot T_z \cdot |\bar{V}_{ref}|}{V_{dc}} \left(\sin \left(\frac{\pi}{3} - \alpha + \frac{n-1}{3} \pi \right) \right) \\ &= \frac{\sqrt{3} \cdot T_z \cdot |\bar{V}_{ref}|}{V_{dc}} \left(\sin \frac{n}{3} \pi - \alpha \right) \\ &= \frac{\sqrt{3} \cdot T_z \cdot |\bar{V}_{ref}|}{V_{dc}} \left(\sin \frac{n}{3} \pi \cos \alpha - \cos \frac{n}{3} \pi \sin \alpha \right) \\ \\ \therefore T_2 &= \frac{\sqrt{3} \cdot T_z \cdot |\bar{V}_{ref}|}{V_{dc}} \left(\sin \left(\alpha - \frac{n-1}{3} \pi \right) \right) \\ &= \frac{\sqrt{3} \cdot T_z \cdot |\bar{V}_{ref}|}{V_{dc}} \left(-\cos \alpha \cdot \sin \frac{n-1}{3} \pi + \sin \alpha \cdot \cos \frac{n-1}{3} \pi \right) \\ \\ \therefore T_0 &= T_z - T_1 - T_2, \quad \left(\text{where, } n = 1 \text{ through } 6 \text{ (that is, Sector 1 to 6)} \right) \\ &\quad 0 \leq \alpha \leq 60^\circ \end{aligned}$$

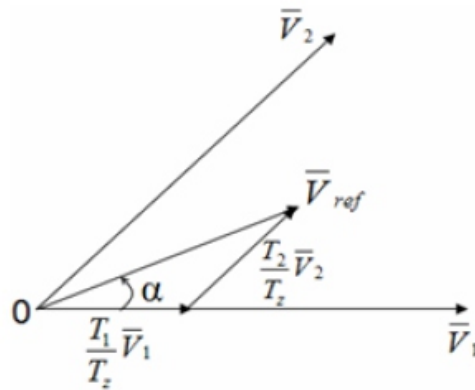
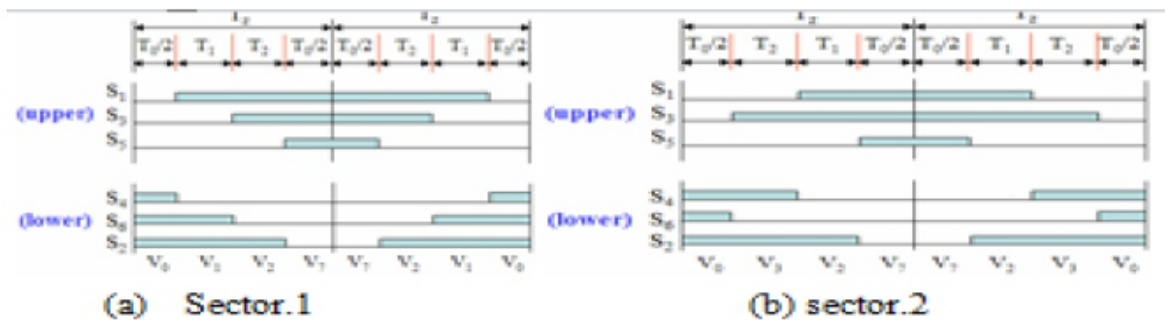
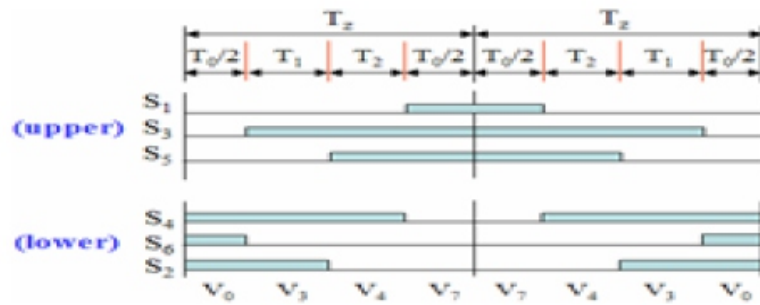


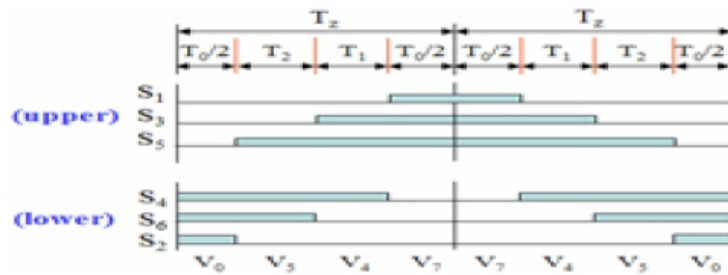
Fig. 12 Reference vector as a combination of adjacent vectors at sector 1.

Step 3: Determine the switching time of each transistor (S1 to S6) Fig. 13 shows space vector PWM switching patterns at each sector.

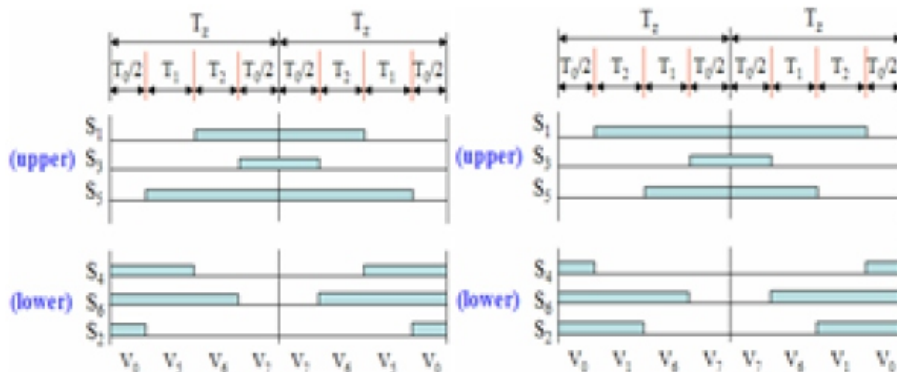




(c) Sector.3



(d) Sector.4



(e) Sector.5

(f) Sector.6

Fig. 13 Space Vector PWM switching patterns at each sector.

Based on Fig. 13, the switching time at each sector is summarized in Table 2, and it will be built in Simulation model to implement SVPWM.

Sector	Upper Switches (S_1, S_3, S_5)	Lower Switches (S_4, S_6, S_2)
1	$S_1 = T_1 + T_2 + T_0/2$ $S_3 = T_2 + T_0/2$ $S_5 = T_0/2$	$S_4 = T_0/2$ $S_6 = T_1 + T_0/2$ $S_2 = T_1 + T_2 + T_0/2$
2	$S_1 = T_1 + T_0/2$ $S_3 = T_1 + T_2 + T_0/2$ $S_5 = T_0/2$	$S_4 = T_2 + T_0/2$ $S_6 = T_0/2$ $S_2 = T_1 + T_2 + T_0/2$
3	$S_1 = T_0/2$ $S_3 = T_1 + T_2 + T_0/2$ $S_5 = T_2 + T_0/2$	$S_4 = T_1 + T_2 + T_0/2$ $S_6 = T_0/2$ $S_2 = T_1 + T_0/2$
4	$S_1 = T_0/2$ $S_3 = T_1 + T_0/2$ $S_5 = T_1 + T_2 + T_0/2$	$S_4 = T_1 + T_2 + T_0/2$ $S_6 = T_2 + T_0/2$ $S_2 = T_0/2$
5	$S_1 = T_2 + T_0/2$ $S_3 = T_0/2$ $S_5 = T_1 + T_2 + T_0/2$	$S_4 = T_1 + T_0/2$ $S_6 = T_1 + T_2 + T_0/2$ $S_2 = T_0/2$
6	$S_1 = T_1 + T_2 + T_0/2$ $S_3 = T_0/2$ $S_5 = T_1 + T_0/2$	$S_4 = T_0/2$ $S_6 = T_1 + T_2 + T_0/2$ $S_2 = T_2 + T_0/2$

Table.2. Switching Time Calculation at Each Sector

SIMULATION RESULTS

The SPWM using for five levels UPFC the reactive power demand is 10MVAR and total harmonic distortion (THD) is 9.01% occurred shown in fig.14, fig.15 and fig.16. In this paper using SVPWM based five levels UPFC instead of reactive power coordination controller and SPWM. During the simulation, phase-shifted SPWM was used with the carrier and switching frequencies being equal to 1 kHz.

The sending and receiving end bus bar voltages are assumed to be constant, of the same amplitude of 10 kV (peak) and displaced by an angle of 15° . The output voltage of the shunt transformer is 3.75 kV (peak). The series inductance and resistance are 0.1p.u, and 0.01p.u, respectively (10 kV, 30 MVA, 50 Hz base). For the shunt circuit, the inductance and resistance are 0.28p.u, and 0.03p.u, respectively [26].

A relatively large DC capacitor of 2000 μ F is used due to the large power demanded by the series converter at some operating conditions. However, the capacitances for the flying capacitors are set at 200 μ F. This is due to the factor that, for the FC multilevel VSC, the voltage of each flying capacitor is balanced within each switching cycle; therefore, relatively small capacitors can be used.

The DC voltage is well controlled with a small ripple. The simulated results of power flow control by the UPFC system are shown in Fig. 14 for $P^*=30$ MW, $Q^*=0$ MVar, in Fig. 15 for $P^*=20$ MW, $Q^*=10$ MVar, and Fore there $P^*=20$ MW, $Q^*=10$ MVar, respectively. As shown, after the series element of the UPFC is started at the time of 0.15s.

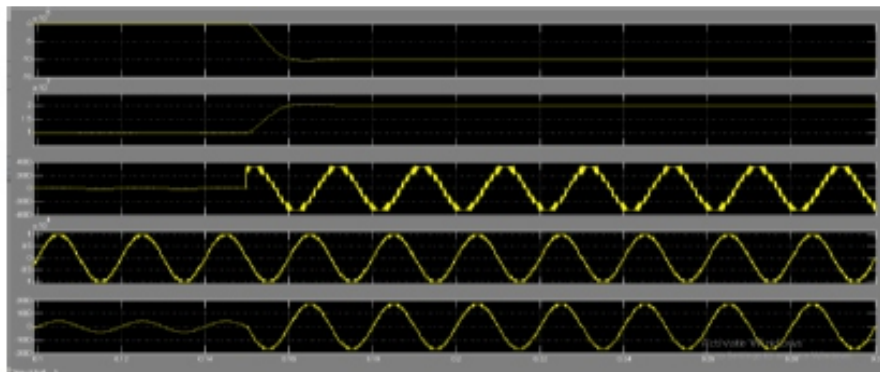


Fig.14 Simulated results of the SPWM based five levels UPFC series converter operation for $P^*=20$ MW; $Q^*=0$ MVar.

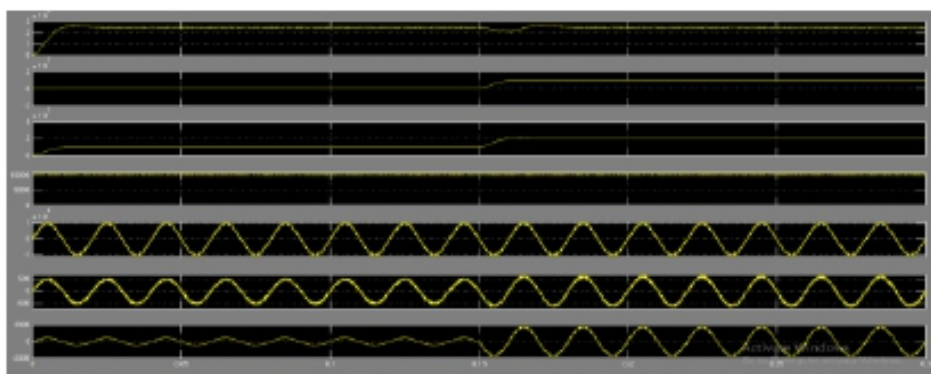


Fig.15 Simulated results of UPFC operation by using flying capacitor converter operation for $P^*=20$ MW; $Q^*=10$ MVar.

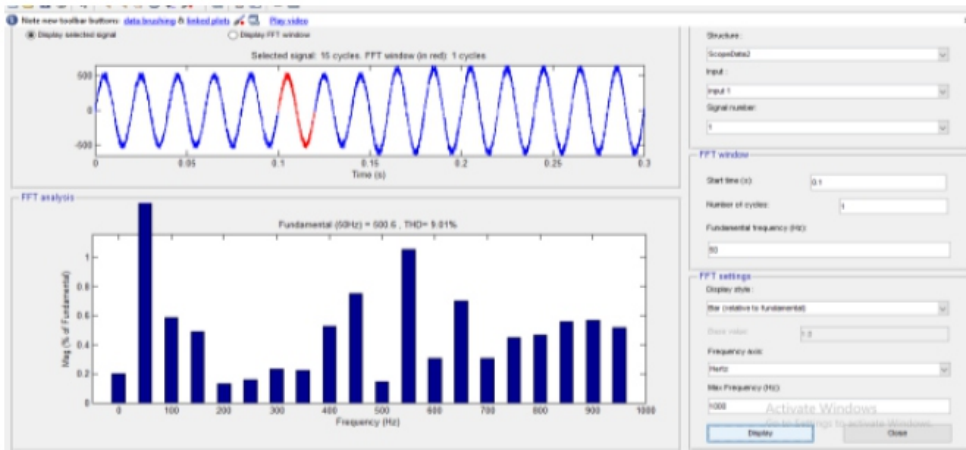


Fig 16 THD values of UPFC operation by using flying capacitor In this paper SVPWM is proposes to reduced reactive power demand 9.5MVAR and total harmonic distortion (THD) 4.85%. Shown in fig.17 and fig.18

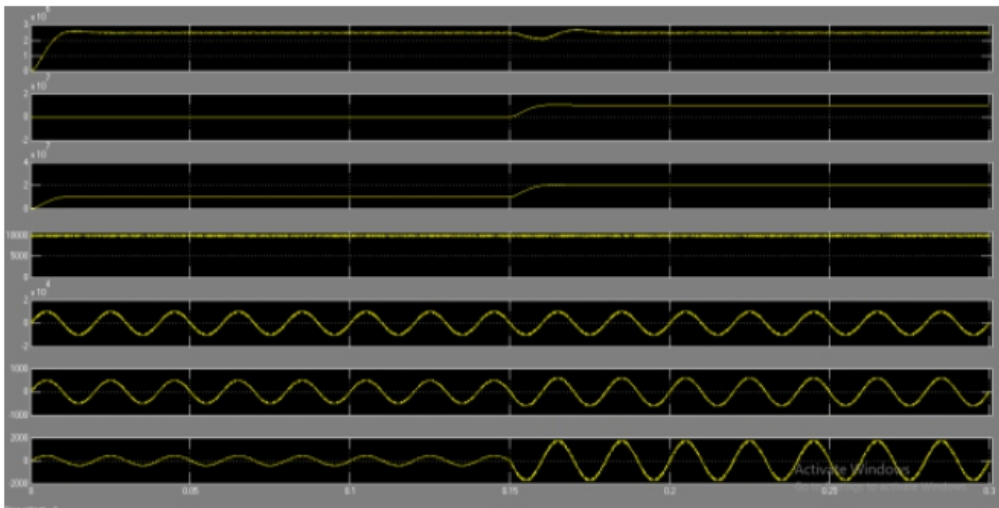


Fig.17 Simulated results of UPFC operation by using SVPWM

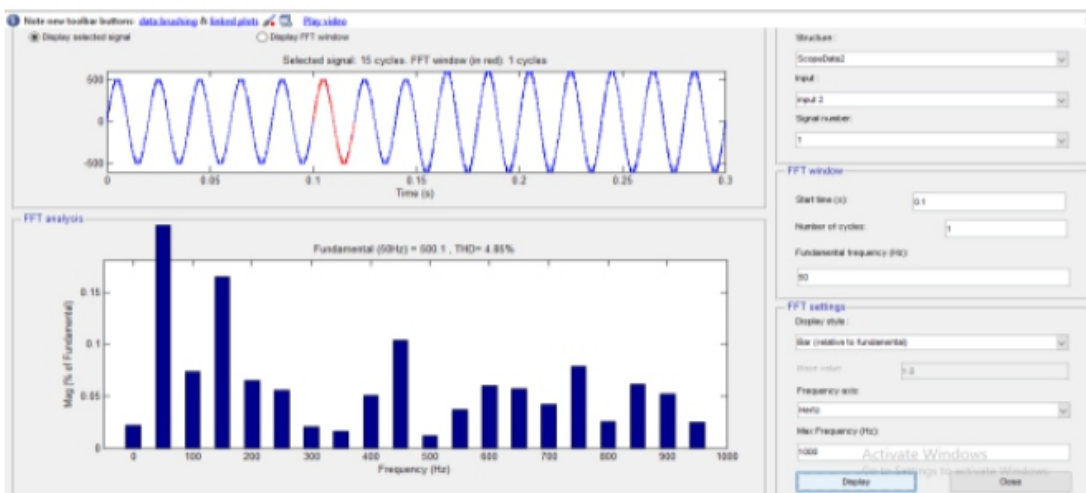


Fig 18 THD values of UPFC operation by using SVPWM In this paper proposes SVPWM for a five levels UPFC is controlled the reactive power and total harmonic distortion than the other controllers (reactive power coordination control and SPWM). The simulation circuit and simulation control circuits are shown in fig.19 and fig.20.

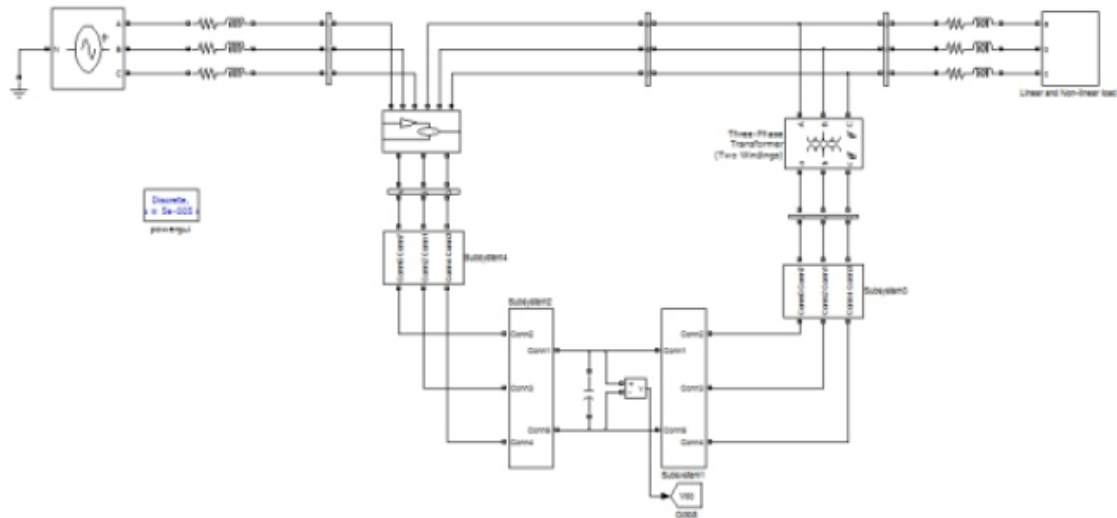


Fig 19 Simulation circuit of UPFC operation by using SVPWM

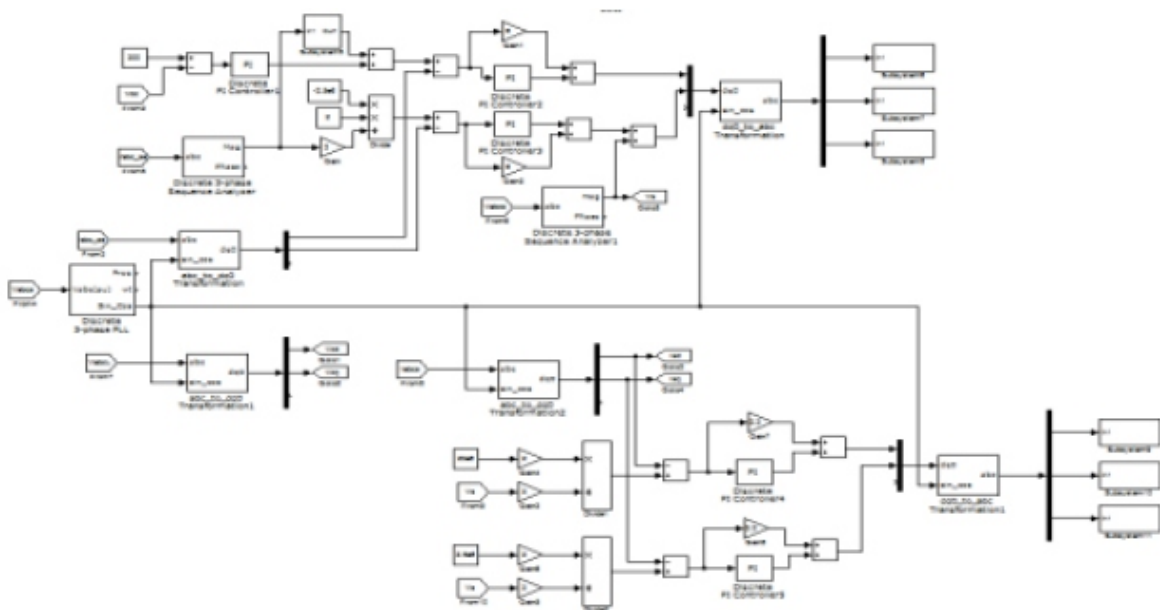


Fig 20 Simulation control circuit of UPFC operation by using SVPWM

CONCLUSION

The possibility of using flying capacitor multilevel SVPWM five level converters for a UPFC application is discussed. The reduction of reactive power and total harmonic distortion (THD) using by SVPWM for a five levels UPFC. For this reason SVPWM is proposes to reduced reactive power demand 9.5MVAR and total harmonic distortion (THD) 4.85%.

A new SVPWM for a five level UPFC has been designed to limit excessive voltage excursions during reactive power transfers. PSCAD-EMTDC simulation results have been presented to show the improvement in the performance of the five levels UPFC control with the proposed reactive power and total harmonic distortion. In this paper proposes SVPWM for a five levels UPFC is controlled the reactive power and total harmonic distortion than the other controllers (reactive power coordination control and SPWM).

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Reasons for the Delay in Implementing "Standards of International Accounting "(IAS) of "Small and Medium Sized Enterprises" in Jordan: An Exploratory Study from the Perspective of Auditors in Jordan

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ABSTRACT

This study aimed to investigate perceptions of the auditors in Jordan about the causes of the delay in applying "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises" in Jordan. To accomplish the aims of this study, a questionnaire was built to collect data, and eighty copies were distributed to the individuals of the sample. They were chosen using simple random sample method. The study reached a set of results from the most important of them:

- 1. The accounting systems used, the weak experience of the financial reports preparers and the high costs delay the implementation of international standards for "Small and Medium Sized Enterprises" in Jordan.*
- 2. Existence of an effect (the accounting systems used, the experiences of financial reporting preparers, the cost of preparing financial reports) in applying "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises", where they explain (74.9%) of the variance in the implementation of "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises".*

The study recommends those in charge of managing "Small and Medium Sized Enterprises" to embrace accounting systems sufficiently to implement "Standards of International Accounting " (IAS) in "Small and Medium Sized Enterprises", or to adapt these systems for proper implementation of the standards in "Small and Medium Sized Enterprises".

INTRODUCTION:

The importance of "Small and Medium Sized Enterprises" for national economies is escalating on a daily basis (2010, Ateq). Therefore, SMEs have an important economic position place and play a crucial role for most developed and developing economies (Bohušová and Blaškova, 2011).

The IASB has defined SMEs as those that are not accountable to the public, that is, they neither have their own equity instruments nor Debt securities traded publically. Moreover, these companies would not issue such instrument to be traded in the public market. (National or foreign exchange market or trade market at national or international levels) (IASB, 2009).

In Jordan, SMEs play a significant and important role in achieving growth and sustainable development in order to contribute effectively to driving the economy through increasing national production and investment. There is no unemployment rate (Suwaidan and Qaqish, 2018). Based on recent statistics, ninety eight percent companies in Jordan are "Small and Medium Sized Enterprises", such companies are regarded as the first and most important contributor to the country's economy. (chamber of Industry and Commerce, Amman, 2011).

Regarding to the implementation of "International Financial reporting Standards" (IFRS) and "Standards of International Accounting" (IAS) in Jordan, , the government passed Companies Law No. 22 in 1997, which states that all registered companies regulated by the Companies Law are demanded to prepare audited financial statements complying with "International Financial reporting Standards" and Standards of International Accounting. Moreover, "Jordanian Securities Act " (76) of 2002, as amended in 2004, requires all companies subject to "Jordanian Securities Commission" (JSC) to apply IFRS in full. The Jordanian Association of Certified Public Accountants and the "Jordanian Companies Control Department " oversaw the adoption of these IFRSs (Altarawneh, 2015).

In 2007, IASB issued the first draft of the proposed "International Financial reporting Standards" for "Small and Medium Sized Enterprises" (IFRS for SMEs), which included fewer IFRSs, less complex accounting treatments, and simplified disclosure requirements. These standards are reflected in full IFRSs (Husammi and Nassar, 2015) and formally adopted in July 2009 (IASB, 2009). The Jordanian Association of Certified Accountants recommended that these standards be adopted in "Small and Medium Sized Enterprises" . (Suwaidan and Qaqish, 2018).

It is clear that SMEs in Jordan face many obstacles in their implementation of full "International Financial reporting Standards" since these standards have been designed for public shareholding companies to increase the quality of their financial reports and to suit the needs of their investors. As well as, the full standards contain certain issues that are not related to SMEs and therefore the implementation of these full standards is a burden on their accounting systems and on the It is necessary to simplify these standards to suit the authors and users of these lists (Suwaidan and Qaqish, 2018). In addition, the implementation of full standards increases costs, especially for "Small and Medium Sized Enterprises", due to the complex financial reporting requirements of public companie (Haller and Eirle, 2008).

In this context, this study seeks to find out the reasons that delay the implementation of financial reporting standards for SMEs in Jordan.

The Problem of the Study:

SMEs in Jordan make up about 95% of Jordanian companies (Central Bank of Jordan, 2012). The implementation of full IFRSs results in a high cost to SMEs due to the complexness of the requirements of financial reports in full standards (Haller and Eirle, 2008). Full IFRS is not suitable for "Small and Medium Sized Enterprises" due to high disclosure requirements and focus on the fair value model through full IFRS (Fearnley and Hines, 2007). Under these conditions, financial statements are less comparable locally and internationally, especially with companies of the same size (Haller and Eirle, 2008). Based on the above, it is necessary to identify the reasons that delay implementing financial reporting standards in SMEs in Jordan.

The problem of the study can be formulated through the following questions:

1. Are accounting systems used in SMEs a reason to delay the implementation of IPSAS?
2. Is the cost of implementing international standards for SMEs one of the reasons for the delay of implementing these standards?
3. Are the experiences of the financial statements of SMEs one of the reasons for the delay of implementing these standards?

The Importance of the Study

The importance of this study stems from the significant role of "Small and Medium Sized Enterprises" in Jordanian economy. Jordan obliges its companies to apply "Standards of International Accounting "(IAS) and Jordanian Association of Certified Accountants has recommended adopting standards for SMEs (Swaidan and Qaqish, 2018). Standardization in the implementation of international standards for SMEs makes it easier to compare them with those of companies around the world that use the same standards, guiding investor decisions (Al Hajja, 2017). Based on the above, this study will elicit the views of the auditors in Jordan on the reasons that delay the implementation of "Standards of International Accounting "(IAS) for SMEs. It is expected that this study will help those concerned with the implementation of these standards to identify the reasons that delay their implementation and thus identify these reasons in order to find ways to overcome these reasons and as a final result the implementation of "Standards of International Accounting "(IAS) for SMEs.

Study Objectives

1. This study aims to identify the impact of accounting systems used on the delay in implementing "Standards of International Accounting "(IAS) for these companies.
2. The aim of this study is to examine the impact of the experiences of "Small and Medium Sized Enterprises" accounts authors on delays in applying international standards to these companies.
3. The study aims to show the impact of cost on the delay in the implementation of "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises".

Study Hypotheses

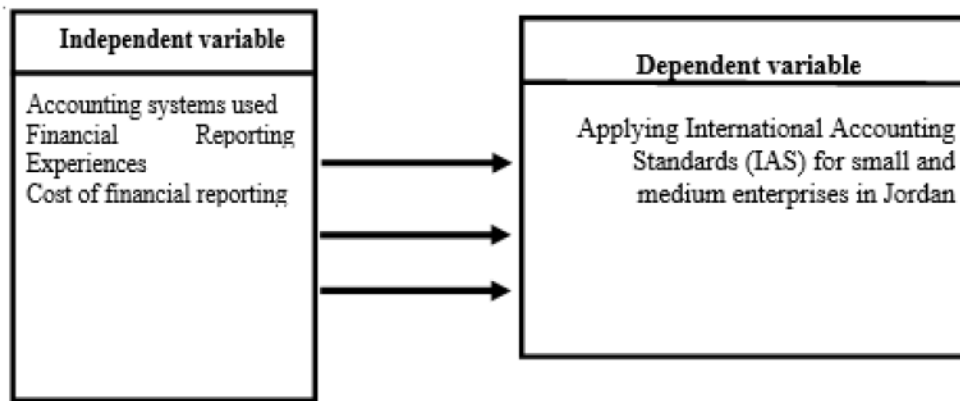
The first hypothesis: - The accounting systems used do not contribute to delaying the implementation of "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises" in Jordan.

The second hypothesis: - The experiences of the financial reporting authors do not contribute to delaying the implementation of the "Standards of International Accounting "(IAS) for SMEs in Jordan.

The third hypothesis: - The cost of preparing financial reports according to international standards for "Small and Medium Sized Enterprises" does not contribute to delaying the implementation of these standards in Jordan.

Study Model:

The figure below illustrates the study model, the independent variables of the study are (Accounting systems used, Financial Reporting Experiences, Cost of financial reporting) and the dependent variable is Applying "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises" in Jordan.



Methodology of the Study

The descriptive analytical method was used in this study. This methodology is based on a phenomenon that is actually described, described, analyzed and interpreted in order to reach conclusions that reflect reality and contribute to its improvement. To achieve the objectives of the study and study their hypotheses, a questionnaire was designed and distributed to a sample of Jordanian Chartered Accountants and Audit Assistants working in the licensed audit offices in Jordan.

The population of the study and its sample

The population of the study comprised the auditors working in the licensed audit offices in Jordan, where the number of chartered accountants practicing the audit profession reached (500). A random sample was selected by (16%) of the study population so, the sample size equals (80). Copies of the questionnaire were distributed to the individuals of the sample all of them were restored but 5 copies were excluded due to incompleteness of the answers. Therefore, the number of questionnaires retrieved and valid for analysis becomes (75) questionnaires, or (94%) of the total sample of the study.

Table 1 : Study population according to personal and functional variables

Variable	Variable Category	Number	Percentage
Age	Less than 25 years	8	10.7
	34 – 25	39	52.0
	44 – 35	12	16.0
	45years and over	16	21.3
Educational qualification	diploma	3	4.0
	Bachelor	57	76.0
	Master	11	14.7
	Ph.D	4	5.3
Professional qualification	AICPA	4	5.3
	CPA	4	5.3
	ACCA	2	2.7
	JCPA	65	86.7
Experience	Less than 5 years	3	4.0
	9 – 5	50	66.7
	14 – 10	17	22.7
	15years and over	5	6.7

It is clear from Table (1) that the highest percentage was 52% for the age group (25 – 34) years, where the number was 39 people and the lowest rate was 10.7% for those in the age group less than 25 years and their number was 8 people. Study in the age group (25 – 34) years.

As for the educational qualification, the highest percentage was 76% for those with a bachelor's degree, where the number was 57 and the lowest was 4% for those with a diploma.

As for the vocational qualification, the highest percentage was 86.7% for those whose professional qualification was JCPA, where the number was 65 persons and the lowest rate was 2.7% for those who qualified as a British Chartered Accountant (ACCA) and the number was 2 persons.

With regard to experience, the highest percentage was 66.7% for those who had experience in the work (5-9) years, where the number was 50 people, and the lowest rate was 4% for those who had experience in the work less than 5 years and their number was 3 people. From 5 years to 9 years.

Study Tool:

By referring to the theoretical framework the researcher designed a the study tool "questionnaire" that includes 3 three sections:

The 1st section: It encompasses data related to the demographic features of the study sample, like (age, educational qualification, experience, and professional qualification).

The 2ed section: This section encompasses data representing the independent variable of the study (Accounting systems used, Financial Reporting Experiences, Cost of financial reporting).

The 3rd section: This section includes items representing the dependent study variable (Applying "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises" in Jordan).

The Validity of the Study:

The questionnaire was judged by 6 arbitrators from different Jordanian universities to verify its items' validity.

The reliability of the study:

The reliability of the study instrument has been verified utilizing test-retest method as applied to an exploratory sample comprised (25) respondents out the sample of the study. The dimensions of the study, and the results as illustrated by Table (2):

Table 2 : The reliability coefficient ("internal consistency") values of each dimension of the study instrument and the instrument as a whole

No	Dimension	Stability coefficient	
		Test-Retest	Cronbach's Alpha
1	Accounting systems used	0.88	0.87
2	Financial Reporting Experiences	0.87	0.82
3	Cost of financial reporting	0.86	0.83
3	The Total	0.92	0.89

Statistical Treatment:

1. Descriptive statistical methods such as (frequencies, percentages, means and standard deviations) as well as analytical statistical methods such as (variance amplitude, tolerant variance, and multiple regression analysis) were utilized for answering the research questions and testing the hypotheses, using SPSS 22.1.
2. Descriptive statistical measures used to describe the characteristics of the subjects studied in terms of the frequency and percentages as well as arithmetic means and standard deviations to identify the perceptions of the reasons behind the delay in applying the “Standards of International Accounting “(IAS) for SMEs in Jordan.
3. The “variance inflation factor” (VIF) test and the “tolerance” test were used to verify that there was no significant correlation between the independent variables, also “skewness” test was used to verify that data follows the normal distribution. Four regression conditions (moderate distribution, mean, constant change, and error independence) were used, and multiple regression analysis was used to test the validity of the study design and the effect of the independent variable and its size on the dependent variable and its size, in addition to the analysis of the stepwise multiple regression of the independent variables in the predicate dependent variable equation.

Previous Studies:

The study (AL-Hussame and Nassar, 2017) entitled “The Suitability of Jordanian “Small and Medium Sized Enterprises” to the prerequisites of “International Financial reporting Standards” in Jordan”. This study aimed to identify the appropriateness of Jordanian “Small and Medium Sized Enterprises” environment with the prerequisites of “Financial Reporting Standards” specifically in the presentation of financial statements and explanations. As well as the study attempted to identify the restraints “Small and Medium Sized Enterprises” face at implementing their own “Financial Reporting Standards”. So as to accomplish the aims of the study, the researcher developed a questionnaire to collect the needed data; copies of the questionnaire were distributed to auditors authorized to practice the auditing in Jordan, the study sample comprised 135 licensed auditors. Based on statistical tests, the study concluded that “small and medium-sized enterprises”, when presenting financial statements, comply with the prerequisites of the “International Financial Reporting Standards” that apply to them. Also that the environment of “Small and Medium Sized Enterprises” correspond to the requirements of “International Financial reporting Standards” specific to them in the presentation of explanations to the financial statements..

The study (Altarawneh, 2015) titled “investigating the suitability of “International Financial reporting Standards” to Small and Medium sized Entities in Jordan.” The purpose of this study is to review the relevance and consistency of the IFRS for SMEs in Jordan. It also analyzed the current challenges facing small and medium enterprises in Jordan in light of the application of current IFRS standards. Moreover, It discussed the expected benefits of using the IFRS for SMEs. A total of 10 interviews with external auditors were conducted to validate and identify relevant issues under the IFRS for SMEs in the context of SMEs in Jordan. In addition, a total of 605 copies of the questionnaire were distributed to external auditors and CFOs of small and medium-sized enterprises who prepare financial statements based on full IFRS. Based on the perceptions of the respondents, the study concluded that both employees and shareholders want to utilize IFRS for SMEs. The researcher considered the importance of applying “financial reporting standards” for “Small and Medium Sized Enterprises”.

The study (Kılıç, et.al, 2013) titled “Perceptions of SMEs about IFRS for SMEs: the case of Turkey”. The aim of this study was to assess the pros and cons of IFRS for SMES in Turkey and their obstacles. The data were collected through a questionnaire, which found that most of sample individuals believe that applying the IFRS for SMEs will make financial statements reliable, understandable, transparent and comparable. The respondents also agree that there are some problems with the implementation of the “Standards of International Accounting “(IAS) for SMEs in Turkey. While there are benefits to using the IFRS for SMEs, the study recommended the adoption of the IFRS for SMEs in Turkey and concluded that adoption of the IFRS for SMEs by related parties (SMEs, auditors and auditors in Turkey) should be effectively supported.

The study (Al-Abaiji, 2013) titled “The Viability of Jordanian SMEs to Comply with the IAS for Presenting Financial Statements” . This study targeted to demonstrate the extent of viability of Jordanian “Small and Medium Sized Enterprises” (SMEs) complying with the International Accounting Standard (IAS) concerning those entities. So as to fulfill the objectives of the study, a questionnaire was designed, containing the items required by the International Accounting Standard for preparing the financial statements for small and medium size enterprises. The questionnaire was distributed to Aa group of (114) financial managers and internal auditors who work at “Small and Medium Sized Enterprises” in addition to credit officers. To analyze the study's data and to test its hypotheses, the researcher used the statistical methods such as the arithmetic mean, the standard deviation and the one way variant analysis ANOVA, in addition to Scheffé test. The study revealed the existence of a high viability at these enterprises to comply with the international Accounting Standard that is specialized in presenting the financial statement, and there is no, differences statistical between the sample's groups (The financial managers, the internal auditors and credit officers) regarding the extent of these enterprises viability to comply with the requirements of the accounting standard, but there are differences with statistical significance regarding the viability of these enterprises regarding the viability to comply with the items that should be presented in the Statement of changes in equity, and the differences were in favor of the credit officers.

What Distinguishes this Study?

Through the previous presentation of Arab and foreign studies related to the subject of the study, some studies have been concerned with the problems faced by “Small and Medium Sized Enterprises” when applying the full standards, while others have been concerned with the suitability of the standards of the medium and small size companies to apply to these companies. Weak accounting systems used by these companies and weak internal control system As for the current study, it touched on the study of three different variables, namely the accounting systems used by “Small and Medium Sized Enterprises”. In Jordan, the cost of applying the “Standards of International Accounting “(IAS) for SMEs in Jordan and the experience of the financial reporting authors and their impact on the delay in applying the International Standards for SMEs in Jordan.

Results

Testing hypotheses:

The first hypothesis: The accounting systems used do not contribute to delaying the implementation of “Standards of International Accounting “(IAS) for “Small and Medium Sized Enterprises” in Jordan.

A (t) test was used for each paragraph of the field of accounting systems to find out the opinions of the sample of the study on the contribution of accounting systems used to delay the implementation of “Standards of International Accounting “(IAS) for SMEs in Jordan at a significant level, as shown in table (3).

Table 3 Analysis of paragraphs of the "accounting systems in Jordan" using the (t) test for one sample

Item	mean	Relative importance	t	sig	Rank
Accounting systems used in SMEs are not suitable for the implementation of international standards for SMEs, which impedes their implementation	4.81	96.2	29.211	0.000	3
The weakness of the accounting systems used hinders the implementation of “Standards of International Accounting “(IAS) for SMEs in Jordan	4.83	96.6	41.512	0.000	2
Training staff on “Standards of International Accounting “(IAS) for SMEs requires considerable time, impeding their implementation	4.93	98.6	66.673	0.000	1
Total	4.88	97.6	46.767	0.000	-

It is clear from the table (3) that the views of the study sample in all paragraphs are positive as the significance level is less than the level of significance and the relative weight of each paragraph is greater than 60%. “Standards of International Accounting “(IAS) for SMEs in Jordan. Paragraph "weak accounting systems used impedes the implementation of“Standards of International Accounting “(IAS) for SMEs in Jordan" second place, and paragraph "paragraph accounting systems used in “Small and Medium Sized Enterprises” is not suitable for the implementation of international standards for SMEs, which impedes their implementation" ranked third.

Comparing the level of significance of the paragraphs of the field of systems and the rate of field answers with the level of significance shows that all of them are below the level of significance, which indicates the existence of a significant statistical relationship meaning that the accounting systems used contribute to delay the implementation of “Standards of International Accounting “(IAS) for SMEs in Jordan.

Test the second hypothesis: The experiences of the financial reporting authors do not contribute to delaying the implementation of the “Standards of International Accounting “(IAS) for SMEs in Jordan.

Table (4)

Table 4 : Items Analysis of the "Financial Reporters' Experience" using the (t) test for one sample

Item	mean	Relative importance	t	Sig.	Rank
SMEs in Jordan will not be able to employ qualified accountants in the International Financial Innovation Standards for SMEs.	4.37	87.4	13.258	0.000	2

Weak experience of financial reporting authors in Jordan hinders the implementation of the "Standards of International Accounting "(IAS) for SMEs in Jordan	3.80	76.0	11.263	0.000	3
There is no interest in the preparation of "Standards of International Accounting "(IAS) for SMEs in Jordan, which hinders their implementation	4.69	93.8	15.775	0.000	1
Inadequate financial qualifications for financial reporting hamper the implementation of international standards for SMEs in Jordan	3.54	32.2	10.902	0.000	5
The lack of professional expertise in the financial reporting process hinders the implementation of international standards for SMEs in Jordan	3.71	54.2	12.395	0.000	4
Total	3.25	65.0	2.356	0.021	-

It is clear from table (4) that the opinions of the study sample in all paragraphs are positive as the level of significance is less than the level of significance and relative weight of each paragraph is greater than 60%, except in the fourth and fifth paragraphs the relative weight was less than 60%. Financial Reporters' Experience by Relative Weight The paragraph "There is no interest by the financial reporting process in applying the "Standards of International Accounting "(IAS) for SMEs in Jordan, which hinders their implementation". The paragraph "SMEs in Jordan will not be able to employ qualified accountants in the international financial creativity standards for SMEs, which hinders the adoption of these standards" second place, and paragraph "Weak experience of financial reporting in Jordan impedes the implementation of "Standards of International Accounting "(IAS) SMEs in Jordan (3rd place, paragraph) Lack of professional expertise in financial reporting hinders implementation of international standards for SMEs in Jordan (4th place, paragraph) The scientific qualifications of the authors of adequate financial reporting hinders the process of applying international standards for medium and small-sized companies in Jordan "ranked fifth.

Comparing the level of significance of the paragraphs of the field of expertise of financial reporting systems and the rate of field answers with the level of significance shows that all of them are less than the level of significance, which indicates a significant moral relationship meaning that the experiences of the financial reports contribute to delay the implementation of "Standards of International Accounting "(IAS) for "Small and Medium Sized Enterprises" in Jordan.

Test the third hypothesis: The cost of preparing financial reports according to international standards for "Small and Medium Sized Enterprises" does not contribute to delaying the implementation of these standards in Jordan.

Table 5 Items Analysis of "cost" using (t) test for one sample

Item	mean	Relative importance	t	Sig.	Rank
The first adoption of the "International Financial reporting Standards" (IFRS) for SMEs is prohibitively expensive, hindering their implementation	4.87	97.4	32.187	0.000	2

The limited financial resources of SMEs hamper the implementation of international standards for SMEs in Jordan	4.16	83.2	13.322	0.000	4
Adoption of international standards for SMEs increases audit costs incurred, impeding their implementation	4.83	96.6	41.512	0.000	3
The implementation of international standards for SMEs in Jordan increases the cost of maintaining accounts and hinders their implementation	4.91	98.2	44.159	0.000	1
Total	4.80	96.0	33.524	0.000	-

It is clear from Table (5) that the opinions of the study sample in all paragraphs are positive as the level of significance is less than the level of significance and the relative weight of each paragraph is greater than 60%. For SMEs in Jordan increases the cost of keeping accounts and hinders their implementation. The first paragraph, “the first adoption of the IFRS for high-cost SMEs, which impedes their implementation” is ranked second, and the third paragraph, “the implementation of the International Standards for SMEs increases the audit costs incurred, which impedes their implementation”. Finance for SMEs hinders the implementation of international standards for SMEs in Jordan.

Comparing the level of significance of the cost field items and the rate of field answers with the level of significance shows that all of them are less than the level of significance, which indicates a significant moral relationship that means that the cost contributes to delay the implementation of “Standards of International Accounting “(IAS) for “Small and Medium Sized Enterprises” in Jordan.

In order to answer the study question related to the question about the impact of (the accounting systems used, the experiences of financial report preparers, the cost of preparing financial reports) on the implementation of international standards for medium and small-sized companies in Jordan. Stepwise multiple regression was adopted as the general trend variable for all variables (the accounting systems used, the experiences of financial reporting preparers, the cost of financial reporting) towards the implementation of international standards for medium and small-sized companies in Jordan (dependent variable = Y), And three independent variables as shown in Table (6).

Under this method, the variables are gradually entered into the regression equation as long as the input of the variable led to an increase in the square of the overall correlation coefficient R², statistically significant at the level of the pre-selected statistical significance (0.05), and this method was used for all general trends (accounting systems used, Experts of financial reports preparers, the cost of financial reporting (the three listed in Table 6), and to determine the relative importance of predicting variables in the model, the values of their standard regression coefficients were compared, and Table (6) shows the results of the regression analysis indicated for all (accounting systems Service, the experiences of financial reporting preparers, the cost of preparing financial reports), as it appears from the indicated table that the number of independent variables affecting the general trend towards the reasons behind delaying the implementation of “Standards of International Accounting “(IAS) for medium and small-sized enterprises in Jordan according to the opinions of the study sample are three variables These are: the accounting systems used, the experiences of the authors of financial reports, the cost of preparing

financial reports, while the variable of unemployment did not enter the model as a variable that does not have a statistically significant effect, and these three variables included in the model are part of it. There is no variation in the interpretation of the reason for applying international standards for “Small and Medium Sized Enterprises” at a rate of 77.8%, and with a significant degree of (P-Value <0.001) for the model according to the F test that reached the final peak of the model 266, and all the variables included in the model were highly significant and exceeded (P-Value <0.05), and statistical tests showed that there was no self or linear correlation between the error limits or the variable, where the value of the VIF for all models was less than 5 which is an indication of the absence of the problem of self-correlation between the independent variables. It also showed that there was no problem with the correlation between the error limits, as the values of Durban-Watson D.W were about 1.96 and these measures are a strong indication of the validity and strength of the model and its lack of standard problems that lead to illogical expectations.

In order to measure the entry of the elements of the independent study into the model according to importance, the results in equation (1) show that the most (the accounting systems used, the experiences of financial reporting preparers, the cost of preparing financial reports) influence the general trend level, the implementation of international standards for medium and small-sized companies, the element that represents All variables of the low level of wages and low income where he managed to explain on his own 56.7% of the general trend towards applying international standards for “Small and Medium Sized Enterprises” in Jordan and with a sense of the model and the variable (P-Value <0.001), and it came with a direct relationship, that is, there is a direct relationship The relationship between the general trend towards the fact that (the accounting systems used, the experiences of financial report preparers, the cost of preparing financial reports) is a reason for the trend towards applying international standards for “Small and Medium Sized Enterprises” with the general trend towards the element of accounting systems used with all its variables. That is, the increased sense of the accounting systems used increases the sense of the research problem and accounts for it at a rate of 56.7%.

$$y = 1.317 + 0.66 x_1 \quad \dots 1$$

$$R^2 = \%56.7 \quad VIF = \%1 \quad t = (13.829)^{**} (24.55)^{**}$$

Then entered the model in the second place in terms of importance, variable of the general trend element of the experiences of the authors of financial reports, as shown in equation (2), where this element was able to explain on its own 14.1% of the total variation or cause of feeling in the study sample due to the implementation of international standards for medium companies Small size due to the reasons behind delaying the implementation of “Standards of International Accounting “(IAS) for medium and small enterprises, and by entering it with the variable in equation (1), the model was able to explain 70.8% of the total variance on the apparent level, and these variables and the model were significant at (P-Value < 0.001), as for the emergence of X2 with a relationship With a positive model explains that a greater sense of the importance of the authors of the reports of financial experience increases the tendency towards the implementation of international standards for medium and small-sized companies according to the opinion of the study sample.

$$y = 0.631 + 0.45 x_1 + 0.396 x_2 \dots$$

$$t = (6.945)^{**} (17.154)^{**} (14.876)^{**} \quad F = 556.435^{**}$$

In the third place in terms of importance, the general trend variable of the financial reporting cost component entered the model, where it was able to explain on its own 4.1% of the variance with a significant amount of (P-Value <0.001) for the model and the variable, and the three variables in equation (3) were also able to explain 74.9% of the reason for applying international standards for “Small and Medium Sized Enterprises” according to the opinion of the study sample, and the presence of X3 in a direct relationship with the model means that the cost of preparing financial reports has a positive effect in feeling that its rise will increase the implementation of “Standards of International Accounting (IAS) for medium and small enterprises in Jordan, according to the opinion The study sample.

$$y = 0.329 + 0.387 x_1 + 0.337 x_2 + 0.193 x_3 \dots\dots\dots 3$$

$$R^2 = \%74.9 \quad (3.607)^{**} (15.246)^{**} (13.17)^{**} (8.636)^{**} \quad F = 455.28^{**} \quad VIF = \%1.5$$

Table 6 Element variables The reasons behind the delay in applying the “Standards of International Accounting (IAS) for medium and small enterprises in Jordan and their relative predictive importance

The independent variable code	Regression scale	B	Std. Error	Beta	t. value	sig	VIF	R ²
X ₀	(Constant)	0.171	0.086	-	1.988	0.046		
X ₁	Accounting systems used	0.287	0.027	0.328	10.438	0.000	2.019	56.7%
X ₂	Financial reporting expertise	0.241	0.027	0.271	8.768	0.000	1.957	14.1%
X ₃	The cost of financial reporting	0.165	0.024	0.196	6.892	0.000	1.663	4.1%
Y	the implementation of international standards for medium and small-sized companies in Jordan	(R ² =74.9%, F. Value=266, sig=0.000, D.W=1.96)						

Results :

1. Accounting systems used in SMEs in Jordan are not appropriate for the implementation of “Standards of International Accounting (IAS) for SMEs.
- 2 - The weakness of the expertise of the financial reporting authors, especially in the small audit offices is one of the most important reasons that delay the implementation of international standards for “Small and Medium Sized Enterprises” in Jordan.
3. High costs related to the implementation of international standards for SMEs delays the implementation of international standards for SMEs in Jordan.

Recommendations:

Based on the findings of the study, it recommends the following:

- 1- The researcher recommends the management of SMEs to adopt appropriate accounting systems to apply the “Standards of International Accounting “(IAS) for “Small and Medium Sized Enterprises” or make amendments to these systems so as to be suitable for the implementation of standards for SMEs.
- 2- The researcher recommends the competent authorities to prepare financial reports to pay attention to raising the efficiency and experience of its employees through holding educational lectures and continuous training courses in universities, specialized associations and institutes on the “Standards of International Accounting “(IAS) for small and medium-sized enterprises, which increases the chances of implementation of these standards and ease of adoption.
- 3 - Given the high cost of the first accreditation of “Standards of International Accounting “(IAS) for “Small and Medium Sized Enterprises”, the researcher recommends the competent authorities to prepare these reports to reduce the costs of implementation to suit the financial resources available to these companies.
- 4 - Given the recent issuance and adoption of these standards, the researcher recommends further studies on the appropriateness of these standards for implementation in Jordan and their usefulness to users of financial statements of these companies compared to the preparation of lists in accordance with the full standards.

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Managing Sexual Victimization Rates of Female Undergraduates in Nigeria: A Study of Delta State University, Abraka

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ABSTRACT

This study empirically examines the rate of sexual victimization of female undergraduates in Nigeria by obtaining evidence from the Delta State University, Abraka – Nigeria. Given this, the effort was made to specifically examine the perception of female lecturers and undergraduate students on the prevailing rate of acts of sexual victimization within Nigerian universities and establish whether acts of sexual harassment, rape and stalking significantly influence the academic activities and outcomes of victims of sexual victimization. Primary data were obtained through interviews and the questionnaire which was specifically constructed for this study. Items in the questionnaire were pre-tested and its reliability was established using the Cronbach alpha test which produced a reliability coefficient of 0.87. The study's data were analysed by selected measures of central tendency (mean, standard deviation) and the formulated hypotheses were tested using relevant regression technique and the Analysis of Variance (ANOVA) test. Findings suggest that while campuses of Nigerian Universities have not been free from cases of sexual harassment involving lecturers and students, the rates of sexual harassment, rape and stalking have not been on the increase in recent time. Recommendations were thus made based on the study's findings.

JEL Classification: I23, I29, K42, Z18

Keywords: School Grades, Sexual Harassment, Victimization, Reportage, Female Students, Physical Assault

1. INTRODUCTION

Victimization of female university students in universities globally and Nigeria in particular, has been a long-standing issue. However, prior researches have focused more on the victimization of females within the context of the family (cohabitation or marriage) than on female students within the environment of higher educational institutions (Lehrer, Lehrer, Lehrer & Oyazun, 2007). Research evidence suggests that women on college campuses are at greater risk of victimization especially in the form of rape and other forms of sexual assault than other women in the general public. On their part, Oni, Tshitangano & Akinsola (2019) report that both male and female students on campus are experiencing different forms of sexual harassment; although, studies like Dambazau (2011) and Erhumse (2019), posit that victims of sexual harassment and rape are mostly females. Specifically, Erhumse (2019), observes that the issue of who sexually victimizes who is still undefined though in every such case, the female students are usually found to be the victims while their male counterparts are mostly found to be the perpetrators.

Akpotor (2013), posits that victims of sexual harassment are sometimes reluctant to report cases of victimization. Such reluctance could be attributed to a lack of trust for lecturers as a result of the

presumed imbalance of power between students and lecturers (female students and lecturers in particular). Again, low reportage of victimization of female students could be ascribed to the fear of retaliation from other students, fear of secondary victimization, fear of being blamed for harassment, and lack of belief in the success of the complaint mechanism (Erhumse, 2019). As observed by Oni (2019), sexual harassment in recent time has been described and identified as an illness disease of learning institutions and has become an obscure principal public health problem in most institutions and organisations. It has also been shown to be one of the main stressors which often form a threat to the performance of organisations or academic institutions (Ladebo & Shopeju, 2004). It is on this note that this study sets out to examine the perception of female academics and those of undergraduate students on the rates of sexual victimization of female undergraduates within the campuses of universities in Nigeria with a specific focus on the Delta State University, Abraka. Efforts have also been made to assess the link between the rate of sexual victimization of female students in tertiary institutions and their academic outcomes in recent times.

1.1 Problem Statement

Empirical evidence across the globe reveal the prevalence of some forms of victimization of female students in higher education institutions which include universities in America, Chile, other Latin American Countries, and Africa (Oni, et al 2019, Ogbonnaya, Ogbonnaya & Emma Echiega, 2011; Smit & Du Plessis, 2011; Steenkamp, 2010). In the United States, a study at Brown University with a sample of 234 students revealed incidences of 6% attempted rape and 3.5% rape cases (Omoroghomwan & Obire, 2019; Nasta, Shah, Shoma, Richman, Quittels, Allsworth & Boardman 2005). Also, using samples that varied from very large national samples to small isolated samples of single universities or colleges, prevalence rates of sexual victimization of female students were discovered to range from 15% to 75% in the US (Gross, Winslet, Roberts, & Gohm, 2006; Lehrer et al, 2007).

Borufka (2010), reports that the Charles University research team conducted a study and found that over three-quarters of Czech University students have at some points been victims of sexual harassment. Also, in the United Kingdom, Weale (2014), found that the National Union of Students (NUS) had indicated that sexual harassment and "lad culture" (i.e. behaviours and attitudes that belittle, humiliate, joke and tend to encourage rape and sexual assault) is prevalent and has increased on campuses of universities in the U.K. Furthermore, according to Weale (2014), the general opinion of NUS is that more than a third of women were reportedly subjected to unwelcome advances such as touching and inappropriate groping. Notwithstanding, in China, a study conducted at the Chinese University of Hong Kong among undergraduate female students, reported 1.4% of rape cases (Omoroghomwan & Obire, 2019; So-Kum Tang, Critelli & Porter, 1995) and in Australia, according to Olle (2004), data available suggests that up to a third of girls report forced sexual initiation which includes sexual assault and harassment involving demands for school grades. Similarly, in a study involving a sample of 221 women from the higher American University of Beirut, University of Antonine and Beirut Arab University, research evidence indicates that approximately 18% of women were harassed by their professors within university campuses (Lynch, 2013).

Noteworthy, research evidence on harassments and the high prevalence of sexual victimization of female students on university campuses has not exempted Africa. Specifically, studies have reported high incidences of sexual victimization in countries like Egypt, Malawi, Uganda, Ethiopia and Nigeria (Phiri, Senu, Nankhuni & Madise, 1994; Yohannes, 2007; Kulima, Audu, Mariga & Bukar 2010; Smit & Du Plessis, 2011; Agardh, Odberg-Petterson & Ostergren 2011; Ogbonnaya et al, 2011; Joseph, 2015).

Evidence of high rates of victimization of female university students in Nigeria includes a study conducted among female students of four tertiary institutions namely Obafemi Awolowo University (OAU), Ladoke Akintola University of Technology (LAUTECH), Osun State College of Education (COLLEGE), and Osun State College of Technology (OSCOTECH) in Osun State. The study reported a prevalence of sexual harassment/victimization ranging from 16/3% in OSCOTECH to 28.9% in O.A.U. (Ogbonnaya et al, 2011). The study also concluded that sexual victimization is a common crime against women and undergraduates in Osun State. In another study by Owoaje and Olusola-Taiwo, (2009-2010), results revealed that 69.8% of the female respondents had been sexually harassed by male classmates and lecturers in several tertiary institutions in Nigeria, among whom 48.2% experienced physical sexual harassment, while 32.2% had requests to be involved in sexual acts in exchange for favours. Again, Okeke (2011) provides empirical evidence on sexual victimization of women undergraduates in the Anambra State of Nigeria which revealed that 64% of the participants had been touched inappropriately by a faculty member, 71% had experienced inappropriate gestures directed to them and 80% inappropriate jokes told in front of them.

Research outcomes have attributed the high rates of victimization in Nigerian universities to several factors which include indecent and provocative dressing among youths especially female students, attitudes to drug abuse, school grades and cultism (Asiyai & Oghuvbu, 2020; Omoroghomwan & Obire, 2019; Onoyase, 2019; Ogbonnaya et al, 2011). It is therefore believed that tertiary institutions (which includes universities) in Nigeria are breeding grounds for criminal victimization which involves sexual victimization such as sexual assaults/harassment and rape, and these acts have become worrisome with serious problematic implications. Ifedili & Ifedili (2011) had also observed and condemned the increasingly high rates of incidences of victimization in Nigerian universities which they described as not ethical and criminal. While we observe that most of the prior Nigerian studies have focused more on the prevailing trend and rates of sexual victimization of students, nothing has been said on the perception of stakeholders on the link between acts of sexual victimization and the academic activities and outcomes of victims of sexual harassment. Given the aforesaid, this study investigated the perception of lecturers and students on the rate of sexual victimization of female students in the Delta State University Abraka, South-South Nigeria. Specifically, this study focused on sexual harassment, rape and stalking since scrutiny of prior studies suggests that there seems to be a dearth of research on stalking as a form of victimization of female students in Nigerian Universities.

Additionally, while we agree that there have been concerns by prior studies on sexual victimization of female students in Nigeria and beyond; efforts have been made to distinguish this study from prior studies by also analysing the perception of female lecturers and undergraduate students on whether the present trend of acts of sexual victimization (sexual harassment, rape and stalking) affects the academic activities and outcomes (examination grades, continuous assessment scores, involvement in practical classes/lecture attendance) of female undergraduates in Nigeria.

2. CONCEPTUAL REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Concept of Victimization and Victimization Rates

The concept "victimization" has been used by various scholars and crime records to imply the process that results in the emergence of a crime victim. Prior studies have reiterated that victimization means the process of becoming a victim of crime or behaviour that makes an individual become a victim of crime (Morgan, 2016; Osobosa, 1995; Bureau of Justice and Statistics U.S., 2020). Wikipedia defined

victimization as the process of being victimised or becoming a victim of the action of singling someone out for harmful or unfair treatment. For personal crimes, the number of victimization is equal to the number of victims involved (Wikipedia). The University of the Pacific Victim Advocacy Programme defines a victim as someone who suffers direct or threatened physical, emotional or financial harm as a result of an act by someone else.

The term victim is further defined as any person who has suffered a personal injury, death, loss of or injury to personal or real property, because of crime, irrespective of whether the perpetrator is arrested or otherwise and regardless of the familial relationship between the offender and the victim (Declaration of the Basic Principles of Justice of Crime and Abuse of Power, 1985). Thus, to qualify as a victim of crime, a person must have suffered loss or injury in psychological, emotional, economic, physical or social terms. According to Thunberg (2020), few young victims receive professional and psychological support while a greater percentage of them receive support from their family and friends.

Victimization rates, on the other hand, refer to the number of victimization per unit population or some other base and they are used instead of total numbers because they are more comparable (Omoroghomwan & Obire, 2019; Bohm & Harley, 1998). Also, calculating victimization in rates helps scholars to show changes in the population that are related to changes in the amount of crime or changes in the actual prevalence of crime if any. (Adler, Mueller, Laufer, 1994). Victimization rates can be both positively and irregularly related to the real risk of crime but they may not be very exact (Balkin, 1979).

2.1.1 Sexual Harassment

Generally, forms or patterns of victimization that have been identified by previous studies are numerous and include Rape/Attempted Rape; Sexual Misdemeanour; Sexual Touching; Sexual Harassment; Assault/Battery; Stalking; dating/Relationship Violence; Theft; Threat of Harm and Bullying (Victim Advocacy Program, 2018; Dambazau 2011; Hart, 2008). According to Ogbonnaya et al. (2011), sexual harassment and related behaviours can range from the slightly mild to those that are extreme. While the extreme ones include subtle pressure for sexual activity, sexual physical assault and "outright demand for sexual favours accompanied by implied or overt threats concerning one's grades, the fairly mild forms include unnecessary touching and pinching, sexist remarks, leering or ogling and verbal abuse" (Ogbonnaya et al, 2011, p. 56). Again, sexual harassment has been defined as any unwelcome sexual conduct or behaviour that creates an intimidating, hostile or offensive working or educational environment (Sharma, 2013, Victim Advocacy Program). In this study therefore, we examined the perception of female lecturers and undergraduate students on whether acts of sexual harassment have significant effect on the academic performance of female undergraduates in Nigeria. In this light, we hypothesize thus:

HO1: There is no significant difference on the perception of female lecturers and students on the current level of sexual harassment on campuses of Nigerian universities and its influence on the academic outcomes of female undergraduates in Nigeria.

2.1.2 Concepts of Rape and Stalking

Rape has been conceptualised as a form of sexual assault that usually involves sexual intercourse or other forms of sexual penetration which is carried out against a person without his/her consent (Wikipedia Petrak & Hedge 2003). Rape/sexual assault (including both aggravated and simple assaults) was identified by Hart (2003), as violent and criminal acts. Hart (2003) further maintained that simple

assault also includes attempted assaults without a weapon. The act of rape may occur by physical force or threat of force, coercion or abuse of authority and includes date rape, gang rape or statutory rape. Most explanations of rape insist that lack of consent is a key to the definition of rape. Bastow (2020) and Wikipedia defines consent as affirmative and informed approval that indicates freely given agreement to sexual activity. According to Bastow (2020), although rape was in the far past considered to be caused by uncontrolled sexual longing, it is however, in recent times seen as unreasonable and uncontrollable exercise of power over victim.

On the other hand, the Policy Statement on Sexual Assault, Domestic Violence, Dating Violence, and Stalking issued by the Delta State University Abraka (2020), refers to sexual assault as "any sexual act perpetuated upon a person without his/her consent where, the assailant uses physical force, threat, coercion or intimidation to overpower or control the survivor..." (Delta State University Abraka, Policy Statement, p.2). It further defines stalking as a course of behaviour directed at a specific person and a „stalker“ as anyone who makes a credible threat and who knows or should know that such behaviour would cause a reasonable person to fear for his/her own safety or safety of another person (Delta State University Abraka, Policy Statement, p.3). The policy further states that such an individual is guilty of the crime of stalking. Victim Advocacy Program of the University of the Pacific defines stalking as the wilful and malicious act of following of a person or harassing a person, thereby instilling sufficient fear in him/her for his/her personal or family safety. Also Victim Advocacy Programme and Destil (2006) posit that methods of stalking include the use of notes, mail, gifts, communication technology such as voicemail, text messages, internet and social networking sites – i.e. cyber-stalking – to harass or convey a threat. In this study therefore, efforts have been made to examine the perception of female lecturers and undergraduate students on the rate of acts of rape and stalking and their influence on the academic performance of female undergraduate students in Nigeria. On this note, we hypothesize as follows:

HO2: There is no significant difference on the perception of female lecturers and students on the rate of rape and its influence on the academic outcomes of female undergraduates in Nigeria.

Ho3: There is no significant difference on the perception of female lecturers and students on the rate of stalking and its influence on the academic outcomes of female undergraduates in Nigeria.

2.2 Theoretical Framework

Different scholars have explained victimization/victimization rates of female students in universities with theoretical models like the socio-cultural model and the organisational model (Sharma 2013, Fitzgerald & Weitzman, 1990). Proponents of the Socio-cultural model posits that sexual victimizations of female students is an enforcement of gender role inequalities in the social system; while the proponents of the organisational model have argued that power relations and structures in organisations are responsible for the occurrence of high rates of female students sexual victimization in universities. Other schools of thought have argued that sexual victimization of female students occur as a result of natural outcomes of the aggressive sexual instincts of men. This study however adopts the organisational model and incorporates the concept and practice of patriarchy: that is, both male and females have internalised gender socialisation processes of society from childhood to adulthood, thereby positioning the female/woman as a subordinate to the male/man. Thus harassers are seen to be usually in superior positions than the harassed and they have valuable assets that will benefit the harassed. Such assets include good grades, money and material gifts. The harassers usually may be male university administrators, male lecturers or male students (Till, 1980; Akpotor, 2013).

3.0 METHODS

3.1 Research Design, Data and Sampling Procedure

This study adopted the cross sectional survey design and specifically elicited responses through the self structured questionnaire that was designed in line with the study's objectives and variables of interest. Additionally, interviews were conducted to get further insights on the responses from the participants. For the purpose of analysis and discussion therefore, this study relies on primary data that were obtained from the interview, alongside responses obtained through the administration of the questionnaire to a sample of 158 randomly selected respondents. The respondents comprised of female lecturers and students drawn from across six (6) faculties of the main campus of the Delta State University, Abraka. The sample spread across the selected faculties is as presented in Table 1.

Table 1: Sample Spread of The Study

S/N	Faculties	Lecturers	Students	Total
1	Arts	6	20	26
2	Basic Medical Science	5	20	25
3	Education	10	20	30
4	Pharmacy	6	20	26
5	Science	6	20	26
6	Social Sciences	5	20	25
	TOTAL	38	120	158
	PERCENTAGE	24.05%	75.95%	100%

Source: Fieldwork, 2020.

As indicated in Table 1, a total of 38 female lecturers, representing about 24.05% of the total sample and 120 female students, representing approximately 75.95% of the total sample took part in this study. The responses to the items in the questionnaire which were designed using the 4-point Likert rating scale is analysed and presented in the following section of this report.

3.2 Measurement of Variables and Reliability Testing

The questionnaire designed for this study consists of items that measured the various variables of primary interest. These variables include measures of the independent variables (sexual harassment, rape and stalking) and measures of the dependent variable – academic outcomes and activities (examination grades, CA scores, involvement in practical classes, assignment and lecture attendance). By apparently operationalizing these variables, each variable was deliberately collapsed into observable dimensions that permitted the design of a measurement index. Additionally, to ensure that items in the questionnaire were free from ambiguity and were clearly understood by participants, Sekaran (2000) recommended the conduct of a pilot study. In this regard, a pilot study was therefore conducted using a sample of 25 participants consisting of 8 female lecturers and 17 female students drawn from 2 faculties of the Federal University of Petroleum Resources, Warri, Delta State. Responses from this pilot study were tested by means of the Cronbach's alpha reliability test and Table 2 presents the outcome for the reliability test.

Table 2: Results For Reliability Test

Variable	Ave Interim Cov.	Items in Scale	Alpha Value	Remarks
Sexual Harassment	0.39583	4	0.8162	Reliable
Rape	0.17056	3	0.7779	Reliable
Stalking	0.05667	3	0.6800	Reliable
Students' Academic Outcome	0.06333	4	0.6080	Reliable
Overall	0.05943	14	0.7238	Reliable

Source: Fieldwork, 2020

An indication from Table 2 is that Alpha values ranged from approximately 0.60 to 0.81. The overall Alpha value was 0.7238. Impliedly, the research instrument meets the minimum requirement and is adjudged as being reliable since the values obtained were in all cases above the minimum threshold of 0.50 (Gay & Airasian, 2003).

3.3 Method of Data Analysis

This study combines both descriptive and inferential statistical techniques for the purpose of analysing the data obtained from the fieldwork. Relevant measures of central tendencies (mean and standard deviation) were deployed to analyse each questionnaire item while the regression technique was the basis of testing the study's hypotheses. Since the research instrument was designed using the four point Likert scale rating, our decision/remarks in the first part of our analysis was reached using the arithmetic mean derived as stated hereunder:

$$\begin{aligned} \text{Average Point (4-Point Scaling)} &= \\ \frac{4 + 3 + 2 + 1}{4} &= \frac{10}{4} \\ &= \underline{2.50} \end{aligned}$$

Based on the above, our remarks for each questionnaire item is based on the following categorization

3.50 – 4.00
Strongly
Agree
2.50 – 3.49
Agree
1.50 – 2.49
Disagree
0.00 – 1.49
Strongly
Disagree

3.3.1 Model Specification

The composite model of the study is given as:

Students' Academic Outcomes = f(Sexual Victimization Rates) eq. 1

Based on the composite model above, the study's hypotheses were subsequently tested based on the following models:

Model 1

$$ACADOUTCOME = f(SHarass)$$

$$ACADOUTCOME = \alpha_0 + \beta_1 SHarass + \mu_t$$

Model 2

$$ACADOUTCOME = f(Rape)$$

$$ACADOUTCOME = \alpha_0 + \beta_1 Rape + \mu_t$$

Model 3

$$ACADOUTCOME = f(Stalking)$$

$$ACADOUTCOME = \alpha_0 + \beta_1 Stalking + \mu_t$$

Variable Description

ACADOUTCOME = Academic Outcomes of Female Students

SHarass = Sexual Harassment

Rape = Rape of Female Students

Stalking = Stalking of Female Students by Lecturers

$\alpha_0, \beta_0, \beta_1, \beta_2$ = Regression coefficients of the model

μ_t = Error term

4.0 RESULTS AND DISCUSSION

This section presents the results of the analyses of the primary data that was gathered for this study.

4.1 Analysis of Questionnaire Items on Sexual Victimization Rate

4.1.1 Sexual Harassment

Table 3: Rate of Sexual Harassment on University Campuses

S/N	Questionnaire Items	Obs.	Mean	Std. Dev	Remarks
SH1.	Majority of the female students on campus are regularly assaulted by lecturers	158	1.61	0.68	Disagree
SH 2	On semester basis, the rate of sexual assault on female students is on the increase	158	1.62	0.65	Disagree
SH 3	Some male lecturers are fond of making inappropriate jokes and gestures to female students	158	1.67	0.73	Disagree
SH 4	Female students are often coerced into subtle pressure for sexual activities by their lecturers	158	1.55	0.69	Disagree
SH 5	Campuses of Nigerian Universities are absolutely free from cases of sexual harassment involving lecturers and students	158	1.72	0.67	Disagree

Source: Fieldwork, 2020

Table 3 presents the average responses for the questionnaire items designed to elicit information on the rate of sexual harassment of female students within university campuses, by further analysing the level of involvement of lecturers. Notably, the value recorded for the respective standard deviation for all the questionnaire items in this regards ranged from 0.65 to 0.73; thus implying that majority of the respondents had similar views which were basically skewed towards the overall mean response. Explicitly, the mean responses obtained for all 5 items were below 2.50 suggesting that the general view of the respondents is that even though campuses of Nigerian universities are not absolutely free from acts of sexual harassments, the rate of sexual harassment of female students and the level of lecturers' involvement is not on the increase. This means that acts of sexual harassment of female students within the campuses of universities in Nigeria have reduced over the years.

4.1.2 Rape

Table 4: Rate of Rape Within University Campuses

S/N	Questionnaire Items	Obs.	Mean	Std. Dev	Remarks
R1.	Lecturers involvement in sexual physical assault and rape of their female students is becoming alarming	158	1.45	0.5116	Strongly Disagree
R2.	Students, especially victims are not afraid of reporting cases of rape within Nigerian Universities	158	1.41	0.5064	Strongly Disagree
R3.	Over the years, universities and their respective management have not taken strict measures to curb the menace of rape within campuses.	158	1.37	0.4965	Strongly Disagree

Source: Fieldwork, 2020

Table 4 presents the mean response and the standard deviations for the questionnaire items designed to elicit information on lecturers' involvement and the rate of rate within university campuses in south-south Nigeria. With the results above, it is evident that the values obtained with respect to the standard deviation ranged from 0.4965 (see questionnaire item R3.) to 0.5116 (see questionnaire item R1.). Since the values for the standard deviation for each of the questionnaire item is low, it means that the generality of responses were not too far from the overall mean response.

Nonetheless, with a mean score of 1.45 for questionnaire item R1 and a standard deviation of 0.5116, the implication is that majority of the respondents strongly disagreed with the idea that lecturers' involvement in sexual physical assault and rape of their female students is becoming alarming. Also with respect to item R2, the mean score of 1.41 is an indication that majority of the respondents strongly disagreed with the opinion that students are not afraid of reporting cases of rape within Nigerian Universities. This means that victims of rape are sometimes afraid of reporting their ordeal, possibly for fear of further victimization or even stigmatization. Finally on the issue of rape, we observed that by obtaining a mean score of 1.37 with a corresponding standard deviation of 0.4965, majority of the respondents strongly disagreed with the arguments that over time, universities and their respective management have not taken strict measures to curb the menace of rape within campuses.

Given the aforesaid, it is obvious that most of the participants that took part in this study supports the view that the menace of rape and physical assault on female students have been on a downward trend due to the steps taken by several universities to apparently curb such acts.

4.1.3 Stalking

Table 5: Rate of Stalking Within University Campuses

S/N	Questionnaire Items	Obs.	Mean	Std. Dev	Remarks
ST1.	There are known cases of lecturers that are regularly involved in sending unsolicited romantic pictures and messages to female students	158	1.67	0.4714	Disagree
ST2.	Lecturers are involved in outright demand for sexual favours through repeated voice mails and text messages	158	1.35	0.5182	Strongly Disagree
ST3.	The rate at which lecturers are stalking female students is increasing on campus	158	1.34	0.4758	Strongly Disagree

Source: Fieldwork, 2020

From the mean responses presented in Table 5, it is evident that a sizeable number of the respondents (majority) disagreed with the arguments that lecturers are regularly involved in sending unsolicited romantic pictures and messages to female students. Additionally, majority of the respondents strongly disagreed with the idea that the rate of stalking by lecturers through outright demand for sexual favours has been on the increase in recent times. The above position is obvious from the mean responses of 1.67, 1.35 and 1.34 for questionnaire items ST1, St2 and ST3 respectively.

4.2 Test of Hypotheses and Discussion

4.2.1 Test of Hypotheses I

Table 6: Model Summary for Test of Hypothesis 1

Source	SS	Df	MS	F	Prob > F	Decision
Between Groups	1.35485233	1	1.35485233	7.56	0.0067	Reject
Within Groups	27.966666	156	.1792735			
Total	29.3215183	157	.186761263			
Obs	158					
Bartlett's Test – Chi2(1)	4.7467					
Prob>Chi2(1)	0.029					

Source: Fieldwork, 2020

Table 6 presents the results for the test of Hypothesis 1 of this study. From the results presented, the Bartlett's test produced a chi2(1) of 4.7467 with a corresponding probability value (p-value) of 0.029. This means that at 5% level of significance, the responses analysed in respect of the test of hypothesis 1 exhibits signs of equal variances (no heterogeneity) across the two categories of respondents. Impliedly, the data collated for responses for sexual harassment are homogenous and can be sufficiently relied upon for the test of the specified hypothesis. Additionally, with the result of the Fcal for the overall model (Fcal = 7.56) and its corresponding probability value (p-value = 0.0067), the null hypothesis which states that there is no significant difference on the perception of female lecturers and students on the current level of sexual harassment on campuses of Nigerian universities and its influence on the academic outcomes of female undergraduates in Nigeria, is rejected.

Further insight on this result was obtained from the interview conducted. Accordingly, the female lecturers interviewed maintained that following the entrenchment of discipline in academics and the institution of checks and control measures in the conduct of examinations and in grading students' examination scripts, cases of male lecturers harassing female students have become alien to the campuses of universities in Nigeria and Delta State University in particular. However, the opinion expressed by some interviewed students seems to be different from the views of the interviewed lecturers. Specifically, some students mentioned that cases of sexual harassment abound but there may be no official statements on such acts since victims of sexual harassment were either threatened by their prey or sometimes rewarded with good grades and monetary compensations for them to remain silent on such matters. On whether the menace of sexual harassment is increasing, or has increased over the years, the general view of the respondents interviewed (lecturers and students) is that the recent efforts of university management targeted at curbing the menace of sexual harassment on the campuses of Nigerian Universities may have yielded positive results to the extent that such cases are not rampant as it was in years past. Notwithstanding, a few students reiterated that some of their friends and colleagues are silent victims of sexual harassment and for one reason or the other, may not be able to make such reports public.

Based on the aforementioned, we therefore conclude that there is a significant difference on the perception of female lecturers and students on the current level of sexual harassment on campuses of Nigerian universities and its influence on the academic outcomes of female undergraduates in Nigeria

4.2.2 Test of Hypotheses II

Table 7: Model Summary for Test of Hypothesis II

Source	SS	df	MS	F	Prob > F	Decision
Between Groups	2.68987053	1	2.68987053	25.44	0.0000	Reject
Within Groups	16.4950453	156	0.10573747			
Total	19.1849158	157	0.122196916			
Obs	158					
Bartlett's Test – Chi2(1)	8.8161					
Prob>Chi2(1)	0.003					

Source: Fieldwork, 2020

The result relating to the test of Hypothesis II is presented in Table 7. As indicated, the Bartlett's test produced a chi2(1) of 8.8161 with a corresponding probability value (p-value) of 0.003. This means that at 5% level of significance, the responses analysed in respect of the test of hypothesis II exhibits signs of equal variances with little or no trace of heterogeneity across the two categories of respondents. This however justifies the usability of the data collated from the responses on rape as a form of sexual victimization of female students in Nigerian Universities. Note that as indicated in Table 7, the computed value of F (Fcal) for the overall model of 25.44 is greater than the table value (Fcrit) of 3.84. The probability value obtained is 0.0000, thereby signifying that we reject the null hypothesis which states that there is no significant difference on the perception of female lecturers and students on the rate of rape and its influence on the academic outcomes of female undergraduates in Nigeria. Surprisingly, insights from the interview conducted indicated that while the female lecturers believed that prevailing sanctions within campuses have drastically eliminated acts of rape of female students by lecturers, the

opinion expressed by some interviewed students seems to differ. Specifically, some students averred that there are lecturers who rape students and the culminating effect on the students' academic outcome is obvious on situations where victims find it difficult to attend lectures or partake in practical classes of such lecturers. On the issue of reportage, while the female lecturers maintained that they have not heard of any case of rape in recent time, some students pointed that victims of rape find it difficult to report for fear of further victimization and possible stigmatization.

Given the above, our conclusion is that there is a significant difference on the perception of female lecturers and students on the rate of rape and its influence on the academic outcomes of female undergraduates in Nigeria.

4.2.3 Test of Hypotheses III

Table 8: Model Summary for Test of Hypothesis III

Source	SS	df	MS	F	Prob > F	Decision
Between Groups	1.10265487	3	0.367551624	2.04	0.1107	Accept
Within Groups	27.7581046	154	0.180247433			
Total	28.8607595	157	0.183826494			
Obs	158					
Bartlett's Test – Chi2(1)	7.1882					
Prob>Chi2(1)	0.066					

Source: Fieldwork, 2020

Table 8 presents result relating to the test of Hypothesis III of this study. A careful analysis of the result in Table 8 reveals that the computed value of F (F_{cal}) for the overall model of 2.04 is less than the table value (F_{crit}) of 3.84. The probability value obtained is 0.1107, thereby signifying that we accept the null hypothesis which states that there is no significant difference on the perception of female lecturers and students on the rate of stalking and its influence on the academic outcomes of female undergraduates in Nigeria. Insights from the interview conducted indicated that majority of the respondents (lecturers and students) noted that acts of stalking female students through voice mails, chats and text messages was not too common among lecturers. On whether male lecturers do send unsolicited romantic messages to female students with promises of awarding good grades thereafter, the general view of the respondents (lecturers and students) is that stalking of female students by male lecturers has not been common within campuses of Nigerian Universities.

Given the above, our conclusion is that there is no significant difference on the perception of female lecturers and students on the rate of stalking and its influence on the academic outcomes of female undergraduates in Nigeria. 5.0 Conclusion and Recommendations Acts of victimization of university students in tertiary institutions have been a global and long standing issue. Prior research evidence suggests that female students within campuses of tertiary institutions seem to be at greater risk of victimization than their male counterpart. While the issue of who sexually victimizes who remains undefined within the campuses of universities, on the issue of victimization generally, evidence from the bulk of prior studies suggests that female students are mostly found to be the victims with their respective male lecturers as perpetrators.

Given the above concern, studies in and out of Nigeria have attempted to examine the concept of victimization of students in tertiary institutions and research outcomes have attributed the high rates of victimization to factors like indecent/provocative dressing among female students, quest for high school grades, cultism, amongst others. Notwithstanding, the concern of most prior studies in this area of discourse has been more on the prevailing trend and rates of sexual victimization of students, with little or no concern on the perception of stakeholders on the link between acts of sexual victimization and the academic activities and outcomes of victims of sexual harassment. This study therefore sets out to examine the perception of female lecturers and students on the rate of sexual victimization of female students in the Delta State University Abraka, South-South Nigeria by specifically analysing the perception of female lecturers and students on whether acts of sexual harassment, rape and stalking may significantly affect the academic activities and outcomes (examination grades, continuous assessment scores, involvement in practical classes/lecture attendance) of female undergraduates in Nigeria. Research hypotheses were specifically developed given the study's specific focus and these hypotheses were tested by means of relevant inferential statistics. Prior to the test of hypotheses, the items in the self structured questionnaire were analyzed using descriptive statistical tools. Overall, this study found that while campuses of Nigerian Universities have not been absolutely free from cases of sexual harassment involving lecturers and students, the rates of sexual harassment, rape and stalking have not been on the increase in recent time.

Based on the study's findings and conclusion, the following recommendations have been made:

1. Nigerian universities and their management should continue to take and maintain the strict measures and actions that seem to be abating the increasing trend of female students' sexual victimization and rape on the campuses and still put in more efforts.
2. Perpetrators of sexual harassment when caught and/or found guilty, should be dealt with promptly and decisively and such cases should be made public (both within the University community and beyond its walls), to serve deterrence to both the offender and the public.
3. To encourage reportage and overcome the existing dark figure of victimisation, attractive and meaningful rewards that can undermine the desire for and promise of pass/good grades or the fear of threats should be given to students who report sexual harassment attempts. Also, the most adequate protection/security should be effectively provided for such students as well as actual victims who report their victimization.
4. The universities and their management should create greater awareness and publicity on stalking in particular as it may be the hidden link to other criminal victimisations such as kidnapping, robbery, cultist activities and ritual killings, though not directly linked to sexual victimization in this study.

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Innovative Management Practices and Organizational Performance

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ABSTRACT

The study examined Innovative Management Practices and Organisational Performance in the telecommunications Industry. The objectives centred on the effect of innovation strategy on organizational performance and the impact of organizational structure on organizational performance. A descriptive survey research design adopted was appropriate to the study because it allows the use of descriptive and inferential statistics in processing the collected data to answer the research questions. The respondents of 205 were determined using the purposive sampling technique. A 5point Likert Scale and closed-ended questions were used to draw responses from the respondents used. The sample was drawn from the respondents because of the small size permissible by census statistical application in research. Data presented and analyzed was dichotomized into three parts of simple percentage, descriptive statistics and Standard deviation applications. Findings revealed that both independent variables innovation strategy and organizational structure have a significant relationship with organizational performance in the Telecommunications Industry. It was recommended that Innovation strategy and overall company goal should always be in sync when planning enhanced development and organisations should continue with a flat structure system but built around creativity and reduced centralized system of administration that could lead to reduced interest on the part of employees

Keywords: Compensation Management, Salary, Benefits Programme, Employee Performance

1.0. INTRODUCTION

As business enterprises operate in an environment marked greatly by intense and cut-throat competition, one of the keys to profitability and achieving a leading position in any industry hinges on innovation. Technological advancement, global competition, deregulation, consumers empowerment, ubiquitous connectivity are some of the forces that have brought about unprecedented fast-paced change being witnessed in today's business landscape (Kalay&Lynn, 2015). All over the world, organizations are encountering a joint challenge on the need to improve their performance by capitalizing on new opportunities, and to establish or recapture competitive advantage for profitability and survival in a dynamic competitive environment. Consequently, contemporary firms are embracing innovative practices in their business model to survive and thrive profitably, (Ghosh, 2015).

At the start of the twenty-first century, innovation has been one of the fundamental aspects of industrial and business policies all over the world in that it is a strategic process that assists organizations to adapt both internally and externally. The competitiveness of organizations depends on their ability to innovate and improve, and that organizations achieve competitive advantage through innovation, (Porter, 1996). The term innovation as first used by Schumpeter refers to product, process and organizational changes that do not necessarily originate from new scientific discoveries but may arise from a combination of already existing technologies and their applications in a new context (Hana, 2013). Innovation is an

unavoidable means for organizations to take advantage of opportunities, whether through the development of new markets or to reinvent their market (Alam, 2013; Vargas, Goncalo, Ribeire & Souza, 2017). Sanchez, Lago, Ferras and Ribera (2011) postulated that companies adopt a series of innovation practices as a result of strategic adaptations which are triggered by any change in the environment or by an internal proposal of strategic innovation.

Innovation has become the strategic goal of all organizations. The increasingly fierce competition and turbulent economic situation have made innovation a highly sought-after capability for business organizations. Instead of relying on long-range strategies, organizations need to be able to anticipate and react to fast changes and take advantage of the unknown. Therefore, it is not enough for organizations to recruit creative individuals; instead, the whole organization needs to be adaptive, flexible and innovative. These requirements have brought the notion of innovative management practices to the centre of managerial interests. Innovative management practices can be grouped around several dimensions to describe company practices regarding innovation. These dimensions include innovation strategy, management systems, innovation culture, creativity, organizational structure, project management, process innovation, technological change, and technological innovations. However, in this study, the focus shall be on the leading determinants of innovative management practices as outlined by Kalay and Lynn, (2015). They include; innovation strategy, organizational structure, innovative culture, technological change and innovative service delivery.

The notion of organizational performance is connected to the survival and success of an organization. It is considered to be the sum of accomplishments that have been achieved by all departments and the organizational goals that have been set in a given period. Performance is a comprehensive measure that can include productivity, quality, consistency, and so on. As Richard (2002) pointed out performance indicators may also involve (criterion-based) results, behaviours and (normative) relative measures, concepts of education and training and instruments, involving management development and leadership training for developing attitudes of performance management and essential skills. Assessing organizational performance is a critical part of strategic management in that it helps in gauging how well an organization is doing in reaching its vision, mission, and goals. Essentially, executives must understand how well their organizations are performing to figure out what strategic changes, if any, to make.

There is no doubt that innovation exerts great influence on various performance metrics of a firm as seen in strands of studies, theories and literature on the concept (Andriopoulos, 2001; Bharadwaj & Menon, 2000; Ghosh, 2015; Zhou & Hoever, 2014). Few of those studies have focused and analyzed factors within an individual that foster innovative outputs (Khandwalla & Mehta, 2004; Mumford, 2003). Some of which are intelligence, cognitive thinking, personality, and leadership traits, etc. Others have explored key external conditions in the work environment such as organizational culture and resources that can inhibit or facilitate innovation for higher levels of performance in the firm (Jansen, Van Den Bosch & Volberda 2006). While others still have combined the effects environmental or individual internal factors have on work outcomes (Ghosh, 2015; Mostafa, 2005). However, a thorough review of these studies shows that a gap exists as there is little or no published work to the best of the researcher's knowledge, which has provided evidence on the role a comprehensive list of innovative management practices plays on organizational performance. Against this background, this study aims to fill this yearning gap by examining the relationship between innovative management practices and organizational performance using an extant literature review.

Business innovation is essentially a differentiator as business managers and executives are increasingly embracing innovation as a tool to drive businesses forward. Ironically, although innovation is commonly associated with new products and services, evidence suggests that launching new products is the least successful means to accomplish profitability and growth, with a failure rate of over 70 per cent. Perhaps to be effective, business owners may need to have different approaches to innovation, learn from their past mistakes and set reasonable goals. The thing is, as a process to bring new products to markets, innovation carries multiple risks, and not even the most experienced executives can predict with certainty which products will be successful and which ones will flop. However, having a set of innovative management practices in place to originate and validate innovative ideas might improve organizations chances at succeeding and help them get luckier more often.

A critical issue with innovation in many organizations is that it is often regarded as the sole responsibility of functional groups, like research and development or product development. This misconception that one functional group is more suited to innovation than others is a severe hindrance to the pace of innovation since each department provide a unique perspective on the problems of customers. By extension, this is also a barrier for employees to interact with people from different departments which could provide information that is beneficial for the generation of ideas. On the other side, in few organizations where innovation is taken as an activity that cut across different functional areas, lack of collaboration arising from not empowering employees and workplace diversity are becoming challenging issues. It stands to reason then that internal collaboration and the building of diverse teams that can provide the organizational innovation initiatives with a wealth of ideas generated from different perspective tends to suffer.

It is surmised that the explanation to the tripartite issues might be nested in the fact that the determinants of successful innovations have not been integrated into a cohesive strategy. On this account, this study attempts to examine the relationship among components of innovative management practices that could exert on organizational performance. Specifically, it will provide answers on how innovation strategy, culture, organizational structure, technological change and customer/supplier relationships are connected to organizational performance using literature.

Objectives of the study

- a. Establish the effect of innovation strategy on organizational performance.
- b. Determine the impact of organizational structure on organizational performance..

Hypotheses: In order to provide evidences to find Innovative Management Practices and Organizational Performance, the following hypotheses were developed that were further tested. Ho1: Innovation strategy has no significant impact on organizational performance. Ho2: Organizational structure has no significant impact organizational performance.

Review of Related Literature Conceptual Review Innovative Management Practices

Innovation is defined as "the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations." (OECD, 2005). Considering definitions of innovation, it is seen obviously that innovation is indicated as a process in some of these definitions, whereas innovation is indicated as an output in the other part of definitions. Namely, innovation can be explained as both process and result of this process (Narayanan, 2000). Innovation can be both a response to

changing environment and a reason for the change (Damanpour, 1996). This can be an internal or external environment of the firm. Both of them are effective in the development of innovation, also, they are affected by results. From a strategic viewpoint, innovative management practices is the entire set of innovative practices involving the analysis of competition mechanisms, such as creating an innovative vision, harmonizing business strategy, expanding the strategy to all organizational levels, market tendencies, technologies and competitor acts (Sanchez, Lago, Ferras, & Ribera, 2011). Giving the fact that the concept of innovative management practices describes a process composed of many parts, there is not a common and clear definition on which all scholars agree regarding the content and components of the concept.

To overcome this confusion, Dankbaar (2003) suggested two approaches that are different from each other but, at the same time, complementary. According to Dankbaar (2003), innovative management practices can be defined as either establishing preconditions in the enterprise that will encourage human creativity or the process of information usage. It refers to firms managing technology, business processes (customers, suppliers, financial and external resources, etc.) and human relationships (culture, communication, organization, etc.) in a way that will support and encourage innovation. In this context, the success of innovation depends on owned resources (human, equipment, technology, information, etc.) and the ability of the organization to manage these resources. Innovative management practices is a process that has different components and, at the same time, requires the management of these different components as a whole (Igartua, Garrigos, & Hervas-Oliver, 2010). Creativity and Innovation The word creativity and innovation are mostly used interchangeably because many assume they mean the same thing. However, there exists a difference between the two concepts. Creativity, simply put is an individual's ability and capacity to create and develop new, novel and useful ideas about the firm's products, practices, services or procedure (Mumford, 2003). When the ideas generated in creativity are successfully implemented, it becomes an innovation. Aptly put Innovation is the successful implementation of creative ideas. Creativity is therefore regarded as the cornerstone and precondition for Innovation.

Creativity requires absolute novelty of the idea, whereas innovation only requires relative novelty of the idea to the unit of adoption (Woodman, Sawyer and Griffen, 1993). Therefore, adopting a new policy from another organization to the current organization would be innovative but not creative. The definition of creativity also includes an essential requirement for the idea or product to be useful. Brief on the telecommunications industry in Nigeria Telecommunications is generally referred to as the "infrastructure of infrastructures" to underscore its importance in the general development of a society. Telecommunications is seen as a tool, not an end in itself, and it is regarded as the most vital factor in the information revolution. It increases the capacity of many sectors of a modern economy to deliver effectively the services essential for equitable and sustained development. The Nigerian telecommunications consists of the Federal Ministry of Communications (FMOC), as the supervising authority, the Nigerian Communications Commission (NCC), as the regulatory agency, and authorized carriers companies.

According to Andrey (2011), the month of August 2001 represents a milestone in the history of telecommunication in Nigeria. Before that date, which marks the commencement of GSM mobile telephone services, and the pursuant of liberalization of the industry, the state-owned NITEL was a monopoly that did everything possible to stifle growth and development in the sector. In 40 years of operation, the utility was only able to account for approximately 450,000 telephone lines, nearly all of

them fixed landlines, servicing a population that is the largest in Africa, estimated at 120 million people. It was one of the lowest connectivity rates in the world. The potentials of the market had long been recognized by investors as huge and only begging to be tapped despite glaring deficiencies in backbone infrastructure.

South Africa's MTN and Zimbabwe's Econet (now Airtel) were first to enter into the industry, recording what was regarded as the fastest take-off in the history of GSM operation. At that point, MTN and Econet operated a virtual duopoly and tacitly collaborated in what was largely regarded as an exploitive regime of product offerings and call rates. Not faced with an alternative, Nigerians continued to subscribe overwhelmingly, even as they groaned under the weight of high call rates and inflexible product packages. This was the scenario when Glo Mobile arrives as the only indigenous, non-government operator. Glo Mobile caused a huge stir in the sector by introducing per second billing denied by other networks. From that period up till 2011, many telecom operators have entered the industry, with Etisalat being one of the biggest who entered the industry in September 2008. This has increased competition among the many network providers in the country.

Concept of Innovation Strategy

To develop meaning and forge a better understanding of the term innovation concept, it is expedient to define strategy as a distinct concept. According to Hough, Strickland, Gamble and Thompson (2008) strategy are the determination of basic long term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals.

An Innovation strategy is a collection of business initiatives that seek the creation of new sources of earnings to maximize the value of an organization within a given period. Innovation strategy is a guide that forces organizations to think about why they innovate before attempting to innovate. It is the overall criteria providing a set of filters through which the concept of strategic roles and a new product or service should pass, thereby defining the strategic missions of new products or services (Kalay& Lynn, 2015). Innovation strategy consists of financial objectives and growth areas relating to a new product or service.

As with all business processes, the decisions made and how the process is implemented are all governed by a strategy. The strategy governing innovation in an organization is called innovation strategy. Integrating the various definitions, Katz Preez and Schutte (2015) comprehensively defined innovation strategy guides to decisions on how resources are to be used to meet a firm's objectives for innovation and thereby deliver value and build competitive advantage.

Concept of Organizational structure

Jones (2013) defined it as the formal system of authority relationships and tasks that control and coordinate employee actions and behaviour to achieve goals in organizations. Organizational structure describes the formal arrangement of jobs and tasks in organizations (Robbins and Coulter, 2007); it describes the allocation of authority and responsibility, and how rules and regulation are executed by workers in firms.

Cosh and Hughes, (2012) proposed two divergent ideas of organizational structure, namely 'organic' organizational structure and 'mechanic' organizational structure. In mechanic organizational structure, authority and control are often centralized, and task standardization and specialization occur frequently. In contrast, in an organic organizational structure, a 'flatter' structure occurs. That is, the hierarchy

onsists of fewer levels, decision making is more frequently decentralized, and multifunctional employees, who work in systems where greater degrees of horizontal integration occur, are more widely found.

Organizational performance

What organizational performance means is an issue subject to debate among academic scholars, practising manager and researchers. As a recurrent theme of great interest, it is affiliated with the endurance and success of an organization. Organizational performance can be defined as the "organization's ability to attain its goals by using resources efficiently and effectively" (Daft, 2000) or as "the ability of the organization to achieve its goals and objectives" (Richardo, 2001). It is also a measure of the change of the state of an organization or the outcomes that result from management decisions and the execution of those decisions by members of the organization. Organizational performance is considered to be the sum of accomplishments that have been achieved by all departments. The organizational goals that have been set in a given period, outline its accomplishments that are involved in each stage (Lee and Huang, 2012). The idea of organizational performance is affiliated with the survival and success of an organization. organizational performance is "the ability to acquire and process human financial and physical resources properly to achieve goals of the organization". Organizational performance is the outcome of an organization so that it is measured based on its goals and objectives (Lee, 2008).

Organizational performance has become one of the multi-dimensional and complex phenomena in the business literature. Although the concept of organizational performance is very common in the academic literature, there is no unanimous agreement on its definition and measurement. There are two ways of measuring organizational performance: subjective and objective. Subjective measures are non-financial or non-economical indicators of performance measurement like sales growth, market share, employee satisfaction, customer satisfaction, product development, competitive advantage, customer retention, innovation and some other factors.

March and Sutton (1997) opined that most studies in strategic management conceptualize performance as a dependent variable and seek to identify variables that explain variation in performance. Performance is a comprehensive measure that can include productivity, quality, consistency, and so on. On the other side, performance indicators may also involve (criterion-based) results, behaviours and (normative) relative measures, concepts of education and training and instruments, involving management development and leadership training for developing attitudes of performance management and essential skills. Alam (2013) posits that organizational performance is a multidimensional construct that consists of four elements. Customer-focused performance, including customer satisfaction, and product or service performance; financial and market performance, including revenue, profits, market position, cash-to-cash cycle time, and earnings per share; human resource performance, including employee organizational effectiveness, including time to market, level of innovation, and production and supply chain flexibility.

Many researchers like Kaplan (1991), Bromwich and Bhimani (1989), demonstrated the need for multidimensional performance: financial and non-financial, internal and external, quantitative and qualitative. In the last years, academics and practitioners embraced the use of non-financial measures as they treat both causes and effects. Measures like customer satisfaction and innovation activities are considered to be the drivers of future financial performance (Kaplan and Norton, 1992)

Innovation strategy and organizational performance

According to Striteska and Propkop (2020), innovation strategy can have a significant impact on the innovative production of the business and overall business results when it flows from and is fundamentally embedded in a company strategy. This is because it is a key element of the innovation ecosystem. Innovation is of great essence when it comes to strategy. It can create superior business growth, reduce costs, eliminate competition and even create entirely new markets. Kalay and Lynn (2016) pointed out that the application of innovation strategy in an organization ensures the implementation of successful innovations by curtailing critical internal and external exigencies that may threaten the chances of progress.

Pisano (2015) found out that there is a lack of innovation strategy in many companies which causes the biggest issue in innovation improvement efforts, because creating a capacity to innovate begin with a strategy. Furthermore, sustainable business models as an innovation strategy, consisting of various innovation outputs, are prerequisite for sustainable growth for companies and within the industry innovation ecosystem. Organizational structure and organizational performance Organizational structure does have both negative and positive impacts on employees' creative and innovative behaviours that are designed to produce new ideas, processes, products and services (Hassan, Anwar, Rafique and Saeed, 2014). Past investigations have come up with different findings on centralization's impact upon the innovative performance of organizations. A few studies have come to find that centralization has a positive impact on innovative output (Rogers, 1995; Gosselin, 1997) while others have discovered otherwise (Damanpour, 1991). Kalay and Lynn, (2016) stated that when a positive effect occurs through centralization, upper-level managers have increased control, and those making decisions have more freedom when doing so. This greater level of authority and responsibility in management can make them more receptive to opportunities of the technological, market, and organizational variety.

Conversely, the adverse effects of centralization include: narrower channels of communication, increased layers in the transfer of information and the further filtering of information (Cardinal, 2001). So, in a centralized structure, the progress of information from lower levels to upper management are impeded; and thus, the quality and frequency of ideas, employee initiative and problem-solving are reduced (Jansen et al., 2006). Such a reduction will result in decreased levels of innovative performance, the consequences of which are the substandard development of products, processes, and management. Additionally, employees working within an organization that employs centralization make less frequent attempts to pursue the finding of new and innovative solutions to problems proactively. As regards, formalization, Lewis, Welsh, Dehler, and Green, (2002) found that formalization discourages the generation of ideas due to the inflexibility of this mode, which constrains creativity. Formalization prevents divergence from standard knowledge and from the tendency to seek a variation. Kalay and Lynn, (2016) posit that flexibility within a system is facilitated by a low level of formalization, and this flexibility is key for the generation of ideas that will boost organizational output.

It was concluded from a literature survey that creativity impact on organizational outcomes is usually highest when the structure is organic and when it is composed of individuals drawn from diverse fields (Woodman et al.1993). Andriopoulos (2001) from findings advocates for a flat structure that allows decision making at all level, while evaluation should be supportive and informative.

Theoretical Review

This study relied heavily on the componential theory of creativity

Componential Theory of Creativity

Teresa Amabile propounded the componential theory of creativity in 1983. It is a comprehensive theory that proposes psychological and social components necessary for an individual to produce creative work in an organizational setting. According to this theory, four components are necessary for any creative response: three components within the individual and one component outside the individual. Domain-relevant skills (expertise in the relevant domain or domains), creativity-relevant processes (cognitive and personality processes conducive to novel thinking), and task motivation (specifically, the intrinsic motivation to engage in the activity out of interest, enjoyment, or a personal sense of challenge) are the three within-individual components. The component outside the individual is the surrounding environment – in particular, the social environment.

The theory specifies that creativity requires a convergence of all components; creativity should be highest when an intrinsically motivated person with high domain expertise and high skill in creative thinking works in an environment high in supports for creativity. Similarly, Amabile (2012) emphasized that the theory is hinged on two important assumptions. First, there is a continuum from low, ordinary levels of creativity found in everyday life to the highest levels of creativity found in historically significant inventions, performances, scientific discoveries, and works of art. The second, related underlying assumption is that there are degrees of creativity in the work of any single individual, even within one domain. The level of creativity that a person produces at any given point in time is a function of the creativity components operating, at that time, within and around that person.

The componential theory is a perfect match for this study because innovation is an offshoot or the outcome of creative initiatives. It is relevant to the study in that the constructs of innovative management practices adopted in this study such as innovation strategy, organizational structure, innovation culture, technological change and customer-supplier relationships are an aspect of the surrounding or social environment components in the theory. Specifically, these are the work environment created by management which influences process and outcome of innovation. In the postulations of the theory, the interplay of favourable social contexts and psychological processes within creative individuals usually yields significant work-related outcomes.

Empirical Review

Pertuz and Perez, (2020) worked on innovation management practices in organizations. This study employed a scoping review methodology proposed by MedicinaSeguridadTrabajo 2009. A total of 322 documents were located and screened by two reviewers. They applied the inclusion and exclusion criteria, 19 articles were analysed in depth. The article, identified the innovation management practices used by different kinds of companies, focusing on small and medium-sized enterprises. The review found a total of 116 practices, grouped into 13 categories. These categories were classified based on the innovation management process.

The study revealed that practices most frequently cited by authors were the application of project management fundamentals, product changes and process improvements, idea generation techniques, and practices related to human talent management for innovation. The recommendations were drawn along that line. This article provides a framework of good practices for companies that wish to improve their innovation management process that validates the work under study.

Abdul, Shafique, Raja, Muhammad, and Altaf, (2017) carried out a research study to investigate the relationship of innovation with the organizational performance of the telecommunication sector. The independent variables are process innovation, product innovation and organizational innovation as an organizational culture and a moderating variable. The research was survey research in which a questionnaire was administered to 200 employees that are concerned with innovation in the telecom industry present in Islamabad and Rawalpindi to ensure a reasonable response. The data was analyzed through the SPSS v.20 software. Results showed that product innovation, process innovation and organizational innovation has a positive impact on organization performance. Results showed that product innovation, process innovation and organizational innovation has a positive impact on organization performance. The study also indicates that the moderation effect of organisational culture on the connection of product innovation with organizational performance is positive. The moderation effect of organization culture on the connection of process innovation with organization performance be optimistic. In finally, the moderation effect of organization culture on the connection of organizational innovation with organization performance was also positive. The study further validated the work significant impact on moderating organizational performance.

Faruk and Gary (2015) studied the impact of strategic innovation management practices on firm innovation performance. Their study pointed out that in a highly competitive environment, innovation is the essential key to a firm obtaining a dominant position and gaining higher profits. Therefore, the understanding of which strategic innovation management practices lead to success is very important. The purpose of the study was to investigate the impact of innovation strategy, organizational structure, innovation culture, technological change and innovative service delivery, which appear in the literature as strategic innovation management practices in business enterprises, on firm innovation performance. In this context, data collected from 132 managers at 66 firms operating in the manufacturing sector in the TRB2 zone of Turkey were analyzed. The partial least squares structural equation modelling (PLS-SEM) method was used to test the hypotheses of the study. The analyses revealed that innovation strategy, organizational structure and innovation culture significantly increased firm innovation performance. However, no significant impacts of technological change and innovative service delivery on firm innovation performance were determined, a gap the study under review would address.

Tools and Methodology

The study is a Survey design based on the samples collected and the data gathered through sampling. Samples are drawn from permanent staff categorized from the manufacturing Firms selected in Delta State Metropolis (MTN and Glo). The variables are only being observed and not controlled and the hypotheses are based on the relationship between Innovative Management Practices and Organizational Performance and are valid only for the Stratified sampling technique, keeping in mind the effective coverage and lower cost. The statistical techniques were adopted for processing the data and testing the hypotheses formulated for the study regression statistical tools of analysis via the use of statistical package for social sciences.

Results and Analysis

Table 4.1: Analysis of the field survey

Patter n focuse d	Number adminis tered	Num ber retur ned	Percen tage used
Emple yees	256	205	80.

Source: Researchers Distributed Questionnaire (2021).

Table 4.1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.319 ^a	0.785	0.767	1.14566	0.525

a. Predictors: (Constant), Innovation strategy, organizational structure, b. Dependent Variable: Organizational Performance

Table 4.1 above showed the extent to which the independent variable accounted for change on the dependent variable as shown on the model summary. It shows that change in project management is brought about by the sub variables of organizational policy as indicated by the adjusted R2 value by 76% (.76).

Table 4.2: Fitness of the Model**ANOVA^a**

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	18.422	5	3.070	72.339	.036 ^b
Residual	162.753	200	1.313		
Total	181.176	205			

a. Dependent Variable: Project Management, b. Predictors: (Constant), Innovation strategy, organizational structure

The F-ratio in table 4.2 above shows if the overall regression model is a good fit for the data. The table showed that organizational policies statistically and significantly predict project management, $F(6, 124) = 72.339, p < .0005$. This implies that the regression model is a good fit for the data.

Table 4.3: Multiple regression analysis of Innovative Management Practices and Organizational Performance.**Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.675	0.310		8.625	0.000
Innovative Strategy	0.049	0.309	0.050	0.159	0.037
Organizational Structure	0.275	0.297	0.292	0.929	0.035

a. Dependent Variable: Organizational Performance, b. Independent variable: Innovative Strategy, Organizational Structure

Decision Rule

If the probability value calculated is greater than the critical level of significance, then the null hypothesis is accepted and the alternate hypothesis is rejected. If the probability value of 0.00 is smaller than the critical value of 5% (i.e. $0.000 < 0.05$) we conclude of the given parameter is statistically significant. In this situation, it is accepted and there is a need to reject the null hypothesis to accept the alternate hypothesis. Therefore, the P-value = 0.005(5%).

Test of Hypothesis One: Innovative Strategy has no significant impact on organizational performance. The level of significance that was calculated in table 4.4 is lesser than the established p-value ($0.037 < 0.05$), therefore the null hypothesis was rejected while the alternate was accepted which states that Innovative Strategy has a significant relationship with organizational performance. The statement is supported by Striteska and Propkop (2020), the argument that innovation strategy can have a significant impact on the overall business results when it flows from and is fundamentally embedded in a company strategy. Findings from Kalay and Lynn (2016) study also show that the application of innovation strategy in an organization ensures the implementation of successful innovations by curtailing critical internal and external exigencies.

Test of Hypothesis Two: Organizational structure has no significant impact on organizational performance. Table 4.4 shows that the calculated level of significance is lesser than the p-value of 0.05 (5%) i.e. ($0.035 < 0.05$). Similarly, the null hypothesis was rejected and the alternate was accepted implying that organizational structure has a significant relationship with organizational performance. From the outcome, organizational structure relationship with organizational performance could be positive or negative. Support for the positive comes from (Wood, 1993) statement that innovation impact on organizational outcomes is usually highest when the structure is organic and when it is composed of individuals drawn from diverse fields. Andriopoulos (2001) also theorizes that for a flat structure that allows decision making at all level, while evaluation should be supportive and informative. On the other side, support is provided by Jansen et al.,(2006) statement that a centralized structure where the progress of information from lower levels to upper management are impeded will result in decreased levels of quality of ideas, employee initiative and innovative performance

CONCLUSIONS

The study concludes from the literature that an innovation strategy that is enmeshed and in tandem with the company-wide strategic goals; implemented cross-functionally usually leads to higher levels of organizational performance. This is because the two strategies cannot be effective in isolation. The study concludes that when the organizational structure is flat and built around teams positive out results from organizational creativity initiative. Conversely, a highly centralized structure tends to be related negatively with it because employees will get less chance to take creative initiatives Recommendations

1. Innovation strategy and overall company goal should always be in sync when planning enhanced development
2. Organisations should continue with flat structure system but built around creativity and reduced centralized system of administration that could lead to reduced interest on the part of employees.

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