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ASSESSMENT OF ICT INVESTMENT, ICT STRATEGIC ALIGNMENT AND PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN SOUTH WESTERN NIGERIA

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Abstract: This study assessed ICT investment, ICT strategic alignment, and performance of small and medium enterprises in southwestern Nigeria. A total number of 3,520 SMEs were selected with a three-stage sampling procedure across the study area. Both primary and secondary sources of data were employed for the study. Frequency distribution tables and rigorous analysis were used in analyzing both positive and negative factors influencing ICT investment. Multiple regression analysis was used to analyze the hypothesis of the study. The result of the study revealed that there are both positive and negative factors that influence ICT investments by SMEs. Moreso, complementary factors, SMEs capital, ICT perception, business strategy, SMEs type, and ICT intensity all have high significant ($p \leq 0.01$) effect on ICT investment and SMEs performance. Years of experience (YREXP) has a negative effect on ICT investment and SME performance. The coefficient of the result is – 5.911 and $R^2 = 0.866$ which means that 86.6% performance of small-medium enterprises in South Western Nigeria is being explained by the explanatory variables. Recommendations were made that SMEs' owners should strategically align complementary factors such as (SMEs type, SMEs size, SMEs capital, SMEs ICT perception and business strategy) with ICT investment so that it can have a positive effect on their performance.

Keywords: ICT Investment, SMEs, Strategic Alignment, performance

INTRODUCTION

Investment in ICT has become an important strategy for the SMEs industry to survive the millennium challenges. However, factors influencing ICT and the extent to which SMEs have invested in ICTs to enhance their performances vary from developed to developing countries and also from one SME to another. In this regard, Agboola (2006) states that "reasonable investment in ICT has provided self-service facilities (Automated customer service machine) from where prospective customers can complete their transaction and shopping direct online on a real-time basis".

The belief of the research stream that explores the leveraging effect of strategic alignment on IT investment is that one reason for the inability to realize value from IT investments is the lack of alignment between the business and IT strategies. Previous research shows that companies with high strategic alignment are better performing companies (Duh, Chow and Chen, 2006; Somers and Nelson, 2003). Strategic alignment of business with Information System strategies has been an important topic in the 1980's and 1990's and it refers to the extent to which the IS portfolio of a company provides support to the business

strategy. Some studies point out the control effects of the alignment of business with IS strategies on the relationship between IS and business performance (Stratopoulos and Dehning, 2000).

In the literature of ICT and business value, it is highlighted that Dehning and Richardson (2002) propose a framework for guiding future research in the evaluation of IT business value. The framework describes three ways of measuring the investments in IT:

1. IT spending,
2. type of IT strategy, which refers to the type of system bought (e.g. ERP or electronic commerce) and
3. IT management, which refers to the degree of success with which companies use IT.

This model shows that the research examines both the direct relationship between IT investments and SMEs performance and the indirect relationship between the two variables, intermediated by the business process changes. The framework also includes the papers that investigate the effect of contextual factors such as industry, size, or IT intensity on the IS-SMEs performance relationship.

In the study of ICT Investment and strategic alignment, Kim, Xang and Leo, (2009) adapted Dehning and Richardson (2002) theory, but the theory was adopted without any intermediate variable (e.g. business processes) and non-IT production factors (e.g. complementary organizational resources), which has often been used in IT business value research. Two contextual factors that can influence the relationship between IT investments are used such as SMEs' size and information intensity of the industry, which are part of the industry's characteristics. SMEs' size was controlled by normalization with sales, and the information intensity of the industry was controlled by concentrating only on the electronics industry, which is one of the highly information-intensive industries.

In light of the strategic alignment research field, Dehning and Richardson (2002) framework can be extended to comprise the effect of strategic alignment on the ICT investment and business performance and this is what this study examined.

Research Questions

To be able to adequately evaluate the effect of strategic alignment on ICT investment on SMEs performance in Southwestern Nigeria, the following research questions become necessary:

i. What are the factors influencing ICT investment by SMEs in Southwestern Nigeria?
ii. Do complementary factors when aligned with ICT investment affect SMEs performance in Southwestern Nigeria?

The hypothesis of the Study

Given the formulated research questions, the following null hypotheses were proposed to establish a sound empirical relationship between the selected dependent and independent variables that were considered in the study:

H_0: Complementary factors when aligned with ICT investment do not have a significant effect on SMEs performance.

LITERATURE REVIEW: Conceptual and Empirical Review

1. ICT investments

ICT investment is an investment that covers the acquisition of equipment and computer software that is used in production for more than one year. ICT has three components: information technology equipment (computers and related hardware), communications equipment, and software. The software includes the acquisition of pre-packaged software, customized software, and software developed in-house. Investment in physical capital is important for growth. It is a way to expand and renew the capital stock and enable new technologies to enter the production process. Information and communication technology (ICT) has

been the most dynamic component of investment in recent years (OECD, 2007).

ICT investments are also referred to as second-order investments that, for example, create opportunities for people to overcome conditions of poverty and marginalization (Servon, 2002). Investments in ICT can be considered to consisting of four aspects: hardware, software, and internal spending and telecommunication investments. Software investment refers to total country spending on software packages, database systems, utility software and programming tools. Internal spending refers to the total national amount spent on software customization, human capital development and other miscellaneous IT-related expenses.

2. Strategic Alignment

The Strategic Alignment of ICT has been defined by different researchers. Broadbent and Weil (1993) defined strategic alignment as the extent to which business strategies are enabled, supported and stimulated by ICT strategies. Luftman (2000) provides a more detailed definition stating that "Business-IT alignment refers to applying Information Technology in an appropriate and timely way, in harmony with business strategies, goals and needs. This definition of alignment addresses:

1. How IT is aligned with the business and
2. How the business should or could be aligned with IT.

However, the conceptual definition of strategic alignment for this study will be adapted from Broadbent and Weil, (1993) and Luftman (2000). Several studies have shown that strategic alignment between IT and business strategy plays a significant role in explaining business performance.

Strategic alignment for this study is the extent to which complementary factors (years of existence, SMEs type, SMEs capital, and ICT intensity are aligned with ICT investment while

- SMEs type for this study means the small or medium type of business.
- SMEs years of existence means SMEs that have been in operation for at least ten years or more
- SMEs ICT intensity means the extent of ICT usage by SMEs
- SMEs capital means both the fixed and current money owns by the SMEs
- SMEs business strategy means the rate at which SMEs aligned it objectives with ICT investment

3. Previous Studies on ICT Investment and Strategic Alignment

Samgwa, Godavari, and Ricardo (2021) explores the reported benefits of IT-business alignment. The study findings revealed that applying IT in an appropriate and timely way, in line with business strategies, goals and needs can result in enormous benefits for an organization and these benefits include competitive advantage, performance enhancement, enhanced cooperation among members, facilitation of processes, high return on investment, and growth.

Santa, Acosta, Borrero, and Scavarda, (2020) investigates the impact of corporate, operational, and information systems strategy alignment on business performance. The information was gathered by sending 138 questionnaires to large utility firms in Australia's electrical sector. To identify the dependency link between the variables, structural equation modeling was employed in the investigation. The findings indicate that harmonizing operational and information systems strategies can improve organizational performance.

Stratopoulos and Dehning (2000) show that companies that successfully use their IT to support the business goals have superior financial performance compared to companies that aligned less successfully the IT use to the business goals. Dehning and Richardson (2002) concurred that IS that provides managerial information responding to the business strategy is associated with higher performance and stated that business performance could be analyzed using accounting measures (return on assets, return on equity,

and return on sales) or market value measures (Tobin's q, short-window abnormal stock returns).

Byrd, Lewis and Bryan (2006) study the strategic alignment of ICT investment from four perspectives: on one hand, two perspectives on the alignment of the planning process of the business and it strategy (Coordination and integration) and to the other hand, two perspectives on the realized alignment of business and IT strategy (matching and moderating). The findings revealed that:

a) the integrator factor of the strategic alignment process does not yield a positive result.
b) SMEs with coordination views on alignment can be made further IT investments that can have a substantial leveraging effect.
c) SMEs with matching and moderating views on alignment can increase their revenue without investment in IT.

It is further revealed that in the small and medium-size manufacturing SMEs, strategic alignment is proved to be an important element for the success of IT management as a moderator between IT investments and SMEs performance.

Dehning and Richardson (2002) identified contextual factors (e.g. strategic alignment, size, ICT intensity, financial health, and companies) that when included in the analysis of the link between the ICT invested amounts and business performance, higher positive correlations are expected. Recent SME-level studies, however, paint a more positive picture of ICT contributions to productivity. These findings raise several questions about mismeasurement of output by not accounting for improved variety and quality, and about whether ICT benefits are seen at SMEs-level or at the factories-level.

Floyd and Wooldrige (1990) report reveals that when IT represents a strategic necessity, it has effects on performance is modestly positive or neutral, and when IT is strategically misaligned, its impact on performance is negative. This implies that the impact of IT investments on financial performance depends on the strategic role of IT within the organization. Brynjoffson and Hitt (1996) observe that the companies that invest in a mix of mainframes and PCs are better performers than the companies that use mainly either mainframes or PCs.

Theoretical Framework

This study adopted the theory used by Dehning and Richardson (2002). This theory is employed to determine the relationship between ICT investment and SMEs financial performance. Moreso, an enlarged research theory in the measurement of ICT investment has been used by Velcuoana (2007), likewise research theory with intermediate variable (like business process) and non-IT production factors (like complementary organizational resources) has also been used by Dehning and Richardson (2002). The theory showed the complementary factors independent variable, ICT investment as intervening variable and performance as dependent variables. As shown in Figure 1. Kim et al. (2009) adapt the theory used by Dehning and Richardson (2002) to determine the effect of ICT investment on SME's performance but without intervening variables or complementary factors. In this study investment in ICT is hypothesized to be influenced by complementary factors (years of existence, type of firm, ICT intensity, firm capital, ICT perception and business strategy) that have a direct effect on performance.

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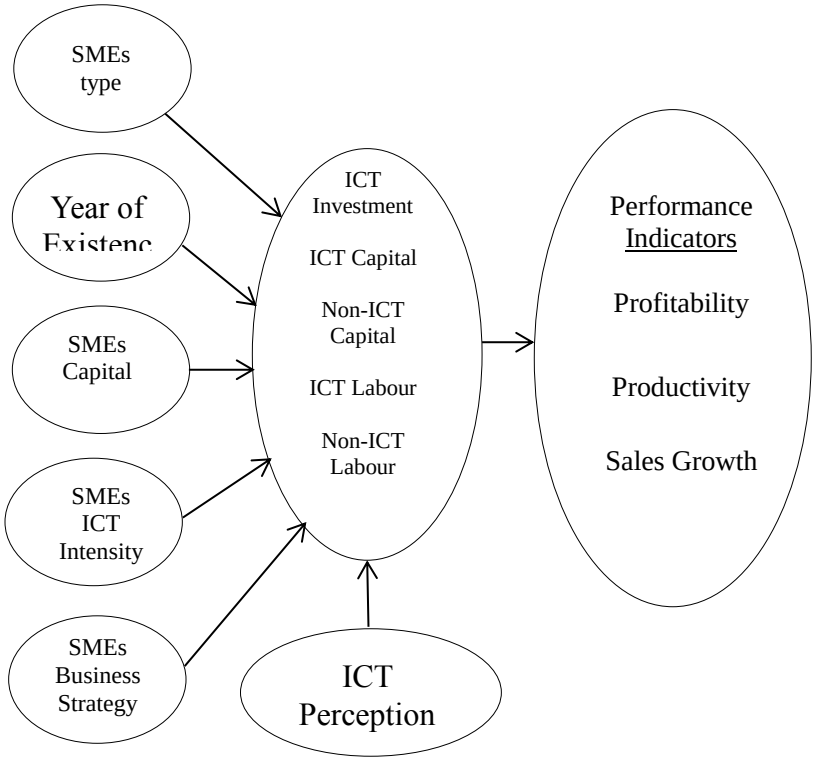

Fig. 1: Theoretical Framework on the effect of ICT investment on SMEs performance with complimentary factors
Source: *Dehning and Richardson, (2002)*

METHODOLOGY

The study was carried out in Southwestern Nigeria. The zone consists of six states namely Lagos, Ogun, Oyo, Osun, Ondo and Ekiti states. The study was conducted on SMEs i.e. manufacturing industry, production and traders that are in existence for 15 years and registered with the Ministry of Industries, Manufacturing Association of Nigeria (MAN) and Corporate Affairs Commission (CAC) and unregistered SMEs. Stratified and judgmental sampling was used to select both registered and unregistered SMEs in Lagos and Oyo States and covering virtually all forms of manufacturing food and beverages industry. Only 3,520 SMEs that fulfilled the condition of judgmental sampling techniques were selected and their business activities covered fifteen years.

A three-stage sampling procedure was utilized in the study. In the first stage, Oyo and Lagos states were purposively selected due to higher concentrations of SMEs. The second stage involved a random selection of 80% of the LGAs in each of the states. In the third state a total sample of 4500 SMEs was drawn (for the questionnaire administration) (2840 from Lagos and 1660 from Oyo State). However, only 3520 questionnaires were properly filled and used for the analysis due to inconsistencies and errors in some of the questionnaires.

Both primary and secondary sources of data were employed for this study. Primary data was from the

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administered questionnaire to SMEs staff, the secondary data was obtained from the books of account and annual reports of the selected SMES. SMEs Performance was proxy by productivity, sales growth and profitability. The performance function was:

$$smp = productivity(prd) + salesgrowth + profitability(prof) \quad (1)$$

Sales growth was calculated as the percentage change in sales in each year divided by the sales in the initial year. The net profit margin was calculated as the net profit (operating profit or loss before tax and extraordinary items) as a percentage of gross income in each year. Return on assets was calculated as the net profit in each year as a percentage of total assets.

To measure the effect of Complementary factors when aligned with ICT investments (IC_i) on SMEs performance (smp) multiple linear regression techniques was used. The SMEs performance (smp) was the dependent variable while the complementary factors aligned with ICT investment will serve as the independent variables. These independent variables are defined as: Industrial type (it); Size of the company (sc); Financial health (fh); ICT intensity (ii) and Business strategy (bs)

The multiple linear regression models which will show the effect of complementary factors aligned with ICT investments (IC_i) on SMEs performance is given below:

$$smp = \beta_0 + \beta_1 \text{it} + \beta_2 \text{sc} + \beta_3 \text{fh} + \beta_4 ii + \beta_5 \text{bs} + \beta 6\text{Ici} + \varepsilon_t \quad (2)$$

Where

β_0 = Constant

$\beta i's$ = are the Coefficients for i= 1,2…,6

RESULTS AND DISCUSSIONS

1. Factors Positively Affecting Investment in ICT by SMEs

Tables 1 present the results of positive factors affecting investment in ICT by SMEs. Accessibility to internal and external information was found to have a high impact on ICT investment as 40.30% of the respondents agreed to this while 0.9% strongly disagreed. Also, effective communication within and outside the enterprise affects the rate at which SMEs invest in ICT with 51.90% of the respondents 0.87% disagreed with this. This gives the impression that the information from outside and within the enterprise and the effectiveness of such information can affect the investment in ICT by the enterprise. Effective communication with customers was found to have a positive effect on investment in ICT by SMEs. About half of respondents (49.27%) strongly agreed while 0.58% of respondents strongly disagreed. It implied that effective communication with customers affects investment in ICT positively. Having good communication with the customers and getting feedback can help improve the customer service relationship. The relationship the SMEs have with their buyers also has significant positive effects on investment in ICT.

A high number of respondents (52.62%) strongly agreed with this while 0.29% strongly disagreed. Being able to reach new customers is a positive way that can affect the investment in ICT by SMEs. In the present study, the use of ICT was found to enable SMEs to reach out to more and new customers. Among the respondents, 49.27% strongly agreed with this while 0.88% strongly disagreed. It is the data collected from respondents on firm reliability, production cost, human resources and supply chain management as related to the level of investment in ICT. 50.29% of respondents strongly agreed that firm reliability could be increased with an increase in SMEs' investment in ICT. A large percentage (52.49%) agreed that human resources would affect the investment in ICT while only 0.29% strongly disagreed. The ability of the firm to retain its market position can also affect the investment in ICT by SMEs. 55.00% of the respondents agreed with this while a small proportion 0.88% strongly disagreed. The company image is another factor that could affect the investment in ICT by SMEs. About 39.00% of the respondents strongly agreed with

this assertion while 0.88% strongly disagreed. Increasing the product/service quality of the SMEs also affects the investment made in ICT by the SMEs. 40.88% of respondents strongly agree with this while 1.47% strongly disagreed. When the service quality is better, the SMEs may want to invest more in ICT.

Table 1 presents data collected on some other positive factors that influenced the amount of investment in ICT by SMEs. The launching of new products had a positive effect on investment in ICT by SMEs. The data collected indicated that 48.40% strongly agreed with this while 1.75% strongly disagreed. 43.79% of respondents strongly agreed that decreasing paperwork is a factor that can affect investment in ICT while 1.48% strongly disagreed. 62.83% strongly agree that shorter delivery time will affect investment in ICT by SMEs positively while 2.36% of the respondents strongly disagree. Finance and accounting are part of the factor that affects investment in ICT 54.41% strongly agree while 1.47% strongly disagrees. Also indicated in Table 4.3 is inventory management which also can affect investment in ICT by SMEs. 45.91% agreed to this while 1.17% strongly disagreed. Integrating and speeding up business processes also have an influence on investment in ICT by SMEs positively while a larger percentage 50.00% agreed with this, 0.92% strongly disagreed. The process of E-applications also affects investment in ICT as indicated while 43.28% strongly agreed to this, 2.69% strongly disagreed which indicates that they do not think using E-applications can affect investment in ICT. E-marketing as a factor influencing ICT investment positively for small and medium scale enterprises showed that 39.47% strongly agreed to it as it increases the marketing performance and productivity of any enterprise, 32.05% agreed that it increases the efficiency of any enterprise, 8.31% were undecided, while 17.21% of the respondents disagree to the e-marketing as a factor and 2.67% strongly disagreed to the factor.

Internet marketing was the same with e-marketing as the majority of the respondents 37.20% strongly agreed to it as among the major influencing the ICT investment in any enterprise, 35.42% of the respondents agreed to it to increase the efficiency and marketing performance of the enterprise, 17.56% disagreed to the factor to have many positive effects to the enterprise while 2.68% of the respondents strongly disagreed to it. The majority of the respondents 47.48% agreed to the e-commerce application as a factor contributing positively to the productivity and efficiency of the small and medium scale enterprise but 5.64% disagreed to have any positive effects on the enterprise.

Resources planning and optimization, provision of quality and innovative products, market expansion ability and productivity level are some of the other positive factors affecting investment in ICT by SMEs (Table 1). Resource planning and optimization as a factor influencing ICT investment positively, 2.67% of the respondents disagree to this as it may not have any effects to the enterprise but the majority of the respondents 45.83% agree that it may contribute to the efficiency and performance of customers relation in any enterprise. Positive investment in ICT from the factors that will provide the highest quality product or service, majority of the respondents 48.66% agree that this type of factor can increase the performance and production on any enterprise while 9.20% were undecided about this factor, 0.89% strongly disagreed to it to have any positive contribution to the enterprise. Investment in ICT so as to have the most innovative product or service, majority of the respondents 51.04% strongly agree to this as among the factor influencing positively to ICT while 4.48% disagree about it.

Among other positive factors the need to stay ahead of the competitors influencing investment in ICT by any enterprise. The majority of the respondents (45.72%) believe that this is an essential factor that will increase the performance and productivity of an enterprise but 1.18% of the respondents strongly disagreed. The majority of the respondents (44.81%) equally strongly agreed that the strategy set ahead by your

executives is a positive factor influencing investment in ICT but 1.48% of the respondents strongly disagreed. The majority of the respondents 50.59% strongly agreed to the advice from ICT consultants as a factor influencing ICT positively but 7.40% were undecided and 1.48% strongly disagreed to the factor. To enhance company research and design as another factor contributing positively to small and medium scale enterprise ICT, the majority of the respondents 50.90% strongly agree to it as it could increase the market and consumer participation but 1.50% of the respondents strongly disagree to the factor.

ICT investment also has a positive impact on market expansion, the majority of the respondents 52.37% strongly agree to this while 3.85% were undecided about this, 2.07% strongly disagree to the factor. Enhance company productivity among other factors influencing ICT investment positively, majority of the respondents 54.95% strongly agree that this could contribute to the production of any enterprise but 1.50% of the respondents disagree and strongly disagree. ICT investment increases the growth of sales or revenue, 34.53% agree that it is a good factor that could influence investment positively but 1.83% disagrees to the factor to have a negative influence on investment. To enhance company productivity among other factors influencing ICT investment positively, 57.79% of the respondents strongly agree to it to contribute to increasing performance and efficiency of any enterprise while 1.30% of the respondents strongly disagree to the factor.

In the present study, all the factors identified to be positively influencing ICT investment corroborated with the findings of Kiveu (2013), Neirotti and Raguse (2013), Peansupap and Walker (2005), Indahwati and Afiah (2014), Apulu and Latham (2011), Irefin *et al.*, (2012) and Agboh (2015), Scupola (2009), Tan *et al..*, (2010) and Moomal and Masrom (2014), Santa, Acosta, Borrero, and Scavarda, (2020) Samgwa, Godavari, and Ricardo (2021)

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Table 1: Factors Positively Affecting Investment in ICT by SMEs

Factors	Strongly Agree Freq. (%)	Agree Freq. (%)	Undecided Freq. (%)	Disagree Freq. (%)	Strongly Disagree Freq. (%)	Total Respondent
1. Accessibility to internal and external information	620 (18.51)	1350(40.30)	800(23.88)	550(16.40)	30(0.9)	3350
2. Effective communication within and outside the enterprise	1450(42.27)	1780(51.90)	100(2.92)	30(0.87)	70(2.04)	3430
3. Effective communication with customers	1690(49.27)	1640(47.81)	50(1.46)	30(0.87)	20(0.58)	3430
4. Improvement of buyer relationship	1810(52.62)	1480(43.02)	80(2.33)	50(1.45)	10(0.29)	3440
5. Reaching new customers	1680(49.27)	1470(43.11)	160(4.69)	70(2.05)	30(0.88)	3410
6. Increment of SMEs reliability	1710(50.29)	1340(39.41)	290(8.53)	50(1.47)	10(0.29)	3400
7. Decrement of production costs	1350(39.47)	1110(32.46)	210(6.14)	660(19.30)	90(2.63)	3420
8. Supply chain management	1290(37.83)	1640(48.09)	270(7.92)	150(4.40)	60(1.76)	3410
9. Human resources	1200(35.19)	1790(52.49)	250(7.33)	150(4.40)	10(0.29)	3410
10. Retention of SMEs market position	1220(35.88)	1870(55.00)	140(4.12)	140(4.12)	30(0.88)	3400
11. Company Image	1330(39.00)	1240(36.36)	640(18.7)	170(4.99)	30(0.88)	3410
12. Increment of the product /service quality	1390(40.88)	1110(32.65)	270(7.94)	580(17.06)	50(1.47)	3400
13. Launching new products	1660(48.40)	1350(39.36)	210(6.12)	150(4.37)	60(1.75)	3430
14. Decrease paper work	1480(43.79)	1020(30.18)	410(12.13)	420(12.43)	50(1.48)	3380

15.	Shorter delivery time	2130(62.83)	920(27.14)	210(6.19)	40(1.18)	80(2.36)	3390
16.	Finance and Accounting	1850(54.41)	1260(37.06)	180(5.29)	50(1.47)	50(1.47)	3400
17.	Inventory management	1510(44.15)	1570(45.91)	200(5.85)	90(2.63)	40(1.17)	3420
18.	Integrate business processes	1460(42.69)	1590(46.49)	240(7.02)	60(1.75)	70(2.05)	3420
19.	Speeding up business processes	1320(40.49)	1630(50.00)	170(5.21)	110(3.37)	30(0.92)	3260
20.	Standardize business processes	1610(47.49)	1430(42.18)	170(5.01)	150(4.42)	30(0.88)	3390
21.	E- application applications	1450(43.28)	990(29.55)	200(5.97)	610(18.21)	90(2.69)	3350
22.	E- marketing	1330(39.47)	1080(32.05)	280(8.31)	580(17.21)	90(2.67)	3370
23.	Internet marketing	1250(37.20)	1190(35.42)	230(6.85)	590(17.56)	90(2.68)	3360
24.	E- commerce applications	1250(37.09)	1600(47.48)	280(8.31)	190(5.64)	40(1.19)	3370
25.	Resource Planning and Optimization	1340(39.88)	1540(45.83)	300(8.93)	130(3.87)	30(0.89)	3360
26.	Providing the highest quality product or service	1300(38.58)	1640(48.66)	310(9.20)	90(2.67)	30(0.89)	3370
27.	Providing the most innovative product or service`	1710(51.04)	1210(36.12)	230(6.87)	150(4.48)	40(1.19)	3350
28.	The need to stay ahead of your competitors	1550(45.72)	1050(30.97)	430(12.68)	300(8.85)	40(1.18)	3390
29.	The strategy set by your executives	1510(44.81)	990(29.38)	480(14.24)	320(9.50)	50(1.48)	3370
30.	Based on the advice from your ICT consultants	1710(50.59)	1310(38.76)	250(7.40)	40(1.18)	50(1.48)	3380
31.	Enhance company research and design	1700(50.90)	1090(32.63)	380(11.38)	100(2.99)	50(1.50)	3340
32.	Market Expansion	1770(52.37)	1340(39.64)	130(3.850)	50(1.48)	70(2.07)	3380
33.	Increase growth of sales or revenue	1810(55.18)	1150(34.53)	170(5.18)	60(1.83)	70(2.13)	3280

34. Enhance company productivity	1770(57.47)	1010(32.79)	180(5.84)	60(1.95)	40(1.30)	3060

Source: Author's compilation **(2021)**

2. Factors Negatively Affecting Investment ICT by SMEs

There are certain factors that negatively affecting investment in ICT by SMEs (Tables 2). Results on Table 4.6 shows that majority of the respondent agreed that high Electricity (89.52%), owners of SMEs not ready to invest in ICT, financial constraint and maintenance cost (86.83), lack of infrastructure (80.24%) illiteracy amongst employees (79.46%), cost of ICT (78.51%), and cost of training employee (76.35%)as the major factors affecting SMES negatively amongst other factors. The lack of materials and human infrastructure needed for the successful implementation of ICT project can seriously affect the outcome of the ICT project. Illiteracy among the employee which is also a major factor affecting ICT negatively will impose a high cost of training the employee on the employer, which will increase the maintenance cost of the ICT program. The cost of setting up ICT was also a major factor affecting ICT negatively, SMEs may not be able to afford the high cost of installing the ICT equipment without any external support.

Other factors affecting investments in ICT by SMEs negatively include; lack of knowledge of benefit from investment in ICT 70.29% and uncertain return on investment 70.39%. Most employers do not have adequate knowledge on the expected return from ICT, so they want to avoid taking an expensive risk. An employer who is risk-averse will want to avoid taking a risk in which the utility from taking the risk is lower than the gain from it, so they will prefer investing their capital on investment in which they are certain of good return from it.

In the present study, all the negative factors influencing ICT investment identified were also in line with the research of: Mokoya (2012), Dixon *et al.*, (2012), Agboh (2015), Irefin *et. al.*, (2012), Kogilah *et al.*, (2008), Manuere (2012), Dutta and Coury (2003), Adenikinju (2005),
Parida, Johanson, Ylinenpaa and Braunerhjelm (2010); Kabanda (2011), and Sajuyigbe and Alabi (2012).

Table 2: Factors Affecting Investment in ICT by SMEs Negatively

Hindrances	Yes	No	Total Resp. (= 100 %)
1. High cost ICT	2630(78.51)	720(21.49)	3350
2. Time to implement projects	2290(67.75)	1090(32.25)	3380
3. Lack necessary internal skills workers	2630(78.51)	720(21.49)	3350
4. Not incorporating ICT expenses into company budget	2180(64.31)	1210(35.69)	3390
5. Lack of awareness about ICT	2190(64.22)	1220(35.78)	3410
6. Lack of knowledge of benefit from investment in ICT	2390(70.29)	1010(29.71)	3400
7. Bad experience from past investment in ICT	2050(60.12)	1360(39.88)	3410

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8.	Lack of support by the top management	2680(80.24)	660(19.76)	3340
9.	Government policy e.g. taxes	2210(65.77)	1150(34.23)	3360
10.	Electricity	2990(89.52)	350(10.48)	3340
11.	Financial constraint	2900(86.83)	440(13.17)	3340
12.	Maintenance cost	2900(86.83)	440(13.17)	3340
13.	Illiteracy amongst employees	2630(79.46)	680(20.54)	3310
14.	Lack of infrastructure	2680(80.24)	660(19.76)	3340
15.	Cost of training employee	2550(76.35)	790(23.65)	3340
16.	High cost of ISP providers	2470(74.4)	850(25.60)	3320
17.	Unfavorable environment in which the SMEs operate	2340(70.91)	960(29.09)	3300
18.	Uncertain return on investment	2330(70.39)	980(29.61)	3310
19.	Owners of SMEs not ready to invest in ICT	2900(86.83)	440(13.17)	3340

Source: Author's compilation (2021)

3. Effect of Complementary Factors (when aligned with ICT Investment) on SMEs Performance

To confirm the previous results, SMEs the above results statistically and more importantly, to measure the joint effect of the complementary factors on ICT investment; a two stage least square (2SLS) regression model was employed. The exogenous variables considered were SMEs type, years of existence, SMEs capital, ICT intensity, ICT perception and business strategies. The ICT capital, Non-ICT capital, ICT labour and Non-ICT labour were used as instrumental variables in the 2SLS regression. The regression was a panel fixed effect regression corrected for heteroscedastic errors. The result is as shown in Table 3.

Table 3: Regression of Effect of Complimentary Factors (when aligned with ICT Investment) on Performance

Variable	Coefficient	t-value
Const	1.681e-16	-0.368
FCa	1.000	4.048***
ICT per	1.000	6.346***
BUSstr	7.675	0.183
FT	1.000	2.809***
ICTINT	4.082	0.4077
YREXP	-5.911	-0.4356

R^2 = 0.866

Note that

***** indicates significant at 1%**

**** indicate significant at 5%**

***indicate the significant at 10%**

Source: Data analysis, (2021)

Discussion of Result

In testing the objective 2 and the hypothesis of the study Table 3 revealed that R^2 = 0.866 which means that 86.6% performance of small-medium enterprises in southwestern Nigeria is being explained by the explanatory variables. The remaining 23.3% is accounted for by the error term. Table 4.23 shows that SMEs capital variable has a positive and significant effect on ICT

investment and performance of small and medium enterprises in South-Western Nigeria. The coefficient of SMEs capital is 1.00 which is significant at 1% and it implies that a unit increase in SMEs capital will increase performance by 1 %. It can be inferred from the data above that the higher the amount invested in the business by the SME's in the study area the better the performance of small and medium enterprises.

ICT perception has a positive and significant effect on small and medium enterprises in the study area. The coefficient of ICT perception is 1.00 which is significant at 1%. This suggests the perception of the SME's to ICT equipment, computers and other related communication system has a positive effect on small and medium enterprises in the study area. Perception will aid the attitude of the SME's to ICT use and will ultimately affect performance. Business strategy has a positive effect on the ICT performance of SME's in South-Western Nigeria. The coefficient is 7.675 and this suggests that a unit increase in the approach will increase the performance of SMEs by 7.675unit. The results suggest that the business strategy adopted by the SME's are good hence its positive and significant effect on the performance of the SME's.

SMEs type variable has a positive and significant effect on ICT investment and performance of SME's in southwestern Nigeria. The coefficient is 1.00 which is significant at 1%. This implies that the type of SMEs will determine the profitability of ICT investment. A SMEs may be a small enterprise that will require between 11-100 employees. This kind of SMEs need services of telephone, computer system, fax, and all other related information communication system. It showed that there is high-level usage of ICT investment on SMEs which is being determined by SMEs type.

ICT intensity has a positive effect on the performance of SMEs in the study area. The coefficient which is 4.082 shows that a unit increases in ICT investment will increase the performance of small and medium enterprise by 4.082unit. The use of skype, telephone and other related computer hardware is profitable in promoting SMEs. It enables the SMEs to hold a meeting despite the different geographical locations of its employees. For instance, a device like Skype encourages SMEs to hold its meeting and pass necessary information at any particular time. The intensity of usage of these ICT devices will in no doubt determine the efficiency of SMEs. The coefficient is however not significant statistically.

Table 3 shows that year of experience harms ICT investment and the performance of SMEs. The coefficient is – 5.911. This shows that a unit increase in ICT investment will decrease the performance of SMEs by 5.911 units. Although this is contrary to a-priori expectation, it could be due to a lack of willingness among some of the SMEs to change. Furthermore, In testing the Hypothesis, the result showed that ICT intensity has a positive effect on SMEs performance. The coefficient is 4.082 and significantat1%. Year of experience (YREXP) years of experience has a variable harms ICT investment and SMEs performance. The coefficient is – 5.911. R^2 = 0.866 which means that 86.6% performance of small-medium enterprises in South Western Nigeria is being explained by the explanatory variables (SMEs Capital, ICT perceptions, Business Strategy, SMEs Type, ICT I intensity and Years of Existence).

CONCLUSION

Complementary factors, SMEs capital, ICT perception, business strategy, SMEs type, and ICT intensity all have high significant ($p \leq 0.01$) effect on ICT investment and SMEs performance. Years of experience (YREXP) have a negative effect on ICT investment and SME performance. The coefficient of – 5.911 R^2 = 0.866 which means that 86.6% performance of SMEs in South Western Nigeria is being explained by the explanatory variables (SMEs Capital, ICT perceptions, Business Strategy, SMEs Type, ICT intensity and Years of Existence).

RECOMMENDATIONS

In view of the findings of the study, the following recommendations are made to enhance SMEs performance in Nigeria:

- **SMEs OWNERS**

i. should strategically align complementary factors such as (SMEs type, SMEs size, SMEs capital, SMEs ICT perception and business strategy) with ICT investment so that it can have a positive effect on their performance.

- **GOVERNMENT**

i. should create more awareness on the benefit of ICT investment and ICT adoption because of their contribution to the economy.
ii. should create a more flexible policy that will support easy adoption of ICT
iii. should provide funds for SMEs to invest in ICT to enhance their performance

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