

**How Knowledge sharing behaves in technopreneurship and entrepreneurial outcomes**

**Abstract**

*Technopreneurship is considered to reconfigure entrepreneurial outcomes, but how knowledge sharing moderates the interaction is an academic and practical concern. In pursuit of knowledge, data were collected through the primary sources (questionnaire) after establishing the questionnaire's validity and reliability. Findings revealed that technopreneurship and knowledge sharing individually affected entrepreneurial outcomes. However, knowledge sharing could not significantly moderate the interaction between technopreneurship and entrepreneurial outcomes. Hence, the recommendation was anchored on improving knowledge sharing, technopreneurship, and managerial dexterity of owners and managers.*

Keywords: *Technopreneurship, Knowledge Sharing, Entrepreneurial Outcomes, Owners*

**Introduction**

Entrepreneurial outcomes are core measures for adjudicating firms sustenance, performance, and competitive advantage. In the case of this research work, micro, small and medium-scale enterprises (MSMEs) outcomes are fundamental for nations that intend to promote economic growth and social-political resilience toward sustainable development. The survival outcomes aspirations are not geographically restricted as developed, transiting, and developing economies have observed a substantial blink in the growth and performance of MSMEs. Also, conventional index instituted to measure the outcomes of MSMEs, such as financial and non-financial, enable a universal measurement denominator relative. Regardless of the adopted outcome measurements, the continuously declining performance of MSMEs in most countries globally is a daunting challenge. In developing economies in Africa, MSMEs account for 90% of all enterprises activities and are located in rural and urban settings, hence providing equitable creation and distribution of income across the economies (Khuabi & Mayinga, 2020; Kraima & Boudabbous, 2022; Asikhia & Naidoo, 2020).

For instance, Egypt's MSMEs constitute the economy's backbone, contributing nearly 80% to the GDP and 75% of total employment (Central Bank of Egypt, 2017). In addition, the MSME expansion and growth suffered contraction orchestrated by political unrest, structural weaknesses, ambidexterity, weakness, and low-profit margins (Central Bank of Egypt, 2017). Additionally, the empirical report shows that 83.9% of MSMEs were negatively impacted by the pandemic, while 29% of MSMEs startups suspended operations (WEMDA-Arabnet, 2020). In Nigeria, MSMEs created 80% of the jobs (Ajibola, 2020 Asikhia & Naidoo, 2020) and contributed 49.78% of the GDP (Abubakar & Hussaina, 2020). Despite these contributions,

cursory observations show that nearly four of every five SMEs do not survive beyond five years of inception because of inexperience, weak ambidexterity, and poor knowledge sharing. Abubakar and Hussaina (2020) recognized the numerous challenges affecting MSMEs, and Igboeli and Bisallah (2020) indicated a low level of Information and Communication Technology (ICT) adaptation, knowledge management, and me-too orientation, making them unprofitable.

According to Koe, Alias, Ismail, and Mahphoth (2018) and Kura, Abubakar, and Abubakar (2017), technopreneurship constitutes a learning process where people acquire, assimilate, and organize newly formed knowledge and align with pre-existing structures and how this learning affects entrepreneurial action. It suggests and equates entrepreneurship to the experiential process where enterprising persons continuously develop their entrepreneurial knowledge throughout their professional lives, thereby improving their business performance. Additionally, Sentanu and Ardik (2019) opined that knowledge collecting is a shared understanding in gathering information from employees, consumers, and other related parties, while knowledge donating is a shared understanding in providing information to employees, consumers, and other parties. Both processes used a knowledge network to achieve organizational goals. Kura et al. (2017) stress the link between technopreneurs' learning, innovativeness, and firm performance. Nevertheless, Alina (2019) opined the level of awareness of technological entrepreneurs on the influence of knowledge sharing on the entrepreneurial outcome is insufficient. Thus triggering the need to investigate whether knowledge sharing as a moderator affects the relationship between technopreneurship and entrepreneurial outcome

In light of the above discussion, Abiodun and Harry (2016) work on national productivity and competitiveness, knowledge-intensive to deepen insight into the interdependence and interactions as drivers of government public policies. Jegege (2020) found that the soft component of learning by doing, using, interacting, searching, producing, and learning by imitating through on-the-job learning enhanced the capacity for skills and knowledge sharing in informal business enterprises. Likewise, Ibidunni, Kolawole, Olokundun, and Ogbari (2020), using a structural equation model, found that knowledge transfers and sharing dimensions such as R&D and social networking have varying levels of impact on the innovation performance of informal sector MSMEs. On the other hand, knowledge transfers from training showed an inverse and insignificant relationship with innovation performance. Also, in Singhry (2015) work on the effect of technology entrepreneurial capabilities on the technopreneurs' intention of nascent graduates, results revealed no mediation effect of knowledge-sharing on the relationship between technological relational capabilities and technopreneurship intention mindset to achieve a good entrepreneurship outcome. There is a scarcity of understanding the fundamental significance of knowledge sharing concerning entrepreneurs' technology abilities. Based on the divergent results, tested variables, context, and outcomes of previous studies, this study intends to bridge the gap through the stated hypothesis by evaluating: **the moderating effect of knowledge sharing on technopreneurship and entrepreneurial outcome of MSMEs in Lagos State, Nigeria.**

## **Literature Review**

### **Entrepreneurial Outcome**

Two fundamental measurements of performance scholarly recognized in literature are the financial and the non-financial approaches. While the financial performance measures proxies, such as profitability, growth, productivity, level of sales revenue, market share and product, return on investments, product added value, non-financial performance measures employee development, customer satisfaction, job satisfaction, and efficient organizational internal processes (Eniola & Ektebang, 2014; Goshu & Kitaw, 2017). Measuring enterprise outcomes is needful since it is a means of determining whether or not an organization is achieving its pre-determined objectives (Makanga & Paul, 2017) and evaluates the overall health of an organization. This study used the financial and non-financial indicators to measure entrepreneurial outcomes knowing that it refers to results achieved by a firm.

### **Technopreneurship**

Technopreneurship is not a commodity that is traded, as it is a composition of a group of skills, scientific expertise, and intelligence possessed by an individual or several individuals (Koe et al., 2018), which represents the first building blocks of the digital society, smart cities and space technology (Suradi, Yasin, & Rasul, 2017), proficiency and provides sophisticated programs to create strategic thinkers with the required skills to achieve success in a competitive dynamic environment (Abbass, 2018). Likewise, Selvarani and Venusamy (2015) claimed that technopreneurship is simple entrepreneurship in a technology-intensive context. It is a process of merging technology prowess and entrepreneurial talent and skills. Technopreneurship, propelled as firm competitiveness, becomes a lever to enhance creativity and innovation (Dutse, Ningi, & Abubakar, 2013). According to scholars, technopreneurship within context refers to entrepreneurs who are into technology business to unlock creativity and sustain long-run competitive advantage (Moemenam, Moemenam, Okwara, Ohagiyo, & Alozie 2017; Oyedele et al., 2019). As such, MSMEs need to develop or exploit indigenous technology, new products or processes-based innovations, seek new technological ideas, and significant technological changes as tools for fundamental competitiveness

### **Knowledge Sharing**

Knowledge sharing is an activity that involves disseminating or transferring knowledge among individuals and groups, or organizations (Lee, 2001). It entails a process that allows individuals to exchange their tacit and explicit knowledge and create new knowledge (Van den & De Ridder, 2004). The advantages of knowledge sharing are that it is essential for improving operating efficiency and lowering costs, provided that it is the appropriate information. Although most top management believes technology is an enabler of knowledge flow, many researchers still focus on the human side of making knowledge sharing at work (Diab, 2021; Leistner, 2010; Prasetyo, 2020). In addition, Nwagwu and Ibeku (2016) stated the importance of networking behavior for

knowledge sharing by showing that the relationship with edge sources has a strong relationship with their capacity to innovate, acquire, understand and use knowledge. Thus this paper perceived knowledge sharing as an exchange of knowledge, such as new devices/applications, market trends, and new products with co-workers and suppliers within the market.

### **Knowledge sharing, technopreneurship, and entrepreneurial outcome**

Several researchers (Adhikara, Lasmy, Sasmoko & Indrianti, 2019; Hoque, Awang, & Siddiqui, 2017; Machmud et al., 2020; Otamiri & Ogwe, 2019) have approached technopreneurship studies from different perspectives. Some works applied quantitative methods to explain the relationship/association with other variables and found divergent results. These divergent results could be li to industry-specific, geographical location, unit of analysis, sample size and technique, and methodology. For instance, Singhry (2015) investigated the effect of entrepreneurial technology capabilities on the technopreneurs' intention of Nascent Graduates; the result shows a significant relationship between technology entrepreneurship capabilities and technopreneurship intention. Further regression test also shows that a significant relationship exists between knowledge-sharing capabilities and capabilities and technopreneurship intention. Thus, knowledge-sharing capabilities mediated the relationship between technology entrepreneurship capabilities and technopreneurs' intentions. More recently, another study on student's personalities in implementing science and technology for Entrepreneurship learning with a production-based learning approach in higher education was studied by Yuliana and Hidayat (2020). The study shows that the personality condition of students in science and technology for entrepreneurship with the production-based learning approaches in higher education was exceptional.

Odumosu, Binuyo, Adefulu, and Asikhia (2020) studied social innovation and graduate entrepreneurship in Nigeria and found a combined significant effect of social innovation dimensions on graduate entrepreneurship. Also, educational innovation and digital innovation had a positive and significant effect on graduate entrepreneurship. On the other hand, entrepreneurship education and agricultural innovation had a positive but insignificant effect on graduate entrepreneurship in Nigeria. In a study to prove the importance of willingness and benevolence trust dimensions in knowledge-sharing measurement, Wongthongtham, Zadjabbari, and Naqvi (2016) found divergent results regarding members of a simulated network divided into three groups.

In an earlier research, Nayır and Uzunçarşılı (2008) found in the article reviewed that effective knowledge management practices combined with unique corporate culture can enable companies to instill a lasting knowledge management culture. Also, Fernando and Dasanayaka (2018) found a wide gap between internationalized tech-based sea SME owners and workers in Nuwara Eliya District in terms of awareness and knowledge of technological innovation. Likewise, the results found in the study of **Abiona and Koppensteiner (2018)** exposed the neglect of appropriate

attention to the operational factors of technical/vocational education in Nigeria that have affected knowledge digest and small business success amongst the youths.

### **Theoretical review**

Creative destruction theory, propounded by Joseph Schumpeter in 1942, is the underpinning theory for this paper. The theory refers to the never-ending product and process innovation mechanism by which new production units replace outdated ones. This restructuring process permeates the main aspects of macroeconomic performance, not only long-run growth but also economic fluctuations, structural adjustment, and the functioning of factor markets. Over the long run, the creative destruction process accounts for over 50 percent of productivity growth. At business cycle frequency, restructuring typically declines during recessions and adds significantly to the cost downturns. Hence, creative destruction theory assumes that long-standing arrangements and assumptions must free up resources and energy for innovation deployment. To Schumpeter, economic development is the natural result of forces internal to the market and created by the opportunity to seek profit (Kopp, Boyle, & Costagliola, 2021).

Creative destruction theory treats economics as an organic and dynamic process because it contrasts with the static mathematical models of traditional Cambridge-tradition economics. Equilibrium is no longer the end goal of market processes since many fluctuating dynamics are constantly reshaped or replaced by innovation and competition. It implies by the word destruction that the process inevitably results in losers and winners. Producers and workers committed to the older technology will be left stranded. Meanwhile, Entrepreneurs and workers in new technologies will inevitably create disequilibrium and highlight new profit opportunities. Creative destruction theory is relevant to this study by laying the theoretical foundation for creating new innovativeness of MSMEs and how it influences a better business outcome. It is in existing problems experienced in the market and incumbent offerings, with the mind to create a new solution that will eventually overtake the existing product or service in the market, thus destroying the old for new thinking (Stam, 2018).

### **Methodology**

A quantitative research method was employed since the variables are measurable. It involves numerical data collection and analysis to establish patterns, make predictions, test relationships, and generalize results to broader populations. This method aligns with previous scholars such as Okundaye, Fan, and Dwyer (2019), Obodoeze, Obiokafor, and Ojibah (2019), and Oyedele, Ojeaga, Ganiyu, Derera, and Oyero (2020). The respondent population was technopreneurs, and the unit of analysis was the owners and employees from selected technology companies in Lagos State, Nigeria. The sample was selected using simple random sampling to guarantee each unit's independent and equal chance of being picked by the whole population as respondents. The respondents were required to respond to a Likert-type scale questionnaire and self-administered it after establishing its validity and reliability. Nine thousand (9000) was the total population of which four hundred and seventy-five thousand (475) samples were determined by applying

Krejcie and Morgan (1970) sample size table. Out of 475 copies of the questionnaire distributed, a total of 282 copies were deemed usable at the end of the data collection process, and 100 copies were not properly filled while 93 were not retrieved.

Measurement of the variables as adapted instruments from established studies was based on context understanding and relevance. Technopreneurship adapted five sub-variables from Yezeed (2017), Aminu and Raifu (2019), and Nkereuwem (2021). Knowledge sharing measure was harvested from Nwagwu and Ibeku (2016) to understand perceived internal knowledge sharing as a moderator while entrepreneurial outcomes was adapted from Isaga (2012), Kura (2017), and Chew, Hoe, Kim, and Kiaw (2016). The study regarded technopreneurship as a construct that contained five elements, thus measuring five distinct elements. The items measuring the different variables (Y, X, Z) were assessed for individual internal consistency reliability through Cronbach alpha ( $\alpha$ ). The results revealed that the scores and scales obtained acceptable alpha values ranging from 0.80 to 0.90. The models for the study were based on the linear relationship between entrepreneurial outcomes (EO) and technopreneurship (TECHP):

$$EO = \beta_0 + \beta_1 \text{TECHP} + e_i \dots\dots 1.$$

The establishment of this relationship further informed the decision to determine the moderating effect of knowledge sharing (KS) into the equation:

$$Y = \beta_0 + \beta_X X_i + \beta_Z Z_1 + \beta_{XZ} X_i * Z_1 + e_i \dots 2$$

The equation above is explained as:

Y = Entrepreneurial Outcome (Dependent Variable)

$\beta_0$  = Constant term

$\beta_X X_i$  = Technopreneurship (Predictor Variable)

$\beta_Z Z_1$  = Knowledge Sharing (Moderator)

$\beta_{XZ} X_i * Z_1$  = Technopreneurship \* Knowledge Sharing (Interaction term)

$e_i$  = Error term

Note that  $\beta$  = Parameters to be estimated

In line with the two assumptions, the expected interaction between technopreneurship and entrepreneurial outcomes moderated by knowledge sharing was presented. Based on the empirical perspectives, it is expected that technopreneurship would positively influence entrepreneurial outcomes, and knowledge sharing will have a positive moderating effect on the interactions. To establish confidence in the data, preliminary tests, or treatment of the data were conducted to fulfill certain assumption in the areas of normality, linearity, heteroscedasticity, and multicollinearity. For instance: Homoscedasticity means constancy of variance. In regression analysis, the residuals are assumed to be the same across all values of the independent variables. Homoscedasticity in this study was evaluated using a normal P-P plot in which the regression standard residuals for the independent variables, technopreneurship and moderating variable (knowledge sharing) were plotted against the dependent variable (Entrepreneurial Outcome).

Results from the test indicated that the homoscedasticity assumption was not violated. This paper carried out statistical analysis to analyze the data collected. Specifically, multiple hierarchical regression analyses was performed. Ethical dictates or norms were respected in conducting, analyzing, and interpreting the results.

### Analysis, Results, and Findings

Technopreneurship and entrepreneurial outcomes was the first assumption tested. How knowledge sharing moderated the effect among the selected MSMEs in Lagos State, Nigeria constituted the second phase of the analysis. The analysis tested the fundamental assumptions using the following three steps: step one tested the effect of technopreneurship on the entrepreneurial outcome. Step 2 tested the effects of knowledge sharing on the entrepreneurial outcome, and step three determined the effects of the interaction term. The interaction term was computed as the product of the standardized scores technopreneurship and knowledge sharing. To confirm moderation, the influence of the interaction term should be significant.

Table 1 presents the summary of the hierarchical regression analysis used to test how knowledge sharing moderates the effect of technopreneurship on the entrepreneurial outcome of MSMEs in Lagos State, Nigeria. The predictors are valued technopreneurship (TEC) aggregated, knowledge sharing (KS), and interaction of aggregated technopreneurship and knowledge sharing (TEC\*KS), while the dependent variable is the entrepreneurial outcome (EO) aggregated.

**Table 1: Goodness of Fit model**

| Model Summary   |                    |                |                     |                            |                   |            |     |     |        |
|---|--------------------|----------------|---------------------|----------------------------|-------------------|------------|-----|-----|--------|
| Model   | R                  | R <sup>2</sup> | Adj. R <sup>2</sup> | Std. Error of the Estimate | Change Statistics |            |     |     |        |
|   |                    |                |                     |                            | $\Delta R^2$      | $\Delta F$ | df1 | df2 | Sig. F |
| 1   | 0.658 <sup>a</sup> | 0.433          | 0.431               | 16.30163                   | 0.433             | 214.26     | 1   | 280 | 0.000  |
| 2   | 0.719 <sup>b</sup> | 0.517          | 0.514               | 15.0772                    | 0.084             | 48.324     | 1   | 279 | 0.000  |
| 3   | 0.719 <sup>c</sup> | 0.517          | 0.512               | 15.1038                    | 0.000             | 0.016      | 1   | 278 | 0.899  |
| a. Predictors: (Constant), Technopreneurship  |                    |                |                     |                            |                   |            |     |     |        |
| b. Predictors: (Constant), Technopreneurship, KNOWLEDGE SHARING                               |                    |                |                     |                            |                   |            |     |     |        |
| c. Predictors: (Constant), Technopreneurship, KNOWLEDGE SHARING , Interaction term (TECHP*KS) |                    |                |                     |                            |                   |            |     |     |        |

**Source: Statistical Package for Service Solutions (SPSS) version 23 (Field Survey, 2022)**

Results in Table 1 regarding  $R^2 = 0.433$  and adjusted  $R^2 = 0.431$  for Model I indicate that technopreneurship explained 43.1% variation in the entrepreneurial outcome. With the inclusion of knowledge sharing in Model II as a moderating variable, there was an increase *in*  $R^2$  change of 0.084 or 8.4% from 0.433 to 0.517. Hence, technopreneurship and knowledge sharing explain 51.7% of the variation in entrepreneurial outcomes. In model III, with the introduction of the interaction term/variable into the model,  $R^2$  is 0.517, while adjusted  $R^2$  is 0.512. Introducing the interaction variable neither decreased nor increase the  $R^2$  change at 0.000. This indicates no considerable improvement in the explanatory power of the model (remains constant). The interaction of the moderator (knowledge sharing) and technopreneurship allow the entrepreneurial outcome to retain its position. This lack of change in the explanatory power of the interaction term may have been due to the probability level of managerial dexterity already displayed by the owner/managers or the tacit hoarding of knowledge within the technopreneurship ecosystem.

**Table 2: ANOVA Results**

| ANOVA <sup>a</sup>  |            |                |     |             |         |                    |
|---|------------|----------------|-----|-------------|---------|--------------------|
| Model   |            | Sum of Squares | Df  | Mean Square | F       | Sig.               |
| 1   | Regression | 56938.580      | 1   | 56938.580   | 214.262 | 0.000 <sup>b</sup> |
|   | Residual   | 74408.044      | 280 | 265.743     |         |                    |
|   | Total      | 131346.624     | 281 |             |         |                    |
| 2   | Regression | 67923.669      | 2   | 33961.834   | 149.399 | 0.000 <sup>c</sup> |
|   | Residual   | 63422.955      | 279 | 227.322     |         |                    |
|   | Total      | 131346.624     | 281 |             |         |                    |
| 3   | Regression | 67927.350      | 3   | 22642.450   | 99.254  | 0.000 <sup>d</sup> |
|   | Residual   | 63419.274      | 278 | 228.127     |         |                    |
|   | Total      | 131346.624     | 281 |             |         |                    |
| a. Dependent Variable: Entrepreneurial Outcome  |            |                |     |             |         |                    |
| b. Predictors: (Constant), Technopreneurship  |            |                |     |             |         |                    |
| c. Predictors: (Constant), Technopreneurship, KNOWLEDGE SHARING                             |            |                |     |             |         |                    |
| d. Predictors: (Constant), Technopreneurship, KNOWLEDGE SHARING , Interaction term (TEC*KS) |            |                |     |             |         |                    |

**Source: Statistical Package for Service Solutions (SPSS) version 23 (Field Survey, 2022)**

Table 2 shows an F-statistic of  $F(1, 280)$  is 214.262,  $p < 0.05$  for Model 1, where technopreneurship is the independent variable. It implies that technopreneurship has a significant effect on the entrepreneurial outcome of selected MSMEs in Lagos State, Nigeria. Model II which included knowledge sharing as a moderating variable, shows an F statistic of  $F(2, 279)$  149.399,  $p < 0.05$ . It implies that the fitted model of technopreneurship with the inclusion of knowledge sharing (Moderating variable) as an independent variable has a significant effect on

the entrepreneurial outcome of selected MSMEs in Lagos State, Nigeria. Model III introduces the interaction term with the independent variable and shows an  $F$  statistic of  $F(3, 278) = 99.254, p < 0.05$ . It implies that the fitted combined model of technopreneurship and knowledge sharing with the interaction term (moderating variable) has a strong positive significant effect on the entrepreneurial outcome of selected MSMEs in Lagos State, Nigeria.

**Table 3: Regression coefficients for Technopreneurship and Entrepreneurial Outcome on Knowledge Sharing**

| Model |                           | Coefficients <sup>a</sup>   |            |                           |        |       |
|-------|---------------------------|-----------------------------|------------|---------------------------|--------|-------|
|       |                           | Unstandardized Coefficients |            | Standardized Coefficients | T      | Sig.  |
|       |                           | B                           | Std. Error | Beta                      |        |       |
| 1     | (Constant)                | 13.561                      | 6.755      |                           | 2.007  | 0.046 |
|       | Technopreneurship         | 0.811                       | 0.055      | 0.658                     | 14.638 | 0.000 |
| 2     | (Constant)                | 2.060                       | 6.463      |                           | 0.319  | 0.750 |
|       | Technopreneurship         | 0.648                       | 0.056      | 0.526                     | 11.503 | 0.000 |
|       | Knowledge Sharing         | 1.310                       | 0.188      | 0.318                     | 6.952  | 0.000 |
| 3     | (Constant)                | 0.222                       | 15.855     |                           | 0.014  | 0.989 |
|       | Technopreneurship         | 0.664                       | 0.138      | 0.539                     | 4.819  | 0.000 |
|       | Knowledge Sharing         | 1.407                       | 0.785      | 0.341                     | 1.793  | 0.074 |
|       | Interaction term (TEC*KS) | -0.001                      | 0.006      | -0.032                    | -0.127 | 0.899 |

a. Dependent Variable: Entrepreneurial Outcome

**Source: Statistical Package for Service Solutions (SPSS) version 23 (Field Survey, 2022)**

Table 3 shows the regression coefficient results with three models. In Model I, the dependent variable (entrepreneurial outcome) of selected MSMEs was regressed against the independent variable (technopreneurship). The regression analysis revealed that technopreneurship ( $\beta = 0.811, t = 14.638, p < 0.05$ ) had positive and significant effect on entrepreneurial outcome. It implies that one unit change in technopreneurship is associated with 0.811 change respectively in entrepreneurial outcome of selected MSMEs. The overall model confirmed that technopreneurship had a significant contribution to entrepreneurial outcome ( $F(1,280) = 214.262, p < 0.005$ ). This finding met the first assumption that technopreneurship affect entrepreneurial outcome among the surveyed respondents.

The results in model II revealed that technopreneurship ( $\beta = 0.648, t = 11.503, p < 0.05$ ) and knowledge sharing ( $\beta = 1.310, t = 6.952, p < 0.05$ ) had an individual positive and significant effect on entrepreneurial outcome. It implies that one unit change in technopreneurship and knowledge sharing is associated with 0.648 and 1.310 changes respectively, in entrepreneurial outcome. The regression coefficients for technopreneurship and knowledge sharing revealed that both affect entrepreneurial outcome of MSMEs in a positive and significant way. The overall model also confirmed that technopreneurship and knowledge sharing had a significant contribution to entrepreneurial outcome of MSMEs ( $F(2,279) = 149.399, p < 0.05$ ). The

technicality of the findings is that knowledge sharing and technopreneurship had a positive effect on entrepreneurial outcomes.

Model III considered the existence of the interaction effect, and thus the independent variables were Technopreneurship (*TECHP*), Knowledge sharing (*KS*), and Interaction of *TECHP* and *KS*. When the interaction was added in the model, the explained variation in entrepreneurial outcome remained at 43.3% ( $R^2 = 0.433$ ) with an adjusted  $R^2$  value of 0.517,  $R^2$  changes ( $\Delta R^2$ ) increased by 0.084 in Model II, Model III given  $\Delta R^2 = 0.000$ . Although, the overall model was statistically significant ( $F = 99.254, p < 0.05$ ). The change in  $F$  ratio ( $\Delta F = 0.016$ ) at  $p < 0.05$  was statistically positive and significant. The results were further confirmed by the Beta coefficient of the interaction term ( $\beta = 0.664, t = 4.819, p < 0.05$ ), thus indicating moderating effect of knowledge sharing with a total effect of -0.001 at a 95% confidence level was statistically insignificant. MacKinnon, Fritz, Williams, and Lockwood (2007) suggested that a variable has a moderating effect if the coefficient of the variable is significant both before and after moderation. Therefore, based on the moderation rule by Mackinnon et al. (2007), knowledge sharing as a moderating variable was not significant. Therefore, the model showing the relationship between the independent variables and the dependent variable was expressed as follows:

$$\text{Entrepreneurial Outcome} = 0.222 + 0.664\text{TECHP} + 1.407\text{KS} + (-0.001\text{TECHP}*\text{KS}) \dots \text{Eq. (3)}$$

(Predictive Model)

$$\text{Entrepreneurial Outcome} = 2.060 + 0.648\text{TEC} + 1.310\text{KS} \dots \dots \dots \text{Eq. (4) (Prescriptive Model)}$$

The regression equation established shows that taking all factors (technopreneurship, knowledge sharing, Interaction of *TECHP* and *KS*) into account constant at zero, entrepreneurial outcome of selected MSMEs would be 0.222 and is positive. When the predictive regression equation established comprising all factors (technopreneurship and knowledge sharing) is considered constant at zero, entrepreneurial outcome of selected MSMEs in Lagos State would be 2.060. Data-aided findings that have been analyzed. It also shows that when all other independent variables are taken from zero, an increase in the implementation of technopreneurship would lead to a 0.648 improvement in entrepreneurial outcome and a unit increase in knowledge sharing leads to a 1.310 increase in the entrepreneurial outcome.

The results in Model III revealed that when the interaction term is included in the model, the effect of any improvement in technopreneurship, knowledge sharing, and the interaction variable (*TEC\*KS*) by a single unit results in a corresponding increase in entrepreneurial outcome by 0.664 units 1.407 units and -0.001 units respectively. The results implied that knowledge sharing has a statistically negative moderate effect of technopreneurship on entrepreneurial outcome but is insignificant. Based on the results, technopreneurship has an insignificant effect on entrepreneurial outcomes as moderated by knowledge sharing among the surveyed firms in Lagos State, Nigeria.

## Discussion

The test of hypotheses using hierarchical multiple regression results for technopreneurship on entrepreneurial outcome and knowledge sharing as moderators revealed that technopreneurship affected entrepreneurial outcomes, and knowledge sharing also affected entrepreneurial outcome, but the moderating effect was not statistically significant. This finding provides implications conceptually, empirically, and theoretically. From a conceptual angle, the definitions and clarifications of the concepts of the study provide a good conceptual outlook. Empirically, findings from this study supports Singhry (2015) that a significant relationship between technology entrepreneurship capabilities and technopreneurship intention. Further regression tests also showed a significant relationship between knowledge-sharing capabilities and technopreneurship intention. Yuliana and Hidayat (2020) also affirmed that the personality condition of students in the implementation of science and technology for entrepreneurship with the production-based learning approaches in higher education were good and exceptional.

Odumosu et al. (2020) study showed in the analysis that a combined significant effect of social innovation, educational innovation, and digital innovation has a positive and significant effect on graduate entrepreneurs, while entrepreneurship education and agricultural innovation have positive but insignificant effects on graduate entrepreneurship in Nigeria. Wongthongtham et al. (2016) result indicated that members of a simulated network were divided into three groups blue group members have a high level of benevolence and competence trust in each other, but their level of trust in other group members is low. Similar to the blue group, red group members, and green group members have a high level of trust in their group members and a low level of trust in members from other groups.

Divergent to the above findings, the result found by Singhry (2015) that the effect of technology entrepreneurial capabilities on technopreneurs' intention of graduates revealed no mediation effect of knowledge-sharing on the relationship between technological relational capabilities and technopreneurship intention mindset to achieve a good entrepreneurship outcome. There arise divergent arguments on the moderating effect of knowledge sharing between the relationship of technopreneurship and entrepreneurial outcome. Based on these extant findings and contradictions. Fernando and Dasanayaka (2018) study revealed a wide gap between internationalized techs based tea SME owners and workers in Nuwara Eliya District in terms of awareness and knowledge of technological innovation. Likewise, the results found in the study of Abiona (2018) exposed the neglect of appropriate attention to the operational factors of technical/vocational education in Nigeria that have affected knowledge digest and small business success amongst the youths.

Theoretically, the findings align with the Creative destruction theory propounded by Joseph Schumpeter in 1942. The Creative destruction theory validates this paper's findings and supports the variables of technopreneurship, entrepreneurial outcome, and knowledge sharing. The

Creative destruction theory assumes that long-standing arrangements and assumptions must be destroyed to free up resources and energy to be deployed for innovation. Creative destruction theory treats economics as an organic and dynamic process. This stands in stark contrast with the static mathematical models of traditional Cambridge-tradition economics. Equilibrium is no longer the end goal of market processes. Instead, many fluctuating dynamics are constantly reshaped or replaced by innovation and competition (Schumpeter, 1942). As it implies by the word destruction, the process inevitably results in losers and winners. Producers and workers committed to the older technology will be left stranded. Meanwhile, Entrepreneurs and workers in new technologies will inevitably create disequilibrium and highlight new profit opportunities.

Creative destruction theory is relevant to this study by laying the theoretical foundation for creating new innovativeness of MSMEs and how it influences a better business outcome. It stands the aim of solving existing problems experienced in the market and incumbent offerings, with the mind to create a new solution that will eventually overtake the existing product or service in the market, thus destroying the old for new thinking (Stam, 2018). Considering the support of the Creative destruction theory to the effect of technopreneurship on entrepreneurial outcome as moderated by knowledge sharing, this study's findings cannot prove its dependability.

### **Conclusion and Recommendation**

Based on the hierarchical multiple regression results used to test the hypothesis in this paper, technopreneurship had a positive and significant effect on entrepreneurial outcome. Also, technopreneurship and knowledge sharing had an individual positive and significant effect on entrepreneurial outcome; however, the moderating effect of knowledge sharing was statistically insignificant on technopreneurship and entrepreneurial outcome. Therefore, it could be established that on the strength of the findings, knowledge sharing is not a moderating factor in technopreneurship and entrepreneurial outcome among technopreneurs from selected technology companies in Lagos State, Nigeria. Thus, issues relating to knowledge sharing should be highly controlled and considered by SMEDAN and other MSMEs regulatory bodies in disseminating information/knowledge and other MSMEs amenities to enhance the spread of knowledge.

### **Implication for Regulators**

Through inter-enterprise cooperation, MSMEs raise the level of skills with their flexible and innovative nature. Thus MSMEs can generate important benefits in terms of creating a skilled industrial base and industries, and developing a well-prepared service sector capable of contributing to GDP through higher value-added and also this work seeks to contribute to the exiting store of knowledge on technopreneurship dimensions and entrepreneurial outcome of micro small and medium scale enterprises. More so, there is need for the MSMEs to ensure technopreneurship dimensions are favourable to business and government to ensure the provision of enabling business environment for MSMEs to operate and thrive.

## Limitations and Suggestions for further study

Access to certain information and data was restricted. Possible explanations include, fear of disclosing the knowledge to competitors in the same business. As a result, aggregate data on the indicated factors were analyzed and used in the study. Furthermore, data was gathered from MSMEs owners, managers, and workers in Lagos State. As a result, generalizing the findings must be done with caution, and the findings may not be applicable to other organizations in another industry within Lagos State, Nigeria.

Finally, the study acknowledged that other variables other than the ones revealed in this study contribute to entrepreneurial result and that there are additional drivers of technopreneurship beyond the ones presented in this study. However, the factors utilized are extremely relevant to the research setting. Therefore, the absence of additional variables has not diminished the significance and relevance of this study in the field of management. Future research should consider other dimensions and factors that are critical for entrepreneurial outcome.

Additional, worthy of note is while the need for knowledge sharing to enhance organizational outcomes is crucial, the skepticism concerning combining this construct with technopreneurship to achieve entrepreneurial outcome remains debatable among SME owners and employees. As such, the need to improve knowledge sharing, technopreneurship, and managerial dexterity of owners and managers for the sustainable entrepreneurial outcome cannot be over-stated. Consequently, additional studies should be conducted to unravel the perception of technopreneurs regarding knowledge sharing. Future works could replicate this study in other sectors and geographical locations to proliferate the concept of knowledge sharing.

## REFERENCE

- Abbas, A. A. (2018). The bright future of technopreneurship. *International Journal of Scientific & Engineering Research* 9(12), 563-566
- Abiodun, E. A., & Harry, E. (2016). Performance of SME firm in Nigeria: Malaysia experience. *Journal of Management and Science*, 6(1), 113-134. <https://doi.org/10.26524/jms.2016.11>
- Abiona, O., & Koppensteiner, M. F. (2018). *Financial inclusion, shocks and poverty: Evidence from the expansion of mobile money in Tanzania*. Retrieved from <https://ssrn.com/abstract=3265624> or <http://dx.doi.org/10.2139/ssrn.3265624>
- Abubakar, J. B., & Hussaina, D. A. (2020). Innovation and SMEs performance in Nigeria: A proposed framework. *International Journal of Scientific Research in Science and Technology*, 7(6), 396-400.
- Adhikara, C. T., Lasmy, L., Sasmoko, S., & Indrianti, Y. (2019) *Technopreneurship skills of Indonesian entrepreneurs*. In: *WOMELA-GG 2019*, Medan, Indonesia.
- Ajibola, E. O. (2020). *Nigeria small and medium enterprise sustainability strategies*. Walden Dissertations and Doctoral Studies Collection at Scholar Works, Walden University.
- Aladejebi, O. (2020). The impact of entrepreneurial networks on the performance of small business in Nigeria. *Archives of Business Research*, 8(3), 281-293.
- Aminu, A., & Raifu, I. A. (2019). ICT sector, output and employment generation in Nigeria:

Input-output approach. *MPRA Paper No. 92917*

- Asikhia, O., & Naidoo, V. (2020). SMEs management success determinants and its implications on their performance in South West, Nigeria. *International Journal of Economics and Business Administration*, 8(4), 1057-1072. <https://doi.org/10.35808/ijeba/650>
- Central Bank of Egypt (2017) MSMEs from [www.cbe.gov.eg](http://www.cbe.gov.eg).
- Chew, L. M., Hoe, L. S., Kim, T. C., & Kiaw, L. W. Y. (2016). Self-perceived entrepreneurship skills for undergraduates of Private University in Malaysia, *American Journal of Applied Sciences*, 13(6), 715-725. <https://doi.org/10.3844/ajassp.2016.715.725>
- Diab, Y. (2021). The concept of knowledge sharing in organizations (Studying the personal and organizational factors and their effect on knowledge management). *Management Studies and Economic Systems (MSES)*, 6(1/2), 91-100
- Dutse, A. Y., Ningi, S. I., & Abubakar, S. (2013). Technopreneurship and enterprise growth in Nigeria: An exploration into the latent role of microfinance banks. *Journal of Business and Management*. <http://doi:10.9790/487X-1222532>
- Eniola, A. A., & Entenbang, H. (2016). SME firm's performance in Nigeria: Competitive advantage and its impact. *International Journal of Research Studies in Management*, 3(2), 75-86
- Egwakhe, A. J., Amos, N. B., & Nicodemus, T. (2020). Can technology transfer stimulate labour productivity: Experience from Nigeria automobile sector. *International Journal of Business and Management*, 15(4), 1-10
- Ezenwakwelu, C. A., Egbosionu, N. A., & Okwo, H. U. (2019). Apprenticeship training effects on entrepreneurship development in developing economies. *Academy of Entrepreneurship Journal*, 25(1), 1-21
- Fernando, W. M., & Dasanayaka., S. W. (2018). Impact of technological innovation on the growth of internationalized small enterprises: A case study based on tech- based internationalized seafood processing small enterprises of Puttalam District in, *Eurasian Journal of Business and Management, Eurasian Publications*, 6(1), 52-59.
- Haseeb, M., Hussain, H. I., Slusarczyk, B., & Jermstittiparsert, K. (2019). Industry 4.0: A solution towards technology challenges of sustainable business performance. *Journal of Social Science*, 8, 154; doi:10.3390/socsci8050154
- Goshu, Y.Y., & Kitaw, D. (2017). Performance measurement and its recent challenge: A literature review. *International Journal of Business Performance Management*, 18(4), 381-402
- Hastuti, I., Singgih, P., & Wiji, L. (2018). The guidance of technopreneurship using expert system computing approach based on entrepreneurial values and multiple intelligences. *International Journal of Economics, Business and Accounting Research (IJEBAR)*, 2(3), 27 – 35
- Hoque, A. M., Awang, Z. B., & Siddiqui, B. A. (2017). Technopreneurial intention among university students of business courses in Malaysia: A structural equation modelling. *International Journal of Small & Medium Enterprise (IJSME)*, 4, 1-16
- Igboeli, U. H., & Bisallah, H. I. (2020). Information and communication technology in managing small and medium enterprises in Nigeria. *Open Journal of Management Science (OJMS)*, 1(2), 01-11
- Ibidunni, A. S., Kolawole, A. I., Olokundun, M. A., & Ogbari, M. E. (2020). Knowledge transfer and innovation performance of small and medium enterprises (SMEs): An informal economy analysis. <https://doi.org/10.1016/j.heliyon.2020.e04740>
- Ikupolati, A. O., Adeyeye, M. M., Oni, E. O., Olatunle, M. A., & Obafunmi, M. O. (2017). Entrepreneurs' managerial skills as determinants for growth of small and medium

- enterprises (SMEs) in Nigeria. *Journal of Small Business and Entrepreneurship Development*, 5(1), 1-6. <https://doi.org/10.15640/jsbed.v5n1a1>
- Isaga, N. (2012). Entrepreneurship and the growth of SMEs in the furniture industry in Tanzania. VU University. *Journal of Management*. 27(6), 755-775
- Khuabi, M. L. B., & Mayinga, M. G. (2020). Accounting and financial information system, and performance of small and medium-sized enterprises in the Democratic Republic of Congo. *Journal of Control, Accounting and Auditing*, 4(2), 788-814.
- Koe, W. L., Alias, N. E., Ismail, S., & Mahphoth, M. H. (2018). A suggested model for studying technopreneurial intention in Malaysia. *KnE Social Sciences*, 788-796.
- Kopp, C. M., Boyle, M. J., & Costagliola, D. (2021). *Creative destruction*. Retrieved from <https://www.investopedia.com/terms/c/creativestruction.asp>.
- Kraima, M. T., & Boudabbous, S. (2022). The Covid-19 health crisis and corporate debt: What impact of the crisis on some Tunisian SMEs. *Journal of Business and Entrepreneurship*, 10(2), 88-100
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(1), 607-610.
- Kura, K. M., Abubakar, R. A., & Abubakar, S. (2017). Entrepreneurial learning and organizational performance: Test of the mediating effects of innovativeness among small and medium enterprises. *Journal of Technology Management and Technopreneurship*, 5(1), 51 – 63
- Jegede, O. O. (2020). Dynamics of innovation in the informal settings. *International Journal of Innovation, Creativity and Change*, 13(12), 809 – 828
- Machmud, A., Suwatno, Nurhayati, D., Aprilianti, I., Fathonah, W. N. (2019). Effect of self-efficacy ICT on technopreneurship intention of technopreneurial learning mediation: The case young generation in Indonesia. *Journal of Entrepreneurship Education*, 23(1), 1-11
- McKenzie D. A., & Sansone, D. (2019). Predicting entrepreneurial success is hard: Evidence from a business plan competition in Nigeria. *Journal of Development Economics*, 141, 1-18
- Moemenam, I. C., Moemenam, A. O., Okwara, C. C, Ohagiro, L., & Alozie, S. T. (2017). Technopreneurship education and technological advancement for a sustainable growth and development in Nigeria. *Journal of Educational Policy and Entrepreneurial Research*, 4(5), 91-99.
- Nkereuwem, A. (2021). The factors militating against the globalization of technology market Nigeria: Case study of Abuja. *Journal of Human Theory and Praxis*, 4(2), 18
- Nwagwu, W. E., & Ibeku, S. (2016). Understanding the innovativeness of information technology products and service providers in an IT cluster in Nigeria. *SA Journal Libs & Info Science*, 82(1), 36- 52
- Nwosu, M. E, Osuagwu, O. E., Abaenewe, Z., Ndugbu, C., M. Osondu, M., & Ayegba.S. F. (2017). Funding arrangements for small and medium scale enterprises (SMEs) in Nigeria: An assessment. *Journal of Business Theory and Practice*, 4(1), 1-24
- Obodoeze, F. C., Obiokafor, I. N., & Ojibah, O. C. (2019). ICT and the entrepreneurship: Escape routes for graduate engineers in Nigeria. *Journal of Multidisciplinary Engineering Science and Technology*, 6(4), 9844-9848.
- Odumosu, A. A., Binuyo, A. O., Adefulu, A. D., & Asikhia, O. U. (2020). Social innovation and graduate entrepreneurship in Nigeria. *Journal of Business and Management (IOSR-JBM)*, 22(2), 48 -55
- Okundaye, K., Fan, S. K., & Dwyer, R. J. (2019). Impact of information and communication technology in Nigerian small-to medium-sized enterprises. *Journal of Economics*,

*Finance and Administrative Science*, 24(47), 29-46, <https://doi.org/10.1108/JEFAS-08-2018-0086>

- Otamiri, S., & Ogwe, C. G. (2019). Technopreneurship and youth empowerment in Rivers State, Nigeria. *Journal of Research in Business and Management*, 8(5), 23-32
- Oyedele, O. O., Kowo, S. A., & Oyero, M. A. (2019). Impact of technopreneurship on business performance. *Journal of Economics and Management Research*, 8, 56 – 70.
- Oyedele, O. O., Ojeaga, I. O., Ganiyu, I.O., Derera, E., & Oyero, M. A. (2020). Technopreneurship as a pathway to sustainable business performance: Empirical evidence from SMES in Nigeria. *Journal of Accounting and Management*, 10(2), 20 -33
- Permana, A. Y., Srihartati, R. D., Akbardin, J., Setiawan, A, Jatnika, D., & Rustand, W.(2020). Technopreneur training model in building an entrepreneurship. *Journal of Architectural Research and Education*, 2(2), 190-197
- Saraih, N., Ali, M. A., Mohd Sufian M. S., & Ibnu Ruslan. R., (2020). The relationships between learning orientation, subjective norm and entrepreneurial intention among the undergraduate students in Malaysia. *International Journal of Psychosocial Rehabilitation*, 24(03), 2107-2115
- Schumpeter, J. (1942). *Creative destruction theory*. Retrieved from [https://www.JosephSchumpeter-Overview,EarlyLife,knownTheories\(corporatefinanceinstitute.com\)](https://www.JosephSchumpeter-Overview,EarlyLife,knownTheories(corporatefinanceinstitute.com))
- Selvarani, A., & Venusamy, K., (2015). A study of technopreneurship in small and medium industry. Technopreneurship as a firm strategy: links to innovation, creation and performance. *Journal Impact Factor*, 6(1), 401-408.
- Sentanu, G. E. P. S., & Praharjo, A. (2019), Effect of entrepreneurial orientation and knowledge sharing on business performance, *Jurnal Inovasi Ekonomi*, 5(1), 1-8.
- Singhry, H. B. (2015). Effect of supply chain technology, supply chain collaboration and innovation capability on supply chain performance of manufacturing companies. *Journal of Business Studies Quarterly*, 7(2), 258-273
- Stam, F. C., (2018). *Enabling creative destruction: An entrepreneurial ecosystem approach to industrial policy*. Working Papers 18-05, Utrecht School of Economics.
- Suradi, S., Yasin, R. M., & Rasul, M. S. (2017). Increasing technopreneurs for a developing a Nation: The Majelis Amanah Rakyat (Mara) experience. *Journal of Technical Education and Training (JTET)*, 9(1), 73 – 86
- Ukwuoma, O., Adelowo, C., Adebowale, B., & Akinwale, Y. (2018). Harnessing indigenous innovations for economic development in Nigeria. *Sokoto Journal of the Social Sciences*, 8(3), 290-303
- WEMDA-Arabnet, COVID-19.Pandemic and its impact on MSME day (2020" WEMDA-Arabnet, COVID-19. Pandemic and its impact on MSME day (2020) [https://www.ilo.org/empent/whatsnew/WCMS\\_749275/lang--en/index.htm](https://www.ilo.org/empent/whatsnew/WCMS_749275/lang--en/index.htm).
- Wongthongtham, P., Zadjabbari, B., & Naqvi, H. M. (2016). Simulation of knowledge sharing in business intelligence. *International Journal of Digital Information and Wireless Communications (IJDIWC)*, 6(3), 153-162
- Yazeed, M. (2017). The effect of entrepreneurial characteristics on the profitability of micro, small and medium scale enterprises in Kaduna State. *International Journal of Entrepreneurial Development, Education and Science Research*, 4(2), 139 – 148.
- Yuliana, & Hidayat, H. (2020). How is the student's personality in implementing science and technology for entrepreneurship learning with a production-based learning approach in higher education? *Journal of Engineering and Applied Sciences*, 15(1), 213