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Generativity is a Core Value of the ESJ: A Decade of Growth

Erik Erikson (1902-1994) was one of the great psychologists of the 20th century[1]. He explored the nature of personal human identity. Originally named Erik Homberger after his adoptive father, Dr. Theodore Homberger, he re-imagined his identity and re-named himself Erik Erikson (literally Erik son of Erik). Ironically, he rejected his adoptive father's wish to become a physician, never obtained a college degree, pursued independent studies under Anna Freud, and then taught at Harvard Medical School after emigrating from Germany to the United States. Erickson visualized human psychosocial development as eight successive life-cycle challenges. Each challenge was framed as a struggle between two outcomes, one desirable and one undesirable. The first two early development challenges were 'trust' versus 'mistrust' followed by 'autonomy' versus 'shame.' Importantly, he held that we face the challenge of **generativity** versus **stagnation in middle life**. This challenge concerns the desire to give back to society and leave a mark on the world. It is about the transition from acquiring and accumulating to providing and mentoring.

Founded in 2010, the European Scientific Journal is just reaching young adulthood. Nonetheless, **generativity** is one of our core values. As a Journal, we reject stagnation and continue to evolve to meet the needs of our contributors, our reviewers, and the academic community. We seek to innovate to meet the challenges of open-access academic publishing. For us,

[1] Hopkins, J. R. (1995). Erik Homburger Erikson (1902–1994). *American Psychologist*, 50(9), 796-797. doi:http://dx.doi.org/10.1037/0003-066X.50.9.796

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generativity has a special meaning. We acknowledge an obligation to give back to the academic community, which has supported us over the past decade and made our initial growth possible. As part of our commitment to generativity, we are re-doubling our efforts in several key areas. First, we are committed to keeping our article processing fees as low as possible to make the ESJ affordable to scholars from all countries. Second, we remain committed to fair and agile peer review and are making further changes to shorten the time between submission and publication of worthy contributions. Third, we are looking actively at ways to eliminate the article processing charges for scholars coming from low GDP countries through a system of subsidies. Fourth, we are examining ways to create and strengthen partnerships with various academic institutions that will mutually benefit those institutions and the ESJ. Finally, through our commitment to publishing excellence, we reaffirm our membership in an open-access academic publishing community that actively contributes to the vitality of scholarship worldwide.

Sincerely,

Daniel B. Hier, MD

European Scientific Journal (ESJ) Natural/Life/Medical Sciences

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Investigación de Mercado de Tisanas Frutales y Herbales en Tequila, Xoxocotla y Zongolica, Veracruz, México

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Resumen

La tisana es un remedio natural contra diversas enfermedades de índole gastrointestinal y respiratorio. Además, esta bebida fortalece el sistema inmune, relaja el sistema nervioso y es un antioxidante contra el envejecimiento. El objetivo de este trabajo fue desarrollar una investigación de mercado con base en tisanas e identificar las preferencias de consumidores potenciales de la zona de las Altas Montañas en Veracruz, México, específicamente de los municipios de Tequila, Xoxocotla y Zongolica. Asimismo, la presente investigación tuvo un enfoque mixto con alcance descriptivo, mediante un análisis de campo con respecto al grado de aceptación de "tisanas frutales y herbales" de naturaleza exploratoria y muestreo por conveniencia. Entonces, se aplicó un cuestionario con 20 ítems, mediante la técnica de grupos focales y bitácoras para documentar el proceso

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de análisis. Por consiguiente, los resultados de los tres municipios muestran que la principal razón de consumo de los participantes fue por salud con un ochenta porciento. Ahora bien, las combinaciones de tisanas con mayor aceptabilidad fueron: a) Limón y hierbabuena; b) Buganvilia y limón; c) Manzana y durazno; d) Manzana y limón. El sabor fue el aspecto sensorial predominante en el setenta porciento de los individuos. Por último, la temporada preferida para consumo de tisanas fue en invierno y los supermercados fueron los canales de venta preferidos, con una presentación de 100 gramos y un rango de precio que oscila entre los $80.00 y $100.00 pesos mexicanos.

Palabras clave: Valor Agregado, Desarrollo Económico Local, Gestión del Conocimiento, Tisanas Frutales y Herbales

Market Research on Fruit and Herbal Tisanes in Tequila, Xoxocotla and Zongolica, Veracruz, Mexico

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Abstract

Tisane is a natural remedy against various diseases of a gastrointestinal and respiratory nature. In addition, this drink strengthens the immune system, relaxes the nervous system, and is an antioxidant against aging. The objective of this work was to develop market research based on tisanes and identify potential consumers´ preferences in the area of the Altas Montañas in Veracruz, Mexico, specifically in the municipalities of Tequila, Xoxocotla, and Zongolica. Likewise, the present investigation had a mixed approach, and descriptive scope, through a field analysis regarding the degree of acceptance of "fruits and herbals tisanes" of an exploratory nature and convenience

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sampling. Then, a questionnaire with 20 items was applied, using the technique of focus groups and logs to document the analysis process. Therefore, the results of the three municipalities show that the main reason for participant´s consumption was for health eighty percent. However, the combinations of tisanes with greater acceptability were: a) Lemon and mint; b) Bougainvillea and lemon; c) Apple and peach; d) Apple and lemon. The taste was the predominant sensory aspect in seventy percent of the individuals. Finally, the preferred season for tisanes consumption was in winter, the supermarkets were the preferred sales channels, with a presentation of 100 grams and a price range that oscillates between $80.00 and $100.00.

Keywords: Added Value, Local Economic Development, Knowledge Management, Herbal Tisanes, Fruit Tisanes

Introducción

Los frutos y hierbas que se originan de forma silvestre son poco estudiados y su potencial es desaprovechado por la industria de alimentos (Orozco & Romero, 2020; Simpalo et al., 2020). Consecuentemente, en 2017 más de tres millones de muertes en todo el mundo se atribuyeron a la falta de consumo de frutas y verduras (Dongyu, 2021). Además, se estima que la ingesta insuficiente de frutas y verduras es la causa de alrededor del 14 % de muertes por cáncer gastrointestinal en términos mundiales, el 11 % de las muertes por cardiopatías isquémicas y el 9 % de las muertes por accidentes cerebrovasculares (Afshin et al., 2019). Ahora bien, el año 2021 fue declarado por la Asamblea General de las Naciones Unidas (ONU) como el Año Internacional de las Frutas y Verduras, lo anterior, para concienciar sobre los beneficios nutricionales con base en frutas, verduras y hierbas, y su contribución a una dieta y un estilo de vida equilibrados y saludables. En este orden de ideas, de acuerdo con Alonso (2003), la tisana, es decir, aquella extracción "casera" de frutos, plantas y hierbas medicinales (infusiones, cocimientos o maceraciones), es de gran utilidad e importancia, pues además de refrescar el cuerpo, también coadyuva a combatir trastornos que impactan de forma aguda o crónica a la salud, cabe mencionar que en las tisanas, los principios activos medicinales se encuentran en menor concentración, lo que determina una acción farmacológica más suave, pero también una menor incidencia en la aparición de efectos indeseables, a causa de productos químicos adyacentes. En este sentido, la investigación de mercado vincula posibles consumidores, clientes y público en general con agentes que comercializan mediante información, la cual identifica y define oportunidades de índole mercadológico (Sanz, 2015).

Por otra parte, el valor agregado implica la transformación de materias primas en productos con el fin de brindar un mayor valor comercial, sin perder

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de vista la calidad de su origen y así satisfacer y superar las expectativas del mercado meta, a través de un manejo adecuado de insumos que coadyuven a mejorar las condiciones de vida de la población mediante procesos ecológicos (Hannibal et al., 2016; Martínez et al., 2012). Esto, aunado al aspecto amigable con el medio ambiente, permite tomar mayor conciencia de la interacción y consumo de bebidas salubables para el sistema digestivo del ser humano. En consecuencia, el desarrollo de mercados locales es el mayor reto para los productos orgánicos en américa latina, porque de esto depende –en cierta medida- la sostenibilidad de la producción. Por tanto, la educación específicamente en el consumo de nuevas bebidas como las tisanas frutales y herbales, se convierte en un factor clave para potenciar la microeconomía en algunas regiones de la republica mexicana (Ibarra & Bribiescas, 2019). Naturalmente, para lograr este desarrollo es preciso superar la falta de coordinación entre sectores, articular cadenas productivas y ofrecer mayor visibilidad a productos entre los consumidores, además de la aplicación de habilidades blandas (Rosas et al., 2022).

Por todo lo anterior, el objetivo de este estudio fue desarrollar una investigación de mercado con base en tisanas frutales y herbales, para lo cual, se buscó identificar las preferencias de consumidores potenciales de la zona de las Altas Montañas en Veracruz, México. Finalmente, la pregunta de esta investigación es ¿Cuáles son las tisanas que prefieren los consumidores potenciales de los municipios de Tequila, Xoxocotla y Zongolica?

Método

La presente investigación tuvo un enfoque mixto con alcance descriptivo, mediante un análisis de campo con respecto al grado de aceptación de tisanas frutales y herbales, de naturaleza exploratoria y muestreo por conveniencia, donde la selección de muestra fue por idoneidad y accesibilidad de los sujetos de estudio (Blanco & Castro, 2007; Moliner et al., 2008; Hernández et al., 2017; Ortega, 2018).

Primero, se prepararon diez diferentes combinaciones de tisanas con base en frutos y hierbas propias de la zona objeto de estudio, mismas que se sometieron al paladar de cada uno de los participantes. De forma paralela, se elaboró una matriz de congruecia con indicadores sociales, económicos y culturales. También, se generó una operacionalización de variables (preferencia del consumidor, razones y frecuencias de consumo, entre otras).

Posteriormente, se diseñó el instrumento denominado Cuestionario para Investigación de Mercado de Tisanas “CIMT” con un total de 20 ítems, el cual contó con preguntas tales como: I) Mencione las razones por las cuales usted consume tisanas; II) De las combinaciones que usted probó ¿Cuál le agradó más?, y; III) ¿En qué lugar prefiere consumir tisanas?, entre otras. En este orden de ideas, los criterios para la inclusión y/o exclusión de los sujetos

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de estudio fueron: a) Individuos que tienen gusto por consumir tes, bebidas con sabor a frutas o hierbas; b) Personas con un consumo frecuente de este tipo de bebidas y; c) Hombres y mujeres que cuenten con ingresos suficientes para adquirir tisanas.

En consecuencia, se aplicó el CIMT a través de la técnica de grupos focales y para asegurar la validez y confiabilidad se utilizaron bitácoras como estrategia para documentar el proceso de análisis. En ese sentido, los grupos focales permiten generar espacios de opinión para identificar diversos pensamientos, sentimientos y vivencias de los sujetos de estudio (Hamui & Varela, 2013). Finalmente, se realizó el análisis de la información recolectada con el objetivo de identificar el nivel de aceptación y/o rechazo de las tisanas frutales y herbales entre la población objeto de estudio.

Resultados

Esta investigación tuvo un total de 786 participantes de los municipios Tequila, Xoxocotla y Zongolica: 60 % mujeres y 40 % hombres, con edades que fluctuan desde los 18 hasta los 65 años y sus respectivas ocupaciones son: 40 % amas de casa, 25 % campesinos, 15 % comerciantes, 10 % profesionistas y 10 % estudiantes.

A continuación, se muestra la Tabla 1, donde se presentan las preferencias de la población objeto de estudio de los municipios Tequila, Xoxocotla y Zongolica, con base en diversas combinaciones de tisanas frutales y herbales.

Tabla 1. Razones de consumo y preferencias en combinaciones

Razones de consumo		Preferencias en combinaciones	
Salud	**80 %**	Limón y hierbabuena, buganvilia y limón, manzana y durazno, manzana y limón.	**60 %**
Relajante	10 %	Hoja de guayaba y hierbabuena, pera y limón, hierbabuena y hoja de limón, manzanilla y limón.	30 %
Sociales	10 %	Hoja de guayaba y naranja, hoja de limón y hoja de mandarina.	10 %

Fuente: elaboración propia (2023)

De acuerdo con la Tabla 1, en los tres municipios los participantes consideran pertinente consumir tisanas frutales y herbales por razones de salud, y las combinaciones preferidas fueron: limón y hierbabuena, buganvilia y limón, manzana y durazno y, manzana y limón.

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En la Tabla 2, se presentan las temporadas del año y las frecuencias de consumo de los sujetos de estudio de los municipios de Tequila, Xoxocotla y Zongolica.

Tabla 2. Temporada y frecuencia de consumo

Temporada de consumo	Frecuencia de consumo
Primavera 10 %	4 veces al mes
Verano 3 %	1 vez al mes
Otoño 15 %	6 veces al mes
Invierno **72 %**	**28** veces al mes

Fuente: elaboración propia (2023)

Como se puede observar, en la Tabla 2, la temporada que predominó en los participantes de los tres municipios fue invierno y la frecuencia de consumo fue cuasi diaria.

Por otra parte, en la Tabla 3, se muestran los canales de venta donde los participantes de los municipios Tequila, Xoxocotla y Zongolica prefieren adquirir las tisanas, así como el costo por presentación que están dispuestos a pagar por el producto.

Tabla 3. Canal de venta y precio por presentación en MXN

Canal de venta		Precio por presentación (MXN)	
Supermercado	**70 %**	100 g de $80.00 a $100.00	**80 %**
Tienda	20 %	250 g de $200.00 a $250.00	10 %
Cafetería	10 %	500 g de $400 a $450.00	10 %

Fuente: elaboración propia (2023)
Nota: Peso mexicano (MXN)

Con base en la Tabla 3, el supermercado fue el canal de venta predilecto por los participantes de los tres municipios y el precio de presentación ideal fue de 100 gramos, con un intervalo que oscila entre los ochenta y cien pesos mexicanos.

Por último, en la Tabla 4, se muestra la percepción de la población objeto de estudio de los municipios de Tequila, Xoxocotla y Zongolica, conforme a los aspectos sensoriales de las combinaciones de tisanas frutales y herbales que probaron, y los puntos donde consideran que estas pueden mejorar.

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Tabla 4. Aspectos sensoriales y puntos de mejora

Aspectos sensoriales		Puntos de mejora en tisanas	
Sabor	**70 %**	Presentación	**50 %**
Olor	10 %	Preparación	30 %
Color	10 %	Calidad	15 %
Concentración	10 %	Cantidad	5 %

Fuente: elaboración propia (2023)

Finalmente, en la Tabla 4, el aspecto sensorial que predominó en los participantes de los tres municipios fue el sabor, con un setenta porciento, y los puntos de mejora con mayores porcentajes fueron la presentación con un cincuenta porciento, seguido de su preparación con un treinta porciento.

Discusión

A continuación, se muestra un análisis comparativo de tres estudios de tisanas realizados por diferentes autores versus la presente investigación.

Tabla 5. Comparativo entre investigaciones enfocadas a tisanas

Estudios	Preferencias de clientes potenciales		
	Tisanas	Característica	Canal de venta
Alvarez et al., (2017)	Hojas de guanábana y camu.	Calidad	Máquina expendedora
Castrillo & Vasquez (2019)	Hierbabuena y manzanilla, hojas de guanábana y guayaba, cáscaras de naranja.	Precio	Supermercado
Hernández (2021)	Poleo, manzana, pera, naranja, mango, sandia, fresa, tamarindo y piña.	Empaque	En línea: redes sociales
Mejía et al. (2023)	Limón y hierbabuena, buganvilia y limón, manzana y durazno, manzana y limón.	Sabor	Supermercado

Fuente: elaboración propia (2023)

Con base en la Tabla 5, (Alvarez et al., 2017; Castrillo & Vasquez, 2019; Hernández, 2021) propusieron tisanas elaboradas a partir de hojas de guanábana, camu, hierbabuena, manzanilla, guayaba, cáscaras de naranja, poleo, manzana, pera, naranja, mango, sandia, fresa, tamarindo y piña. Así

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también, las características más valoradas fueron "calidad, precio y empaque", y los canales de ventas fueron: máquina expendedora, supermercado y en línea a través de las redes sociales. En contraste, Mejía et al. (2023) identificaron similitudes en preferencias de consumidores potenciales por tisanas elaboradas con hierbabuena y manzana. Adicionalmente, la característica más valorada en este estudio fue "sabor", la cual, es distinta a los estudios comparados. Por último, en el apartado de preferencia del canal de venta, se observa un resultado igual en la opción "supermercado".

Por otro lado, en los participantes de los municipios de Tequila, Xoxocotla y Zongolica, las razones de consumo con menores impactos fueron los aspectos; relajante y social. En ese sentido, de acuerdo con los autores Melchor et al., (2016), los productos que ayudan a mantenerse en forma y a la vez cuidan la salud, son esenciales en el compartamiento de compra de los consumidores, por esto, la población objeto de estudio prefirió como razón principal la dimensión "salud". Además, las combinaciones que menos prefirieron los participantes de los tres municipios fueron: hoja de guayaba y naranja, así también, hoja de limón y hoja de mandarina. Lo anterior, debido a que en estas tisanas los sabores no contrastaban, es decir, los sujetos las percibieron un tanto amargas y ácidas.

Cabe señalar que la temporada con menos consumo fue en verano, debido a que los sujetos de estudio de los tres municipios prefieren bebidas frías. En ese sentido, es preciso mencionar que sí existen tisanas frías, sin embargo, en esta investigación no se les presentó la modalidad fría a los participantes. Ahora bien, el canal de venta con menor preferencia fue la cafetería, y los precios por presentación (MXN) con menor demanda fueron los que oscilaban entre 250 y 500 gramos, esto debido a que el precio incrementa entre 200.00 y hasta 450.00 pesos mexicanos, en este sentido, cuando los precios aumentan, la población objeto de estudio de los municipios Tequila, Xoxocotla y Zongolica prefiere otras opciones, tales como: café, bebidas energizantes, refrescos, entre otras.

Conclusion

El objetivo de este estudio fue desarrollar una investigación de mercado de tisanas frutales y herbales, para lo cual, se buscó identificar preferencias de consumidores potenciales de zona de las Altas Montañas en Veracruz, México y responder la pregunta de investigación ¿Cuáles son las tisanas que prefieren los consumidores potenciales de los municipios de Tequila, Xoxocotla y Zongolica? En este sentido, entre las preferencias de los consumidores potenciales de tisanas específicamente de los municipios de Tequila, Xoxocotla y Zongolica se identificó que su principal razón de consumo fue por salud con un ochenta porciento. Por otra parte, las combinaciones de tisanas con mayor aceptabilidad fueron: a) Limón y

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hierbabuena; b) Buganvilia y limón; c) Manzana y durazno; d) Manzana y limón. El sabor fue el aspecto sensorial predominante en el setenta porciento de los individuos. Finalmente, la temporada ideal para su consumo es invierno y el canal de venta idóneo son los supermercados, con una presentación de 100 gramos y un rango de precio que oscila entre los $80.00 y $100.00 pesos mexicanos.

Conflictos de intereses

Los autores no tienen ningún conflicto de intereses que revelar.

References:

1. Afshin, A., Sur, PJ, Fay, KA, Cornaby, L., Ferrara, G., Salama, JS, ... & Murray, CJ (2019). Efectos en la salud de los riesgos dietéticos en 195 países, 1990–2017: un análisis sistemático para el Estudio de carga global de enfermedad 2017. The Lancet , 393 (10184), 1958-1972.
2. Alonso, M. J. (2003). Importancia de las tisanas en el tratamiento de síndromes menores. Rev. Rol enferm, 810-814.
3. Alvarez Lévano, C. A., Armand Patiño, G. B., Zuzunaga Verastegui, M. D., Caceres Salvatierra, R. S., & Gamarra Alpaca, K. B. (2017). Bebida funcional a base de infusión de hojas de guanábana y concentrado de Camu-Camu, endulzado con Stevia.
4. Blanco, C. M. C., & Castro, A. B. S. (2007). El muestreo en la investigación cualitativa. NURE investigación: Revista Científica de enfermería, (27), 10.
5. Castrillo Castellares, Y. A., & Vasquez Moratto, R. (2019). Estudio de factibilidad para la creación de una empresa fabricante de tisanas de hojas de guanaba, guayaba con cascara de naranja en el municipio de Curumani, Cesar (Doctoral dissertation).
6. Dongyu, Q. (2021). Frutas y verduras esenciales en tu dieta. Año internacional de las frutas y verduras.
7. Hamui-Sutton, A., & Varela-Ruiz, M. (2013). La técnica de grupos focales. Investigación en educación médica, 2(5), 55-60.
8. Hannibal, B., Paulina, R., Mayra, E., Fausto, Y., Freire, P., Moreno, N., ... & Marcela, I. (2016). Diseño De Un Sistema De Gestión Integral Para El Manejo De Residuos Sólidos En El Mercado" La Merced". European Scientific Journal, 12(11).
9. Hernández Cruz, K. H. (2021). Plan de negocios para una empresa procesadora de tisanas en Santa Catarina Minas, Oaxaca, México.
10. Hernández-Sampieri, R., Fernández-Collado, C., & Baptista-Lucio, P. (2017). Alcance de la Investigación.
11. Martínez Bernal, L. F., Bello Rodríguez, P. L., & Castellanos Domínguez, Ó. F. (2012). Sostenibilidad y desarrollo: el valor

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agregado de la agricultura orgánica. Universidad Nacional de Colombia.
12. Melchor Cardona, M., Rodríguez Manjarrés, J. D., & Díaz Rengifo, M. A. (2016). Comportamiento de compra y consumo de productos dietéticos en los jóvenes universitarios. Pensamiento & Gestión, (41), 174-193.
13. Miriam, I. M., & Arturo, B. S. F. (2019). Educacion Dual: Su Analisis Y Desarrollo Del Modelo Aleman Para Su Implementacion En El Entorno Laboral.
14. Moliner Velázquez, B., Berenguer Contrí, G., Gil Saura, I., & Fuentes Blasco, M. (2008). La formación del comportamiento de queja del consumidor: una investigación exploratoria en usuarios de restaurantes. Innovar, 18(31), 29-44.
15. Orozco, A. F., & Romero, C. V. (2020). Elaboración de vino de corozo (Acrocomia Aculeata). @ limentech, Ciencia y Tecnología Alimentaria, 17(2), 72-84. https://core.ac.uk/download/pdf/328146673.pdf
16. Ortega, A. O. (2018). Enfoques de investigación. Métodos para el diseño urbano–Arquitectónico.
17. Rosas, L. F., Fuentes, M. P. Q., Ramírez, J. H., López, M. T. T., & Pérez, M. G. (2022). La Influencia de las Habilidades Blandas en la Inserción Laboral de Egresados de Ingeniería Industrial del Tecnológico Nacional de México Campus Tierra Blanca. ESI Preprints, 7, 372-372.
18. Sanz, M. J. M. (2015). Introducción a la investigación de mercados. Esic editorial.
19. Simpalo Lopez, W. D., Miñan Olivos, G. S., Galarreta Oliveros, G. I., & Castillo Martinez, W. E. (2020). Caracterización fisicoquímica de un fruto silvestre de cactaceae (Haageocereus pseudomelanostele). Deshidratado por diferentes métodos para la conservación de su contenido de vitamina C. http://dx.doi.org/10.18687/LACCEI2020.1.1.114

ESJ Social Sciences

Higher Education Challenges in the Era of COVID-19 from the Perspective of Educators and Students (Ghana, Georgia and Pakistan Cases): A Literature Review

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Abstract

For the last three years, the entire world has faced a colossal phenomenon due to the COVID-19 pandemic. All sectors and areas of life have been affected, which has forced rapid and radical changes towards adaptation in its wake. The unexpected pandemic's mark and impact on education is more severe and longer lasting than imagined. It has evidently disrupted education provision at an unprecedented scale. This paper is a literature review that focuses on the experience of different countries and education systems during the COVID-19 pandemic. Based on the analysis of the existing literature and research on this issue, from the perspective of educators and students, including the experience of different countries around the world, the pandemic has had a great impact on higher education. This has resulted to digital transformation, which implies overcoming many challenges. The review uses particular examples of higher education in the era of COVID-

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19 in Georgia, Ghana, and Pakistan. The measures taken to continue education in spite of the pandemic are also highlighted. Although this phenomenon proved to be challenging, it has initiated enormous opportunities for creativity within progress. This paper further discussed barriers that students and academics faced during online teaching-learning, the pros and cons of online teaching-learning, the quality of teaching-learning, and the state of preparedness for future education.

Keywords: Pandemic, impact, education, challenges, opportunities, online teaching-learning, quality

Introduction

The pandemic has been a major challenge for almost every sector of the world, including the education system. The gradual educational transformation from traditional face-to-face to the digital or hybrid educational system has received considerable attention from Governments all over the world. Most countries have made attempts to introduce technologies as part of the efforts to transform their educational systems from the elementary to the tertiary level (García-Morales et al., 2021). Thus, a growing number of colleges and universities have been implementing a transition from traditional face-to-face teaching methods to online teaching or a combination of online and traditional teaching technically known as the blended learning approach (Rajab et al., 2020). This form of transition and management of technological systems to support teaching and learning had been a common practice among some schools in developed countries and few schools in developing countries until the worldwide pandemic struck and sharply caused a swift deployment of the use of the online system at the expense of the traditional/conventional system (Bashir et al., 2021; García-Morales et al., 2021; Mahyoob, 2020; Johnson et al., 2020; Henaku, 2020; Chidambaram, 2020; Duong, 2021; Cheng et al., 2021; Jin et al., 2021; Banji et al., 2021; Amir et al., 2020; Puspitawati, 2020; Almendingen et al., 2021; Aliyyah et al., 2020; Means & Neisler, 2020).

The emergence of COVID-19 in Wuhan, China, compelled the World Health Organization (WHO) to declare it a pandemic after studying its mode of spreading and suggested rigorous prevention measures, including social distancing (WHO, 2020; Aboagye et al., 2021; Adedoyin & Soykan, 2020). Complementarily, governments across the globe followed the directives and issued executive fiat. As a result, all businesses, sports activities, and schools were closed. Subsequently, institutions were forced to migrate to online platforms as part of the measures to mitigate the adverse impact of the pandemic on education (Barrot et al., 2021). Following the immediate closure of all activities which involve human contacts, schools with adequate digital

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muscles substituted the in-person instruction for remote learning without effective preparations. However, despite certain limitations in China, the government initiated a "Suspending Classes Without Stopping Learning" policy to ensure that learning was not compromised at any time during the COVID-19 pandemic lockdown (Zhang et al., 2020). For example, Georgia, Pakistan, and Ghana also closed all schools. Although universities, polytechnics, and colleges were allowed to continue with online learning, high and basic schools remained closed until further notice. Students also participated in the government's radio and television learning programmes to support those at home until early 2021 when all schools were directed to reopen and adhere to all protocols. Similarly, teaching tools, such as Skype Call, Vipers, ThingLink, Zoom, Google meet, and other video conferencing apps were introduced to both teachers and students in other jurisdictions (Hamzah & Ahmad Shaberi, 2021; Sobaih et al., 2021).

However, moving from an offline to an online mode of learning poses a number of challenges for students and educators in both developed and developing countries (Liguori & Winkler, 2020). For instance, the key hurdles of online education in developing nations include insufficient ICT skills, poor network administration or IT skills, and insufficient content development capabilities (Aung & Khaing, 2015; Hadullo et al., 2018; Noor et al., 2020). In Kenya, a study found that three major barriers to online education adoption include insufficient IT infrastructure, weak ICT skills, and a lack of financial resources (Ngwacho, 2020; Almaiah et al., 2020). Another study by Kanwal and Rehman (2017) revealed that the main impediments to successful online education adoption in Pakistan include the absence of an existing IT infrastructure, Internet availability, and computer literacy (Kanwal & Rehman 2017). According to Kenan et al. (2013), cultural, political, and economic obstacles were the key reasons for Libyan online education's failure. Kisanga and Ireson (2015) highlighted poor interface design, insufficient technical assistance, and a lack of IT skills as major hurdles to the successful implementation of existing e-learning projects in Tanzania.

The migration and emphasis on online teaching and learning has burdened all the stakeholders of the education sector across the three countries. Therefore, efforts need to be put in place to sustain the gains made during the pandemic as transition is made into the post-COVID-19 era. Specifically, many instructors and students are struggling to adopt online teaching and learning mode (Hodges et al., 2020). The sudden shift towards remote or online teaching and learning at such short notice globally was a novel phenomenon (Brom et al., 2020). These types of emergencies are not planned and require the competency of using technology to teach remotely (Joshi et al., 2018; Rush et al., 2016). The transition to online teaching has also created problems in the process of fully implementing student support activities. This

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is because the university is obliged to create a student-friendly environment, to offer relevant services, to inform them, and support students with low social status or disabilities. Also, it was a great challenge for Georgian universities to provide socially disadvantaged students with the resources needed for distance learning, especially for state universities (Bakradze, 2020, p.3-4).
It is noteworthy that online teaching has had an impact on curricula that require both practical and laboratory teaching. Students found it difficult to achieve learning outcomes in technical subjects. As a result, the students at technical faculties were more affected than those in the humanities. Nonetheless, it was a challenge for everyone, both students and academic staff, to suddenly study and teach in an unusual format.

As it is known, the online teaching process requires the proper equipment, access to Internet, relevant skills and experience, which were lacking before the pandemic and remains a significant challenge today. All of the above, along with other factors (job closures, lack of income or downsizing) initially caused tension and uncertainty. The urgency of the process is also due to the regulations imposed by the state to increase access to education, in particular, higher education, which in turn has become an important dilemma for universities.

Thus, the purpose of this study is to conduct a comprehensive review about the challenges of instructors and students in regards to post-COVID-19 online teaching and learning in Ghana, Georgia, and Pakistan.

Desk review was used as a research method of the study. Based on the analysis of the existing literature and research on this issue, which includes the experience of countries around the world, as well as Georgia, Ghana and Pakistan, it can be concluded that the pandemic has really had a great impact on higher education. This has resulted to digital transformation, which implies overcoming many challenges. Although this phenomenon has proven to be challenging, it has initiated enormous opportunities for creativity within progress. All of this will be discussed in this article based on the questions and issues below:

- What barriers do students and academics face during online teaching-learning (e.g., emotional, technical, financial, material ...);
- What are the pros and cons of online teaching- learning?
- Are they satisfied with the policy pursued by the state in this direction?
- What other steps can be taken to ensure access to quality education?

Literature Review

Digital transformation is not a novel phenomenon, and it has been accompanying higher education institutions for some years now (Kopp et al., 2019; Leszczyński et al., 2018).

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Digital transformation in the context of higher education institutions can be regarded as the summation of all digital processes required to accomplish transformation process that gives higher education institutions the opportunities to positively apply digital technologies optimally for teaching and learning (Kopp et al., 2019).

It has been argued that the contemporary transformation will be seen as revolutionary modifications in the specifications of higher education as a process and as an institution in the next 50 years. This is because the transformation has moved face-to-face instructional programs using objectivist, teacher-centered teaching methods, for thousands of home-grown, provincial and domestic universities to online and hybrid programs. This is possible by applying digital technologies in enhancing constructivist, learner-centered, and cooperative pedagogy for some hundred "mega-universities" that function worldwide (Hiltz & Turoff, 2005; Adedoyin & Soykan, 2020). Institutions' fast-paced move into the blended or hybrid models and the widespread adoption of digital technologies for course redesigns and pedagogical transformations have engendered significant challenges for both students and academic communities. When the pandemic started, this relatively new terminology had to be defined, explained, and assimilated at light speed.

OECD Definition

Online learning (e-learning) involves the use of digital materials in the learning process. This does not necessarily have to be done remotely and can be conducted at classrooms in accordance with traditional teaching methods known as mixed learning (Bakradze, New Educational Reality, Terms, Challenges, Recommendations, 2020). Distance learning refers to learning that takes place away from the classroom or workplace. Traditionally, it includes courses without direct contact, when a student connects to an educational institution by mail. Today, it mainly includes online education, where the teacher conducts lessons and gives assignments using digital technologies. In short, the term "online learning" is mainly used to refer to learning through digital resources that is carried out remotely (OECD 2005, p.11).

UNESCO Definitions

Distance learning is a general term in education that implies the distance between a student and a teacher in time and space. It includes online education (80% of information is transmitted over the Internet) and mixed learning (30-79% of content is delivered through the Internet), as well as the form of education that uses printed material. During online learning, most or all of the content (≥ 80%) is delivered online only. Online education is not

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synonymous with distance learning. However, in many developed countries that have widespread access to the Internet, it is the most widespread form of distance education (Carlsen et al., 2016, p.105).

The European Association for Quality Assurance in Higher Education (ENQA)

The document prepared by the ENQA e-learning Working Group on "considerations for quality assurance of e-learning provision Report from the ENQA Working Group VIII on quality assurance and e-learning" clarifies the definition of terms related to non-traditional teaching methods, in particular e-learning. However, the document states that “e-learning terms and definitions may vary by different countries. Nevertheless, it is necessary to define terms in order to share a common understanding.” (Huertas et al., 2018, p.4).

The pandemic became the engine of digital transformation in Georgia. The Georgian education system, including educators, students, IT specialists, representatives of the quality of education service, and various departments of the administration were faced with the novelty. Naturally, the situation caused by the COVID-19 pandemic was found to be unusual and stressful initially due to the challenges mentioned earlier.

In Ireland, a study by the QQI (2020) on the effects of COVID-19 found that higher education institutions had some experience in distance learning. Nevertheless, about 60% of the academic staff had little or no distance learning experience, and only 13% reported sufficient experience. There were also significant changes in the level of support by staff and students, which was based on their individual context. Some staff and students had online learning experience, while some had little or no experience (QQI, 2020).

The COVID-19 pandemic has caused numerous changes in the lives of students. According to the Irish research document, 38% of students at one of the higher education institutions mentioned that they lost their jobs and became unemployed. Thus, students are concerned about the current situation and express worry about their future carrier.

Conventional and E-learning Approaches of Teaching and Learning

Globally, the fast growth of technology has had an impact on all aspects of human existence, most notably agriculture, medical, education, communication, record keeping and administration, and so on. Countries throughout the globe made excellent investments and formulated and implemented policies to assist them use technology for economic growth and development so as to embrace this global phenomenon and increase the capability of their human capital.

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Most schools around the world deployed the use of online learning to supplement the traditional learning approach called blended learning. This effort persisted until the COVID-19 pandemic outbreak forced many institutions to embrace an online learning approach to contain the spread of the virus. The emergency response from educational institutions during crises (e.g., pandemics or conflict) to shift teaching and assessments online is known as Emergency Remote Education (ERE) (Shin & Hickey, 2020). Due to the nature of the spread of the virus, most schools that could not transform to the digital space were closed for almost a year.

In every educational system, the pedagogical strategies of teaching and learning differ significantly. While some found it prudent to use conventional means (traditional face-to-face), others deployed the use of the Internet or Hybrid form for teaching and learning. According to Oscar (2020), online learning has several advantages over traditional learning, but it appears that traditional face-to-face learning received Global use all over the world.

Traditional Face-to-face is an approach for teaching and learning which strives on delivering instructional content to learners through physical contact. This is characterized by an instructor-led approach and instructor-based activities, where students are taught in a manner that is conducive to sitting and listening (Tularam, 2018). This instructional model has been used for its relevance and popularity, and many instructors prefer to adopt it for teaching and learning (Flanigan et al., 2021). Online teaching and learning, on the other hand, involve the use of the Internet and technological tools to deliver instructional materials and content for teaching and learning (Adedoyin & Soykan, 2020). There are two forms of online instruction: synchronous and asynchronous. Synchronous online courses strive to replicate the communication paradigm of a traditional classroom by allowing instructors and students to be online at the same time through a virtual platform such as google meet and Zoom (Abu Talib et al., 2021; Hsiao, 2010). Asynchronous online classes are differentiated by more versatility and self-paced learning possibilities since they do not demand real-time contact or meeting at a defined time (Abu Talib et al., 2021; Hsiao, 2010).

During the COVID-19 pandemic, most instructors with limited experience in online education design readily converted their traditional classrooms to synchronous online courses by simply uploading the teaching materials over an online learning management system (Gillis & Krull, 2020).

These measures have extensively influenced the understanding of the impacts of emergency use and integration of online and other types of digitalized learning and teaching on the role of institutional deployment of the approach. Most schools, however, deployed the use of an online learning approach without adequate preparations (Maphosa, 2021; Coman et al., 2020; Hondonga et al., 2021; Addae et al., 2021; Aduhene & Osei-Assibey,

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2021). The use of online learning helped many institutions to plan digital content with haste and provided the opportunity to engage students remotely. Complementarily, literature has it that the use of online learning could improve the consistency and quality of instructions, both for formal and non-formal education, and increase opportunities for more student-centered pedagogical approaches. This will promote education by addressing inequalities in gender, language, disability, among others (Leu & Price-Rom, 2006). Furthermore, the use of online platform for teaching and learning has widened the traditional sources of information and knowledge by fostering collaboration, creativity, and higher-order thinking skills. Also, it has provided flexibility of delivery of lessons as well as reaching a wider range of student population outside the traditional education system. Given the benefits that online education offers for teachers, students, and institutions, it is not surprising that it has attracted so much attention (Kebritchi et al., 2020; Konetes, 2011).

Increases in the number of online programs and course offerings are altering the role of instructors and the nature of teaching, with an increasing number of professors and support personnel needed for online instruction (Bennett & Lockyer, 2004). Teachers, who are at the forefront of this growing need and pressure to teach online, are being forced to reconsider their basic beliefs about teaching and learning, as well as the responsibilities they play as educators (Wiesenberg & Stacey, 2008). This increased interest in online education necessitates a rethinking of higher education institutions' cultural, intellectual, organizational, and pedagogical frameworks in order to adapt to a new culture of teaching and learning (Howell, Saba, Lindsay, & Williams, 2004). While conventional teaching responsibilities may be transposed to the online environment, the affordances and restrictions of the new learning environment necessitate instructors adapting to new roles in order to provide successful and meaningful learning experiences. As a result of the Internet's accessibility and the flexibility of online courses, online education has become an essential component of higher education (Luyt, 2013).

In the literature, several studies have addressed the challenges associated with the introduction of e-learning (Pokhrel & Chhetri, 2021; Rajab et al., 2020). Evidence suggests that the implementation of electronic learning initiatives failed because institutions and their constituents were unprepared for the experience (Aboagye et al., 2021). Furthermore, individuals are connected to present pedagogies and practices, which made it difficult for them to adapt to new ones and update old ones (Kundu & Bej, 2021). According to Kundu and Bej (2021), student opinion of online learning has been poor owing to previous experiences, which resulted to high dropouts and low learner motivation (Aboagye et al., 2021). Other factors highlighted include poor student satisfaction with the online learning experience (Aboagye

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et al., 2021). Nonetheless, data indicates that students and instructors are as satisfied with online learning as they are with conventional learning (Ali & Ahmad, 2011).

This pandemic is the first of its kind in recent times, disrupting higher education institutions, and both teachers and students have found the experience to be challenging. Therefore, it is critical to study and understand students' experiences during this time to better prepare for future interruptions to higher education institutions and to understand how COVID-19 has shaped our students, especially since studies have shown that COVID-19 has had a significant impact on psychological wellbeing in the general population (White & Van Der Boor, 2020).

According to research, there was no substantial difference in the objective assessments and effectiveness of conventional and synchronous online learning (He et al., 2021), and students preferred the flexibility of asynchronous forum. Nevertheless, they also enjoyed the capacity to interact in real-time online interaction with the lesson (Gillis & Krull, 2020; Hsiao, 2010).

Teachers and instructors were faced with several problems throughout the transition. However, the initial step, for some of them, was to design online courses using instructional design concepts and then teach them online (Chen & Liu, 2021; Cote et al., 2020; Gillis & Krull, 2020).

Conceptualizing Online Teaching and Learning Challenges Global Context

According to the UN (2020) report, the COVID-19 outbreak has inflicted the very worst disruptions in education systems in history, impacting over a billion students across almost all nations and continents. Schools and other learning space closures have affected 94 percent of the world's student population, including 99% in lower-middle-income nations. COVID-19 has left no part unaffected in any nation on the earth, and its consequences will be felt for years to come (Mohamedbhai, 2020). However, while massive effects were being utilized to change and develop higher education throughout the globe, there is a risk that COVID-19 will harm the sector with serious consequences (Aborode et al., 2020).

Comparing the developed world to the developing countries is a bit problematic. Furthermore, it was discovered that low-income countries are faced with challenges such as inadequate knowledge. Poor Internet connectivity in the use of technological tools and deficiencies in content development (Aung & Khaing, 2015) is also still a phenomenon for many teachers, especially at the tertiary level in third world nations.

The Chinese government for instance has taken stringent steps to halt the spread of the COVID-19 epidemic (Zhu & Liu, 2020). The majority of

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face-to-face activities, including teaching, have been prohibited. The start of the spring semester at Chinese universities and colleges has been postponed. Students were not also permitted to return to campus without prior authorization.

The United States of America has millions of international students communing from their respective countries to the numerous colleges and universities in the states in America to pursue their education. Hess (2020) conceded that all these students have been direly impacted by the COVID-19 pandemic. In the review of Leping et al. (2021), over a thousand colleges and universities in the states were closed and about 14 million students were left stranded. During the periods of the schools' closure, many researchers reported the tremendous efforts made by universities and colleges to transit from traditional (face-to-face) to online education (Greenhow & Lewin, 2021; Carrillo & Flores, 2020; Crompton et al., 2021). They further mentioned the challenges as well as the opportunities that instructors and students were confronted with during and after the COVID-19 pandemic (Moore et al., 2021; Kaisara & Bwalya, 2021).

The proper functioning of distance learning, along with other conditions, is based on two main factors: The first is technical capabilities, which include electronic devices (computer, tablet, smartphone, phone, etc.) and Internet access, as well as digitalized learning management systems (LMS), which facilitate the continuity of the online learning process. Provision of Internet access in Georgia started years ago and presently covers most of the regions of the country. In the 21st century, when it comes to access to education and the right to do so, even the smallest population, especially students, should have access to the Internet. A relatively minor but slightly larger scale problem is the quality of the Internet connection and its stability. This issue is mostly related to the students living in rural areas, who are provided with consistently low-quality connectivity.

At the universities, curricula have been modified, teaching methods and assessment systems were revised, relevant guides and video instructions for students and lecturers were developed as well. Also, online lecture/seminar recordings were uploaded to the relevant platform and made available specifically to the students registered to that subject. An online hotline has been set up at the university to solve technical problems. Universities and the state have pursued preferential tuition policy for students due to the pandemic (Bendeliani, Interpressnews, 11 August 2020).

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The Georgian Context

The Main Challenges in Georgia During the Pandemic

- Access to Internet and owning a computer was a challenge in Georgia even before the pandemic. For example, 20% of the Georgian population does not have access to the Internet and about 64% have access to a computer. It can be said that 80% of those who have access to the Internet before the pandemic used it for communication on social networks and rarely for educational purposes (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020).
- Learning infrastructure, in many cases, is not adapted to modern technologies. The qualification and knowledge of professionals in this area also remains a challenge. Professors and teachers suddenly found themselves faced with a new reality when the curriculum and the lessons plans had to be completely redesigned for online teaching. However, they did not have the basic skills of using a computer nor the Internet. (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020). This situation obviously affected the quality of teaching as well as the number of pupils and students to be taught efficiently.
- The process was spontaneous and the best practice was elaborated during the process. This way of teaching presented problems for a number of groups because certain directions were being tested on the go. For example, it can be said that students with disabilities remained outside the educational space, despite their formal involvement in the teaching-lecture process (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020). Accessibility depended on the individual responsibility and goodwill of each professor or teacher.
- During the pandemic, it became necessary to introduce new forms of teaching, especially using modern technologies. It required appropriate readiness, knowledge, and skills from both the academic staff and the students, which is not so easily mastered, especially by the older academic staff. Both parties should be actively involved in the use of modern teaching-learning methods and assessments, forms, proper use of resources, the use of digital technologies, and other such endeavors. It is important to have the appropriate knowledge and motivation to learn and develop in this direction so as to ensure the efficiency and quality of the process. Current educational programs are accredited with traditional, face-to-face quality assurance standards that do not provide for online learning. Online learning has reduced the quality of teaching courses/modules, shifted the time to study practical subjects, and has made it difficult to achieve some learning outcomes in executive programs, medical programs, and other

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programs with laboratory or practical training. Nonetheless, there were few e-manuals, digital libraries, auxiliary e-materials or virtual laboratories (Bakradze, New Educational Reality, Terms, Challenges, Recommendations, 2020).

- As for internationalization and mobility, students and academic staff can no longer physically afford it. However, it can be done online so that they no longer have to leave the country in order to get education abroad.

As already mentioned, the online teaching-learning process is specific and different from traditional teaching. In order to conduct it, the academic staff must not only have the knowledge and skills to use modern technology, but also be able to adapt teaching-learning and assessment strategies to online teaching. Furthermore, they should be motivated to explore and develop all of the above. Accordingly, the academic staff needs development and constant support. The transition to online learning has shown that the academic staff was not ready to use modern technologies and as mentioned above, the problems did not arise only in Georgian reality.

Both academic staff and students need technical support from relevant services. These functions were performed by an online hotline at some universities. However, solving problems such as limited Internet connection, lack of equipment, etc., was difficult to solve without the involvement of the state. Most students use a mobile phone because it is more comfortable to use but it requires vigilance. Hence, another requirement is cyber hygiene and security (Bakradze, new Educational Reality, Terms, Challenges, Recommendations, 2020).

Steps Taken in the Direction of Higher Education During the Pandemic and Legislative Changes in Georgia

There have always been difficulties in terms of equal access to quality education in Georgia, but since everything has stopped, the problem of access has been faced by almost everyone during the first stage. Kindergartens, private and public schools, vocational and higher education institutions, groups, and foreign language training centers were closed. All institutions where formal or non-formal education was available were closed. (Abkhazava, COVID-19 - The Catalyst Effect on Education (Part 1), Radio Liberty, 2020).

Challenges and Opportunities Created by the Pandemic

An important positive aspect of the pandemic reveals that Georgia began to introduce innovative approaches in the educational space. In order for students not to be delayed, distance learning is the most pragmatic solution

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for almost every country. As for the situation in Georgia, in the summer of 2020, the Law of Georgia on Higher Education ("Law of Georgia on Higher Education", 2005) was amended to include the term "e- learning".

E-learning

This involves the study process or a part thereof that does not require the presence of a student and the personnel of a higher education institution simultaneously at a certain location based on modern information and communication technologies. Also, it is organised by a higher education institution for persons in the territory of Georgia to acquire a qualification on the basis of higher education programmes accredited in Georgia. Appropriate approaches and methods for planning the curriculum as well as organising and administering the study process are required to provide e-learning (Article 477 Law of Georgia on Higher Education, 2005).

During distance learning, information is transmitted electronically using various means of digital communication. There are different forms of e-learning: Asynchronous, synchronous or hybrid.

Synchronous learning is an integral part of the traditional learning process. In this case, the teaching takes place in the classrooms and the learning process is planned in advance. Accordingly, the communication between the students and the lecturer takes place at the same time. With the development of technology, teaching methods were evolving and improving. Various webinars, online trainings, and the Internet in general have made it quite comfortable and accessible to transfer synchronous learning to online mode (Ghvinefadze & Tielidze, "Principles of programming and management of e-learning platform on the example of ILIAS system", 2016). As for asynchronous learning, it is mainly student-centered teaching. The learning process is not spelled out in time and communication between students and lecturer takes place through various online platforms. Since teaching does not take place in classrooms, students have the free choice to engage in the learning process from anywhere at any time. Asynchronous learning helps a person in both education and personal development by using methods such as Blogs, social networks, webinars, and various electronic media (QQI 2020, p.76). Hybrid learning involves both a synchronous and an asynchronous method. Interestingly, this method is the most common in the world today (QQI 2020, p.76).

The National Center for Educational Quality Enhancement has taken the initiative to support higher education with an auxiliary textbook aimed at ensuring online and hybrid learning and its quality, which in turn will help the Georgian higher education sector to easily overcome the shortcomings caused by the COVID-19 pandemic (Crozier & Greer, "Criteria and Guidelines for the Evaluation of Online and / or Mixed Learning and Teaching", 2020). Such

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an approach will accelerate Georgia's integration into the international educational market. With the help of modern digital technologies, students will be competitive. This will help them in their personal development, as well as the country for economic and social development. Online education used to be only a free choice and a future plan for Georgia, but the current reality has forced the country to quickly implement online and hybrid education with the help of digital technologies. In the beginning, there were various problems including technical deficiencies, lack of digital skills, unqualified staff, and so on. However, through joint efforts, the education system faced the challenge well. Most importantly, the learning process did not stop at higher education institutions. Also, the hybrid teaching method was the most tailored and comfortable method for students with a profession since attendance was mandatory due to the specifics of the subjects. Higher education is one of the main preconditions for the economic development of the country. Therefore, the state should make every effort to spend more resources on education in order to further improve the teaching process and make it as adaptable as possible to the student so as to have a positive outcome in return.

In the 21st century, innovative methods are essential in the digital world for general, vocational, and higher education levels (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020).

The pandemic, along with all the other challenges, presented new opportunities for universities. For example, the mobility online can be done without leaving Georgia, lecturers can be invited online, and so on. (Tsiramua, Higher Education Challenges and Potential, GEORGIA FORBES WOMAN, 2021).

Some of the positive results of the pandemic include the following:

1. The desire expressed throughout the higher education sector to be quickly involved in a whole new situation that required the rapid development of staff skills in order to maintain the delivery of education to students;
2. The crisis has revealed more potential for international education, which is available to a larger number of potential students;
3. Students acknowledged the support and effort from academic staff, including those who did not have online teaching experience;
4. The staff realized the support and assistance they received from the Ministry of Education and the National Center for Education Quality Enhancement.
5. In some cases, emergency response proved useful and resulted in, for example, better attendance and student engagement and better term papers (Crozier & Greer, “Criteria and Guidelines for the Evaluation of Online and / or Mixed Learning and Teaching”, 2020).

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The main advantage that studies have shown is optimization of financial resources and time. These are the two most important resources that can help a person take the next steps successfully. Nevertheless, it has been noted that a certain proportion of students are in favor of traditional teaching because they believe that hybrid and/or online teaching reduces social interaction, which is quite an important component in terms of personal development.

Some of the negative aspects include the low motivation of the academic staff, especially the elderly staff, to deepen their knowledge in the field of digital skills, to use technologies, to use equipment, to use modern educational technologies during lecture-seminars or to study from scratch. Also, low motivation of students and lack of mobilization during the online learning process, emotional barrier which limits interaction (this occurs when the video- camera is not turned on), health problems (vision, scoliosis ...), lack of equipment, Internet access, and so on.

The benefits for each student in particular are as follows:

- Efficiency - Distance learning allows the student to make and manage their own schedule, they can decide when and where to study and how much time to devote to learning (FOX, “What are the Advantages and Disadvantages That Distance Education Can Offer You?”, 2020)
- Study from anywhere - Students can study without leaving home or office. They just need to have access to the Internet. Such learning is especially accessible to people with disabilities, prisoners, and people living far from educational institutions (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020)
- High Academic Outcomes - According to American science studies, the results of distance learning are not inferior to the results of traditional teaching. During distance learning, students work much harder on themselves in order to deepen their knowledge, with the help of modern technologies. This, in turn, has positive impact on their academic results (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020)
- Saving the expenses – This is one of the major benefits of distance learning. In this case, the daily expenses that are familiar to all students are reduced (such as transportation costs, food costs, rent costs, etc.). (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020)
- Individual approach - In distance learning, a very important component is the student-centered environment, which considers individual needs. In addition to being able to choose and allocate time for education, they can also have contact with lecturers and get answers to existing

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questions within a small amount of time (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020)

However, the disadvantages and challenges that accompany distance learning are as follows:

- Lack of communication - This implies lack of direct communication between students and the lecturer, as well as among students due to the virtual environment. Therefore, distance learning is less likely to facilitate development of such skills as team work, direct communication, and so on.
- Lack of practice - It is quite difficult to electronically learn courses that require practical assignments.
- Problem of user identification - Another difficulty with exams is determining if the student wrote the exam honestly or not. In this case, video surveillance is the only applicable solution. However, students still have to be on site to take the exams and prove that they are not cheating, especially if they want high academic results (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020)
- The probability of misunderstanding theoretical knowledge - since there is a very large amount of information on the Internet, the probability is quite high that the student will misunderstand the existing material. This is because communication between students and professors is indirect (Tvalabeishvili, "The Right to Education during Pandemic," New Education, 2020)

Ghanaian Context

The concept of e-learning in Ghana traces back to nearly a decade. Ghana's efforts to integrate Information and Communications Technology (I.C.T) into the pre-tertiary education level to meet the aspirational goals of assisting the Z-generations in acquiring digital skills to achieve global standing received attention in the early 2000s with the implementation of Ghana's ICT for Accelerated Development (ICT4AD), which is aligned with the Education Strategic Plan and Sustainable Development Goals of 2018-2030 (Asabere et al., 2020; Otoo, 2020; Adarkwah, 2021; Tanye, 2017; Ofori-Birikorang et al., 2020; Asabere et al., 2017). Besides government Initiatives, many universities and colleges have developed digital platforms to supplement administrative and instructional activities through the use of the e-learning or blended Approach (Ansong et al., 2017; Sarfo & Yidana, 2016; Forson & Vuopala, 2019). University of Ghana, among other universities in Ghana, employed the online learning and management systems (LMS), which is a virtual learning tool for teaching and learning popularly known as SAKAI management systems through distance programs and remote learning among others (Ampadu & Sedofia, 2021; Tagoe & Cole, 2020; Asamoah, 2020;

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Darko-Adjei, 2018). It appeared that these efforts were made as a strategic vision to flip the entire educational system into the digital space. Effective integration of e-learning is achieved when instructors and students have the competencies required to manage its operations and functionalities, which could be attained when the curriculum is tailored to embrace I.C.T in education and Train instructors towards it (Matthew et al., 2020). Frantically, all efforts to promote I.C.T in Ghana proved abortive as many schools in some areas across the country do not have the necessary infrastructure and resources to fully integrate I.C.T tools into the educational system for teaching and learning to leverage the digital gab (Tadesse & Muluye, 2020; Adarkwah, 2021, Soma et al., n.d).

Given the factors that impede the integration of I.C.T into education in Ghana, between 2009 and 2014, the Government of Ghana (GoG) has also introduced an intervention program dubbed 'One Laptop per Child Policy' to sustain the interest of pupils in ICT as well as enhance teaching and learning in basic schools by sharing over 450,00 RLG laptops (Adu Gyamfi, 2017) to most schools at the pre-tertiary level throughout the country (Ababio, 2010). According to Owusu-Ansah (2015), several schools have already benefited from the policy across the country. Factors such as Internet access, electricity, and infrastructure which has the potentials of thwarting efforts geared at integrating ICT into the educational system in Ghana were being managed slowly with plans at the point of critical considerations before the COVID-19 outbreak.

The sudden change from the Traditional face-to-face model to the online model of education and learning has posed serious challenges for instructors and students in Ghana (Aboagye et al., 2021; Serhan, 2020; Mseleku, 2020). The shift from the conventional mode of education to remote or online education was not adequately planned and many institutions' practices and attitudes towards digital platforms depict a completely unexpected occurrence without option (Salih & Omar, 2021; Di Giacomo & Di Paolo, 2021).

The sudden shift to the online mode of teaching and learning without prior preparations posed a greater challenge for both instructors and students with the use of the online systems post-COVID-19 teaching and learning practices in Ghana. This prompted the need to conduct a study to determine the challenges for improvement.

However, less than 15% of these teachers used the Internet as an innovative way of improving teaching and learning. Over 30% of the teachers also used the computer mainly for research work. Despite the limited use of computers by teachers in the teaching process, many agree that the computer has changed the way students learn.

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Pre-existing Challenges Prior to the COVID-19 Pandemic

According to Collis and van der Wende (2002) and the Open and Distance Learning Paper (2004), the integration of e-learning in universities has been so far disappointing both at the macro-level of their strategic options and at the micro level of their educational work processes.

The online teaching and learning challenges are frequently attributed to the COVID-19 experiences, which is not the case. The pandemic revealed the hurdles and unreadiness of certain nations and institutions toward e-learning (Nikdel Teymori & Fardin, 2020). Collis and van der Wende (2002) claim that the integration of e-learning at universities has been unsatisfactory so far, both in terms of administrative strategic decisions and instructor-student level educational standard requirements.

Ali (2020) and Correia (2020) argued that COVID-19 revealed the vulnerabilities in today's e-learning educational system, which was kept behind the traditional and the blended methods. Nelson and Thompson (2005) reported that time management, workload, motivation, inadequate administrative support, cost of technological tools and management systems, students' interactions, and infrastructure posed a challenge to the efforts geared towards e-learning in most institutions among faculty members. They recommended that the administration should provide adequate resources and encourage the use of technology for teaching and learning by providing both pre-service and in-service training. Institutions should also should employ more distance education courses and limit the physical contact between instructors and students. Furthermore, promotions should be fashioned as an incentive to promote online engagement. Collaboratively, Bascow et al. (2012) postulated that the e-learning challenges form an integral part of the digital transformations as applications and systems continue to evolve. In their study, they believe that challenges such as technical challenges, lack of motivation and attitudinal challenges, nature of course content, high cost of adopting online learning, unemployment, among several others thwarts the full adoption of e-learning.

Similarly, Keengwe and Kidd (2010) disclosed that faculty members' involvement in e-learning remains a prevalent issue for most institutions planning to embrace e-learning. It was further revealed that most of the faculty members are reluctant to switch from the conventional method to online learning. 5% of active faculty in German-speaking universities use learning technologies in their courses. According to Barrios and Carstensen (2004), a threshold for e-learning integration shows that the recent Organization for Economic Cooperation and Development (2005) survey was confirmed at an international level. As a result, they labeled e-learning as a "thwarted innovation" in their study. Latchem, Jung, Aoki, and Ozkul (2007) claim that e-learning integration in Japanese higher education moves at the snail's pace.

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In universities, technological advancements tend to outrun strategic thinking and pedagogical design, and the long-term integration of e-learning into higher education institutions remains a key issue. Although learners may have achieved success in traditional education and the classroom, this does not guarantee success in an online learning environment (Watkins et al., 2004). Amenyedzi et al. (2011) carried out research in Tema, Ghana's capital, to evaluate (i) the use of computers and the Internet as supplemental educational materials to improve school administration and planning; and (ii) how students utilize computers and the Internet to aid their learning. Students and instructors were chosen using the stratified sample approach. The findings revealed that a substantially 92% of respondent instructors were computer competent, while 78% of respondent learners had basic computer skills.

Many exploratory studies have been carried out to investigate the quality of online programs from different perspectives. Critical concerns impacting the quality of online education, such as communication, technology, time management, pedagogy, and assessment, have been recognized and studied (Bassoppo-Moyo, 2006; Conaway, Eston, & Schmit, 2005; Ko & Rossen, 2010; Limperos, et al., 2015)

According to Almaiah et al. (2020), the argument that obvious impediments such as instructors' technical challenges and lack of motivation are the sole reasons inhibiting the use of learning technologies is the most difficult to explain. According to them, the actual problem for e-learning is driven by macro-level influencing factors that stifle technology-enhanced innovation in higher education. This is because even if teachers are blamed, pre-service and in-service training will still be a factor. These underlying macro-level constraints are related to university structure weakness, availability and habitual features, and long-standing cultural values in the educational system (Almaiah et al., 2020).

The engagement of the online teacher may be divided into four categories: educational, social, managerial, and technological (Martin et al., 2019). Martin et al. (2019) conceded that pedagogical function focuses on educational facilitation, while the social role focuses on building a welcoming social atmosphere that is required for online learning. The managerial position includes agenda setting, pace, goal setting, regulation, and decision making, while the technical function is dependent on teachers getting familiar with the technology being utilized and then being able to communicate that degree of comfort to their learners (Martin et al., 2019).

According to Houshmandi et al. (2019), one factor for the delayed uptake of e-learning in higher education is the overwhelming number of faculty members' lack of e-competence. Hadley (2019) reviewed the following barriers to faculty participation in developing and teaching online courses: inadequate software and hardware, learner procrastination, slow Internet

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connections, insufficient orientation for learners, lack of technical expertise among instructors, and a lack of release time for instructors to develop and design their courses online (Siga & Acharya, n.d).

Many researchers advocated for teacher training and assistance due to the large number of faculty members who begin their online teaching experience with minimal expertise in the process of conceiving, preparing, and delivering an online course. In this case, faculty support becomes critical (Albrahim, 2020).

Post-COVID-19 Challenges

The Internet has become a common medium for interaction, communication, and collaboration which allows learners and teachers to engage in unique and irreplaceable learning opportunities.

The literature on online learning and teaching in higher education has witnessed a growing interest in the study of key challenges in relation to the online mode of delivery besides the associated capacities (Siddiquei & Kathpal, 2021). Zhu and Liu (2020) observed that the Coronavirus outbreak has hastened the growth of online education in Chinese higher education. Big data, the Internet, 5G, Artificial Intelligence (AI), and cloud-based platforms, among other technologies, have been put to use in the field of education. However, Zhu and Liu (2020) maintained that a more flexible way of teaching and learning does not end up with infrastructure. This implies that infrastructure is only the first step towards a new paradigm of teaching and learning in a post-pandemic time. This paradigm, on the other hand, might reflect a rapid transition away from traditional, teacher-centered, and lecture-based activities and towards more student-centered activities such as group activities, dialogues, hands-on learning activities, and restricted usage of traditional teaching (Zhu and Liu,2020). This requires a conceptual and philosophical rethinking of the nature of teaching and learning, roles, and connections among teachers, learners, and teaching materials in post-digital learning communities (Jandrić et al., 2018). Full long-term integration of online teaching and learning into university curricula implies further attention to quality.

The imposition of e-learning without providing supporting infrastructure caused a significant setback to the fundamental essence of classical pedagogy, including learner's interactivity, access to study material, attentiveness, regularity, time management, and assessment (Manazir & Rubina, 2020). Similarly, broadly identified challenges with e-learning are accessibility, affordability, flexibility, learning pedagogy, life-long learning, and educational policy (Murgatrotd, 2020).

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Challenges to online education reported in the medical literature so far include issues relating to time management, use of technology tools, students' assessment, communication, and the lack of in-person interaction.

Teachers are crucial for the inclusive and equitable provision of high-quality distance education. They are expected to have knowledge, skills, and ethics to conduct online teaching, which requires more flexible and dynamic post-pandemic teacher education. Post-pandemic national teacher education could be composed of face-to-face teacher education, blended teacher education, and online teacher education (Zhu, 2020). National online teacher education could be categorized into sections that provide learning opportunities to future teachers at all levels such as early childhood education, primary education, secondary education, vocational education sectors, etc. Online teacher education platforms could function as a traditional teacher education institute that provides pre-service and in-service programs. This could be supported by online platforms with rich digital materials and resources. Curriculum and pedagogy need to be updated and should become models of successful online pedagogies that could be taken into future teachers' practices. It is also critical to building up an enabling institutional environment for sustainable national online teacher education. Evidence-based policies need to be developed and supported by guidelines for their implementation. To provide a professional reference base for online teacher education, a framework of competencies to conduct online teaching, including other standards, should be developed. In the post-digital context, online and offline (teacher) education cannot be thought of without each other (Jandrić et al., 2018). Therefore, the development of a holistic teacher education system is needful, regardless of the used model of delivery, to support present and future teachers in becoming more resilient to a crisis similar to the COVID-19 pandemic. The COVID-19 pandemic has brought about a huge disruption to all spheres of human life. Chinese higher education and Beijing Normal University, in particular, have responded to the crisis with reasonable success. However, it is strongly believed that the impact of the COVID-19 pandemic on the Chinese education system should extend beyond tackling the current crisis. It should also bring out potential development opportunities for the future (Jandrić, 2020). The current situation requires innovation and renewed attention to more research, study, and reflection about each sector of education in China and globally. It is only by doing this research within the pandemic that a more sustainable, inclusive, and equitable education can be developed after the pandemic is gone.

Dumford and Miller (2018) argue that the students enrolled in online courses are often less engaged in collaborative learning, student-faculty communication, and discussion with their peers than their counterparts in traditional face-to-face courses. It has also been noted that major challenges

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for online education include developing core professional qualities, namely; the acquisition of interpersonal and practical skills, communication skills, sustaining student retention rates, and effective use of online technologies. Challenges have also been raised by educators whilst adapting some activities, such as performance assessment to the virtual learning environment and avoiding the loss of content knowledge or effective interactions between learners and/or educators. The emergence of a range of learning scenarios and pedagogical models has extensively informed practices of online learning and teaching in the higher education context. Nevertheless, a less addressed challenge is "not whether online courses will replace classrooms, but whether technology will drive the redesign of teaching and education". Making clear distinctions between online and on-campus models of learning and teaching has been at the forefront of online education discourse. What matters here is to understand how to best support innovative and collaborative learning and teaching activities so as to utilize emerging instructional technologies regardless of the medium of delivery. It is also useful to understand what form of technology varies between online recorded lectures, in-built assessment, collaborative digital subjects with flexible learning environments, and remote simulation to enable a certain pedagogy or change the existing pedagogical model. Peimani and Kamalipour (2021) indicated that using new technology is not enough. Thus, new models must employ these tools and services to engage students on a deeper level. This also lends itself well to other researchers' arguments that giving primacy to technology over pedagogy is a barrier to successful technology integration, as well as effective teaching and learning strategies in higher education (Peimani & Kamalipour, 2021). Therefore, it is important to understand which course delivery model stands as the students' favored learning and teaching design: blended, fully face-to-face, or online choices.

Siddiquei and Kathpal (2021) reviewed challenges of online teaching and learning during COVID-19 and identified challenging factors such as infrastructure (electricity, Internet, facilities), students or learner challenges (interaction, participation, readiness, technical skills, and learning style), content issues (multimedia, pedagogy, innovation, content creation, and design), institutional factors (policies, incentives, resources), and motivational factors (salary, family support, mental and emotional) as crucial factors that affect teaching and learning online. Their findings highlighted that instructors' challenges emanated from the transition from offline to online, communication barriers regarding online teaching, preparations, and teaching style. They further highlighted factors such as training for instructors, multimedia and technical skills support, students' readiness, technological skills to learn online, learning styles, participation, and pace of learning and

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network issues as pressing challenging factors associated with institutions and learners, respectively.

Corroboratively, Paudel (2021) surveyed 160 instructors and 120 students in Nepal to investigate their challenges during and after the COVID-19 pandemic. The results disclosed that online time management, freedom of interaction between students and instructors, and reliable Internet at home are the extreme challenges that most of the respondents outlined. Additionally, they found that the swift shift of responsibility from instructors to students in terms of learning remotely has the potency of causing social isolation, which impacted greatly students' mental health.

The afore-stated reviews are evidence of the challenges in the post-COVID-19 era due to the transition from face-to-face to e-learning.

Instructors' Challenges

The COVID-19 pandemic has affected many instructors during the swift shift to the e-learning platform. It has been established that many instructors were not technically ready for the transition. Thus, they could not exhibit skills and ideas to troubleshoot the issues that came along with e-learning. Even though many scholars identify challenges regarding other stakeholders and related factors, instructors' readiness and skills exhibited during online teaching cannot be overstated. It is instructive to note that aspects of the e-learning challenges trace back to the instructors and faculty members. For instance, Crompton et al. (2021) mentioned that instructors and faculty were confronted with the challenge to use, learn, and incorporate appropriate multimedia tools (that they had never used) to support their online instructions. This implies that instructors needed to learn how to skillfully handle the learning management system to deliver the online course, how to create and deliver learner-friendly instructional videos that met the accessibility requirements, or how to deliver the Hybrid courses, with part of the class in the classroom and the rest remotely on Zoom or asynchronous online learning platform. Furthermore, those challenges not only affected instructors but students' performance as well, which created challenges for them (Kaisara & Bwalya, 2021). Chopra et al. (2019) contended that the layout of an online course with poorly designed navigation was identified as one of the challenges faced by students, and the ease of navigation was found to be one of the most important predictors of e-learning success (Alshehri et al., 2019). Educators have been exploring methods to deal with the challenges caused by the COVID-19 emergency (Greenhow & Lewin, 2021).

At the beginning of the urgent transition in 2020, it was least anticipated that instructors who had not designed and taught any online course could achieve all the knowledge and skills and be equipped with the necessary technology tool in a short time frame (Liu et al., 2021). However, during the

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pandemic period from March 2020 to August 2021, Liu et al. (2021) posited that educators have taken this emergency as an opportunity to adjust their teaching, update all their skills, become equipped with new technology tools, revise the teaching materials, redesign their online courses, and even produce more publications to share their experiences with other educators and researchers (Abu Talib et al., 2021; Crompton et al., 2021). One of the challenges that instructors encounter is assessment and evaluation. Instructors often experience so many barriers in diversifying their mode of assessment for students. The study of Abduh (2021) on instructors' perceptions and challenges of assessment methods used in full-time e-learning during and after the COVID-19 pandemic was reported after 26 instructors were asked to complete a survey and interview. The findings disclosed that instructors reported moderate attitude towards e-assessment. However, the responses indicated that instructors are confronted with tremendous challenges in assessing students online.

Students' Challenges

Students are the most affected group of individuals in the world's educational system as far as COVID-19 is concerned. As a result of the widespread of the COVID-19 pandemic, states initiated school closure measures to help contain the virus and preserve students' safety at school (Agormedah et al., 2020). Hence, the closure of schools, colleges, and universities has affected over 80% of students all over the world. In early 2020, approximately 1.7 billion learners were not attending school (Day, 2020; UNICEF, 2020; Crawford et al., 2020; Quinn, 2020; Ebrahim, 2020; UNESCO, 2020a; Kokutse, 2020). UNESCO (2020b) reported that over 191 countries have enforced total closure of schools and about five countries have initiated closure due to COVID-19 spread. This has affected close to 99.4% of the entire student population across the world. School closures have impacted several stakeholders, particularly students, which has resulted to economic and societal consequences (Lindzon, 2020; Barrett, 2020; Mitchell & Jamerson, 2020). The closure of schools has broadened learning disparities and has affected susceptible students disproportionately (UNESCO, 2020e).

To address this issue, some international organizations, particularly UNESCO, have approved the deployment of e-learning programs as well as open educational platforms and software that schools can use to reach learners remotely and limit disruptions to education. In response to these recommendations, schools around the world have begun to operate remotely via online platforms for emergency remote teaching and learning as part of measures to reduce the spread of COVID-19 (Crawford et al., 2020). Nonetheless, this has been hampered by the digital divide (Bozkurt & Sharma, 2020; UN, 2020; UNESCO, 2020c) due to inequalities among higher

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educations and socioeconomic distinctions among students. Regarding this, many scholars questioned if higher education institutions are ready to move into the digital platform of teaching and learning (Houlden & Veletsianos, 2020).

Researchers have investigated this area with a focus on students' mental health, home learning experiences, virtual learning environment, self-regulation, and students' overall learning experience (Copeland et al., 2021; Fawaz et al., 2021; Suryaman et al., 2020; Carter et al., 2020; Almaiah et al., 2020; Hew et al., 2020; Tang et al., 2020; Adarkwah, 2021; Day et al., 2021; Khalil et al., 2020; Singh et al., 2020) to ascertain students challenges during the online learning platform. Copeland et al. (2020) study on the impact of the COVID-19 pandemic on the mental health of students found that the pandemic has impacted students' emotional and behavioral abilities, their attention span, and how well they externalize issues due to self-isolation related problems and confusion. They recommended that states and educational stakeholders should employ safety measures to mitigate the relative consequences of the COVID-19 pandemic on students' mental health and wellness. Corroboratively, Barrot et al. (2021) surveyed 200 university first-year students and discovered that the effects of the pandemic on student learning were dire. They further revealed that challenges associated with online learning varied significantly by extent and type. They maintained that the self-reported questionnaire revealed that the greatest challenges were environmental issues, technical challenges, inadequate learning resources, technological sufficient issues, self-isolation, and technological challenges in that order (Barrot et al., 2021).

Similarly, Suryaman et al. (2020) looked into how learning occurred at home during the pandemic. Their findings showed that students faced many obstacles in a home learning environment, such as lack of mastery of technology, high Internet cost, and limited interaction/socialization between and among students. In a related study, Kapasia et al. (2020) investigated how lockdown impacts students' learning performance. Their findings revealed that the lockdown made significant disruptions in students' learning experience. The students also reported some challenges that they faced during their online classes. These include anxiety, depression, poor Internet service, and unfavorable home learning environment, which were aggravated when students are marginalized from remote areas.

Pakistan Case

Online Education's Challenges

The COVID-19 outbreak compelled academic institutions and schools to move online. Online teaching tools, such as Skype Call, Vipers, ThingLink, Zoom, Google meet, and other video conferencing apps, were introduced to both teachers and students (Hamzah & Ahmad Shaberi, 2021; Sobaih et al.,

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2021). However, moving from an offline to an online mode of learning poses a number of challenges for students and educators in both developed and developing countries (Liguori & Winkler, 2020). For instance, the key hurdles of online education in developing nations include insufficient ICT skills, poor network administration or IT skills, and insufficient content development capabilities (Aung & Khaing, 2015; Hadullo et al. 2018; Noor et al. 2020). In Kenya, a similar study found that three major barriers to online education adoption include insufficient IT infrastructure, weak ICT skills, and a lack of financial resources (Ngwacho, 2020; Almaiah et al., 2020). Another research by Kanwal and Rehman (2017) revealed that the main impediments to successful online education adoption in Pakistan was the absence of existing IT infrastructure, Internet availability, and computer literacy (Kanwal & Rehman 2017). According to Kenan et al. (2013), cultural, political, and economic obstacles were the key reasons for Libyan online education's failure. Kisanga and Ireson (2015) highlighted poor interface design, insufficient technical assistance, and a lack of IT skills as major hurdles to the successful implementation of existing e-learning projects in Tanzania.

Challenges from the Student's Perspective

From the perspective of the students, certain major factors influencing the adoption of online education during the Coronavirus pandemic have been documented in the literature. For example, Almaiah and Alyoussef (2019) and Al-Araibi et al. (2019) revealed that one of the major problems students experience is technological difficulty in using e-learning platforms such as Microsoft Team, Google Class, etc., which greatly reduces their willingness to adopt online education. Another issue is learners' lack of awareness of Internet skills (Al-Araibi et al., 2019). Specifically, research has noted that students have poor comprehension of Internet capabilities and are hesitant to take charge of their own e-learning. Almaiah et al. (2020) backed up this point of view, stating that due to varying levels of education among students, online education adoption seemed difficult.

C**hallenges from the Educator's Perspective**

In a similar vein, certain important characteristics impacting the adoption of online education during the Coronavirus outbreak have been reported in the literature from the perspective of educators/universities. During the Coronavirus outbreak, for example, institutional preparation for online education was one of the most significant impediments to switching from offline to online education (Chung et al., 2020). Particularly, research has shown that the most significant reason for the failure of online education adoption in Malaysia, Saudi Arabia, and Iraq is the absence of university readiness (Chung et al., 2020; Budur et al., 2021; Alqabbani et al., 2020). This

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viewpoint is supported by recent research which indicates that the lack of technology infrastructures, such as hardware, software, facilities, and networking is one of the major challenges for universities in developing nations to transition from offline to online education (Almaiah et al., 2020). Other challenges for educators that significantly hinder the adoption of online education according to studies by Bao (2020), Laato et al. (2020), Saxena et al. (2021), and Fatani (2020) include teaching quality, content localization, and lack of relevance of course content. Similarly, research has shown that faculty members' acceptance of online education (Li, 2021), faculty members' poor ICT literacy skills (Alanazi & Alshaalan, 2020; Duraku & Hoxha, 2020; Besser et al., 2020), and teachers' lack of effort and support in the adoption of online teaching (Almaiah et al., 2020) are all important barriers to online education adoption.

Conclusion

With the help of technologists, life has become much easier and more comfortable. Through modern technologies, the worldwide challenge of the COVID-19 pandemic was easier to accept and manage. In education, this was reflected in the transition to the online platform, which had been successfully implemented in many countries around the world before COVID-19.

However, for developing countries, full transition to the online space was quite a challenge. Whether the education system has coped with this challenge is still difficult to say. However, based on the current dynamics, it can be assumed that this test has been more or less successfully passed. Proper management of information requires proper analysis, which entails qualified academic staff. This is because they are better acquainted with the strategies and methods that are appropriate for different levels of higher education.

Information and communication technology has indeed played a significant role for people with disabilities. They were able to get the necessary information on any topic through platforms tailored to them. All of the above is closely related to the quality of teaching. Given the current reality, it can be said that access to higher education has increased significantly. This is evidenced by the abundance of digital technologies. Hence, in order to be successful, it is necessary to follow and keep up with the novelties.

In light of this review, Ghana, Georgia and Pakistan have endeavored to better study and understand the challenges and opportunities of teaching and learning during the pandemic from the students and educator perspectives. Preliminary results have been obtained and will become the subject of near future publications in order to help shape the future development of E-learning impact on the quality of teaching and learning.

As the quality of life improves, the needs of people evolve. This in turn requires constant development and advancement, with the help of

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technologies. Education is a constantly evolving field requiring permanent innovations. The Fourth Industrial Revolution had a paramount impact on the digitalization of the world. This was one of the largest changes in the history of the world. The digital revolution transcends all boundaries in the biological and digital fields. Once again, it has become clear that human capabilities have no boundaries. Technologies such as Artificial intelligence, 3D printing or nanotechnology evolved (Schwab, 2016). When discussions about technology are raised, it is important not to leave out the issue of eliminating the geographical barrier. It is with the help of technology that the traditional teaching method has changed and become fully adapted to the student. With the help of digital platforms, they can get education at any time from the desired place. They also need the competencies and skills to help them easily adapt to a rapidly changing environment.

References:

1. Abduh, M. (2021). Full-Time Online Assessment during Covid-19 Lockdown: EFL Teacher's Perceptions. Asian EFL Journal Research Article, 28.
2. Aboagye, E., Yawson, J. A., & Appiah, K. N. (2021). COVID-19 and E-learning: The challenges of students in tertiary institutions. Social Education Research, 1-8. https://doi.org/10.37256/ser.212021422
3. Aborode, A., Anifowoshe, O., Ayodele, T. I., Iretiayo, A. R., & David, O. O. (2020). Impact of COVID-19 on education in sub-Saharan Africa. https://doi.org/10.20944/preprints202007.0027.v1
4. Adarkwah, M. A. (2021). "I'm not against online teaching, but what about us?": ICT in Ghana post Covid-19. Education and Information Technologies, 26(2), 1665-1685. https://doi.org/10.1007/s10639-020-10331-z
5. Addae, D., Amponsah, S., & Gborti, B. J. (2021). COVID-19 Pandemic and the Shift to Digital Learning: Experiences of Students in a Community College in Ghana. Community College Journal of Research and Practice, 1-12. https://doi.org/10.1080/10668926.2021.1972364
6. Adedoyin, O. B., & Soykan, E. (2020). Covid-19 pandemic and online learning: the challenges and opportunities. Interactive Learning Environments, 1-13. https://doi.org/10.1080/10494820.2020.1813180
7. Adu Gyamfi, S. (2017). Information and Communication Technology Acceptance in Education: A Study of Pre-service Teachers in Ghana (Doctoral dissertation, University of Lincoln). http://eprints.lincoln.ac.uk/id/eprint/35715/
8. Aduhene, D. T. & Osei-Assibey, E. (2021). Socio-economic impact of COVID-19 on Ghana's economy: challenges and

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

prospects. International Journal of Social Economics. https://doi.org/10.1108/IJSE-08-2020-0582

9. Alanazi, A. A. & Alshaalan, Z. M. (2020). Views of faculty members on the use of e-learning in Saudi medical and health colleges during the COVID-19 pandemic. Journal of Nature and Science of Medicine, 3(4), 308-317.
10. Al-araibi, A. A. M., Nazri bin Mahrin, M., & Yusoff, R. C. M. (2019). Technological aspect factors of E-learning readiness in higher education institutions: Delphi technique. Education and Information Technologies, 24(1), 567-590.
11. Albrahim, F. A. (2020). Online teaching skills and competencies. Turkish Online Journal of Educational Technology-TOJET, 19(1), 9-20. https://eric.ed.gov/?id=EJ1239983
12. Aliyyah, R. R., Rachmadtullah, R., Samsudin, A., Syaodih, E., Nurtanto, M., & Tambunan, A. R. S. (2020). The perceptions of primary school teachers of online learning during the COVID-19 pandemic period: A case study in Indonesia. Journal of Ethnic and Cultural Studies, 7(2), 90-109. http://dx.doi.org/10.29333/ejecs/388
13. Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. Education and Information Technologies, 25, 5261–5280. https://doi.org/10.1007/s10639-020-10219-y
14. Almaiah, M. A. & Alyoussef, I. Y. (2019). Analysis of the effect of course design, course content support, course assessment and instructor characteristics on the actual use of the E-learning system. Ieee Access, 7, 171907-171922.
15. Almendingen, K., Morseth, M. S., Gjølstad, E., Brevik, A., & Tørris, C. (2021). Student's experiences with online teaching following COVID-19 lockdown: A mixed methods explorative study. PloS one, 16(8), e0250378. https://doi.org/10.1371/journal
16. Alqabbani, S., Almuwais, A., Benajiba, N., & Almoayad, F. (2020). Readiness towards emergency shifting to remote learning during COVID-19 pandemic among university instructors. E-Learning and Digital Media, 2042753020981651.
17. Amir, L. R., Tanti, I., Maharani, D. A., Wimardhani, Y. S., Julia, V., Sulijaya, B., & Puspitawati, R. (2020). Student perspective of classroom and distance learning during COVID-19 pandemic in the undergraduate dental study program Universitas Indonesia. BMC medical education, 20(1), 1-8. https://doi.org/10.1186/s12909-020-02312-0

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

18. Ampadu, E. & Sedofia, J. (2021). Covid-19 and Emergency Education Strategies in University of Ghana: Students' Challenges with Emergency Remote Learning. In Emergency Remote Learning, Teaching and Leading: Global Perspectives (pp. 103-119). Springer, Cham. https://doi.org/10.1007/978-3-030-76591-0_6
19. Ansong, E., Lovia Boateng, S., & Boateng, R. (2017). Determinants of e-learning adoption in universities: Evidence from a developing country. Journal of Educational Technology Systems, 46(1), 30-60. https://doi.org/10.1177%2F0047239516671520
20. Asabere, N. Y., Agyiri, J., Acakpovi, A., Nachanja, A., & Awuku, P. (2020). Improving education delivery in a technical university in Ghana through mobile learning technology. International Journal of ICT Research in Africa and the Middle East (IJICTRAME), 9(2), 35-59. https://doi.org/10.4018/IJICTRAME.2020070103
21. Asabere, N., Togo, G., Acakpovi, A., Torgby, W., & Ampadu, K. (2017). AIDS: An ICT model for integrating teaching, learning, and research in Technical University Education in Ghana. International Journal of Education and Development using ICT, 13(3). https://www.learntechlib.org/p/182160/
22. Asamoah, M. K. (2020). Reflections and refractions on Sakai/Moodle learning management system in developing countries: A case of Ghanaian universities' demand and supply perspective analyses. African Journal of Science, Technology, Innovation and Development, 12(2), 243-259. https://journals.co.za/doi/abs/10.1080/20421338.2019.1634318
23. Aung, T. N. & Khaing, S. S. (2015, August). Challenges of implementing e-learning in developing countries: A review. In International Conference on Genetic and Evolutionary Computing (pp. 405-411). Springer, Cham.
24. Bakradze, L. (2020). New Educational Reality, Terms, Challenges, Recommendations. Erasmusplus Blog.
25. Banji, G. T., Frempong, M., Okyere, S., & Raji, A. S. (2021). UNIVERSITY STUDENTS READINESS FOR E-LEARNING DURING THE COVID-19 PANDEMIC: AN ASSESSMENT OF THE UNIVERSITY OF HEALTH AND ALLIED SCIENCES, HO IN GHANA. Library Philosophy and Practice, 1-24. https://search.proquest.com/openview/86cde938cd009d1bdc29d1dbb3364525/1?pq-origsite=gscholar&cbl=54903
26. Barrett, S. (2020). Coronavirus on campus: College students scramble to solve food insecurity and housing challenges. CNBC. Retrieved from https://www.cnbc.com/2020/03/23/coronavirus-on-campus-students-face-food-insecurity-housing-crunch.html

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

27. Bashir, A., Bashir, S., Rana, K., Lambert, P., & Vernallis, A. (2021). Post-COVID-19 Adaptations; the Shifts Towards Online Learning, Hybrid Course Delivery and the Implications for Biosciences Courses in the Higher Education Setting. In Frontiers in Education (p. 310). Frontiers. https://www.frontiersin.org/articles/10.3389/feduc.2021.711619/full
28. Bao, W. (2020). COVID-19 and online teaching in higher education: A case study of Peking University. Human Behavior and Emerging Technologies, 2(2), 113-115.
29. Besser, A., Lotem, S., & Zeigler-Hill, V. (2020). Psychological stress and vocal symptoms among university professors in Israel: implications of the shift to online synchronous teaching during the COVID-19 pandemic. Journal of Voice.
30. Budur, T., Demir, A., & Cura, F. (2021). University Readiness to Online Education during Covid-19 Pandemic. International Journal of Social Sciences and Educational Studies, 8(1), 180-200.
31. Bozkurt, A. & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to Coronavirus pandemic. Asian Journal of Distance Education, 15(1), 1-6. https://doi.org/10.5281/zenodo.3778083
32. Coman, C., Țîru, L. G., Meseșan-Schmitz, L., Stanciu, C., & Bularca, M. C. (2020). Online teaching and learning in higher education during the coronavirus pandemic: students' perspective. Sustainability, 12(24), 10367. https://doi.org/10.3390/su122410367
33. Carter, R. A., Jr., Rice, M., Yang, S., & Jackson, H. A. (2020). Self-regulated learning in online learning environments: Strategies for remote learning. Information and Learning Sciences, 121(5/6), 321–329. https://doi.org/10.1108/ILS-04-2020-0114
34. Cheng, X., Chan, L. K., Pan, S. Q., Cai, H., Li, Y. Q., & Yang, X. (2021). Gross anatomy education in China during the Covid-19 pandemic: A national survey. Anatomical Sciences Education, 14(1), 8-18. https://www.researchgate.net/profile/Xin-Cheng-11/publication/347089401_Gross_Anatomy_Education_in_China_during_the_Covid-19_Pandemic_A_National_Survey/links/600e543e299bf14088bc618b/Gross-Anatomy-Education-in-China-during-the-Covid-19-Pandemic-A-National-Survey.pdf
35. Chidambaram, S. M. D. N. (2020). Success of online teaching and learning in higher education-COVID-19 pandemic: A case study, Valley View University, Ghana. International Journal of Applied

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Engineering Research, 15(7), 735-738. http://www.ripublication.com/ijaer20/ijaerv15n7_17.pdf

36. Copeland, W. E., McGinnis, E., Bai, Y., Adams, Z., Nardone, H., Devadanam, V., & Hudziak, J. J. (2021). Impact of COVID-19 pandemic on college student mental health and wellness. Journal of the American Academy of Child & Adolescent Psychiatry, 60(1), 134–141. https://doi.org/10.1016/j.jaac.2020.08.466
37. Crawford, J., Butler-Henderson, K., Rudolph, J., Malkawi, B., Glowatz, M., Burton, R., Magni, P. A., & Lam, S. (2020). COVID-19: 20 countries' higher education intra-period digital pedagogy responses. Journal of Applied Learning and Teaching, 3(1)1-20. Retrieved from https://doi.org/10.37074/jalt.2020.3.1.7
38. Chung, E., Subramaniam, G., & Dass, L. C. (2020). Online learning readiness among university students in Malaysia amidst COVID-19. Asian Journal of University Education, 16(2), 46-58.
39. Darko-Adjei, N. (2018). Students' Perceptions and Use of the Sakai Learning Management System in the University Of Ghana (Doctoral dissertation, University of Ghana). http://ugspace.ug.edu.gh/handle/123456789/26847
40. Day, M. (2020). COVID-19: Surge in cases in Italy and South Korea makes pandemic look more likely. https://www.bmj.com/content/368/bmj.m751.short
41. Day, T., Chang, I. C. C., Chung, C. K. L., Doolittle, W. E., Housel, J., & McDaniel, P. N. (2021). The immediate impact of COVID-19 on postsecondary teaching and learning. The Professional Geographer, 73(1), 1–13. https://doi.org/10.1080/00330124.2020.1823864
42. Di Giacomo, P. & Di Paolo, C. (2021). COVID-19 and dental distance-based education: students' perceptions in an Italian University. BMC medical education, 21(1), 1-9. https://doi.org/10.1186/s12909-021-02971-7
43. Duong, C. (2021). Implementing e-learning in Finnish higher education during the Covid-19 pandemic. https://urn.fi/URN:NBN:fi:amk-2021091917867
44. Duraku, Z. H., & Hoxha, L. (2020). The impact of COVID-19 on education and on the well-being of teachers, parents, and students: Challenges related to remote (online) learning and opportunities for advancing the quality of education. Manuscript submitted for publication]. Faculty of Philosophy, University of Prishtina.
45. Ebrahim, N. (2020). How Canadian universities & colleges are responding to coronavirus. Retrieved from https://www.refinery29.com/en-ca/2020/03/9548653/canadian-university-college-closures-coronavirus

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

46. Fatani, T. H. (2020). Student satisfaction with videoconferencing teaching quality during the COVID-19 pandemic. BMC Medical Education, 20(1), 1-8.
47. Fawaz, M., Al Nakhal, M., & Itani, M. (2021). COVID-19 quarantine stressors and management among Lebanese students: A qualitative study. Current Psychology, 1–8. https://doi.org/10.1007/s12144-020-01307-w
48. Forson, I. K., & Vuopala, E. (2019). Online learning readiness: perspective of students enrolled in distance education in Ghana. The Online Journal of Distance Education and e-Learning, 7(4), 277-294. http://www.tojsat.net/journals/tojdel/volumes/tojdel-volume07-i04.pdf#page=24
49. García-Morales, V. J., Garrido-Moreno, A., & Martín-Rojas, R. (2021). The transformation of higher education after the COVID disruption: Emerging challenges in an online learning scenario. Frontiers in Psychology, 12, 196. https://doi.org/10.3389/fpsyg.2021.616059
50. Hadley, C. M. (2019). An investigation of faculty perceptions of online teaching: Barriers and LMS satisfaction (Doctoral dissertation). https://hdl.handle.net/2346/85941
51. Hadullo, K., Oboko, R., & Omwenga, E. (2018). Factors affecting asynchronous e-learning quality in developing countries university settings. International Journal of Education and Development using ICT, 14(1).
52. Hamzah, H. & Ahmad Shaberi, H. S. (2021). Teaching and learning using the online platform a new experience. International Journal of Practices in Teaching and Learning (IJPTL), 1(2), 1-5.
53. Henaku, E. A. (2020). COVID-19 online learning experience of college students: The case of Ghana. International Journal of Multidisciplinary Sciences and Advanced Technology, 1(2), 54-62. https://www.researchgate.net/profile/EugeneHenaku/publication/342586709_COVID19_Online_Learning_Experience_of_College_Students_The_Case_of_Ghana/links/5efbf4ca299bf18816f5fecb/COVID-19-Online-Learning-Experience-of-College-Students-The-Case-of-Ghana.pdf
54. Hew, K. F., Jia, C., Gonda, D. E., & Bai, S. (2020). Transitioning to the "new normal" of learning in unpredictable times: Pedagogical practices and learning performance in fully online flipped classrooms. International Journal of Educational Technology in Higher Education, 17(1), 1–22. https://doi.org/10.1186/s41239-020-00234-x
55. Hiltz, S. R. & Turoff, M. (2005). Education goes digital: The evolution of online learning and the revolution in higher

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

education. Communications of the ACM, 48(10), 59-64. https://doi.org/10.1145/1089107.1089139

56. Hondonga, J., Chinengundu, T., & Maphosa, P. K. (2021). Online Teaching of TVET Courses: An Analysis of Botswana Private Tertiary Education Providers' Responsiveness to the Covid-19 Pandemic Learning Disruptions. TVETonline Asia, 16, 1-14. http://tvet-online.asia/wp-content/uploads/2021/02/Hondonga-etal_issue16_TVET.pdf
57. Houlden, S. & Veletsianos, G. (2020). Coronavirus pushes universities to switch to online classes: But are they ready? The Conversation. Retrieved from https://theconversation.com/coronavirus-pushes-universities-to-switch-to-online-classes-but-are-they-ready-132728
58. Houshmandi, S., Rezaei, E., Hatami, J., & Molaei, B. (2019). E-learning readiness among faculty members of medical sciences universities and provide strategies to improve it. Research and Development in Medical Education, 8(2), 105-112. https://www.wsj.com/articles/student-loan-debt-relief-offers-support-to-an-economy-battered-by-coronavirus-11584735842
59. Jin, Y. Q., Lin, C. L., Zhao, Q., Yu, S. W., & Su, Y. S. (2021). A Study on Traditional Teaching Method Transferring to E-Learning Under the Covid-19 Pandemic: From Chinese Students' Perspectives. Frontiers in Psychology, 12. https://dx.doi.org/10.3389%2Ffpsyg.2021.632787
60. Johnson, N., Veletsianos, G., & Seaman, J. (2020). US Faculty and Administrators' Experiences and Approaches in the Early Weeks of the COVID-19 Pandemic. Online Learning, 24(2), 6-21. https://doi.org/10.24059/olj.v24i2.2285
61. Kanwal, F. & Rehman, M. (2017). Factors affecting e-learning adoption in developing countries–empirical evidence from Pakistan's higher education sector. IEEE Access, 5, 10968-10978.
62. Kebritchi, M., Lipschuetz, A., & Santiague, L. (2017). Issues and challenges for teaching successful online courses in higher education: A literature review. Journal of Educational Technology Systems, 46(1), 4-29. https://doi.org/10.1177%2F0047239516661713
63. Kenan, T., Pislaru, C., Othman, A., & Elzawi, A. (2013). The social impact and cultural issues affecting the e-learning performance in Libyan higher education institutes. International Journal of Information Technology & Computer Science, 12(1), 50-56.
64. Khalil, R., Mansour, A. E., Fadda, W. A., Almisnid, K., Aldamegh, M., Al-Nafeesah, A., & Al-Wutayd, O. (2020). The sudden transition to synchronized online learning during the COVID-19 pandemic in Saudi Arabia: A qualitative study exploring medical students'

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

perspectives. BMC Medical Education, 20(1), 1–10. https://doi.org/10.1186/s12909-020-02208-z

65. Kisanga, D. & Ireson, G. (2015). Barriers and strategies on the adoption of e-learning in Tanzanian higher learning institutions: Lessons for adopters. International Journal of Education and Development using ICT, 11(2), 126-137.
66. Klaus Schwab (2016). "What the Fourth Industrial Revolution means and how to respond to new challenges.
67. Kokutse, F. (2020). Ghana, Senegal close all universities. https://www.universityworldnews.com/post.php?story=20200315115142951
68. Kundu, A. & Bej, T. (2021). COVID-19 response: students' readiness for shifting classes online. Corporate Governance: The International Journal of Business in Society. https://doi.org/10.1108/CG-09-2020-0377
69. Laato, S., Islam, A. N., & Laine, T. H. (2020). Did location-based games motivate players to socialize during COVID-19?. Telematics and Informatics, 54, 101458.
70. Leu, E. & Price-Rom, A. (2006). Quality of education and teacher learning: A review of the literature. Washington, DC: USAID educational quality improvement project, 1. https://pdf.usaid.gov/pdf_docs/Pnadh491.pdf
71. Li, B. (2021). Ready for online? Exploring EFL teachers' ICT acceptance and ICT literacy during COVID-19 in mainland China. Journal of Educational Computing Research, 07356331211028934.
72. Liguori, E. & Winkler, C. (2020). From offline to online: Challenges and opportunities for entrepreneurship education following the COVID-19 pandemic. DOI: 10.1177/2515127420916738
73. Lindzon, J. (2020). School closures are starting, and they'll have far-reaching economic impacts. Fast Company. https://www.fastcompany.com/90476445/school-closures-are-starting-and-they'll-have-far-reaching-economic-impact
74. Mahyoob, M. (2020). Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners. Arab World English Journal (AWEJ), 11(4). https://ssrn.com/abstract=3652757
75. Maphosa, V. (2021). Factors influencing student's perceptions towards e-learning adoption during COVID-19 pandemic: A developing country context. European Journal of Interactive Multimedia and Education, 2(2), e02109. https://doi.org/10.30935/ejimed/11000

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

76. Martin, F., Budhrani, K., Kumar, S., & Ritzhaupt, A. (2019). Award-winning faculty online teaching practices: Roles and competencies. Online Learning, 23(1), 184-205. https://doi.org/10.24059/olj. v23i1.1329
77. Matthew, U. O., Kazaure, J. S., & Haruna, K. (2020). Multimedia Information System (MIS) for Knowledge Generation and ICT Policy Framework in Education: Innovative Sustainable Educational Investment. International Journal of Information Communication Technologies and Human Development (IJICTHD), 12(3), 28-58. https://doi.org/10.4018/IJICTHD.2020070102
78. Means, B. & Neisler, J. (2020). Suddenly online: a national survey of undergraduates during the COVID-19 pandemic. Digital Promise. http://hdl.handle.net/20.500.12265/98
79. Mitchell. J. & Jamerson, J. (2020). Student-loan debt relief offers support to an economy battered by coronavirus. Wall Street Journal. ISSN 0099-9660.
80. Mohamedbhai, G. (2020). COVID-19: What consequences for higher education in Africa. International Higher Education, 102, 30-32. https://www.internationalhighereducation.net/api-v1/article/!/action/getPdfOfArticle/articleID/2918/productID/29/filename/article-id-2918.pdf
81. Mseleku, Z. (2020). A literature review of E-learning and E-teaching in the era of Covid-19 pandemic. SAGE, 57(52), 588-597. https://ijisrt.com/assets/upload/files/IJISRT20OCT430.pdf
82. Natia, J. & Al-hassan, S. (2015). Promoting teaching and learning in Ghanaian Basic Schools through ICT. International Journal of Education and Development using ICT, 11(2). https://www.learntechlib.org/p/151844/
83. Ngwacho, A. G. (2020). COVID-19 pandemic impact on Kenyan education sector: Learner challenges and mitigations. Journal of Research Innovation and Implications in Education, 4(2), 128-139.
84. Noor, S., Isa, F. M., & Mazhar, F. F. (2020). Online Teaching Practices during the COVID-19 Pandemic. Educational Process: International Journal, 9(3), 169-184.
85. Ofori-Birikorang, A., Hayford, S. A., Dampson, D. G., Hammond, C., Amo-Mensah, M., Amponsah, E. K., & Addai-Mununkum, R. (2020). EDUCATION FOR SUSTAINABLE DEVELOPMENT AND GLOBAL CITIZENSHIP: A SITUATION ANALYSIS OF GHANA'S EDUCATION LAWS, STANDARDS AND BASIC SCHOOL CURRICULUM. International Journal of Psychology and Education, 4(4). http://journals.uew.edu.gh/index.php/ijope/article/view/22

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

86. Otoo, L. B. (2020, December 8). The impact of ICT training in basic schools. The Business & Financial Times. https://thebftonline.com/2020/12/07/the-impact-of-ict-training-in-basic-schools/
87. Owusu-Ansah, S. (2015). One laptop per child policy in Ghana: Any impact on teaching and learning. Library Philosophy and Practice, 1-20. http://digitalcommons.unl.edu/libphilprac/1290
88. Paudel, P. (2021). Online education: Benefits, challenges and strategies during and after COVID-19 in higher education. International Journal on Studies in Education, 3(2), 70-85. https://doi.org/10.46328/ijonse.32
89. Peimani, N. & Kamalipour, H. (2021). Online Education in the Post COVID-19 Era: Students' Perception and Learning Experience. Education Sciences, 11(10), 633. https://doi.org/10.3390/educsci11100633
90. Pokhrel, S. & Chhetri, R. (2021). A literature review on impact of COVID-19 pandemic on teaching and learning. Higher Education for the Future, 8(1), 133-141. https://doi.org/10.1177%2F2347631120983481
91. QQI (2020)
92. Quinn, C. (2020). COVID-19: US universities scramble to arrange campus closures. https://thepienews.com/news/covid-19-us-campus-closures/
93. Rajab, M. H., Gazal, A. M., & Alkattan, K. (2020). Challenges to online medical education during the COVID-19 pandemic. Cureus, 12(7). https://dx.doi.org/10.7759%2Fcureus.8966
94. Salih, A. A. & Omar, L. I. (2021). Season of Migration to Remote Language Learning Platforms: Voices from EFL University Learners. International Journal of Higher Education, 10(2), 62-73. https://doi.org/10.5430/ijhe.v10n2p62
95. Sarfo, F. K. & Yidana, I. (2016). University lecturers experience in the design and use of MOODLE and blended learning environments. The Online Journal of New Horizons in Education, 6(2), 143-154. http://www.tojned.net/journals/tojned/volumes/tojned-volume06-i02.pdf#page=150
96. Saxena, C., Baber, H., & Kumar, P. (2021). Examining the moderating effect of perceived benefits of maintaining social distance on e-learning quality during the COVID-19 pandemic. Journal of Educational Technology Systems, 49(4), 532-554.
97. Serhan, D. (2020). Transitioning from face-to-face to remote learning: Students' attitudes and perceptions of using Zoom during COVID-19 pandemic. International Journal of Technology in Education and

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Science, 4(4), 335-342. https://scholar.archive.org/work/rnosjknmdfgivbl5zfuqizusxm/access/wayback/https://ijtes.net/index.php/ijtes/article/download/148/pdf

98. Siddiquei, M. I. & Kathpal, S. (2021). Challenges of online teaching during Covid-19: An exploratory factor analysis. Human Behavior and Emerging Technologies. https://doi.org/10.1002/hbe2.300
99. Siga, M. D. & Acharya, P. K. (n.d). A REVIEW ON CHALLENGES OF ONLINE TEACHING IN HIGHER EDUCATION DURING COVID19 PANDEMIC. https://doi.org/10.1177/0022034520914246
100. Singh, K., Srivastav, S., Bhardwaj, A., Dixit, A., & Misra, S. (2020). Medical education during the COVID-19 pandemic: a single institution experience. Indian Pediatrics, 57(7), 678–679. https://doi.org/10.1007/s13312-020-1899-2
101. Sobaih, A. E. E., Salem, A. E., Hasanein, A. M., & Elnasr, A. E. A. (2021). Responses to Covid-19 in higher education: Students' learning experience using Microsoft teams versus social network sites. Sustainability, 13(18), 10036.
102. Soma, A., Nantomah, I., & Adusei, R. (n.d). The Challenges Facing the Integration of ICT in Ghanaian Educational System: A Systematic Review of Literature. http://45.113.122.54/pdfs/ijhsse/v8-i11/1.pdf
103. Suryaman, M., Cahyono, Y., Muliansyah, D., Bustani, O., Suryani, P., Fahlevi, M., & Munthe, A. P. (2020). COVID-19 pandemic and home online learning system: Does it affect the quality of pharmacy school learning? Systematic Reviews in Pharmacy, 11, 524–530. https://doi.org/10.31838/srp.2020.8.74
104. Tadesse, S. & Muluye, W. (2020). The impact of COVID-19 pandemic on education system in developing countries: a review. Open Journal of Social Sciences, 8(10), 159-170. https://doi.org/10.4236/jss.2020.810011
105. Tagoe, M. A. & Cole, Y. (2020). Using the Sakai Learning Management System to change the way Distance Education nursing students learn: are we getting it right? Open Learning: The Journal of Open, Distance and e-Learning, 35(3), 201-221. https://doi.org/10.1080/02680513.2019.1704232
106. Tang, T., Abuhmaid, A. M., Olaimat, M., Oudat, D. M., Aldhaeebi, M., & Bamanger, E. (2020). Efficiency of flipped classroom with online-based teaching under COVID-19. Interactive Learning Environments, 1–12. https://doi.org/10.1080/10494820.2020.1817761
107. Tanye, H. A. (2017). Quality eLearning in Distance Learning: Benefits and Implications for National eLearning Policy in Ghana. International Journal of Multicultural and Multireligious Understanding, 4(3), 1-11. http://dx.doi.org/10.18415/ijmmu.v4i3.73

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108. UN (2020). Startling disparities in digital learning emerge as COVID-19 spreads: UN education agency. Retrieved from https://news.un.org/en/story/2020/04/1062232
109. UNESCO (2020a). COVID-19: Educational disruption and response. Paris, France: UNESCO. Retrieved from https://en.unesco.org/covid19/educationresponse
110. UNESCO (2020b). Adverse consequences of school closures. Paris, France: UNESCO. Retrieved from https://en.unesco.org/covid19/educationresponse/consequences
111. UNESCO (2020c). Coronavirus deprives nearly 300 million students of their schooling. Paris, France: UNESCO. Retrieved from https://en.unesco.org/covid19/educationresponse
112. UNESCO (2020f). Startling digital divides in distance learning emerge. Paris, France: UNESCO. Retrieved from https://en.unesco.org/news/startling-digital-divides-distance-learning-emerge
113. UNESCO Report. (2020). COVID-19 educational disruption and response. UNESCO.
114. Zheng, M., Bender, D., & Lyon, C. (2021). Online learning during COVID-19 produced equivalent or better student course performance as compared with pre-pandemic: empirical evidence from a school-wide comparative study. BMC medical education, 21(1), 1-11. https://doi.org/10.1186/s12909-021-02909-z
115. Zhu, X. & Liu, J. (2020). Education in and after Covid-19: Immediate responses and long-term visions. Postdigital Science and Education, 2(3), 695-699. https://doi.org/10.1007/s42438-020-00126-3

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On Relations between Creativity, Innovation, and Quality Management Culture in Europe as a Responce to Crisis and Post-crisis Period

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Abstract

Purpose: Using regression analysis, the paper aims to clarify the relationship between innovation and creativity, innovation and quality management, and creativity and quality management. **Design/methodology/approach** – The paper opted for an exploratory study using regression analysis to find relations between innovation and creativity, innovation and quality management, and creativity and quality management, using data complemented Global Innovation Index and Creativity index and ISO 9001 standards certificate issued in European countries. **Findings** – The paper provides statistical insights about the relations between innovation and creativity, innovation and quality management, and creativity and quality management. It suggests that successful business organizations should invest in innovation, creativity, and quality management to achieve competitive advantage. **Research limitations/implications** – Because of the chosen research approach, the research results may need extended periods of investigation, therefore, researchers are encouraged to test the proposed propositions further. **Practical implications** – The paper includes implications for the development of a powerful tool combining innovation, creativity, and quality management, achieving a competitive advantage. **Originality/value** – This paper fulfills for the first time under a regression analysis an identified need to study how innovation, creativity, and quality management are related strongly between them. **Practical / Industrial value:**

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The outcome of the research stresses the value of investing in innovation, creativity, and quality management to achieve a competitive advantage, considering the importance of soft factors of production (entrepreneurship and innovation) as much important as hard factors of production (labor, land, and capital) too.

Keywords: Innovation, creativity, quality management, quality culture, factors of production

Introduction

In economic sciences, factors of production are considered (1) in classical theory (Adam Smith, etc.) land, labor, and capital, (2) in Marxist theory (Karl Marx, Frederik Engels, etc.), factors of production are considered labor, labor subjects, and labor tools, (3) in the neoclassical theory, land, labor, and capital are considered factors of production, but capital is divided into fixed capital, labor capital, and financial capital, (4) in environmental economics theories, factors of production, matter, energy, and design intelligence have been considered, and starting from the end of the middle of the 20th century, it started to be talked about another factor of production, which is the entrepreneurial ability (entrepreneurship). Within entrepreneurship, many researchers have also seen innovation as an element of this production factor.

However, innovation is not only an attribute of entrepreneurs. Innovation is also an attribute of employees, so, for innovation to appear, subjects/organizations must create the conditions for employees for making it happen.

But the attribute of innovation cannot exist without creativity, which is a prerequisite for innovation to occur. It is the creative abilities that distinguish the individual, who, if he has sufficient and necessary conditions, passes from creativity to innovation. If the innovation is valid, then the economic advantage (comparative and competitive) appears in the market, also helped by the continuous improvement of quality and the respect and application of quality management systems and standards.

The combination of early factors of production (land, labor, and capital) with modern factors of production (entrepreneurship and technological innovation) made possible the success of numerous entities operating in different sectors of the world economy during the pandemic period, when the traditional view of factors of production where labor, land, and capital have been treated as the most important factors almost was over, as well as discusses only entrepreneurship, as the fourth factor of production was not a fashion anymore, without considering creativity, innovation, quality

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management, and standards, and especially, when humans are left unchecked (Malthus, 1798).

That's why recently, factors of production have been considered labor, land, capital, entrepreneurship, and innovation, as they are considered in this paper too.

The economic crisis of 2008 – 2012. Natural disasters and pandemic situations, especially the last one, caused by COVID – 19 have shown day by day the importance of creativity, innovation, and quality management culture as a combination that can bring competitive advantage in a shaking world.

When we discuss creativity, we take into consideration something fresh, and helpful thoughts, works of art, invention, etc. There is an impressive interest in creativity in several disciplines, mostly linked with human/social sciences, economic/business studies, education, tech/engineering, theory/philosophy, etc., as individual or group activity-based ideas (Ceko, 2021).

Discussing innovation, we directly think about new combinations that result in improved and/or new products and services, new methods of processing, manufacturing, assembling, entering new market areas, offering a new way of resource usage, and new or improved business models, etc., like this. Usually, this is related to improvement, extension, and newness connected/related to improved effectiveness and efficiency of processes, procedures, rules, orders, products, services, methodologies, methods, tools, technologies, etc., like this, that people involved in the process of innovation, creativity and quality management (Lin, Chen, Liu, Li, 2022) brings to the market, offering them for economic agents, individuals, families, businesses, and governments. Innovative pure products, pure services, products connected with products, and services connected with products, are something original, more affordable, with higher quality, lower prices, etc characteristics this which make them enter easily into the market and in our life. As we consider today, innovation doesn't always require inventions, but at the end of the process, results in a higher impact on our daily life, with an approach of easy implementation in practice in a marketplace, where problem-solving related to these improved or new products and services has been required. Finally, novel/new ideas affect our economic, social, cultural, creative, sportive, etc., life, aiming to fulfill consumer requirements. Shortly, innovation is the application of activity-based things resulting from the individual, and/or group activities' creativity.

Having creativity and innovation in place, a quality culture is needed.

As a group of values, quality's culture serves as a line on how to improve daily based activities and results, products, and/or services connected to them, continuously. Quality culture attributes to all members of the organization(s) and not only to quality controllers (Ceko, 2021). The current

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working culture of public and private entities all around the world nowadays has been focused on quality of work, "doing right the first time", through quality management, corrective and preventive actions, and being clear, about the same or similar problematic issues don't show up often and/or again, which can be experienced and expressed through (1) individuals development, (2) active respect, and tolerance, (3) responsibility, and (4) entrepreneurship, as main values, bringing finally competitive advantage(s) (Ceko, 2021).

The core value of quality culture is embodied in ISO standards. Generally, for these international quality management standards, and specifically for some of them, there is an increasing interest and demand nowadays by the public and private sectors around the world, aiming to achieve a competitive advantage globally. The ISO standards are related mainly to management and quality of processes, rather than the quality of products, and services, which refers to the idea that how and why products/services achieve customer expectations (Ceko, 2021).

In daily work, organizations implement managerial functions, define quality policy, strategic/operational objectives, and responsibilities, and apply them through planning, budgeting, leading, motivating, and controlling, for improving the quality of products and services on daily bases (Ceko, 2021).

For this, a quality management system serves, which is embodied in ISO standards.

1. Literature review

Nowadays, literature on creativity, innovation, quality management, etc., has been meliorated everywhere, because these concepts help all types of organizations to become more and more competitive in a vibrant market, where demand is much lower than the offer, one of the main characteristics of the last century worldwide (Ceko, 2021).

1.1 Megatrends of 2020 – 2030 and the European response to crisis and post-crisis period

The main megatrends for the next 10 years shall be:

- At the heart of the shift in economic power shall be population growth.
- Huge changes for business, society, and the way we invest shall be influenced by emerging and developing economies.
- The impact of global warming is all around us. Rising temperatures could eventually have a significant impact on crop yields, causing food prices to surge, which in turn could impact poorer communities.
- Being in the midst of a fourth industrial revolution (known as the digital revolution), at the center of all megatrends shall be the rapid advancement of technology, especially that of artificial intelligence and machine learning.

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- Already more over-65s in Asia than people in the United States.
- By 2042 there will be more over-65s in Asia than the populations of the Eurozone and North America combined.
- Significant social change, and therefore challenges and opportunities, for both government and business, shall be caused by changes in global demographics.
- This megatrend brings structural shifts, technological development, and shifting economic power, varying by region, causing a profound effect on local and global markets and societies.
- More than half of the world's population now lives in towns and cities, and by 2030 this number will swell to about 5 billion.
- Much of this urbanization will unfold in Africa and Asia, bringing huge social, economic, and environmental transformations (Fisk, 2019).

It is clear that as a response to these big changes/megatrends and as a response to the crisis and post-crisis period Europe is going towards:

- Information revolution
- Flexible & Learning organizations and innovation systems
- Explosion of knowledge, skills, and learning and competing with them
- Growing innovation and knowledge networks
- Increase in global competition and production
- Employment from business entities of several strategies and locations
- Clustering in the Knowledge-Economy (Robinson, 1953)
- Improving systems of creation, production, and distribution (Robinson, 1953)
- Increasing needs for policy integration
- Increase in global investments and production (Robinson, 1953)
- Shifting the composition of the economy (Robinson, 1953)
- Improving knowledge, education, and skills (Robinson, 1953)
- Usage and expansion of innovation systems, creativity, and quality management culture

1.2 Factors of production

Factors of production involve/describes inputs used in the production process for an economic benefit. The factors of production in this paper (as mentioned above) have been considered (1) land, (2) labor, (3) capital, (4) innovation, and (5) entrepreneurship (Besides some authors involve innovation at entrepreneurship, while innovation is not an attribute of only entrepreneurs but employees and other individuals which are not involved in business activities, too).

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Personally, I think, the whole world history regarding the factors of production is related to the cycles of exploitation of these factors. One cycle is the exploitation of land, labor, and capital (Fernando, 2021) (fixed factors of production) and another cycle is the exploitation of innovation and entrepreneurial skills (nonfixed factors of production). In certain periods of economic development, predominates the cycle of fixed production factors (Capital, Land, and Labor) (Fernando, 2021), and, in certain moments of development, predominates the cycle of nonfixed factors of production (innovation and entrepreneurial skills). The stages through which the cycles of factors of production utilization are stages of entry, maturity increase, and decline.

Currently, in the globe, there is a lot of not used land, and labor, the unemployment rate is high, and there is money in the banks in the form of savings, that is not used for investments. It is clear that currently the cycle of land, labor, and capital's (Fernando. 2021) exploitation as important factors of production (Fernando, 2021) is coming to an end and it is so logical and clear that the cycle of innovation entrepreneurship is in the growth phase. How long this cycle will last is difficult to predict, but when this cycle shall be in the decline phase, the entry phase of the land, labor, and capital cycle, and further the growth phase of this cycle shall continue. And so on.

It is evident that in our daily productivity and growth are increasingly determined by the rate of technical progress and the accumulation of knowledge. Of key importance are networks or systems which can efficiently distribute knowledge and information. Policies relating to science and technology, industry, and education will need a new emphasis on the role and importance of innovation systems, the requirement for infrastructures, and incentives that encourage investments in research and training to support those systems (Houghton & Shehan, 2000, OECD, 1996).

1.3 Creativity

Over the years of quality management experience, (Mumford, 2003), (Sternberg, J.; Sternberg, K.; Mio, 2012), (Meusburger, Funke & Wunder, 2006) seems we have achieved a united issue that processes, procedures, products, services, etc., which are innovative, are part of creativity, or involve it (Ceko, 2021).

This, shortly, means that creativity which starts first, creates conditions for innovation, because it serves as a thinking process on how to become aware of problems, identify them, finding solutions, as an ongoing process (Torrance, 2008, Ceko, 2021).

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Problem definition, gathering data, figures, and information, selecting a solution between several of them, and from this stage creating a new or improved product is called the creative process, which consists of some stages characterized by a thinking process that includes fluency, flexibility, originality, and elaboration (Ceko, 2021).

In fact, for an organization, to achieve and maintain creativity, managerial practices, motivation, and components are needed.

Components are:

- Knowledge (mental – intellect, technicalities, procedures;
- People with flexibility and imagination to approach issues;
- Intrinsic appeal.

Two types of appeal:

- Extrinsic appeal – external elements, for example, threats of being kicked – off or incomes matters;
- Intrinsic appeal – internal elements like work enjoyment, etc.

Practices to encourage appeal:

- Approaching individuals with the right challenge;
- Autonomy for people to choose tools to achieve objectives;
- People, finances, time, etc, as resources, kept in balance
- Supportive working groups with a desire to help and support each other;
- Monitoring support – evaluation, mercy, etc;
- Organization support, cooperation, and sharing of info (Amabile et Al, 1996, 1998, 2016, Ceko, 2021).

Studying entrepreneurship should consider the socio-psychological abilities of entrepreneurs and environmental, and social impact which could be manifested in the ability of business people to create improved and/or new products and/or services (Herrera-Usagre, 2019). This is through a process (Herrera-Usagre, 2019) involving ongoings, brainstorming, conceptions, reliance, and confidence to conceive a new group of processes and procedures or a new version of mixing previous processes and procedures, creating knowledge, based on the process of creativity (Ceko, 2021).

Several authors have stressed the importance of creativity and knowledge creation for successful organizations (Siltala, 2010, Sinha, 2009, Leal & Urrea, 2013, Ceko, 2021, Woodman, Sawyer, Griffin, 1993), stressing that communication, infrastructure, technology, and training helps on the process positively.

In parallel, the concept of "the creative class, an important driver of economies of the modern age", combined with "3T regions (**T**echnology development, **T**alent empowerment, and **T**olerance on differences), causes highly creativity professionals' concentration (Ceko, 2021), which try on

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having a higher position of development of the economy" (Runco & Rubenson, 1992, Florida, 2002).

1.4 Innovation

According to an OECD report (Ahmad & Seymour, 2006), business was defined as an innovation process, including resources and production capacities (Drucker, 1985, Wróbel, Cash, Lomberg, 2020), which have the formation and use of entrepreneurial skills (Shane, 2003, Wróbel, Cash, Lomberg, 2020), which as a creative process takes place even though in the beginning the purpose can not be known, which can be defined even during this processes (Sarasvathy, 2001, Wróbel, Cash, Lomberg, 2020).

Innovation seems to be the practical application of ideas that come from the market when entities introduce new products and services to the market and when efforts are made to improve them (Schumpeter, 1993). According to the ISO 56000: 2020 standard, "innovation is something improved or new that brings and rediscovers value".

The common elements of all the authors who have examined this field are (1) innovation, (2) improvement, and (3) distribution (Cruz-Cunha, Miranda, Gonçalves, 2013). Innovation is not just an invention (Bhasin, Kim, 2012), not all innovations are inventions (Morgan, 2015), and not all innovations require inventions (Schumpeter, 1939).

Each country has its innovation system which includes laws, public administration, procedures, etc., which have a very large impact on how the system absorbs, shapes disseminate, and uses knowledge (Hendarman, Tjakraatmadja, 2012). Innovation requires a conducive environment (Hendarman, Tjakraatmadja, 2012) for business and entrepreneurship, including the elimination of bureaucracy and excessive rules, and other barriers (WB Institute, 2005).

The process of innovation can be described in three basic phases: (1) idea generation, (2) problem solving, and (3) implementation (James, 1971).

Innovation may occur as a result of a focused effort by a range of different agents, by chance, or as a result of a major system failure. According to Peter F. Drucker, the general sources of innovations are different changes in industry structure, market structure, local and global demographics, human perception, mood and meaning, the amount of already available scientific knowledge, etc., (Drucker, 2002).

About the current state of doing business and competition between business models and finding and applying new tools, techniques and equipment, it is understandable that success depends on the efficiency and effectiveness of innovation and innovative processes, as a priority for competitive advantage and comparative in business (Valenta, 2001), a process

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where multiple and different actors intertwine (Dolourex, 2004), this is a very important issue regarding the success of individual organizations.

Stakeholders in this process interact including marketing processes (advertising, publicity, public relations, promotion), among which are ideas and thoughts for improved, innovative, and new products and services, which attract the attention of stakeholders, but the foundation is communication as a process, which includes individual mental activity, group work, ideas generated, which have more advantages than physical activity and/or capital. This means that its production and growth are no longer achieved through land, labor, and capital, but mainly through innovation and technological change (Christina E. Shalley, Michael A. Hit, and Jing Zhou, 2015).

At this point, it is also worth noting the work of many authors who emphasize the close connection between mission innovation, integration, entrepreneurship, leadership, motivation, and management in general (Shung Jae Shin, Xiaomeng Zhang, and Kathryn M. Bartol, 2015, Kris Byron and Shalini Khazanchi, 2015, Lucy L. Gilson, Hyoun Sook Lim, Robert C. Litchfield, and Paul W. Gilson, 2015, Jill Perry-Smith and Pier Vittorio Mannucci, 2015).

Some authors elaborate on the Triple Helix model about responsibility for innovation (Leydesdorff & Loet, 2012), which treats it as) Academics and Government creating the Knowledge Infrastructure, Government and Business creating Political Economy, and Academics and Business creating Innovation and this three-dimensional space of interaction, Triple Helix creates the Economy of Knowledge (Tjakraatmadja et. Al. 2011, 2012). Academics provide knowledge. Knowledge is used by businesses and the government (Leydesdorff & Loet, 2012), Government provides incentives in support of innovation businesses provide funding and facilities for the development of skills, knowledge, and competencies to support innovation (Hendarman, Tjakraatmadja, 2012).

Every natural disaster and every pandemic bring opportunities and space for creativity, innovation, and standards. In the current Covid-19 pandemic, there was a growing interest in innovative solutions in the field of health, accompanied by a great deal of attention in areas such as (1) distance work, (2) distance education, (3) e-commerce, and (4) mobility solutions, with a view to a sustainable and inclusive future and the reduction of climate change. (GII, 2020).

1.5 Quality and culture of quality

Quality has to do with several values that affect how continuous improvement can be achieved in practice. This has to do with some aspects that are taken for granted to create the philosophy of the subject, the working group, the people who deal with the project, etc. (Ceko, 2021). Many authors

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have defined this as a social battle by which people stand together in an organization (Robbins, 1999). This constitutes what is called subject culture, relating to individuals in the organization, the values they hold, the way these members use mechanisms and structures, control, etc. (Schein, 2013, 2020). It is this culture that pushes you towards quality, which makes everyone in the organization interested in quality improvement, making every employee see themselves in a subject both as a customer and as a supplier, this is a way very good to do everything as well as possible, since the first time (Ceko, 2021).

In this regard, it should be borne in mind that people in the organization should not think that since there are opportunities for improvement, it is not a problem that things are not done well the first time, as this mentality constitutes a very large cost to the organization. This requires that in these organizations where quality culture predominates, products and services be evaluated in all steps of their implementation, so as not to shift responsibility along with procedures and procedures, at each stage of product/service realization (Harvey & Green, 1993, Ceko, 2021).

The above relates to (1) the individual who improves with the organization, (2) respect and tolerance among individuals in the organization, (3) entrepreneurial skills (4) having evidence of capacity (Ceko, 2021).

Common approaches that are respected and formed integrally and that are identified in organizations and their culture, and also in quality management systems, constitute the quality culture, which is expressed in the quality of products and services (Vlãsceanu, Grünberg & Pârlea, 2007).

Europe is known for its approach to a quality culture and this is taught in universities across it and applied in these universities, where the main is the principle of "training to achieve the goal" and "creating value, to create opportunities bringing benefits" (EUA, 2002 - 2006), with the aim of excellence, the realization of best practices and experiences to reach the standards. It is the managerial approach that defines the goals and objectives, the responsible persons and their responsibilities, and the procedures and processes that are followed to achieve quality, and thus constitute the values, beliefs, and expectations in the organization, which ultimately form its culture (Ceko, 2021, Kleijnen, Dolmans, Muijtjens, Willem, Van Hout, & J. Williams, 2007).

Numerous studies and papers have been conducted recently on quality, quality culture, its relevance and relevance to competitive advantage, corporate social responsibility, business sustainability, business ethics, etc. (Gordon and Owen, 2008, Harvey and Stensaker, 2008, Ceko, 2021, Schein, 2013, 2020), also has many studies and publications regarding quality, its management, total quality management, etc. (Ceko, 2013, Ceko, 2017, Ceko, 2021), which show the links between quality, quality culture, ISO standards,

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doing business and improving quality of life (Karan, 2016, Ceko, 2016, 2011, Ceko, 2021).

1.6 Concept of quality

Quality in terms of products and services has to do with what customers expect. This shows that quality is about attributes, it is related to perception, it is very subjective and it is conditional. In ISO standards and specifically in ISO 9001, it is defined as meeting customer requirements to a certain degree and this means that customers see quality as what they expect from the product/service. Quality poses a need for customers (Ceko, 2021).

Defining quality as a set of product/service features capable of meeting customer needs goes well with the contribution of Edward Deming on this issue, who wrote that costs should be reduced, increasing productivity, this leads to quality improvement through management, design, testing and processes that are constantly improving ", and with the contribution of Peter Drucker, who said that quality is what customers get from the product and service, for which they are willing and willing to pay and not what manufacturers want to decide on the products and services they deliver (Ceko, 2017).

It seems that the essence of quality is to achieve the satisfaction of the wishes and needs and expectations of customers (Ceko, 2017, Ceko, 2021).

Quality management and its system are related to the management of the organization, having a strategy, having the customer in focus, achieving what the customer needs, having qualified as a long-term commitment, doing teamwork, improving continuously, creating opportunities for staff training and education and allowing freedom through control and empowering and involving employees (Ceko, 2017, Ceko, 2021).

"Quality management system includes personnel system, safety at work, environment, human safety, production, finance, information, development, procurement, etc. (Ceko, 2021, Harrington & Mathers, 1997)

The following diagram shows the relationship between ISO 9001 and management principles (Ceko, 2021):

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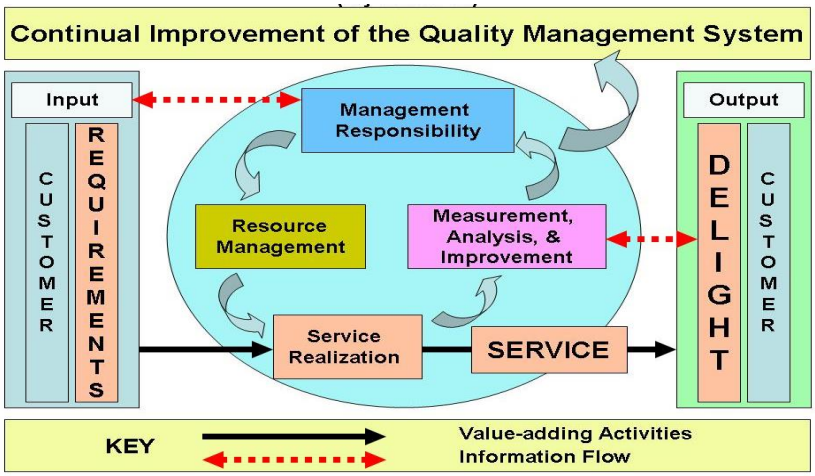

Figure 1. The scheme of relations between management principles and ISO 9000 focus. (Ceko, 2017).

The table below shows the characteristics of innovation, creativity, and quality management and the relations between them.

Creativity, innovation, and quality management					
Techniques of creativity		Innovation		Quality management	
1	Finding and respecting aim & approach;	**1**	Radical innovation: "establishes a new dominant design and, hence, a new set of core design concepts embodied in components that are linked together in a new architecture."	**1**	Characteristics of total product/service features;
2	Forming abilities;			**2**	Management of quality;
3	Supporting getting of new specific knowledge;			**3**	System of managing quality;
4	Promoting & motivating experimentation;	**2**	Incremental innovation: "refines and extends an established design. Improvement occurs in individual components, but the underlying core design concepts, and the links between them, remain the same."	**4**	The firm's management", and "characteristics of total features of products and services are: • Strategy-based – total quality is part of the vision, mission, and objectives; • Focus on the client – client in the light; • Strong link to product or service features – which customer requires; • Scientific problem-solving framework – problem-solving tools and techniques; • Long-term commitment – quality is a journey, not a destination; • Teamwork – setting quality improvement objectives, and processes;
5	Constructing promotes the environment, specific promotion inside organizations;				
6	Promoting risk-taking initiatives;				
7	Mastering auto-competition;	**3**	Architectural innovation: "innovation that changes only the relationships between them [the core design concepts]"		
8	Promoting supportive values and ideas on creative ideas;				
9	Offering chances to choose and explore;				

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10	Offering conditions for the development of auto-management;	**4**	Modular Innovation: "innovation that changes only the core design concepts of a technology" (Henderson & Clark. 1990).		• Continuous improvement process – a quality achievement never ends; • Education and training – of employees to achieve total quality; • Freedom through control – to express views, perform quality improvement actions; • Unity of purpose – based on the objectives of the organization; • Employee involvement and empowerment – through competencies, quality management" (Ceko, 2017.
11	Learning approaches, helping the performance of creativity;				
12	Supporting and establishing a balanced environment" (Nickerson, 2011).				

Table 1. Relations between Innovation, Creativity, and Quality management (Ceko, 2022)

2. Research framework, the purpose of the case study (Wróbel, 2019)

The framework of the research has been the level of creativity, innovation, and ISO 9001: 2015 standard certificates issued in the European entrepreneurship ecosystem.

Given the lack of numerical, statistical, and algebraic arguments on relations between innovation and creativity and lack of theory and numerical, statistical, and algebraic arguments on relations between quality management and creativity (Ceko, 2021) and lack of theory and numerical, statistical and algebraic arguments on relations between innovation and quality management too, this study has been intended to adopt a theory-building mode, aiming to clarify research questions as below (Wróbel, 2019):

RQ1: There is any relation between creativity and innovation?
RQ2: There is any relation between innovation and quality management?
RQ3: There is any relation between creativity and quality management?

…

considering that there is plenty of research on relations between innovation and creativity, covered by several well-known authors, listed in the literature review of this paper research, and considering that theoretical approaches on relations between creativity, and innovation exist, but numerical, statistical, and algebraic arguments on relations between innovation and creativity don't, and considering that theoretical and numerical, statistical and algebraic arguments on connections between quality management culture and innovation, don't exist (Lin, Chen, Liu, Li, 2022), and theoretical and numerical, statistical and algebraic arguments on relations between quality management culture and creativity (Ceko, 2021) don't exist too.

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3. Methodology

Specifically, while acknowledging the importance of innovation, creativity, and quality management in entrepreneurship ecosystems and doing business, prior empirical research does not explain how innovation (Ceko, 2021), and creativity influence and connect to quality management, even though several serious theoretical studies are showing a strong connection between innovation and creativity, but not numerical, statistical and algebraic studies. Thus, theory-building is required, followed by analysis, evidence, and facts. To better explore the phenomenon requires a case study approach, which allows investigation based on theory and statistical conclusions (Ceko, 2021).

Besides that, differently with the traditional model of assuming about economics, in this research, (1) labor has been considered as it is in reality, not homogeneous, (2) land has been considered as it is in reality, not homogeneous (there are particular kinds of soil or mineral deposits (Robinson, 1953) which influences on production and flow of capital and human resources), (3) it is considered as naturally, all households don't consume goods and services in the same proportions (Robinson, 1953), (4) is taken as normal, and regardless of whether their relative prices change, changes in average incomes and how they are distributed have a major effect because it affects supply and demand for end products (Robinson, 1953), (5) is taken as such because an experienced entrepreneur has an advantage over a young person (Robinson, 1953), (6) is understandable as skills, knowledge and competencies are not evenly distributed and at this point managerial skills are very important and (7) it is understandable that having sufficient capital is not the only employment opportunity (Robinson, 1953). These are the characteristics that bring this search very close to reality.

3.1 Selection of case

Three main criteria have been taken into the consideration in this research: (1) a theoretical approach, (2) suitability of relations, (3) practical positive impacts on relations between creativity and innovation, between quality management and innovation, and between quality management and creativity (Ceko, 2021).

Based on this, research questions were built. The research questions are:

- RQ1: There is any relation between innovation and creativity?
- RQ2: There is any relation between innovation and quality management?
- RQ3: There is any relation between creativity and quality management?

Based on these research questions three couples of the hypothesis were built:

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Relations between innovation and creativity (RQ1).

H01 – There is no relationship between innovation and creativity.

H11 – There is a strong relation between innovation and creativity.

Relations between innovation and quality management (RQ2).

H02 – There is no relationship between innovation and quality management.

H12 – There is a strong relation between innovation and quality management.

Relations between creativity and quality management (RQ3).

H03 – There is no relationship between creativity and quality management.

H13 – There is a strong relation between creativity and quality management.

3.2 Collection of data

- Data for creativity - Creativity Index Report 2020 (Marten Prosperity Institute, University of Toronto, 2020), a four-dimensional ranking of countries, combines individually-ranked countries based on creativity, technology, talent, and tolerance into an overall score.
- Data for innovation - Global Innovation Index Report 2020 (World Intellectual Property Organization, 13th Edition), an annual ranking of countries by their capacity for, and success in, innovation.
- Data for ISO 9001 standard application - ISO report 2015 – 2020
- ISO 9001 Index per country drawn by the author of this paper by dividing the number of ISO 9001 certificated issues per country by the total number of business entities of the country, listed in a table (Ceko. 2021, 2022).

In preparing this research, only two following types of data have been used: (1) from international indexes and websites and (2) data processed by the author on ISO 9001 Index calculated per country (Ceko, 2022).

3.3 Analysis of data

1. By ISO website was drown the number of each European country's firm certified with ISO 9001 standards.
2. From different web pages and other printed materials like chambers of commerce, houses of companies, country annual reports, institutes of statistics, etc., the total number of business entities was taken.
3. ISO 9001 index was formed by dividing the number of firms certified with ISO standards by the total number of business entities per country (Ceko, 2022).

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4. Data from European countries' creativity ranking was taken from the Creativity Index (Marten Prosperity Institute, University of Toronto, 2020).
5. Data on European countries' innovation ranking was taken from the Global Innovation Index (World Intellectual Property Organization, 13th Edition).
6. A regressive analysis between the Innovation index and Creativity Indexes for 45 European countries was performed.
7. A regression analysis between the Creativity index and ISO 9001 certification ranking data for 34 European countries was performed (Ceko, 2021).
8. A regression analysis between the Innovation index and ISO 9001 certification ranking data for European countries was performed (Ceko, 2021).

Relations between innovation and creativity
(45 European countries)

No	Country	Innovation INDEX (x)	Creativity INDEX (y)
1	Switzerland	66.08	0.822
2	Sweden	62.47	0.915
3	United Kingdom	59.78	0.881
4	Netherlands	58.76	0.889
5	Denmark	57.53	0.917
6	Finland	57.02	0.917
7	Germany	56.55	0.837
8	France	53.66	0.822
9	Ireland	53.05	0.845
10	Luxembourg	50.84	0.696
11	Austria	50.13	0.788
12	Norway	49.29	0.883
13	Iceland	49.23	0.913
14	Belgium	49.13	0.817
15	Czech Republic	48.34	0.609
16	Estonia	48.28	0.625
17	Italy	45.74	0.715
18	Cyprus	45.67	0.446
19	Spain	45.60	0.811
20	Portugal	43.51	0.71
21	Slovenia	42.91	0.822
22	Hungary	41.53	0.673
23	Latvia	41.11	0.563
24	Bulgaria	39.98	0.505
25	Poland	39.95	0.516
26	Slovakia	39.70	0.484
27	Lithuania	39.18	0.49

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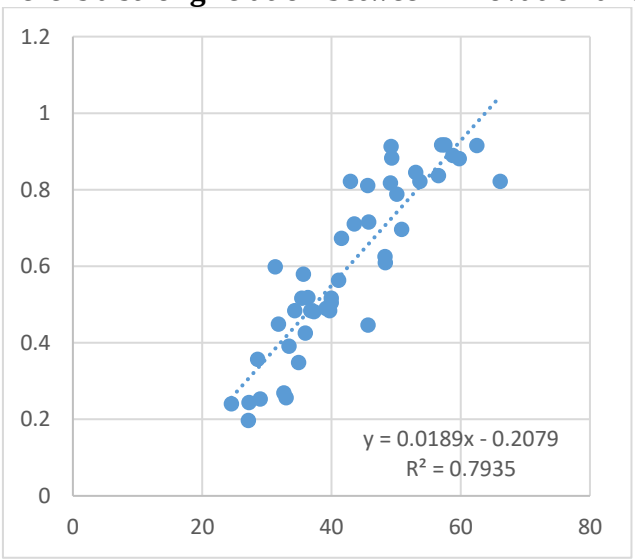
28	Croatia	37.27	0.481
29	Greece	36.79	0.484
30	Ukraine	36.32	0.518
31	Romania	35.95	0.425
32	Russian Federation	35.63	0.579
33	Montenegro	35.39	0.516
34	Turkey	34.90	0.348
35	Serbia	34.33	0.484
36	North Macedonia	33.43	0.391
37	Republic of Moldova	32.98	0.256
38	Armenia	32.64	0.269
39	Georgia	31.78	0.449
40	Belarus	31.27	0.598
41	Bosnia and Herzegovina	28.99	0.253
42	Kazakhstan	28.56	0.357
43	Azerbaijan	27.23	0.244
44	Albania	27.12	0.197
45	Kyrgyzstan	24.51	0.24

Table 2. Innovation index and Creativity Index in European countries (GIIR, 2020)

Relations between innovation and creativity (RQ1).

H01 – There is no relationship between innovation and creativity.

H11 – There is a strong relation between innovation and creativity.



Graphic 1. Regression line innovation & creativity

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Regression Statistics	
Multiple R	0.890789
R Square	0.793505
Adjusted R Square	0.788703
Standard Error	0.102342
Observations	45

ANOVA					
	df	***SS***	***MS***	***F***	***Significance F***
Regression	1	1.730675	1.730675	165.2378	2.52E-16
Residual	43	0.450375	0.010474		
Total	44	2.18105			

	Coefficients	**Standard Error**	**t Stat**	**P-value**	**Lower 95%**	**Upper 95%**	**Lower 95.0%**	**Upper 95.0%**
Intercept (b)	-0.20789	0.064674	-3.21438	0.002481	-0.33831	-0.07746	-0.33831	-0.07746
Innv. INDEX (a)	0.018934	0.001473	12.85449	2.52E-16	0.015963	0.021904	0.015963	0.021904

	y= ax+b	
Model	Y = 0.018934x – 0.20789	**y = 0.0189 (Innovation Index)x – 0.20789 (intercept)**
	R^2 = 0.7965	

The results show that Innovation at a level of 79.65% has the explanation of indication of the Creativity factor (Ceko, 2021).
Relations between the Innovation index and the Creativity index are strong (r = 0.890789).

Regression equation y = 0.018934x – 0.20789

R^2 coefficient = 0.7965

Correlation coefficient "r" = 0.890789.

Hypothesis:

H01 – There is no relationship between innovation and creativity. – the model is not good, with the security level α=0.05.

H11 – There is a strong relation between innovation and creativity. – the model is good.

By ANOVA $F_{llog} > F_{crit,}$ F Significance F (probability getting these results) < α= 0,05.

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H0 is not valuable, H1 has been verified (Ceko, 2021), with a significance level of 0.05 or a level of reliability = 95 %.

Coefficients are the values of the correlation coefficient.

Relations between innovation and ISO 9001:2015 (34 European counties)

No	Country	Innovation INDEX (x)	ISO 9001 Certificates % of Total No Businesses (y) (Ceko, 2022)
1	United Kingdom	59.78	0.019
2	Netherlands	58.76	0.0155
3	Finland	57.02	0.009
4	Germany	56.55	0.019
5	France	53.66	0.015
6	Ireland	53.05	0.016
7	Austria	50.13	0.0146
8	Norway	49.29	0.0066
9	Czech Republic	48.34	0.016
10	Estonia	48.28	0.0123
11	Italy	45.74	0.002
12	Cyprus	45.67	0.004
13	Spain	45.6	0.009
14	Portugal	43.51	0.0139
15	Slovenia	42.91	0.012
16	Hungary	41.53	0.0055
17	Latvia	41.11	0.013
18	Poland	39.95	0.0066
19	Slovakia	39.7	0.0084
20	Lithuania	39.18	0.0061
21	Croatia	37.27	0.013
22	Greece	36.79	0.008
23	Ukraine	36.32	0.001
24	Montenegro	35.39	0.007
25	Turkey	34.9	0.006
26	Serbia	34.33	0.005
27	North Macedonia	33.43	0.0069
28	Republic of Moldova	32.98	0.002
29	Armenia	32.64	0.0005
30	Georgia	31.78	0.00025
31	Belarus	31.27	0.0007
32	Kazakhstan	28.56	0.008
33	Albania	27.12	0.0008
34	Kyrgyzstan	24.51	0.00001

Table 3. Innovation index (GIIR. 2020) and ISO 9001: 2015 index in European countries

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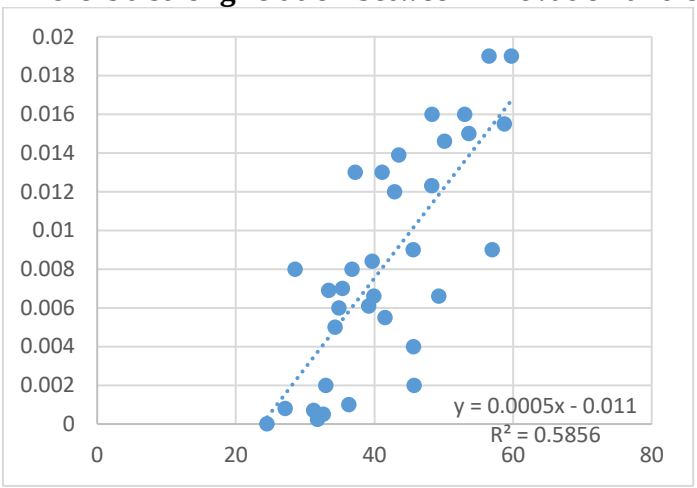
Relations between innovation and quality management (RQ2).

H02 – There is no relationship between innovation and creativity.

H12 – There is a strong relation between innovation and creativity.



Graphic 2. Regression line Innovation & ISO 9001 : 2015

Regression Statistics	
Multiple R	0.76526
R Square	0.585623
Adjusted R Square	0.572674
Standard Error	0.003754
Observations	34

ANOVA					
	Df	***SS***	***MS***	***F***	***Significance F***
Regression	1	0.000637	0.000637	45.22444	1.35E-07
Residual	32	0.000451	1.41E-05		
Total	33	0.001088			

	Coefficients	***Standard Error***	***t Stat***	***P-value***	***Lower 95%***	***Upper 95%***	***Lower 95.0%***	***Upper 95.0%***
Intercept (b)	-0.01104	0.00295	-3.74416	0.000714	-0.01705	-0.00504	-0.01705	-0.00504
Innov INDEX (a)	0.000464	6.91E-05	6.724912	1.35E-07	0.000324	0.000605	0.000324	0.000605

	y= ax+b	
Model	Y = 0.000464x – 0.01104	**y = 0.000464 (Innovation Index)x – 0.01104 (intercept)**
	R^2 = 0.585623	

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At ISO 58.0% can be explained under the indication of the Innovation factor
The relation (Connection) between them is strong (r = 0.76526).
Regression equation y = 0.000464x – 0.01104
R^2 coefficient = 0.585623
Correlation coefficient "r" = 0.76526.
Hypothesis:

H02 – There is no relationship between innovation and quality management.
– the model is not good, with the security level α=0.05.

H12 – There is a strong relation between innovation and quality management.
– the model is good.

By ANOVA $F_{llog} > F_{crit}$ F Significance F (probability getting these results) < α= 0,05

H0 is not valuable and H1 has been verified (Ceko, 2021), with a significance level of 0.05 or a level of reliability = 95 %.

Coefficients are the values of the correlation coefficient.

Relations between creativity and ISO 9001:2015
(32 European countries)

No	Country	Creativity INDEX (x)	ISO 9001 Certificates % of Total No Businesses (y) (Ceko, 2022)
1	United Kingdom	0.881	0.019
2	Netherlands	0.889	0.0155
3	Germany	0.837	0.019
4	France	0.822	0.015
5	Ireland	0.845	0.016
6	Luxembourg	0.696	0.0045
7	Austria	0.788	0.0146
8	Czech Republic	0.609	0.016
9	Estonia	0.625	0.0123
10	Cyprus	0.446	0.004
11	Spain	0.811	0.009
12	Portugal	0.71	0.0139
13	Slovenia	0.822	0.012
14	Hungary	0.673	0.0055
15	Latvia	0.563	0.013
16	Poland	0.516	0.0066
17	Slovakia	0.484	0.0084
18	Lithuania	0.49	0.0061
19	Croatia	0.481	0.013
20	Greece	0.484	0.008
21	Ukraine	0.518	0.001
22	Russian Federation	0.579	0.00066
23	Montenegro	0.516	0.007
24	Turkey	0.348	0.006

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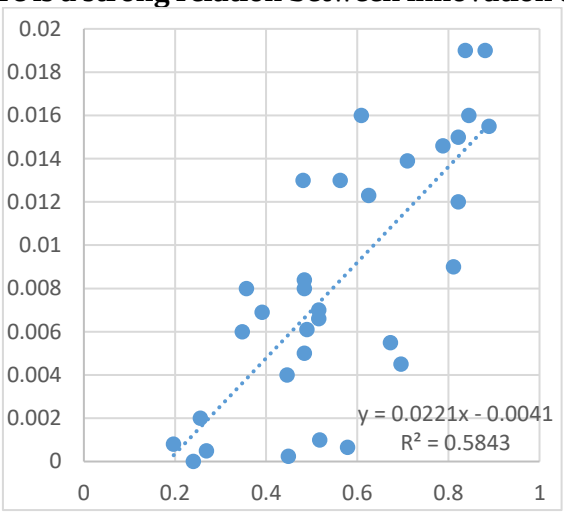
25	Serbia	0.484	0.005
26	Rep. North Macedonia	0.391	0.0069
27	Moldova	0.256	0.002
28	Armenia	0.269	0.0005
29	Georgia	0.449	0.00025
30	Kazakhstan	0.357	0.008
31	Albania	0.197	0.0008
32	Kyrgyzstan	0.24	0.00001

Table 4. Creativity index (GIIR. 2020) and ISO 9001: 2015 index in European countries

Relations between creativity and quality management (RQ3).

H03 – There is no relationship between innovation and creativity.

H13 – There is a strong relation between innovation and creativity.



Graphic 3. Regression line Creativity & ISO 9001: 2015

Regression Statistics	
Multiple R	0.764424
R Square	0.584345
Adjusted R Square	0.57049
Standard Error	0.003832
Observations	32

ANOVA					
	df	***SS***	***MS***	***F***	***Significance F***
Regression	1	0.000619	0.000619	42.17519	3.53E-07
Residual	30	0.00044	1.47E-05		
Total	31	0.00106			

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	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept (b)	-0.00407	0.002039	-1.99425	0.055282	-0.00823	9.79E-05	-0.00823	9.79E-05
Creativity INDEX (a)	0.022108	0.003404	6.494243	3.53E-07	0.015156	0.029061	0.015156	0.029061

	y= ax+b	
Model	Y = 0.022108x – 0.00407	**y = 0.022108 (Creativity Index)x – 0.00407 (intercept)**
	R^2 = 0.5843	

ISO 58.0% under Creativity factor indication

The relation is strong (r = 0.764424).

Hypothesis:

H03 – There is no relationship between creativity and quality management.

– the model is not good, with the security level α=0.05.

H13 – There is a strong relation between creativity and quality management.

– the model is good.

By ANOVA $F_{llog} > F_{crit}$ F Significance F (probability getting these results) < α= 0,05

H0 is not valuable and H1 has been verified (Ceko, 2021), with a significance level of 0.05 or a level of reliability = 95 %.

Coefficients are the values of the correlation coefficient.

3.4 Summary output

This research produced three main results and provided insight into the strong connection between creativity and innovation, and vice versa (Ceko, 2021), quality management and creativity, and vice versa, and between quality management and innovation, and vice averse, not only in theoretical aspects but what is more important this research produced for the very first time the statistical results through regression analysis for connections which exist between innovation and creativity, innovation and quality management and between creativity and quality management.

This research uses an ISO 9001 index, which lists countries based on the index derived by dividing the number of ISO 9001 certificate issues in a country by the number of existing business entities in this country in the same period (Ceko, 2022).

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3.5 Research's context

The traditional view of factors of production where labor, land, and capital have been treated as the most important factors almost is over. As well as discusses only entrepreneurship, as the fourth factor of production is not fashion anymore. Economic crises, natural disasters, and pandemic situations, especially the last one, caused by COVID – 19 have shown day by day the importance of creativity, innovation, and quality management culture as a combination that can bring competitive advantage in a shaking world. The fact that countries where innovation, creativity, and quality management principles are part of daily activities of public and private entities, are more competitive than others doesn't need any comment and/or interpretation.

Specifically, while acknowledging the importance of innovation, creativity, and quality management in doing business (Ceko, 2021) and the ecosystem of entrepreneurship, prior research, which mainly has been empirical, does not explain how creativity and innovation influence and connect to quality management.

Besides, several serious theoretical studies showing the strong connection between innovation and creativity, prior empirical studies have shown a lack of numerical, statistical, and algebraic studies on the topic and a missing of studies on connections between quality management and innovation (and vice versa), and connections between quality management and creativity (and vice a versa) (Ceko, 2021) in terms of theoretical approach and terms of numerical, statistical and algebraic studies.

3.6 Discussion

The framework of the research has been the level of creativity, innovation, and ISO 9001: 2015 standard certificates issued in the European entrepreneurship ecosystem.

Based on a regressive analysis of relations between innovation and creativity, innovation and ISO 9001 standards, and between creativity and ISO 9001 standards (Ceko, 2021), the main results are that there is a strong connection between innovation and creativity, between innovation and ISO 9001 standards, and between creativity and ISO 9001 standards too.

Considerations for practice and theory

About the theory, as per the final results regarding this research, a new window has been opened for further research in the field of relations between economic indicators, indexes, subjects, and quality management issues like ISO standards, etc., which is still an unknown area.

In terms of practice, the research shows the importance of considering innovation, creativity, and quality management as a triangle that leads to a

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stronger competitive advantage approach for individual businesses and a country's economy too.

3.7 Limitations and avenues for further research

This paper attempts to highlight ongoing concerns in understanding the relations between creativity, innovation, and quality management, and the availability to address such concerns. At the present time, there is sufficient information available to provide some definitive answers to questions of these relations, while questions of processes that facilitate these relations are the subject of further investigation, which is a window this paper's research opens for other academics and practitioners of these fields since now we are much closer to being able to design studies that will provide better answers to such questions.

This research, as the very first of this type for relations between creativity, innovation and quality management, has been undertaken using plenty of data about innovation and creativity for 2020, as well as plenty of data for ISO 9001 certificates issued per country while lacking data reliable on several registered business entities in European countries, which doesn't permit performing regression analysis for all European countries for relations between innovation and ISO 9001 standard and between creativity and ISO standard too, for some time and not just for one year.

Further studies are required to examine whether these links persist (Conn, Szilagyi, Alpert-Gillis, Webster-Stratton, Manly, Goldstein, 2018) for other non-European countries/regions for the same period (2020).

Further studies are required to examine whether these links persist (Conn, Szilagyi, Alpert-Gillis, Webster-Stratton, Manly, Goldstein, Jee, 2018) for some time probably every five years based on index publications as well as further research is needed to clarify relations between innovation, creativity, and quality management with other economic indicators and other subjects too.

From the creativity perspective, combined studies involving psychological approaches can be initiated.

From the innovation perspective, combined studies with the quality and quantity of investments can be initiated.

From the quality management perspective, combined studies for sectors affected more from relations between creativity, innovation and quality management can be initiated.

I can argue that future research should:

1. Imbed within the design appropriate questions of processes and collect data that would illustrate links between creativity, innovation and quality management worldwide.

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2. Data from correlational studies should be specific enough to provide clues to actual organizational aspects of business, human resources, strategic management, organizational behavior, supply chain management, marketing strategies, digital economy, etc., areas, that are clearly requiring a total eclipse of needed changes.
3. Conceptualize potential interactions among variables that may be particularly relevant to the issues under study, keeping in mind, researchers need not consider every possible interaction but rather target data collection efforts to test explicitly defined interactions (AIN, 1995).

Conclusion and recommendation

1. This research produced three main results and provided an overview of the strong link between innovation and creativity, between creativity and quality management, and between innovation and quality management, not only in theoretical terms, but what is most important that this research produced for the first time the time of statistical results through a regression analysis of the links that exist between innovation and creativity, innovation and quality management, and between creativity and quality management.
2. Based on regression analysis on the relationship between innovation and creativity, innovation and the ISO 9001 standard, and between creativity and the ISO 9001 standard, the main results are that there is a strong link between innovation and creativity, between innovation and the ISO 9001 standard, and between the creativity. and ISO 9001 standards as well.
3. This research uses an ISO 9001 index, which ranks countries based on the index derived by dividing the number of ISO 9001 certification issues in a country by the number of existing business entities in that country in the same period (Ceko. 2022).
4. The strong links between innovation and creativity, statistically proven, between creativity and certification with ISO 9001, statistically proven, and between innovation and certification with ISO 9001, statistically proven, shows that to achieve competitive and comparative advantage, promoting and investing in creativity, innovation, and quality management, as a nonfixed factor, is required, in parallel with the effective and efficient use of other factors of production (labor, land, and capital) which are limited and fixed.
5. In Europe the link between innovation, creativity, and quality management culture is strong and this refers mostly to the culture of entrepreneurship and doing business as a response to the crisis and the post-crisis period.

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6. Although some researchers think that the world is heading towards poverty because natural resources are immutable (fixed), this research argues that natural resources do not pose any constraints regarding economic growth.
7. There are two ways to alleviate resource constraints to increase productivity: first by increasing productivity to help overcome the constraints of fixed factors of production, for example by steadily increasing revenue, and second, by using innovation to overcome the issue of limited resources.
8. There is a tendency to innovate to save on fixed and limited resources. It follows that if we make technological advancements to save fixed and limited factors of production, then, these factors may not constitute an obstacle to growth and development. So, the same argument and logic can be applied to creativity and quality management, as both are not fixed resources and are strongly related to innovation.
9. The whole world history related to the factors of production is related to the cycles of the utilization of these factors. One cycle is the use of land, labor, and capital (fixed factors of production) and another cycle is the exploitation of innovation and entrepreneurial skills (non-fixed factors of production). In certain periods of economic development, the cycle of factors of production that are fixed and/or limited (capital, labor, and land) prevails, and in certain moments of development, the cycle of non-fixed factors of production (innovation and entrepreneurial skills) prevails).

Gratitude and thanksgiving

Along the way, for the realization of this paper research, part of my post-doctoral studies, I have had the full and unconditional support of Prof. Assoc. Dr. Almudena Guarnido Rueda (Almeria University, Ph.D. Brian W. Sloboda (University of Maryland) and Prof. Assoc. Dr. Ignacio Amate Fortes (Almeria University), who with dedication and professionalism have helped me to realize a very special study, for which I thank them a lot.

Along the way of the realization of this paper's research, part of post-doctoral studies, and completing post-doctoral studies, I have had the full and unconditional support of the European Scientific Institute and La Laguna University, San Cristobal, Tenerife. Spain.

References:

1. A World Bank Group Flagship Report. 2016. Doing Business 2016: Measuring Regulatory Quality and Efficiency. Washington, DC: International Bank for Reconstruction and Development/ World Bank.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

2. A World Bank Group Flagship Report. 2017. Doing Business 2017: Equal Opportunity for All. Washington, DC: International Bank for Reconstruction and Development/ World Bank.
3. A World Bank Group Flagship Report. 2018. Doing Business 2018: Reforming to Create Jobs. Washington, DC: International Bank for Reconstruction and Development/ World Bank.
4. A World Bank Group Flagship Report. 2019. Doing Business 2019: Training for Reform. Washington, DC: International Bank for Reconstruction and Development/ World Bank.
5. Agata Ewa Wróbel, Philip Cash, Carina Lomberg. 2020. Pro-active neutrality: The key to understanding creative facilitation. Creativity and Innovation Management. Volume29, Issue3. September 2020. Pages 424-437. https://doi.org/10.1111/caim.12372. https://onlinelibrary.wiley.com/doi/10.1111/caim.12372
6. Bhasin, Kim. 2 April 2012. "This Is The Difference Between 'Invention' And 'Innovation'". Business Insider.
7. Ceko, E. 2016. On Relationship Between Quality Management and Life Quality, European Journal of Economics and Management Sciences, Nr 2, 2016
8. Ceko, E. 2013. Quality Management Tools. Planetary University Press. 2014
9. Ceko, E. 2011. Total Quality Management and Competitive Advantage of Albanian Firms, Journal of Institute Alb-Shkenca 4(3): 423–429.
10. Ceko, E. 2017. Total Quality Management. Wisdom University Press. 2017.
11. Ceko, E. 2021. On relations between creativity and quality management culture. Creativity Studies, 14(1), 251-270. https://doi.org/10.3846/cs.2021.12154. https://journals.vilniustech.lt/index.php/CS/article/view/12154. file:///C:/Users/Admin/Downloads/12154-Article%20Text-53104-7-10-20210617%20(2).pdf.
12. Ceko. E. 2022. On Relations between Innovation, Creativity and Quality Management. 10th Mediterranean International Conference. University San Cristobal de La Laguna. Tenerife. Spain. 10th May 2022.
13. Ceko, E. (2022). A new approach to evaluate the index of ISO 9001. *SocioEconomic Challenges*, *6*(3), 5-22. https://doi.org/10.21272/sec.6(3).5-22.2022
14. Creativity Index. 2020. Marten Prosperity Institute, University of Toronto.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

15. Edgar H. Schein. 2013, 2020 Organizational Culture and Leadership. San Francisco: Jossey-Bass Publishers.
16. EUA - European University Association. 2002 – 2006. Quality Culture in European Universities: A Bottom-Up Approach. Report on the Three Rounds of the Quality Culture Project. ISBN: 9-0810-6983-7
17. Florida, R. 2002. Rise of Creative Class. New York: Basic Books.
18. Global Innovation Report. 2020. Preface vii. World Intellectual Property Organization, 13th Edition. https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020.pdf.
19. Gordon, G.; Owen, C. 2008. SHEEC on Management of Quality: Cultures of Enhancement and Quality Management Systems and Structures [online], [cited 31 January 2020]. Available from the Internet: http://www.enhancement music.UK/docs/report/ - management-of-quality-cultures-of-quality-enhancement. pdf?sfvrsn=12
20. Harrington, H. J.; Mathers, D. D. 1997. ISO 9000 and Beyond: From Compliance to Performance Improvement. New York: McGraw-Hill.
21. Harvey, L.; Green, D. 1993. Defining Quality, Assessment and Evaluation in Higher Education 18(1): 9–34.
22. Harvey, L.; Stensaker, B. 2008. Quality Culture: Understandings, Boundaries, and Linkages, European Journal of Education: Research, Development, and Policy 43(4): 427–442.
23. Henderson, Rebecca M.; Clark, Kim B. March 1990. "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms". Administrative Science Quarterly. 35 (1): 9. doi:10.2307/2393549. ISSN 0001-8392. JSTOR 2393549.
24. Herrera-Usagre, M. 2019. Cultural Practice, Creativity, and Innovation. In: Bericat, E., Jiménez-Rodrigo, M. (eds) The Quality of European Societies . Social Indicators Research Series, vol 75. Springer, Cham. https://doi.org/10.1007/978-3-030-05023-8_6
25. ISO. 2019. ISO [online], [cited 31 January, (2020)]. Available from the Internet: https://www.iso.org/home.html
26. "ISO 56000:2020 (en). 2020. Innovation management — Fundamentals and vocabulary". International Organization of Standards.
27. Jacob Morgan. 10th September 2015. "What's the Difference Between Invention and Innovation?", Forbes
28. Jason Fernando, Janet Berry-Johnson. Factors Of Production. Feb 18, 2021, & JASON FERNANDO. November 05, 2021. Factors of production. The evolution of accounting and accounting terminology. https://www.investopedia.com/terms/f/factors-production.asp

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

29. Jill Perry-Smith and Pier Vittorio Mannucci. 2015. Social Networks, Creativity, and Entrepreneurship(2015) The Oxford Handbook of Creativity, Innovation, and Entrepreneurship, Oxford University Press, ISBN 978–0–19–992767–8
30. Joan Robinson. 1953. The Production Function and the Theory of Capital. The Review of Economic Studies, Volume 21, Issue 2, 1953, Pages 81–106, https://doi.org/10.2307/2296002. https://academic.oup.com/restud/article-abstract/21/2/81/1555416?redirectedFrom=fulltext. https://www.scribd.com/document/87188046/Joan-Robinson-the-Production-Function-and-the-Theory-of-Capital
31. John Houghton, Peter Shehan. 2000. A primer on the knowledge economy, Centre for Strategic Economic Studies, Victoria University. http://docplayer.net/50330830-A-primer-on-the-knowledge-economy.html
32. Kris Byron and Shalini Khazanchi. 2015 Rewards' Relationship to Creativity, Innovation, and Entrepreneurship at The Oxford Handbook of Creativity, Innovation, and Entrepreneurship. 2015. The Oxford Handbook of Creativity, Innovation, and Entrepreneurship, Oxford University Press, ISBN 978–0–19–992767–8
33. Leal, S.; Urrea, J. 2013. Ingenio y Pasión. Barcelona: Lid Publishers, Inc.
34. Lucy L. Gilson, Hyoun Sook Lim, Robert C. Litchfield, and Paul W. Gilson. 2015. Entrepreneurial Creativity: The Role of Learning Creativity in Teams: A Key Building Block for Innovation and Entrepreneurship. 2015. The Oxford Handbook of Creativity, Innovation, and Entrepreneurship, Oxford University Press, ISBN 978–0–19–992767–8
35. Leydesdorff, Loet. 2012. The Triple Helix of University-Industry-Government Relations. The University of Amsterdam. The Netherlands. http://www.leydesdorff.net/th12/th12.pdf
36. Malthus, Thomas. 1798. Essay on the Principle of Population. Oxford: Oxford University Press (1993 printing).
37. Maria Manuela Cruz-Cunha, Isabel Maria Miranda, Patricia Gonçalves. April 2013. Handbook of Research on ICTs for Human-Centered Healthcare and Social Care Services (2 Volumes). Pages: 978. DOI: 10.4018/978-1-4666-3986-7. ISBN13: 9781466639867|ISBN10: 1466639865|EISBN13: 9781466639874. https://www.igi-global.com/book/handbook-research-icts-human-centered/72373#table-of-contents
38. Meusburger, P.; Funke, J.; Wunder, E. 2006. Milieus of Creativity: An Interdisciplinary Approach to Spatiality of Creativity. Series:

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Knowledge and Space. Meusburger, P. (Series Ed.). Vol. 2. Berlin: Springer Science + Business Media B. V., 97–154.
39. Mumford, M. D. 2003. Where Have We Been, Where Are We Going? Taking Stock in Creativity Research, Creativity Research Journal 15(2–3): 107–120.
40. Nadim Ahmad and Richard G. Seymour. 2006. Defining entrepreneurial activity, OECD Report
41. Neena Sinha. 2009. "Unleash the power of creativity and innovation", International Journal of Sustainable Strategic Management.
42. Nickerson, R. S. Developing intelligence through instruction.
43. OECD. 1996. The Knowledge-Based Economy, OECD Paris. https://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=OCDE/GD%2896%29102&docLanguage=En
44. OECD. 2005. Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, OECD Publishing, ISBN 92-64-01308-3, Paris, France
45. Peter Fisk. 2019. https://www.peterfisk.com/2019/12/mega-trends-with-mega-impacts-embracing-the-forces-of-change-to-seize-the-best-future-opportunities/. https://thegeniusworks.com/2019/12/mega-trends-with-mega-impacts-embracing-the-forces-of-change-to-seize-the-best-future-opportunities/.
46. Peter Drucker. 1985. Innovation and Entrepreneurship: Practice and Principles. New York, USA: Harper Business.
47. Peter Drucker. August 2002. "The Discipline of Innovation". Harvard Business Review. https://en.wikipedia.org/wiki/Innovation#cite_note-1
48. Pink, D. H. 2006. A Whole New Mind: Why Right-Brainers Will Rule Future. New York: Riverhead Books.
49. Robbins, Stephen P. 1999. Organizational Behavior 12th. New York: Prentice Hall.
50. Siltala, R. 2010. Innovatiivisuus ja yhteistoiminnallinen oppiminen liike-elämässä ja opetuksessa. Turku: Turun Yliopisto.
51. Sarasvathy, S., N. Dew, S. R. Velamuri and S. Venkataraman. 2003. Three views of entrepreneurial opportunity. In Handbook of entrepreneurship research: an interdisciplinary survey and introduction, ed. Z. Acs and D. Audretsch, 141–160. New York: Springer.
52. Shane, S. 2003. A General Theory of Entrepreneurship. The Individual–Opportunity Nexus. Cheltenham, UK: Edward Elgar.
53. Schumpeter, Joseph A. 1939. Business Cycles. 1. p. 84. Innovation is possible without anything we should identify as an invention, and the

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

invention does not necessarily induce innovation. https://en.wikipedia.org/wiki/Innovation

54. Schumpeter, Joseph A. 1983. The theory of economic development: an inquiry into profits, capital, credit, interest, and the business cycle. Opie, Redvers, Elliott, John E. New Brunswick, New Jersey. ISBN 0-87855-698-2. OCLC 8493721. https://en.wikipedia.org/wiki/Innovation#cite_note-1
55. Shung Jae Shin. 2015. Leadership and Creativity: The Mechanism Perspective. (2015) The Oxford Handbook of Creativity, Innovation, and Entrepreneurship, Oxford University Press, ISBN 978–0–19–992767–8
56. Christina Ellen Shalley, Michael A. Hitt, Jing Zhou · 2015. The Oxford Handbook of Creativity, Innovation, and Entrepreneurship, Oxford University Press, ISBN 978–0–19–992767–8
57. Sternberg, R. J.; Sternberg, K.; Mio, J. 2012. Cognitive Psychology. Wadsworth: Cengage Learning.
58. Teresa M. Amabile, Conti, R., Coon, H., Lazenby, J., & Herron, M. 1996. Assessing the work environment for creativity. Academy of Management Journal, 39, 1154– 1184. https://doi.org/10.5465/256995
59. Teresa M. Amabile. 1998. "How to kill creativity". Harvard Business Review
60. Teresa M. Amabile, Pratt, M. G. 2016. Dynamic Componential Model of Creativity and Innovation in Organizations: Making Progress, Making Meaning, Research in Organizational Behavior 36: 157–183.
61. Tjakraatmadja, Jann Hidajat; Wicaksono, Agung; and Martini, Lenny. 2011. Institut Teknologi Bandung (ITB) is a Potential Knowledge Hub to Create Value from Academia, Business, and Government Linkages. Beyond The Knowledge Trap. World Scientific Publishing.
62. Tjakraatmadja, Jann Hidajat, Achmad Fajar Hendarman. 2012. Relationship among Soft Skills, Hard Skills, and Innovativeness of Knowledge Workers in the Knowledge Economy Era. 10th Triple Helix Conference 2012. Procedia - Social and Behavioral Sciences 52 (2012) 35 – 44. 1877-0428.https://moam.info/relationship-among-soft-skills-hard-skills-and-59cecf501723dd7cffa40067.html
63. Torrance, Paul. 2008. "Verbal Tests. Forms A and B-Figural Tests, Forms A and B.". The Torrance Tests of Creative Thinking-Norms-Technical Manual Research Edition. Princeton, New Jersey: Personnel Press. p. 6.
64. Utterback, James. 1971. "The Process of Technological Innovation Within the Firm". Academy of Management Journal. 14(1): 78 – via Jstor. https://en.wikipedia.org/wiki/Innovation#cite_note-1

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

65. Vlãsceanu, L.; Grünberg, L.; Pârlea, D. 2007. Quality Assurance and Accreditation: A Glossary of Basic Terms and Definitions. Seto, M.; Wells, P. J. (Eds.). Bucharest: UNESCO-CEPES.
66. Wróbel, A. E. 2019. Creative Facilitation in Innovation Management: Facilitator's Role in Shaping Team Processes. The Technical University of Denmark.
67. Xiaomeng Zhang and Kathryn M. Bartol. 2015. Empowerment and Employee Creativity: A Cross-Level Integrative Model, The Oxford Handbook of Creativity, Innovation, and Entrepreneurship, Oxford University Press, ISBN 978–0–19–992767–8
68. The Relationship Between Undernutrition and Behavioral Development in Children. 1995. J. Nutr. 125: 2211S-2284S, 1995. Copyright (c) 1995 by the American Institute of Nutrition.
69. Agius, C., & Devine, K. 2011. "Neutrality: A dead concept?" A reprise. Cooperation and Conflict, 46, 265– 284. https://doi.org/10.1177/0010836711416955
70. Ahmed Mohammed, Norfarah Nordin. 2020. A Theoretical Evidence: The Mediating Role Of Creativity On The Relationship Between Knowledge Management And Entrepreneurial Orientation Toward Innovation Performance In The Jordanian SMEs. International Journal of Scientific & Technology Research. ISSN 2277-8616. Volume 9 - Issue 3, March 2020 Edition. https://ijstr.org/paper-references.php?ref=IJSTR-0320-31580
71. Anne-Marie Conn, Moira A. Szilagyi, Linda Alpert-Gillis, Carolyn Webster-Stratton, Jody Todd Manly, Nicolas Goldstein, Sandra H. Jee. 2018. Pilot randomized controlled trial of foster parent training: A mixed-methods evaluation of parent and child outcomes. Children and Youth Services Review. Volume 89, June 2018, Pages 188-197. https://doi.org/10.1016/j.childyouth.2018.04.035. https://www.sciencedirect.com/science/article/abs/pii/S0190740917307429?via%3Dihub
72. Annika Martens, Annette Kleinfeld. 2020. "Chapter 69-1 Bribery", Springer Science and Business Media LLC, 2020.
73. Appelbaum, S. H., & Steed, A. J. 2005. The critical success factors in the client-consulting relationship. Journal of Management Development, 24, 68– 93. https://doi.org/10.1108/02621710510572362
74. Astor, H. (2007). Mediator neutrality: Making sense of theory and practice. Social & Legal Studies, 16, 221– 239. https://doi.org/10.1177/0964663907076531
75. Averill, J. R. 1999. Individual Differences in Emotional Creativity: Structure and Correlates, Journal of Personality 67(2): 331–371.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

76. Azadegan, A., & Kolfschoten, G. 2014. An assessment framework for practicing facilitators. Group Decision and Negotiation, 23, 1013– 1045. https://doi.org/10.1007/s10726-012-9332-4
77. Barczak, G., Lassk, F., & Mulki, J. 2010. Antecedents of team creativity: An examination of team emotional intelligence, team trust, and collaborative culture. Creativity and Innovation Management, 19, 332– 345. https://doi.org/10.1111/j.1467-8691.2010.00574.x
78. Bens, I. 2012. Facilitating with ease! Core skills for facilitators, team leaders, members, managers, consultants, and trainers. New York: John Wiley & Sons.
79. Berman, E. M., & Kim, C.-G. 2010. Creativity management in public organizations. Public Performance & Management Review, 33, 619– 652. https://doi.org/10.2753/pmr1530-9576330405
80. Bernard, S. E., Folger, J. P., Weingarten, H. R., & Zumeta, Z. R. 1984. The neutral mediator: Value dilemmas in divorce mediation. Conflict Resolution Quarterly, 1984(4), 61– 74. https://doi.org/10.1002/crq.39019840406
81. Berry, M. 1993. Changing perspectives on facilitation skills development. Journal of European Industrial Training, 17(3), 23. https://doi.org/10.1108/03090599310026355
82. Braun, V., & Clarke, V. 2006. Using thematic analysis in psychology. Qualitative Research in Psychology, 3(2), 77– 101. https://doi.org/10.1191/1478088706qp063oa
83. Christine Greenhalgh and Mark Rogers. 2010. Innovation, Intellectual Property, and Economic Growth. Published by Princeton University Press. 41 William Street, Princeton, New Jersey 08540ISBN 978-0-691-13798-8. https://doi.org/10.1515/9781400832231. https://www.jstor.org/stable/j.ctt1zgwjjb. https://www.degruyter.com/document/doi/10.1515/9781400832231/html
84. Cydney Spohn. 2008. Teacher Perspectives on No Child Left Behind and Arts Education: A Case Study. Arts Education Policy Review Volume 109, 2008 - Issue 4. Pages 3-12 | Published online: 07 Aug 2010. https://doi.org/10.3200/AEPR.109.4.3-12. https://www.tandfonline.com/doi/abs/10.3200/AEPR.109.4.3-12
85. Doloreux, D. 2004. Regional Networks of Small and Medium Sized Enterprises: Evidence from the Metropolitan Area of Ottawa in Canada. European Planning Studies, Vol. 12, No. 2, 173-189, ISSN 0965-4313

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

86. Engelberger, J. F. 1982. "Robotics in practice: Future capabilities". Electronic Servicing & Technology magazine.
87. Ernst, H. 2001. Patent applications and subsequent changes of performance: evidence from time-series cross-section analyses on the firm level. Research Policy, Vol 30, No. 1, 143-157, ISSN 0048-7333
88. Gerard O'Regan. 2002. "A Practical Approach to Software Quality", Springer Science and Business Media LLC.
89. Hicks, John R. 1932. The Theory of Wages. London: Macmillan.
90. Himanshu Gupta, Mukesh Kumar Barua. 2018. Modeling cause and effect relationship among enablers of innovation in SMEs. Benchmarking: An International Journal. ISSN: 1463-5771. https://www.emerald.com/insight/content/doi/10.1108/BIJ-03-2017-0050/full/html
91. Hjorth, D. 2004. Creating Space for Play/Invention – Concepts of Space and Organizational Entrepreneurship. Entrepreneurship and Regional Development, 16(5), 413–432.
92. Hoegl, M.; Gibbert, M.; Mazursky, D. 2008. Financial Constraints in Innovation Projects: When Is Less More?, Research Policy 37(8): 1382–139.
93. James Williams. 2009. "Editorial", Quality in Higher Education.
94. Jinwoo Kim Jooeun Lee Dongseong Choi. 2003. Designing emotionally evocative homepages: an empirical study of the quantitative relations between design factors and emotional dimensions. International Journal of Human-Computer Studies. Volume 59, Issue 6, December 2003, Pages 899-940. https://doi.org/10.1016/j.ijhcs.2003.06.002. https://www.sciencedirect.com/science/article/abs/pii/S1071581903001320?via%3Dihub
95. Jong, J. P. J. 2007. Individual innovation: the connection between leadership and employees' innovative work behavior. I'M. The University of Amsterdam. UvA-DARE (Digital Academic Repository). ISBN 978-90-371-0725-8 https://pure.uva.nl/ws/files/4343764/52860_Jong_jeroen_de_Ind_innovation_JJO_cropped.pdf
96. Joshua Wilde. How Substitutable are Fixed Factors in Production? Evidence from Pre-Industrial England. MPRA Paper from University Library of Munich, Germany Ludwigstraße 33, D-80539 Munich, Germany. May 21, 2017
97. Kiran, D. R. 2017. Total Quality Management: Key Concepts and Case Studies. Amsterdam: Elsevier Inc.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

98. Julie A. Caswell, Mary E. Bredahl, Neal H. Hooker. (1998) "How Quality Management Metasystems Are Affecting the Food Industry", Applied Economic Perspectives and Policy.
99. Lijster, Thijs, ed. 2018. The Future of the New: Artistic Innovation in Times of Social Acceleration. Arts in society. Valiz. ISBN 9789492095589. Retrieved 10 September 2020.
100. Loo, S. 2017. Creative Working in Knowledge Economy. Series: Routledge Advances in Organizational Learning and Knowledge Management. New York: Routledge.
101. Malinić Dejan, Milićević Vlade, Glišić Milan. 2015. Da li najbolja preduzeća u Srbiji kreiraju vrednost?Ekonomika preduzeća. 2015, vol. 63, br. 7-8, str. 337-353. ISSN: 0353-443X, e- ISSN: 2406-1239. http://scindeks.ceon.rs/Article.aspx?artid=0353-443X1508337M
102. Massimiliano Agovino, Fabio Corbisiero, 2020.Diversity Management Policies for the Inclusion of LGBT People into the Labour Market: The Case of Naples. Papers in Applied Geography. Volume 7, 2021 - Issue 1. Pages 50-66 | Published online: 01 Sep 2020. https://doi.org/10.1080/23754931.2020.1815236. https://www.tandfonline.com/doi/full/10.1080/23754931.2020.1815236
103. Michael Gibbert & Philip Scranton. 2009. Constraints as sources of radical innovation? Insights from jet propulsion development management 4(4):385-399 DOI: 10.1177/1744935909341781.
104. Michael Lewis, James Moultrie. 2005. The Organizational Innovation Laboratory. https://doi.org/10.1111/j.1467-8691.2005.00327.x
105. Neil Robert Anderson, Kristina Potočnik, Jing Zhou, 2014. Innovation and Creativity in Organizations: A State-of-the-Science Review, Prospective Commentary, and Guiding Framework. Journal of Management 40(5), DOI: 10.1177/0149206314527128
106. Paul Paulus. 2012. Collaborative Creativity—Group Creativity and Team Innovation DOI: 10.1016/B978-0-12-374714-3.00014-8 In book: Handbook of Organizational Creativity (pp.327-357)
107. Paul Romer. 2012. Economics.
108. Peri, C.; Lavelli, V.; Marjani, A. 2004. Qualità nelle aziende e nelle filiere agroalimentari: gestione e certificazione dei sistemi per la qualità, per la rintracciabilità e per l'igiene. Milano: Ulrico Hoepli Editore S.p.A.
109. Rina Rifqie Mariana, Laili Hidayati, Soenar Soekopitojo. 2018. Implementing the HACCP system to the production of Bakso Malang-

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Indonesia. Volume 17, 2019 - Issue 4. Pages 291-312 | Received 11 Oct 2017, Accepted 30 Jan 2018, Published online: 22 Mar 2018. https://doi.org/10.1080/15428052.2018.1442760. https://www.tandfonline.com/doi/full/10.1080/15428052.2018.1442760

110. *Simonton, D. K. 1997.* Creative Productivity: A Predictive and Explanatory Model of Career Trajectories and Landmarks, *Psychological Review 104(1): 66–89.*
111. Stuart, T. 2000. Interorganizational alliances and the performance of firms: a study of growth and innovation rates in a high-technology industry. Strategic Management Journal, Vol. 21, No. 8, 791-811, ISSN 1097-0266
112. Sunil Sharma. 2018. Total Quality Management: Concepts, Strategy, and Implementation for Operational Excellence First Edition. ISBN-13: 978-9352805129. ISBN-10: 9352805127
113. T.R. Gopalakrishnan Nair, V. Suma, 2010. A paradigm for metric-based inspection process for enhancing defect management, ACM SIGSOFT Software Engineering Notes, Volume 35, Issue 3, May 2010. https://doi.org/10.1145/1764810.1764827 https://dl.acm.org/doi/10.1145/1764810.1764827
114. Thierry Burger-Helmchen. 2012. Entrepreneurship – Creativity and Innovative Business Models. InTech, Janeza Trdine 9, 51000 Rijeka, Croatia. ISBN 978-953-51-0069-0. https://www.scribd.com/document/179525591/ENTREPRENEURSHIP-CREATIVITY-AND-INNOVATIVE-BUSINESS-MODELS.
115. The World Bank Institute, 2005
116. Xiang-Qian Lin, You-Cheng Chen, Chih-Hsing Liu, Yong-Quan Li. 2022. Measuring creativity: role of service quality management, knowledge sharing, and social interaction. Total Quality Management & Business Excellence https://doi.org/10.1080/14783363.2021.2021800. https://www.tandfonline.com/doi/full/10.1080/14783363.2021.2021800

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Do Budgeting Practices Affect Saving Behavior among Small-scale Enterpreneurs in Kenya? Evidence from Kisumu Central Constitency

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Abstract

World Bank Development Indicators' most recent data reveals that the nation's Gross Domestic Savings as a proportion of gross domestic product(GDP) was 11.09 percent in 2017, 11.64 percent in 2018, 11.25 percent in 2019, and 12.83 percent in 2020. This shows that the country's domestic savings is increasing but relatively low. As a result of this, the country presents a significant development challenge. Individuals need to learn the basic knowledge of financial areas so that people may make knowledgeable financial decisions about how to earn, spend, save, manage, and invest their money. The purpose of this study was to answer if budgeting practices affect saving behavior among small-scale entrepreneurs in Kenya. The study's particular objectives were to; establish the influence of monitoring spending, financial planning, and tracking spending patterns on saving behavior among small entrepreneurs. The study was guided by Life Cycle Theory and Financial Literacy Theory. A correlational research design was employed in the study. The target population comprised 914 registered small entrepreneurs in Kisumu town central constituency who have been in business for at least 2 years. The study adopted the Yamane sampling technique and obtained 278 respondents. Open-ended and closed-ended structured questionnaires were employed to gather primary data. To test the reliability of

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the questionnaire, the study piloted 28 respondents who were excluded from the final study. The study then used Cronbach's Alpha to test reliability. The results showed that budgeting practices (α=0.828) and saving behavior (α=0.870) all had a strong alpha value of above 0.7 which indicates that the instrument is reliable. The study findings revealed that; monitoring spending was significant (β= .376; p=.000< 0.05) that is an increase of 1 unit in monitoring spending causes an increase of .376 units in saving behavior, financial planning was significant (β= .333, p=.000<0.05) that is an increase of 1 unit in financial planning causes an increase of .333 units in saving behavior and tracking spending pattern was also significant (β= .179, p= .000<0.05) that is an increase of 1 unit in monitoring spending terms causes an increase of .179 units in saving behavior. There was a strong positive and significant association between budgeting and saving behavior thus rejecting the null hypothesis. The study concludes that budgeting practices improve the saving behavior of small entrepreneurs in Kenya and recommends that small-scale entrepreneurs should practice all aspects of budgeting practices which includes monitoring spending, financial planning, and tracking spending patterns. This will enable them to compare what they have spent concerning what they had planned thereby helping them improve their saving behavior.

Keywords: Small Scale Entrepreneurs, Financial Planning, Monitoring

1. Introduction

Individuals whether in the public or private sector should be able to manage their finances in terms of saving and investing since managing money can be more difficult compared to earning it (Shafinar, Koe, Karim, Yusof, & Ishmail, 2020). The balance remaining after subtracting the cost of spending from the amount of disposable income is what Keynesian economists refer to as saving. The role played by private savings in propelling growth and investments cannot be over-emphasized. Even though investment helps the economy as a whole thrive, investment cannot be improved without a rise in savings. The economic growth of nations with higher savings rates has outpaced that of nations with lower savings rates (Ribaj & Mexhuani, 2021). A rise in aggregate savings would give rise to higher GDP growth. This is the fact that Savings contributes to capital development, which in turn spurs technological advancement and innovation, which aids in the economies of large-scale production. Specialization also boosts worker productivity, which further boosts GDP. Therefore, saving results in more efficient use of the resources that are already available, a rise in the amount of national output, income, and employment, and a reduction in poverty and inequality. Saving is crucial because it influences two economic principles, distribution and growth, and serves a variety of other reasons.

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Globally, household saving has risen in the United States and other high-income countries, despite widespread declines in wages and other private income streams. Domestic savings at the national level enable capital formation, which serves as a key pillar for economic development (Mwangi, 2020). For emerging nations like Kenya, where funds deposited in commercial banks represent a significant source of funding. Savings significantly contribute to encouraging investment and boosting economic growth. Despite its enormous relevance as a development and investment booster, domestic savings in emerging countries continue to be relatively low when compared to those in wealthy countries. The country's Gross Domestic Savings as a Percentage of GDP was 11.09 percent in 2017, 11.64 percent in 2018, 11.25 percent in 2019, and 12.83 percent in 2020, according to recent data from World Bank Development Indicators. According to Kenya's 2019 Fin Access household survey, households account for a sizeable share of the gross national savings. Although 55% of all adults have at least one formal saving account, there are still gender and geographic differences in formal accounts that average 10% and 23%, respectively. Despite efforts to increase financial literacy and the development of business ventures to increase savings, saving behavior in Kenya is still scarce. This might be a result of easy access to cash using mobile phones, the high cost of living, and the rise in consumption of goods and services.

An individual's marginal propensity to save, which is impacted by other factors, can be used to measure their saving behavior. As stated by African Development Bank (ADB, 2018), if Africa saved more and improve their household saving they would use those funds for infrastructure instead of raising the funds through external debt which is expensive although the saving and investment rate has increased over the last one decade, more needs to be done so we can support our investment. Furthermore, according to (ADB, 2018) African nations still have to bring up residential reserve funds rates compared to their per capita GDPs as their doing poorly compared to the East Asian and Pacific countries but good operative money-related intermediation can lead t anand increment to the rate of household investment funds. Be that as it may, numerous African nations are described by low savings and investment-related segment improvement, with a restricted cluster of money-related instruments to pull in reserve funds for investment in the same light.

Onduso (2013), examined how budgets affected the financial health of industrial firms in Nairobi County, Kenya. The study used a cross-sectional research methodology with 18 manufacturing companies listed on the Nairobi Securities Exchange. For the study, a census survey was used to gather information on all manufacturing companies in Nairobi County. The study included both primary and secondary data. The statistical package for social

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sciences was used to examine the data, and a regression model was used to ascertain the relationship between dependent and independent variables. The study's findings showed that the budget has a significant favorable impact on manufacturing enterprises' financial performance as indicated by return on assets (ROA). According to the study's findings, businesses must create a solid connection between the budgeting and planning processes. Based on the findings, the study suggested that increasing capability, prioritizing sound systems and processes, and closely monitoring for assessment could help with effective budget implementation. However, the study's conclusions solely addressed the connection between budgeting and financial performance and did not explore whether there was a connection between budgeting and saving behavior.

Mwaguni, Mbugua, & Rambo (2020), in their study to assess how budgets influence the performance of research projects of public Universities in the coast region Kenya. The study used the pragmatism paradigm. A descriptive survey and correlation research design were adopted in the study. Primary data was collected by the use of an interview guide and semi-structured questionnaires. The study findings established that budget influences the performance of research projects with a composite mean of 3.93 and a standard deviation of 0.747. The study found a positive correlation between budget and the success of research projects at public universities and advised the ministry of education and treasury to prioritize budgeting to build institutions' capacity and, as a result, enhance the success of research projects at public universities. The study did not, however, look at the connection between spending habits and saving patterns.

The impact of budgetary control uses on the financial performance of public universities in Nairobi County, Kenya, was studied by Odero in 2019. In Nairobi County's five primary public universities, a census survey was carried out. Primary data were gathered via structured questionnaires, and secondary data from the audited financial accounts of the public universities for the three fiscal years between 2014 and 2017 were utilized to calculate indicators of financial performance. Data analysis for the study included descriptive and correlation techniques. At alpha values of 0.05 (95% confidence level), regression analysis was done to evaluate whether there was a significant link between the independent and dependent variables. As evidenced by p values of 0.000, 0.025, and 0.006, respectively, the study's findings showed a significant association existed between budget planning, budget coordination, budget control, and the financial performance of public universities in Kenya. The study came to the conclusion that budgetary control aids in improving financial performance because it compares budget targets with actual performance and immediately corrects adverse discrepancies. The report advised that public universities employ effective budgetary

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coordination in their diverse departments' budgetary activities. The study did not, however, highlight the connection between saving and budgeting behavior.

Numerous studies such as Onduso (2013), Mwaguni, Mbugua, & Rambo (2020) and Odero (2019) have become interested in the impact of financial literacy and how it affects financial performance over time. However, few studies have focused on analyzing the influence of budgeting and its contribution to small-scale entrepreneurs' saving behavior or individuals who are in the informal sector. Even though the sector generates close to 80% of employment in the country. The majority of the available research studies have been done outside Kenya and mostly in more developed countries.

1.1 Small-Scale Entrepreneurs in Kisumu Central Constituency

Kisumu city is the largest city in Kenya and Kisumu central consistency is one of the 7 constituencies in Kisumu County. The city of Kisumu is widely dependent on small-scale businesses for its growth as they play an important role in generating employment, and promoting diversity, competition and innovation. Among the challenges faced by small-scale business owners is managing their funds. The majority of them do not keep track of their finances and often fail to save when they have a surplus. This is often contributed by limited financial knowledge and business owners' ignorance leading to the closure of the enterprises, over-reliance on loans, and poor business growth. The primary goal of an entrepreneur is their business survival (Kisker, 2016), for this reason, small-scale business owners' participation in saving will provide them with financial security and also secure them in a financial emergency. As a result of this, they can be able to avoid unnecessary debt and unexpected expenses.

1.2 Statement of The Problem

Small-scale business owners need to be encouraged to save more money, although they have low savings due to a high cost of living, a lack of saving knowledge, poor income, and other demographic factors. This is crucial because 80% of Kenyans work in the informal sector. Even though a lot of energy is being channeled by both governmental and non-governmental bodies in terms of offering financial and consultative support services, several research studies show they have been facing survival and success challenges. Studies on determinantsof saving have been done in Kenya but at the national level and in the formal sectors. Even though the informal sector is most oriented toward human psychological needs meaning that their financial management has a major influence on the stainability of these enterprises, according to the literature already in existence, not much has been

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accomplished regionally, especially in the informal sector. Again, prior research concentrated on identifying a variety of factors that restrict saving, such as interest rates, demographic factors, the availability of credit, and inflation, but little has been done to examine the impact of financial literacy on saving, especially in Kenya's metropolitan areas. Last but not least, there is relatively little research done in Kenya on the impact financial literacy has on households' decisions to save. The majority of the studies concentrated on the relationship between financial literacy and successful entrepreneurship, retirement planning, and personal financial management. By examining the effect of budgeting practices on saving among small-scale enterprises, this study aims to close this knowledge gap.

1.3 Justification of the Study

The study will assist in guiding the government on how they can mobilize, train and educate small-scale entrepreneurs on the need for saving and investment as they are significant contributors to the economy. Financial institutions namely banks, building societies, mortgage firms, and insurance companies will benefit by understanding the level of financial literacy of their clients and their behavior concerning the services and products they offer. The information gathered from the study will assist small-scale entrepreneurs' in improving their financial decision-making and confidence in managing finances relating to their businesses. They will be in a much better position in understanding the need to save and plan for their financial freedom, future investment, and financial risk management. Researchers may use the study as a resource to refer to when doing a related study in the future. The study's findings will also raise public awareness of the advantages of saving, and more small business owners will be encouraged to start saving.

2. Literature Review

2.1 Theoretical Literature Review

2.1.1 Life Cycle Theory

Franco Modigliani and Richard Brumberg developed a theory of spending in the early 1950s based on the notion that people make wise decisions about how much they want to spend at each age, limited only by the resources available throughout their life. An economic hypothesis called the Life Cycle Hypothesis (LCH) explains how people's spending and saving patterns change throughout their lives. According to the hypothesis, people try to balance their lifetime consumption by borrowing during times of low income and saving during times of high income. It is predicted that persons with higher earnings may save more money and are more intelligent than those with lower incomes. People with low salaries have less discretionary income, which is why this is the case. It also implies that households will behave

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sensibly and restrained as they plan for retirement and that they will have a full understanding of their future income flow, consumption levels, and life span.

According to the Life Cycle Hypothesis (LCH), people tend to spread out their consumption throughout their lives by saving money during times of high income and borrowing during times of low income. Spending too much at some point in the life cycle may be justified. The ability to predict future earning and saving periods to offset present and future spending justify deficit spending. This kind of spending management involves some forethought and restraint. The relationship between budgeting techniques and saving should be favorable in light of this.

2.1.2 Financial Literacy Theory

Financial literacy, according to Atkinson and Messy (2015), is the ability and confidence of investors to appreciate opportunities and financial risks to make informed decisions, know where to seek assistance, and take other useful actions that enhance their financial well-being. Financial literacy is also defined as an investor's understanding of financial concepts, and products, and the ability to appreciate opportunities and risks. Through the development of pertinent knowledge and skills in money management, financial literacy gives investors the power to overcome obstacles in the marketplace, particularly in today's advanced credit markets. As a result, financial literacy empowers and enables entrepreneurs to weather tough economic times by teaching them risk-management techniques like saving, diversification, debt management, financial planning, and insurance coverage. Therefore, financial literacy promotes good financial budgeting, planning, and control, as well as more efficient usage of financial products and services. Financially literate individuals are expected to be able to understand the importance of saving, managing their finances, and having proper financial management. The theory was useful in the study as it explains how financial literacy influences the saving behavior of individuals.

2.2 Empirical Literature Review

In a study to look into the present budgeting procedures of the biggest manufacturing enterprises in Lithuania, Klimaitiene & Ramanauskaite (2019). The focus of the study was on identifying the pertinent budgeting trends in the biggest industrial enterprises in Lithuania and contrasting those findings with those of similar studies conducted in other nations. The study's design was based on a questionnaire for an empirical study. The 22 largest Lithuanian enterprises were asked to complete a questionnaire to examine their existing budgeting procedures. According to cross-sectional analysis, businesses with good ratings for their budgeting techniques employ more modern approaches

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than businesses with middling ratings. The study concludes that the global trends in budgeting practices, which are supported by global research initiatives, are observed by Lithuanian companies. Further, the study concluded that the number of financial and non-financial indicators used for performance and budgeting is important when assessing the effectiveness of the created budget. The study recommended that to achieve higher budgeting efficiency companies should pay more attention to employees, their engagement, and motivation and Lithuanian companies need to adopt more sophisticated budgeting methods. However, the study did not bringout the relationship between budgeting and saving behavior.

Mohamed, Evans, & Tirimba (2015), conducted a study to evaluate the effects of organizational performance at the Dar es Salaam Bank headquarters in Hargeisa, Somaliland, using budgetary control approaches. The study concentrated on how responsibility accounting affects the effectiveness of organizations. Both descriptive and retrospective research designs were used in the study. Seventy Dar-Salaam Bank employees provided primary data, and secondary data was gathered from published sources. Statistical software for social scientists (SPSS) was used to analyze the data, which were then presented as frequency tables and conversations. According to research findings on the efficacy of budgetary management systems, responsibility accounting strengthens budget control and boosts productivity and efficiency. The study concluded that there is a positive relationship between an organization's responsibility accounting system and performance and recommended that organizational staff needs to be trained on the existing budgetary control techniques to enhance business decision-making and improve efficiency as well as productivity. However, the study did not bring out the relationship between budgeting and saving behavior.

The impact of budgeting techniques on the financial performance of manufacturing small and medium-sized businesses in Nairobi County, Kenya, was examined by Mbogo, Olando, and Macharia in 2021. The study employed a self-administered cross-sectional survey to collect data and adopted a descriptive research methodology. Through the use of structural equation modeling, data from a survey of 156 manufacturing SMEs in the city of Nairobi was evaluated. The results of the study showed that budgeting practices have a positive and significant impact on the financial performance of manufacturing SMEs. It was concluded that strategic action in budgeting practices, such as planning for cash flows, resource allocation, activity coordination, and financial position monitoring, can improve the financial performance of manufacturing SMEs. The study advised the management of manufacturing SMEs to give budgeting procedures more attention because it enhances the performance of their business. The primary goal of the study was to determine how budgeting methods affected financial success, although it

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did not explicitly explain how budgeting techniques and saving behavior relate to one another.

Nafisatu (2018), investigated how East African Portland cement Limited's performance was impacted by the budget and budgetary control. The purpose of the study was to determine whether employee behavior and budgetary control are related, as well as how budgetary control affects business performance. The explanatory research design was used to describe the link between the independent and dependent variables in the study while the descriptive research design was used to describe the independent variable. Primary data was gathered using questionnaires,s, while secondary data came from the company's publicly available financial reports. The data were analyzed using statistical software for social sciences (SPSS), and the findings were displayed as tables and figures. The results of the investigation showed a 32.3,% low positive correlation between the two variables. The study found a strong correlation between budgetary control and employee behavior at 54.7% and a strong correlation between budgetary control and profit before tax at 54.4%. According to the report, the business should support the implementation of its budgets as intended. However, the study did not investigate if there was a relationship between saving behavior and budgeting strategies.

A thorough analysis of budgeting and financial control in government-owned organizations was carried out by Isaac, Lawal, & Okoli (2015). The Nigerian National Petroleum Cooperation was the subject of the study (NNPC). Secondary data came from the NNPC's yearly financial statements, files, memos, tax laws, and gazette, while primary data came from structured questionnaires given to respondents. According to the study's findings, all necessary stakeholders must be included in the budget's design and implementation to achieve effective budgeting and budgetary control. The study concluded that budgeting and budgetary control help a company operate effectively and produce a lot of work, and it suggested that everyone who matters be included in the budget process to guarantee overall goal attainment. However, the study did not bring out the relationship between budgeting practices and saving behavior.

The top 100 small and medium-sized businesses in Kenya were the subject of a study by Abongo (2017) , to determine how budgeting influences their financial performance. In the study, 100 SME owners and managers were surveyed using semi-structured questions that included both open-ended and closed-ended questions to gather primary data. The study used a descriptive approach to data analysis, and the results were shown in figures and tables. The study's conclusions showed that budget planning and budgetary evaluation methods had all been applied to a large extent, showing that the top 100 SMEs in Kenya had done the same. According to the study's findings,

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there is a substantial correlation between budgeting procedures and financial performance (R-value = 0.721), with financial performance accounting for 49% of the variance in the financial performance of the top 100 SME firms. Additionally, the study concluded that the top 100 SMEs' financial performance is positively impacted by budget planning, budget control, budget coordination, budget communication, and budget review processes. The report advises SMEs who have not implemented budgeting processes to do so to reap the benefits. The study did not explore the possibility of a connection between budgeting and saving behavior; instead, it simply examined the impact of the budgeting process on the financial performance of small and medium-sized businesses.

Previous studies by Mohamed, Evans &Tirimba (2015), Mbogo, Olando, & Macharia (2021), Nafisatu (2018), and Abongo (2018) analyzed the impact of budgeting on the financial performance of Dara-Salaam bank, Ministry of Education in Zambia, small and medium manufacturing enterprises, East African Portland cement and the top 100 SMEs in Kenya respectively. Both studies adopted descriptive research techniques to analyze data and agreed that application of a good budgetary system enhances financial performance and productivity. However, none of these studies examined the relationship between budgeting practices and saving behavior among small-scale entrepreneurs.

3. Methodology

3.1 Research Design

The study investigated the links between the independent variables of budgeting practices and the dependent variable of savings. Therefore, the study employed a correlational research approach. When examining the degree to which two or more variables co-vary that is, when changes in one variable are reflected in changes in the other researchers use the correlational research design (Creswell 2008).

3.2 Area of Study

One of the seven constituencies that make up Kisumu County, Kisumu Central Constituency is where the study was carried out. The six wards that makeup Kisumu Central Constituency Are Railways, Migosi, Shauri Moyo, Kaloleni Market, Milimani, Kondele, and Nyalenda. According to the most recent national population and housing survey, the constituency has a number of 240 and a population of about 168,892 censuses 2019, and the area in square kilometers is about 32.70.it is located in Kisumu city with the latitude and longitude coordinates of 0.1152ºS and 34.7409ºE. The constituency's major economic activity is trade and as it is well-known trade has always been identified as the key engine of the country’s economy. Hence, it is important

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to invest in this sector as it will boost the economy of Kisumu and the country at large. Considering savings facilitates investments it is important therefore to understand the determinants of saving for those involved in this sector. The choice of the study area was motivated by the increasing number of small businesses that reside in the area and depend on their business income. Secondly, the study area was selected because of its significance in the county's economy, in terms of creating employment, boosting productivity, and income generation. Thirdly, the study was selected because there are no previous studies on the influence of budgeting on savings among small-scale entrepreneurs in Kisumu's central constituency. For this reason, there was the need to carry out one.

3.3 Target Population

The target population is considered to be a group of individuals exhibiting similar characteristics from which a sample is drawn from (Ngina, 2020). The target population is a complete set of cases (Kombo & Tromp, 2011). The study was carried out in Kisumu Central Constituency, Kisumu County. The target population comprised registered small-scale entrepreneurs in Kisumu Central Constituency who have been in operating for at least two years. These entrepreneurs consisted of wholesale and retail shops, saloons/barbers/cosmetics, hardware, hotels/restaurants/guests, grocery/cereals, and tailoring.The target population was estimated to be 914 registered enterprises in Kisumu central constituency (Kisumu County Trade Department,2021).

Table 3. 1 Target Population

TYPE OF BUSINESS	TARGET POPULATION
General retail shops	184
Saloon/ barber/ cosmetics shop	164
Grocery &cereals	102
Hotels/restaurants/guests	193
Wholesale shops	94
Hardware	106
Tailoring	71
Total	**914**

Source: (Kisumu County Trade Department, 2021)

3.4 Sample Method and Sample Size

Sampling is the process of choosing in advance, based on the sort of analysis to be carried out, the number of respondents, or observations to be obtained from the target population. It provides a method of picking certain segments of the population to get the data required (Bryman & Bell, 2015). The sample size for the investigation was determined using the Taro Yamane

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(1967) approach. Yamane (1967) used the formula below to calculate the sample size for a given population with a 95% confidence level with a 0.05 accuracy; n= N/ 1+N $(e)^2$

Where, n= sample size, N=population size, and e= the level of precision Therefore, n=914/1+914(0.05)^2 =$^{914}/_{3.285}$= 278 respondents. The study used simple random sampling to select the sample.

Table 3. 2 Sample Size Distribution

Type of business	**Sample size**
General retail shops	56
Saloon/ barber/ cosmetics shop	50
Grocery &cereals	31
Hotels/restaurants/guests	59
Wholesale shops	29
Hardware	32
Tailoring	21
Total	**278**

Source: (Kisumu County Trade Department, 2021)

3.5 Data Collection Method

3.5.1 Data Sources and Type

The study used primary data sources. Structured questionnaires were administered to the respondents who were registered and licensed small-scale entrepreneurs operating within Kisumu central constituency and have been in business for more than 2 years.

3.5.2 Data Collection procedure

Questionnaires were employed in the study to gather primary data. Semi-structured questions made up the questionnaire. Since they are affordable, take little effort from the researcher, and the data acquired is uniform, questionnaires were the preferred method of gathering data. This made data compilation easy. The one significant drawback was that for responders to provide appropriate answers to the questions posed, they needed to be able to read and comprehend.

3.5.3 Data Collection Instruments

Primary sources were used to get the information for this investigation. Structured questionnaires were used to gather the main data. A questionnaire is a set of questions used as a research instrument to gather information from respondents (Mugenda & Mugenda, 2003). In this study, a semi-structured questionnaire comprising both closed- and open-ended items were used. Closed-ended questions required respondents to select an answer from a list of alternatives, whereas open-ended questions allowed respondents to react

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based on their own opinions. The study objectives were used to create the questionnaire. The study used both qualitative and quantitative research methods to collect data.

3.5.4 Validity and Reliability of the Research Instruments

According to Mugenda & Mugenda (2003), validity is the accuracy and meaningfulness of inferences, which are based on the research results. It is the degree to which results obtained from the analysis of data represent the variables of the study. To test validity, the study used a content and construct validity test. Content validity shows whether the questions and statements fully represent every element of the research questions and objectives of the study. Construct validity on the other hand ensures that the questions and statements are correctly and clearly stated.

To test the reliability of the questionnaire, the study piloted it on 28 respondents who were excluded from the final study. The study then used Cronbach's Alpha to test reliability. Brown (2002), indicates that Cronbach's alpha reliability coefficient normally ranges between 0 (if no variance is consistent) and 1 (if all variances are consistent). The results in Table 3.3 show that budgeting practices are 0.828 and saving behavior is 0.870. All the variables showed a strong alpha value of above 0.7 which indicates that the instrument is strongly reliable

Table 3.3 Reliability Statistics

	Cronbach's Alpha	N of Items
Budgeting Practices	.828	6
Saving Behavior	.870	6

Source: Research Findings (2022)

3.6 Data Analysis and Presentation

The respondents' data was compiled, coded, and reviewed for quality and completeness. The fundamental characteristics of the study's data are described using descriptive statistics. They offer summaries of the sample graphics analysis, and they serve as the foundation for almost all quantitative data analyses. The results of the analysis were presented using tables and graphs, with percentages and frequencies being used for interpretation. This was achievedby tallying up responses, calculating the level of variation of responses, and also describing and interpreting data per objectives of the study and assumptions by use of Statistical Package for Social Sciences (SPSS) to communicate the findings of the study. Quantitative data and aspects of data that were obtained from open-ended questions will be tested using content analysis. Multiple regression was performed to establish the correlation between the independent and dependent variables.

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Equation (3) shown below was used to investigate the influence of budgeting practices on Savings behavior among small-scale entrepreneurs in Kisumu Central Constituency.

Regression Equation

$$ESB_i = \beta_0 + \beta_1 MS_i + \beta_2 FP_i + \beta_3 TSP_i + e_i \quad \text{..... Eq. (3)}$$

Where; ESB_i- entrepreneurs i saving behavior which is the dependent variable.

$\beta_1 MS_i$- monitoring spending of entrepreneur i

$\beta_2 FP_i$- financial planning of entrepreneur i

$\beta_3 TSP_i$ - tracking spending pattern of entrepreneur i

$\beta_0, \beta_1, \beta_2, \beta_3$-regression coefficients e_i- Error term and **i**- the ith individual in the population

4.0 Results and discussion

4.1 Response Rate

The study had a target population of 250 out of which 233 participated and questionnaires were returned for analysis giving a 93.2% response rate. Targeting small business owners in the Kisumu Central Constituency and hand-delivering questionnaires to respondents both contributed to the high response rate. A study is regarded to have a questionnaire return rate of more than 50%, according to Linder and Wingerbach (2002). The authors add that surveys with a high response rate give some comfort that the results can be extrapolated.

4.2 Demographic information

4.2.1 Age Group

Figure 4.1 shows age group-wise distribution stats indicate the survey surfaced 30.47% (34-40 years) age group as the majority with the least statistics being observed for the 18-24 years age group (9.44%).

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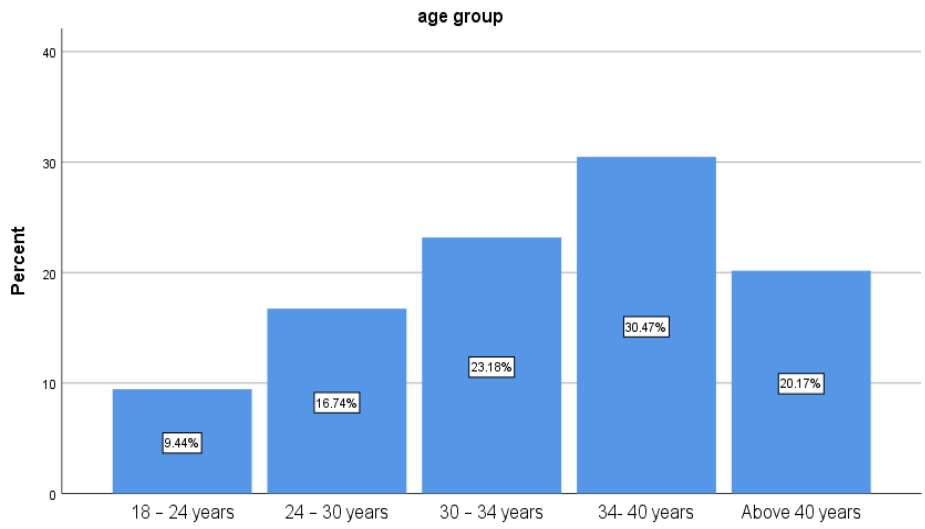
Figure 4. 1 Age Group



Source: **Research Findings (2022)**

4.2.2 Education Level

Table 4.1 shows the statistics for education level which indicates that most of the participants have a degree (39.5%) while the least had primary education (8.2%).

Table 4. 1 Education Level

	Frequency	**Percent**
Primary	19	8.2
Secondary	51	21.9
Diploma	71	30.5
Degree	92	39.5
Total	**233**	**100.0**

Source: Research Findings (2022)

4.2.3 Type of Business

Figure 4.2 shows the statistics for type of business shows that there is almost equal distribution in terms of hotel/restaurant/guests and general retail shop businesses, the least number is observed for tailoring business (9.01%).

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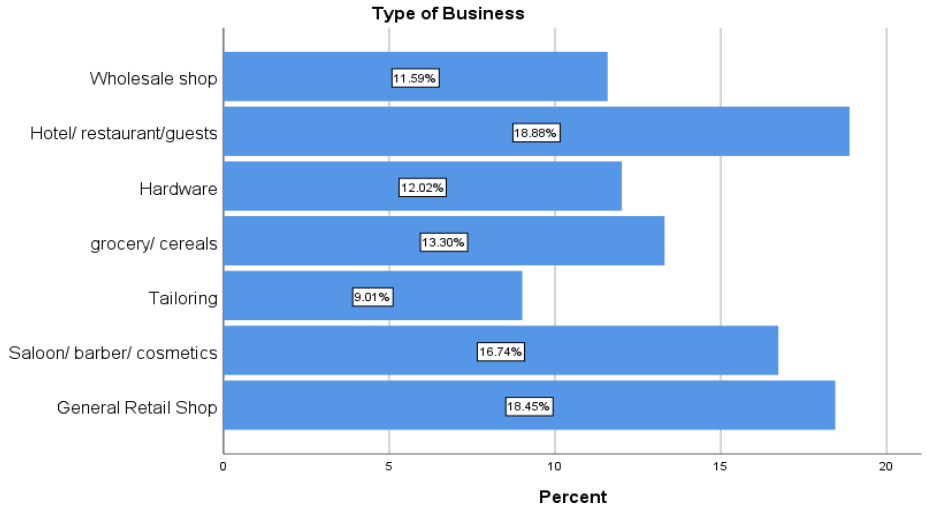
Figure 4. 2 Type of Business



Source: Research Findings (2022)

4.2.4 Years in business

Table 4.3 shows years in business statistics. Most of the participants have been in business for between 4-10 years (55.4%). The least stat is observed for those who have been in business for less than two years (6.0%).

Table 4. 2 Years in Business

		Frequency	Percent
Valid	Less than 2 years	14	6.0
	3 years	51	21.9
	4 – 10 years	129	55.4
	More than 10 years	39	16.7
	Total	233	100.0

4.2.5 Number of employees

Table 4.3 shows the number of employees statistics. The study established that most of the participants have 1-9 employees (92.3%). The least stat was observed for participants with between 10-19 employees (7.7%).

Table 4.3 Number of Employees

		Frequency	Percent
Valid	1 – 9	215	92.3
	10 – 19	18	7.7
	Total	233	100.0

Source: Research Findings (2022)

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4.2.6 Main source of capital

Table 4.4 shows the main source of capital. Most participants use both sources of capital (67.0%). The minority borrow money from friends and family (3.4%).

Table 4. 3 Main source of capital

		Frequency	Percent
Valid	Loan	44	18.9
	Savings	25	10.7
	Borrowed money from friends and family	8	3.4
	Both	156	67.0
	Total	233	100.0

Source: Research Findings (2022)

Correlation Analysis

The study established a significant positive association between debt management and saving behavior of Pearson correlation *(α=.919, p=.000)* shown in Table 1.

Table 1 Correlation Analysis

		Saving Behavior	Budgeting Practices
Saving Behavior	Pearson Correlation	1	
	Sig. (2-tailed)		
	N	233	
	Sig. (2-tailed)	.000	
	N	233	
Budgeting Practices	Pearson Correlation	.919**	1
	Sig. (2-tailed)	.000	
	N	233	233
	Sig. (2-tailed)	.000	.000
	N	233	233

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Research Findings (2022)

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Regression Analysis

4.3 The influence of budgeting practices on saving behavior among small-scale entrepreneurs in Kisumu Central Constituency

Regression

Table 4. Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.927[a]	.859	.857	.13367

a. Predictors: (Constant), Tracking Spending Patterns, Financial Planning, Monitoring Spending

Source: Research Findings (2022)

Together, Tracking Spending Patterns, Financial Planning, and Monitoring Spending impact saving behavior by 85.9%. Other factors outside the model included in the error term explain the 14.1% variation in saving behavior.

Table 4. 4 ANOVA[a]

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	24.973	3	8.324	465.863	.000[b]
	Residual	4.092	229	.018		
	Total	29.064	232			

a. Dependent Variable: Saving Behavior

b. Predictors: (Constant), Tracking Spending Patterns, Financial Planning, Monitoring Spending

Source: Research Findings (2022)

As per the ANOVA statistics, the model is accepted.

Table 4. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	.377	.137		2.745	.007
	Monitoring Spending	.376	.039	.431	9.588	.000
	Financial Planning	.333	.050	.289	6.622	.000
	Tracking Spending Patterns	.179	.021	.305	8.697	.000

- Dependent Variable: Saving Behavior

Source: Research Findings (2022)

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$$ESB = .377 + .376_{MS} + .333_{FP} + .179_{TSP} + .137$$

Tracking Spending Patterns, Financial Planning, and Monitoring Spending significantly influences saving behavior ($p<0.05$). An increase of 1 unit in spending pattern causes an increase of .376 units in saving behavior, an increase of 1 unit in financial planning causes an increase of .333 units in saving behavior, and finally an increase of 1 unit in monitoring spending terms causes an increase of .179 units in saving behavior. The study reveals a strong positive and significant association between budgeting and saving behavior thus rejecting the null hypothesis.

These results are validated by the findings of a study by Mohamed, Evans, and Tirimba (2013) carried out a study to evaluate the organizational performance of the Dar es Salaam Bank headquarters in Hargeisa, Somaliland, using budgetary control approaches. The study concentrated on how responsibility accounting affects the effectiveness of organizations. Both descriptive and retrospective research designs were used in the study. Seventy Dar-Salaam Bank employees provided primary data, and secondary data was gathered from published sources. Statistical software for social scientists (SPSS) was used to analyze the data, which were then presented as frequency tables and conversations. The effectiveness of budgetary control strategies was studied, and the results showed that responsibility accounting strengthens budget management and boosts effectiveness and productivity.

These study's results are further validated by the findings of a study by Mutinta (2018) who examined the effectiveness of budgeting control system in a government based institution in Zambia. The study focused on investigating the relationship between budgetary controls and financial performance of Ministry of Education. Data was collected using a self-designed interview questionnaire from 37 sampled respondents from a target of 50 respondents. The study was purely non experiment exploratory, descriptive in nature. SPSS and Microsoft office package were used for data entry, analysis and report writing. The study findings indicated a low implementation of budgetary controls, low perceived financial performance through slightly above average with budgeting and planning.

5. Conclusion and recommendation

Conclusion

Influence of Monitoring Spending on Saving Behavior among Small Scale Entrepreneurs

The study findings indicate that monitoring spending significantly influences saving behavior among small scale entrepreneurs. An increase of 1 unit in spending pattern causes an increase of .376 units in saving behavior. The study therefore rejected the null hypothesis. The study also found out that by small scale entrepreneurs setting aside funds for expenses and monitoring

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their expenditures they are able to avoid overspending thus improving their savings. Based on the study findings regarding objective one, the study concludes that monitoring spending have a significant relationship on saving behavior among small scale entrepreneurs. Therefore, monitoring spending influences small scale entrepreneurs in Kenya.

Influence of Financial Planning on Saving Behavior among Small Scale Entrepreneurs

The study findings revealed that financial planning had an effect on saving behavior among small scale entrepreneurs. From the findings, the study found a significant and positive association between financial planning and saving behavior and rejected the null hypothesis. The results implied that an increase of 1 unit in financial planning causes an increase of .333units in saving behavior. The study further revealed that through financial planning small scale entrepreneurs are able to plan on how to spend and what portion to save from their business income. The study therefore concludes that financial planning positively influence saving behavior among small scale entrepreneurs in Kenya.

Influence of Tracking Spending Pattern on Saving Behavior among Small Scale Entrepreneurs

Concerning objective three of the study, findings indicate that tracking spending pattern had a positive and significant association on saving behavior thus rejected the null hypothesis. the results implied that an increase of 1 unit in tracking spending terms causes an increase of .179 units in saving behavior. From the findings the study also revealed that by tracking expenditure against income small scale entrepreneurs are able to ensure that their expenditure does not exceed their available income. The study therefore concludes that tracking spending pattern positively influence the saving behavior among small scale entrepreneurs in Kenya.

Recommendations of the Study

The study recommends that aspects of financial literacy such as budgeting practices should be imparted among small scale entrepreneurs in Kenya. This will enable them to grasp knowledge relating to monitoring expenditure, financial planning and tracking spending pattern. By having knowledge in financial planning, small scale entrepreneurs will be able to improve their saving habits through proper planning of their finances thus reducing or do away with financial risk. On the other hand, monitoring spending through setting aside funds to cater for expenses aid in smooth management of the business while tracking expenditure is essential in comparing what has been spent with regard to what was planned. Knowing

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where their money goes will help small scale entrepreneurs avoid getting themselves into unnecessary debts that might be caused by overspending and poor financial decisions.

References:

1. Abongo, S. (2017). *The Effect of Budgeting Process on The Financial Performance of Top 100 Small And Medium Firms in Kenya.* Nairobi Kenya: University of Nairobi.
2. Brown, J. D. (2002). The Crobach alpha reliability estimate. *Shiken:JALT Testing & Evaluation SIG Newsletter*, 17-19.
3. Bryman, A., & Bell, E. (2015). *Business Research Methods.* Oxford University Press.
4. Cooper, D., & Schindler, P. (2016). *Business Research Methods 12th Edition.* McGraw Hill Higher Education.
5. Gliem, J. A., & Gliem, R. R. (2003). Calculating, Interpreting and Reporting Cronbach's Alpha Reliability Coeffient for Likert- Type Scales. In *Midwest Research to Practice Conference in Adult, Continuing and Communit Education* (pp. 82-88). Columbus.
6. Isaac, L., Lawal, M., & Okoli, T. (2015). A Systematic Review of Budgeting and Budgeting Control in Government Owned Organizations. *Research Journal of Finance and Acconting Vol 6 (6)*.
7. Kisker, C. E. (2016). Model For Testing The IMPACT Of Motivational Factors Of Nascent Entrepreneurs On Business Surviving Success . *European Scientific Journal, ESJ 12(4)*, 42.
8. Kisumu County Trade Department. (2021, July).
9. Klimaitiene, R., & Ramanauskaite, J. (2019). Insight into Budgeting Practices : Empirical Study of The Largest Manufacturing Companies in Lithuania. *Science and Studies of Accouting and Finance Problems And Perspectives 13(1)*, 19-27.
10. Kombo, D., & Tromp, D. (2011). *Proposal and Thesis Writing.* Nairobi: Paulines Publications Africa.
11. Mbogo, M., Olando, C., & Macharia, J. (2021). Effect of Budgeting Practices on Financial Performance of Manufacturing Small and Medium Enterprises in Nairobi County , Kenya. *Journal of Language, Technology and Entrepreneurshipin Africa volume 12, No.1*.
12. Mohamed, A. I., Evans, K., & Tirimba, I. O. (2015). Analysis of The Effectiveness of Budgetary Control Techniques on Organizational Performance at Dara-Salaam Bank Headquaters in Hargeisa Somaliland. *International Journal of Business Management and Economic Research Vol 6(6)*.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

13. Mugenda, O., & Mugenda, A. (2003). *Research Methods: Quantitative and Qualitative Approaches.* Nairobi: African Centre for Technology Studies.
14. Mwaguni, H. J., Mbugua, J., & Rambo, C. (2020). Budgets and Performance of Research Projects in Public Universities in the Coastal Region , Kenya. *European Journal of Business and Management Research* .
15. Mwangi, I. (2020). Household Saving Behaviour in Kenya: A Discrete Choice Approach. *Economics and Sustainable Development*, 2222-2855.
16. Nafisatu, A. D. (2018). *Effect of Budget and Budgetary Control on Firms Performance: A Case Study of the East African Portland Cement Company Limited.* United States International University - Africa.
17. Ngina, N. K. (2020). Influence of Financial Literacy On Financial Management practices : A survery of Dairy Farmers Managed by K-Unity SACCO in Limuru Sub County.
18. Onduso, E. O. (2013). *The Effect of Budgets on Financial Performance of Manufacturing Companies in Nairobi County.* University of Nairobi.
19. Ribaj, A., & Mexhuani, F. (2021). The Impact of Savings on Economic Growth in Developing Country. *Journal of Innovation and Entrepreneurship 10(1)*.
20. Shafinar, I., Koe, W.-L., Karim, R. A., Yusof, N., & Ishmail, S. (2020). *Saving Behavior Determinants in Malaysia: An Empirical Investigaton.* Kne Publishing.
21. Shanghverzy, T. (2003). Market and Community as Strategies for Change. In H. A., L. A., F. M., & H. D., *International handbook of educational change(vol.1)* (pp. 576-595). Dordrecht: Kluwer Academic Publishers.

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Perception, Motivation et Acceptation des Acteurs de l'Unite de Formation et de Recherche des Sciences Medicales d'Abidjan (Ufrsma) Face a l'Integration de la Dormation a Distance (FAD)

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Resume

L'objectif de cette étude qualitative est de recueillir les informations sur la motivation et l'acceptation des acteurs (enseignants et étudiants) par rapport à l'introduction de la formation à distance à l'UFR des sciences médicales d'Abidjan. Il s'agit d'une étude qualitative dont l'enquête a été réalisée du 16 décembre 2019 au 08 janvier 2020 à l'UFR des Sciences Médicales d'Abidjan. Ont été inclus dans l'étude trois administrateurs de l'UFHB, quatre enseignants et trente étudiants de l'UFRSMA. Les données ont été recueillies lors d'entrevues individuelles et de focus group à l'aide de guides d'entrevue. Le postulat de départ stipule que lorsque la perception est positive, les personnes sont plus motivées et l'acceptation est garantie. L'outillage méthodologique utilisé a permis de ressortir les perceptions mitigées des acteurs autour de ce changement pédagogique. Le renforcement de capacités des enseignants en technologie éducative a été enclenché, ainsi tous les enseignants enquêtés avaient des compétences en matière de cours en ligne et étaient favorables à son introduction au sein de l'UFRSMA.

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Cependant ils souhaitaient que les conditions favorables soient réunies avant la mise en œuvre de la FAD. Quant aux étudiants, ils étaient aussi favorables à l'introduction de la FAD bien que certains demeurent réticents. Comme les enseignants, ils ont évoqué la nécessité de réunir toutes les conditions essentielles avant le démarrage de la FAD. La théorie de la cognition sociale d'Albert Bandura est la théorie de référence. Elle permet de comprendre qu'il existe bien une relation entre la perception, la motivation et l'acceptation de l'individu face à une activité ou un projet. En d'autres termes, les acteurs éducatifs de l'UFRSMA pour accepter l'enseignement en ligne doivent être au minimum engagés, mobilisés et cette mobilisation est étroitement liée au degré de réussite potentiel qu'ils attendent.

Mots-clés: Perception-FAD (formation à distance) - UFHB : Université Félix Houphouët Boigny- UFRSMA : Unité de Formation et de Recherche des Sciences Médicales d'Abidjan-Formation bimodale- Changement

Perception, Motivation and Acceptance of the Actors of the Unit for Training and Research of Medical Sciences of Abidjan (UFRSMA) Facing the Integration Of Distance Learning (DLF)

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Abstract

The objective of this qualitative study is to collect information on the motivation and acceptance of stakeholders (teachers and students) in relation to the introduction of distance learning at the UFR of Medical Sciences of Abidjan. This is a qualitative study whose survey was conducted from 16 December 2019 to 08 January 2020 at the UFR of Medical Sciences of Abidjan. Three UFHB administrators, four teachers and thirty UFRSMA students were included in the study. Data were collected through individual and focus group interviews using interview guides. The starting point was the assumption that when perceptions are positive, people are more motivated and acceptance is guaranteed. The methodological tool used allowed us to highlight the mixed perceptions of the actors around this pedagogical change.

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The capacity building of teachers in educational technology had been initiated, and all the teachers surveyed had skills in online courses and were in favour of their introduction at UFRSMA. However, they wanted the right conditions to be in place before the implementation of ADF. As for the students, they were also in favour of the introduction of ADF, although some remained reluctant. Like the teachers, they mentioned the need to have all the essential conditions in place before starting ADF. Albert Bandura's theory of social cognition is the reference theory. It allows us to understand that there is a relationship between the individual's perception, motivation and acceptance of an activity or project. In other words, in order to accept e-learning, UFRSMA's educational actors must be at least committed, mobilised and this mobilisation is closely linked to the degree of potential success they expect.

Keywords: Perception-FAD (distance learning) - UFHB: Université Félix Houphouët Boigny- UFRSMA: Unité de Formation et de Recherche des Sciences Médicales d'Abidjan - Bimodal training - Change

I. Introduction

Selon le mouvement New Look, fondé par les Américains Bruner, Postman et Mc Ginnies, la perception naît de la rencontre entre les stimuli externes et les attentes, c'est-à-dire les valeurs et les intérêts du sujet, qui devient ainsi un constructeur actif de ses propres expériences perceptives. Les individus, placés devant un stimulus complexe, effectuent une catégorisation, l'identifiant et le classant sur la base d'indices donnés, structurés sur la base de relations et de l'univers motivationnel et personnel du sujet.

D'autres théories dites de la perception directe (ou écologique), inspirées des théories de J.J. Gibson (1950, 1966, 1977, 1986), déclare que l'information est déjà présente dans la stimulation perçue par le sujet et qu'elle peut être immédiatement saisie par ce dernier sans nécessiter de processus d'élaboration. Le sujet n'a donc pas à réélaborer l'information perçue de manière constructive, ni à l'intégrer de quelque manière que ce soit : il doit seulement saisir l'information perceptive disponible dans l'environnement. Gibson définit ce processus par le terme anglais "affordances" qui se traduit par disponibilité.

Mais il appert nécessaire d'envoyer la notion de changement étant donné que dans l'étude, la perception doit emmener ou induire le changement. La notion de changement est fortement polysémique, comme en fait foi l'utilisation très fréquente, voire banalisée, du terme dans le langage courant et ses multiples références dans toutes les disciplines des sciences humaines et sociales. Les dictionnaires d'usage indiquent toute la variété des significations attachées à cette notion et aux termes associés. Il est intéressant de noter que le terme « changement », en français, a pour origine première le

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terme provenant du bas latin cambiare, qui veut dire : échanger, substituer une chose à une autre. L'interaction et l'échange sont ainsi au cœur du changement. Par abstraction et généralisation, le changement désigne aussi le passage d'un état à un autre. Cela conduit à cette définition simple du changement psychologique ou social : un changement, c'est le passage d'un état x, défini à un temps t, vers un état x1 à un temps t1, où x et x1 peuvent représenter un être humain ou un milieu social qui, après « changement », devient à la fois autre chose et le même. » (J.Rhéaume, 2016). D'autres écrits montrent que le changement peut être accepté ou non pour différentes raisons. (Claire de Billy & al, 2016). Dans le cas d'espèce, le passage de l'UFRSMA de l'enseignement traditionnel ou présentiel à l'enseignement à distance ou en ligne (et ses variétés) est un changement significatif pour cette institution et partant pour ces acteurs ou son personnel dont les dispositions et attitudes sont forcément à prendre en compte. Il faut préciser, qu'avec la demande croissante d'enseignement supérieur et la diminution concomitante du financement public, la formation à distance (FAD) est un moyen important d'améliorer l'accès à l'éducation (A. S.Kanwar et al, 2018). L'offre de cours à distance est donc devenue de plus en plus fréquente dans les universités dites « campus ». Cependant, les universités africaines connaissent moins de succès dû à un certain nombre d'obstacles. Or connaitre les défis et obstacles est primordial pour la réussite de l'adoption et la mise en œuvre de la formation bimodale. L'enseignement à distance est un enseignement et un apprentissage planifié dans lequel l'enseignement se déroule normalement dans un lieu différent de l'apprentissage, nécessitant une communication par le biais de technologies ainsi qu'une organisation institutionnelle spéciale (M.G ; Moore, 2012). Il vise à éliminer les obstacles à l'éducation et à offrir aux apprenants une flexibilité en termes de temps, de lieu et de contenu, souvent facilitée par la technologie (Commonwealth of Learning, 2004). Cependant, en Afrique, les universités conventionnelles contrairement à leurs homologues des pays développés, ont eu un succès limité lors de la transition vers la formation bimodale (A. S. Kanwar et al, 2018). Selon A. S. Kanwar et collaborateurs (2018), des obstacles tels que l'absence de politique nationale sur la formation à distance ainsi que des fonds et infrastructures insuffisants, les capacités organisationnelles limitées et le manque d'expertise et les perceptions négatives des étudiants et du personnel vis-à-vis de la formation à distance ont empêché l'adoption effective de la formation bimodale. Dans la même veine, J. P ;Wisdom et collaborateurs (2014) ont identifié à partir d'une série d'études, les obstacles et les facilitateurs de l'adoption de l'innovation par les institutions d'enseignement supérieur. Quatre dimensions sont concernées : l'environnement extérieur qui comprend les influences sociopolitiques, le financement et les infrastructures ; l'organisation faisant référence à sa structure, sa gouvernance et son leadership, sa capacité d'absorption;

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l'innovation et ses caractéristiques; les acteurs (enseignants et étudiants) avec leurs perceptions et attitudes (J. P ;Wisdom et *al*, 2014). La connaissance de ces obstacles et facilitateurs devrait permettre aux établissements d'opérer un passage plus réussi. Les facteurs liés à l'individu ou le personnel sont ici ceux que nous mettrons en exergue : capacité ou compétence, perception et acceptation. C'est-à-dire, les connaissances, aptitudes et les compétences du personnel sont essentielles à l'adoption réussie d'une innovation au sein d'une organisation. La recherche a montré que les enseignants ont besoin de ressources et d'une formation à jour pour réussir à traduire leur enseignement des salles de classe traditionnelles à l'environnement en ligne. De plus, de tels programmes de formation de qualité peuvent faciliter l'acceptation des cours d'enseignement à distance parmi les instructeurs. La capacité du personnel peut également influer sur sa perception de l'apprentissage ouvert et à distance. L'apprentissage ouvert et à distance peut être perçu comme trop difficile, trop complexe ou trop long parce que le personnel n'est pas suffisamment équipé des compétences nécessaires. Bien que les perceptions du personnel n'aient pas été spécifiquement abordées dans les études de base, des recherches antérieures ont montré que les enseignants estiment que l'enseignement à distance (ED) entraine une charge de travail excessive et que la participation à l'ED peut être stressante et prendre du temps (A. Bezuidenhout, 2015). Davis a émis l'hypothèse que l'attitude d'un utilisateur envers un système était un déterminant majeur de l'utilisation ou du rejet effectif du système par l'utilisateur. Il a défini l'utilité perçue comme le degré auquel la personne croit que l'utilisation du système particulier améliorerait ses performances professionnelles, tandis que la facilité d'utilisation perçue était définie comme le degré auquel la personne pense que l'utilisation du système particulier serait libre d'effort (F.Davis, 1986). Enfin, les deux croyances ont été supposées être directement influencées par les caractéristiques de conception du système (représentées par X1, X2 et X3), voir la figure 1.

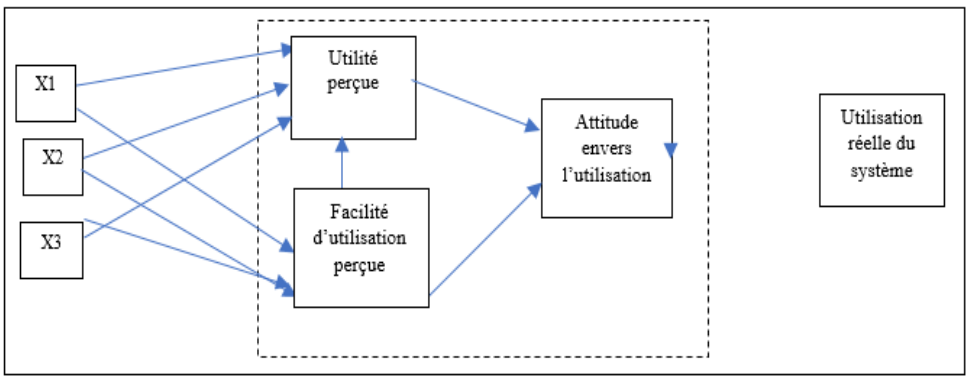

Figure 1. Modèle d'Acceptation Technologique (F. Davis,1986)

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Concernant les apprenants : La perception qu'ont les apprenants de la réputation de l'ED est un facteur de l'adoption de l'apprentissage ouvert et à distance. M. Firat (2017) a constaté que les apprenants ont cité la réputation comme étant la différence la plus importante entre les études d'ED et les études conventionnelles, et ont décrit les établissements d'ED comme étant moins réputés que leurs collègues de contact. Les perceptions négatives peuvent avoir une incidence sur l'acceptation de l'apprentissage ouvert et à distance par l'étudiant, ce qui se traduit par de faibles taux d'inscription.

Tableau I. Facteurs influençant l'adoption de l'innovation et leurs effets (J. P. Wisdom et al, 2014)

Facteurs	Effets
Influence sociopolitique et externe	● Influences externes positives, telles qu'un environnement physique de développement et de croissance; politiques, réglementations et normes d'accréditation favorables à l'innovation; des incitations financières et un environnement social favorable à l'adoption sont proposés pour promouvoir l'adoption. ● Peu d'associations théoriques négatives démontrent que l'absence de ces influences externes entrave l'adoption, ce qui suggère que les preuves sont cohérentes quant au rôle des influences externes sur l'adoption.
Caractéristiques organisationnelles	● Les caractéristiques de l'organisation présentent un croisement entre l'environnement et les travailleurs et constituent donc un domaine de constatations contradictoires. ● Le soutien des dirigeants et leur expérience en matière d'adoption conduisent à une meilleure adoption, mais une hiérarchie de direction descendante peut entraver l'adoption. Les organisations dotées d'une infrastructure de recherche et de ressources supplémentaires facilitent l'adoption, mais si la structure organisationnelle est trop formelle et centralisée ou requiert trop d'individus, l'adoption aura moins de chances de réussir. ● Comme dans l'environnement externe, un climat social positif et des interactions avec les développeurs d'innovation sont utiles, mais si la culture de l'organisation concentre la responsabilité d'apprendre sur l'organisation, elle est moins efficace que si les individus sont responsables de l'apprentissage.
Caractéristiques de l'innovation	● Les constatations à ce niveau étaient généralement cohérentes. ● Les innovations faciles à utiliser, meilleures que les pratiques actuelles, observables, rentables, adaptables à l'entreprise, fondées sur des preuves, compatibles avec les normes et les valeurs de l'organisation et des utilisateurs, pertinentes et à faible risque ont plus de chances d'être adoptées. Peu d'études

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	indiquent que l'absence de ces caractéristiques d'innovation était plus susceptible d'entraîner un échec de l'adoption. ● Les innovations qui engendrent une résistance ou dont le personnel n'est pas au courant, qu'elle ne connaît pas et pour lesquelles il n'est pas possible de recueillir des preuves ont moins de chances d'être adoptées. Les organisations qui évaluent ces caractéristiques, contrôlent l'adéquation et éliminent les obstacles ont plus de chances de réussir.
Caractéristiques du personnel	● Les attitudes et la motivation des individus pour l'adoption, en particulier les attitudes positives à l'égard du changement, la nécessité de changer et l'amélioration de la qualité sont importantes pour une adoption réussie. Les commentaires sur le processus d'adoption sont utiles pour augmenter l'adoption, et des caractéristiques individuelles telles que les compétences et l'expérience, l'innovation, la tolérance à l'ambiguïté, la propension à prendre des risques sont associées à une adoption accrue. Comme le montrent les caractéristiques externes et organisationnelles, de vastes réseaux sociaux d'individus sont associés à l'adoption.
Caractéristiques du client	● Moins de chercheurs ont abordé ce sujet que beaucoup d'autres. En général, les caractéristiques, les attitudes, les convictions et l'état de préparation du client envers le changement sont similaires à ceux du personnel et des responsables, ce qui permet une meilleure adoption. Des travaux supplémentaires sont nécessaires dans ce domaine.

Source : J. P .Wisdom et al, 2014

La recherche documentaire a permis de recenser diverses études sur la FAD et la disposition des personnes vis-à-vis de ce changement. L'originalité de notre travail consiste à relever les perceptions, motivations et acceptations des acteurs enseignants et apprenants de l'UFRSMA quant à l'intégration de l'enseignement en ligne dans leur institution. Dans le sens que leur perception va engager leur mobilisation et motivation qui va induire leur acceptation et partant un passage réussi de leur institution à la FAD.

Le postulat de départ stipule qu'il y a une relation entre la perception, la motivation et l'acceptation des personnes. En d'autres termes, lorsque la perception est positive les personnes sont plus motivés et l'acceptation est garantie.

La théorie de la cognition sociale d'A. Bandura (2004, 2007, 2010) est la théorie de référence.

« …Pour Bandura, le système de croyance sur son auto-efficacité, ou sentiment d'efficacité personnelle (SEP), est au fondement de la motivation, du bien-être et des accomplissements humains. Pour lui, si les gens ne sont pas convaincus qu'ils puissent obtenir les résultats qu'ils souhaitent grâce à leur propre action, ils auront peu de raisons d'agir ou de persévérer face aux

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difficultés. Ainsi, pour la personne, c'est cette ressource interne d'évaluation et de guidage qui donne aux individus un sens à leur vie et c'est de là également que découle la satisfaction de ce qu'ils font. » Appliquée à cette étude, cette théorie permet d'arguer qu'il existe bien un lien entre la perception, la motivation et l'acceptation que les personnes ont du changement ou du projet engagé, en l'occurrence ici, la FAD.

II. Methodologie

II.1 Type d'étude et lieu de l'étude

Il s'agit d'une étude qualitative dont l'enquête a été réalisée du 16 décembre 2019 au 08 janvier 2020 à l'UFR des Sciences Médicales d'Abidjan. Ont été inclus dans l'étude trois administrateurs de l'UFHB, quatre enseignants et trente étudiants de l'UFRSMA. Les données ont été recueillies lors d'entrevues individuelles et de focus group à l'aide de guides d'entrevue. Nous avons réalisé une étude transversale à visée descriptive à l'Unité de Formation et de Recherche des Sciences Médicales d'Abidjan de l'Université Félix Houphouët Boigny (UFHB) d'Abidjan Côte d'Ivoire. L'UFHB d'Abidjan, dont dépend l'UFR Sciences Médicales, a été créé en plusieurs phases. En 1959, le Centre d'Enseignement Supérieur d'Abidjan, est créé. Il est ensuite transformé en Université d'Abidjan en 1963 (décret n° 64 - 42 du 09 janvier 1963), puis en Université Nationale en 1977 (loi n° 77 – 333 du 01 juin 1977). En 1995 avec la réforme de l'Enseignement Supérieur, elle est scindée en trois (03) universités : Abidjan-Cocody, Abobo-Adjamé (et son URES de Daloa) et Bouaké (et son URES de Korhogo). En 2012, à la suite de la crise post-électorale, l'université d'Abidjan-Cocody a été réhabilitée et renommée Université Félix Houphouët Boigny. Elle comprend treize (13) Unités de Formation et de Recherche (UFR) dont l'UFRSM et une Ecole de Formation continue. En 2018, l'UFRSM qui fait partie intégrante de l'UFHB, avait 3298 étudiants, six (06) amphithéâtres de 100 à 600 places, onze (11) laboratoires et une bibliothèque.

2.2 Population d'étude et échantillon

La population de l'étude était composée d'administrateurs de l'UFHB, d'enseignants de l'UFRSMA et d'étudiants en sciences médicales.

- administrateurs : le secrétaire Général adjoint de l'UFHB, le responsable du studio d'enregistrement pédagogique de l'UFHB, le doyen de l'UFRSMA. Soit 03 administrateurs.
- enseignants : Les enseignants-chercheurs responsables des départements de l'UFRSMA. Sur les cinq responsables de département de l'UFRSMA, quatre ont pu être interviewés. Ce sont les responsables des départements de sciences fondamentales et biocliniques, médecine et spécialités médicales, chirurgie et spécialités chirurgicales, santé

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publique et spécialités. Soit 04 enseignants chercheurs, responsables de filière interrogés.

- étudiants : douze (12) étudiants du niveau licence, douze (12) étudiants du niveau master et six (6) étudiants du niveau doctorat. Soit un total de 30 étudiants interrogés.

La sélection des participants à l'étude s'est faite de façon raisonnée. Concernant les étudiants, le contact a été par voie téléphonique avec les représentants des étudiants des niveaux d'étude concernés par l'étude. Le choix de l'année d'étude s'est fait selon la disponibilité des représentants des étudiants. Ainsi, nous avons retenu les années d'études suivantes : licence 3, master 2 et le doctorat 1. Les étudiants ont participé aux discussions de groupe sur la base du volontariat.

Les administrateurs de l'UFHB qui ont participé à l'étude ont été identifiés par le Vice-président de l'UFHB chargé de la recherche et l'innovation. Les enseignants et les administrateurs ont été joints au téléphone pour solliciter leur consentement oral à participer à l'étude et obtenir un rendez-vous pour la réalisation de l'entrevue. Les critères d'inclusion de la population d'étude étaient les suivants : être présent au moment de l'enquête et donner son consentement oral.

2.3 Techniques et outils de collecte des données

Deux méthodes de collecte de données ont été utilisées pour l'enquête : l'entrevue semi-dirigée en face à face et le focus group. Au total, sept entrevues individuelles en face à face et trois focus group en langue française ont été réalisés à l'aide de guides d'entrevue.

Les guides d'entrevue étaient constitués de questions ouvertes allant du général au spécifique, en rapport avec les objectifs de l'étude.

Concernant le guide administrateur, les domaines thématiques étaient les suivants : L'opinion sur l'adoption de la formation à distance par l'université/l'UFR, la politique institutionnelle d'adoption et de mise en œuvre de la Formation à Distance (FAD), les obstacles rencontrés à la mise en œuvre. Pour le guide enseignant il s'agissait des domaines thématiques suivants : les connaissances et perceptions sur les FAD, les pratiques de FAD, l'acceptation de la FAD.

S'agissant du guide étudiant les domaines thématiques étaient : les connaissances et perceptions sur les FAD, l'acceptation de la formation à distance.

Les entrevues ont été réalisées du 16 décembre 2019 au 08 janvier 2020. Toutes les entrevues individuelles et les focus group ont été enregistrés à l'aide d'une enregistreuse (smartphone). La durée moyenne des entrevues individuelles était de 20 minutes 30 secondes et celle des focus group était de

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50 minutes 33 secondes. Avant la réalisation des entrevues et des focus group, nous avons obtenu un consentement oral de la part des participants à l'étude.

2.4 Traitement et analyse des données

Les entrevues individuelles ainsi que les focus group ont été transcrits intégralement en verbatims par nous-même à partir des enregistrements audios. Cette transcription a été faite à l'ordinateur à l'aide du logiciel Word. Un code book a été constitué à partir des guides d'entretien et un encodage a été fait à l'aide du logiciel QDA Miner. En effet, après la lecture de chaque transcription, les verbatims ont été importés vers des nœuds et des sous-nœuds. À partir de là, nous avons fait une analyse thématique et verticale.

La théorie de la cognition sociale de Albert Bandura est la théorie de référence. Elle permet de comprendre qu'il existe bien une relation entre la perception, la motivation et l'acceptation de l'individu face à une activité ou un projet. En d'autres termes, les acteurs éducatifs de l'UFRSMA pour accepter l'enseignement en ligne doivent être au minimum engagés, mobilisés et cette mobilisation est étroitement liée au degré de réussite potentiel qu'ils attendent.

3 Resultats

3.1. Perception et acceptation de la FAD par les enseignants

Les administrateurs interrogés sont également enseignants d'où les deux types d'acteurs considérés ici : enseignants et apprenants. La compétence, la perception et l'acceptation ont été prises en compte pour jauger la perception de la FAD selon le Modèle d'Acceptation Technologique (Davis,1986).

Compétences ou capacités en FAD

La FAD est un mode d'enseignement qui est de plus en plus présent dans le monde de l'apprentissage. Ainsi, tous les enseignants interrogés disent avoir une expérience en formation à distance. Parmi eux, trois (03) affirment avoir déjà suivi des cours à distance ou reçu une formation dans ce domaine:

> *« J'ai reçu une formation à distance par le biais de l'université virtuelle de médecine de sport de l'université Senghor d'Égypte. J'ai déjà mis des cours en ligne. » (Enseignant # 1 UFRSMA).*
>
> *« J'ai pu participer en tant qu'auditeur à la télémédecine, mais pas en tant qu'enseignant. Actuellement, je suis à l'ordre des médecins et suis chargé de la formation médicale continue et donc nous mettons actuellement en place le e-learning pour les post doc et adressé aux médecins généralistes qui ne peuvent pas faire l'actualisation des connaissances par nos congrès. » (Enseignant # 3 UFRSMA).*

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« Moi-même dans le cadre d'une formation en statistique, nous avons réalisé un CD-Rom avec une équipe d'ingénierie pédagogique qui permettait aux auditeurs après la phase présentielle d'être encadrés sur le terrain via ces CD-ROM ». (Enseignant # 4 UFRSMA).

Parfois, certains enseignants ont des compétences pour faire les cours en ligne, mais n'arrivent pas à les appliquer comme l'affirme cet enseignant :

« J'ai reçu une formation portant sur l'EAD, mais cela ne m'a pas servir à le mettre en œuvre. » (Enseignant # 2 UFRSMA).

Perceptions des enseignants

Les enseignants que nous avons interrogés ont une perception positive de la FAD. Ils trouvent que c'est un mode de formation qui peut être pratiqué au même titre que la formation présentielle.

« La FAD fait partie maintenant des moyens d'enseignement. » (Enseignant # 1 UFRSMA).

Pour deux (02) enseignants, ce mode de formation peut contribuer à résoudre d'autres problèmes tels que la disponibilité temporelle des étudiants et la massification.

« La FAD permet de résoudre les problèmes présentiels. Cependant, cela nécessite beaucoup de travail en amont. » (Enseignant # 2 UFRSMA).

« De façon générale, j'estime que la FAD vient toujours compléter la formation en présentiel. Pour nous il est important vu la massification des étudiants, le nombre important d'étudiants, de basculer vers la FAD. Je n'ai pas de préjugés sur la FAD tout dépend de l'organisation de la formation. » (Enseignant # 4 UFRSMA).

Acceptation de la FAD

Lors des interviews, les enseignants étaient tous d'accord pour que la FAD soit introduite à l'UFRSMA. Cependant, ils précisent que certaines conditions devront être réunir avant son introduction. Il s'agit essentiellement de disposer au niveau de toute l'UFR d'une connexion internet à haut débit, de préparer les enseignants et les étudiants à ce nouveau mode de formation, de disposer de ressources matérielles, technologiques et humaines pour organiser la mise en ligne des cours.

« Il faut l'internet haut débit, préparer l'apprenant à ce nouveau mode par une formation préalable et une sensibilisation, préparer les enseignants à ce nouveau mode de formation (formation des formateurs), disposer d'une salle de préparation de cours. Si tout ceci est mis en place à l'UFR je suis partant pour donner des cours à distance. » (Enseignant # 1 UFRSMA).

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> *« Il faut : Préparer la partie technique : mettre en place la plateforme, avoir une connexion internet et former ceux qui vont l'administrer (une équipe formée); sensibiliser les enseignants pour qu'ils puissent eux-mêmes mettre leur cours sur la plateforme soit via l'administrateur. Si on opte pour que chaque enseignant mette en ligne son cours, il peut avoir beaucoup de retard dans le processus; pour les étudiants, puisqu'il s'agit d'un lieu de dépôt de cours, il leur faut peu de chose. Il faut surtout un ordinateur ou un smartphone. » (enseignant # 4 UFRSMA).*

Bien qu'ils soient tous unanimes sur la nécessité d'introduire les cours à distance, l'aspect professionnel de la formation médicale amène certains enseignants à dire que les activités telles que les stages, les enseignements dirigés doivent rester en présentiel.

> « *La FAD donne le savoir et le savoir-faire visuel, mais pas le savoir-faire de manipulation. […]. Tout ce qui est pratique : stages, gardes il faut les maintenir en présentiel puisse que la formation médicale est une formation professionnelle » (Enseignant # 3 UFRSMA).*

Nous constatons que les enseignants ont une perception positive et sont favorablement à la formation bimodale. L'acquisition de compétence en formation à distance a probablement eu un impact sur le comportement des enseignants. Les responsables administratifs l'ont sûrement compris c'est pourquoi ils se sont engagés depuis quelques années à la sensibilisation des enseignants de l'UFHB à travers le renforcement de capacités.

3.2 Perception et acceptation de la FAD par les apprenants

Compétences ou capacités en FAD

La question de la ***compétence*** ne nous a pas semblé pertinente pour les apprenants. En ce sens que leur rôle dans la FAD est amplement déterminé par la compétence des enseignants eux même. Des connaissances basiques de l'outil informatique et des environnements numériques seront justes nécessaires.

Perception des apprenants

Pour la plupart des étudiants ayant pris part aux discussions, la formation à distance est un mode de formation qui peut engendrer un état de paresse chez l'étudiant. Ils l'ont exprimé à travers les phrases suivantes :

> *« La FAD peut instaurer la paresse chez l'étudiant. Pour preuve nos amis étudiants de l'Université Virtuelle de Côte d'Ivoire s'amusent toute l'année. C'est à la veille des compositions qu'ils se mettent à étudier. La FAD ne doit pas remplacer la FEP, mais la compléter. Si*

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les étudiants n'ont pas bien compris les choses, ils doivent aller en ligne pour retrouver les cours. » (Étudiant # licence). « La FAD peut engendrer la paresse chez les étudiants qui peuvent se laisser surprendre par les examens. » (Étudiant # doctorat).

Pour d'autres étudiants, la FAD peut engendrer l'absence de contact direct avec l'enseignant et les autres étudiants.

« La FAD a pour inconvénient que les étudiants ne sont pas en contact direct avec le professeur afin de poser les questions. » (Étudiant # master).

« L'inconvénient est l'absence de contact avec l'enseignant et les autres étudiants. L'étudiant est isolé. » (étudiant # licence).

En marge de ces quelques inconvénients, la majorité des étudiants disent que les avantages de la FAD sont plus nombreux. Les plus fréquents selon eux sont la flexibilité des cours en termes de lieu et d'heure, l'économie sur les coûts indirects liés aux formations en présentiel (déplacement), la disponibilité permanente des contenus de cours, l'uniformité des informations.

« La FAD est un bon outil. Elle donne une certaine flexibilité en termes de temps à l'étudiant. Il peut faire d'autres choses et en fonction de sa disponibilité aller faire les cours sur la plateforme. Il a les mêmes informations que celui qui est en présentiel. Il ne perd pas en matière de qualité d'informations. » (étudiant # licence).

« La FAD est flexible en termes de temps et convient pour les niveaux d'étude incluant les stages et garde. La majorité des étudiants ne viennent pas aux cours, car manque de disponibilité de temps. […]. L'autre avantage est que les étudiants ont accès aux cours et peuvent les visionner autant de fois qu'ils le veulent et avoir tous les détails dont ils ont besoin. » (Étudiant # master).

Le caractère flexible de la FAD donne une certaine liberté à l'étudiant pour faire son apprentissage. Ainsi certains étudiants ont déclaré que la formation à distance s'adresse surtout aux étudiants consciencieux et responsables, capables de prendre en charge leur apprentissage. *« La FAD doit s'adresser à des étudiants responsables. » (Étudiant #master).*

L'acceptation de la FAD

La plupart des étudiants étaient d'accord pour l'introduction de la FAD en mode bimodal à l'UFRSMA. Cependant selon eux la FAD ne sera possible que si les conditions qu'ils jugeaient essentielles étaient toutes réunies. Il s'agit essentiellement de : Mettre une connexion internet wifi stable à haut débit au sein de l'UFRSM; équiper la bibliothèque d'ordinateurs avec une connexion

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internet stable à haut débit; faciliter l'obtention d'un ordinateur individuel; sensibiliser les étudiants sur la FAD et les former à la maitrise des TIC; former les enseignants pour la mise en ligne des cours; introduire la FAD au niveau du master.

Voici quelques propos illustratifs recueillis lors des séances de discussion avec les étudiants:

> *« Faire une formation informatique préalable aux étudiants en Licence 1 et Licence 2 pour qu'ils maitrisent l'outil informatique puis en Master introduire FAD - Faciliter la disponibilité d'un ordinateur portable et la connexion internet sur le campus et hors campus » (Étudiant # licence).*
>
> *« Il faut une salle informatique à la bibliothèque avec internet pour permettre à ceux qui n'ont pas d'ordinateur de venir sur le campus pour suivre les cours à distance. » (Étudiant # doctorat).*

Si la majorité des étudiants étaient favorables à l'introduction de la FAD à l'UFRSM, n'empêche que certains demeuraient réticents à cause d'expériences passées non réussies telles que l'introduction du système Licence-Master-Doctorat (LMD).

> *« Moi je ne suis pas d'accord, car je n'ai pas confiance tout simplement. Ce projet demande des moyens or avec le LMD il y a déjà beaucoup de problèmes ». (Étudiant # licence).*
>
> *« Je suis un peu d'accord un peu réticent, car la FAD demande beaucoup de choses, moyens financiers, internet en permanence. Il faut que cela soit en mode hybride. Pas de synchrone ni asynchrone » (Étudiant # licence).*

Tous les acteurs ont une perception assez positive de la FAD et leur motivation reste liée selon eux aux conditions d'expérimentation proposées qui seules, détermineront la réussite du projet. Les réticences des autres restent liées également à ces mêmes conditions d'expérimentation qui ont pu faire défaut lors de projets précédents.

Discussion et conclusion

Il apparait clairement à l'analyse des propos des sujets que la perception des acteurs autant que leur motivation sont intrinsèquement liées. Pour que les acteurs éducatifs acceptent l'enseignement en ligne, ils doivent être au minimum engagés, mobilisés et intéressés. Cette mobilisation est étroitement liée au degré de réussite qu'ils attendent du projet et de son impact sur leurs pratiques pédagogiques. Plus les sujets perçoivent positivement la FAD et plus ils se mobilisent et se disposent pour le projet d'intégration. Et leur acceptation peut concourir à la réussite du passage de l'enseignement

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présentiel à l'enseignement en ligne, même si pour les différents acteurs, certaines conditions idéales devront être mises en branle.

La théorie de l'activité permet d'exposer les bases autour desquelles ce changement gagnerait à être porté. Les auteurs trouvent dans le principe de la stimulation duale de Vygotsky, le mécanisme psychologique pour expliquer la motivation des personnes face à une activité donnée. L'on peut la définir comme la capacité de l'humain à interagir avec son milieu pour le transformer, en réponse à un besoin. Le besoin susciterait comme une mise en mouvement ou en activité de la personne. La personne a une certaine perception de quelque chose, l'accepte ou la récuse et en fonction émet une réaction. Cependant, les conditions ou stimuli qui le mettent en mouvement déterminent son engagement et sa réaction. Il peut alors se dépasser et trouver une solution idoine et généralisable. Il ressort que lorsque cette volonté d'agir, a une source collective, elle est capitalisable au plus haut point d'où la nécessité du travail collaboratif. En outre, les auteurs estiment que *les organisations gagneraient à s'appuyer sur ce principe pour induire le changement en leur sein*. (E.Yrjö et S. Sannino, 2013). Appliquée à cette étude, il serait productif que l'institution universitaire, dans ce désir de se raccorder au numérique, propose des infrastructures nouvelles, des équipements numériques performants, une connexion haut débit afin de provoquer la motivation et la volonté collective des acteurs de l'Institution. De façon qu'une remise en question soit suscitée au sein de la communauté universitaire, des réflexions soient construites, des actions soient menées sur la base de ces actions comme des projets pilotes par filière, qui eux-mêmes expérimentés, seront évalués afin de parvenir à asseoir un modèle propre aux réalités et contingences de l'organisation. Cette méthode a l'avantage d'être un processus qui favorise une évolution continuelle en ce sens que chaque nouveau besoin suscitera la mise en action de la communauté universitaire et consacrera pour elle la capacité à toujours évoluer en trouvant en elle-même, les ressources pour y arriver. Les intentions des uns et des autres deviendront vite, des actions et des projets novateurs pour le bien collectif.

Le changement pourra être induit avec la collaboration de tous les acteurs impliqués dans l'organisation.

Le postulat de départ qui stipule qu'il y a bien un lien entre la perception, la motivation et l'acceptation est confirmé. L'objectif de montrer l'importance de la prise en compte des perceptions, motivations et acceptation des acteurs dans le processus de l'intégration de la FAD est également confirmé. Quant à la théorie de référence elle se révèle appropriée pour expliciter comment de la perception, et de la motivation face à un projet, l'acceptation peut être induite et le succès dès lors possible.

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Cependant, face aux expérimentations diverses de la FAD dans l'éducation en Côte d'Ivoire, peut-on dire que les institutions soient assez matures pour ce changement pédagogique ?

References:

1. BANDURA A. (2004). « J'y arriverai » : le sentiment d'efficacité personnelle. Sciences Humaines, avril; 148, pp 42 – 45.
2. BANDURA A. Auto-efficacité. (2007, 2010). Le sentiment d'efficacité personnelle, Editions de Boeck, 1ère édition : 2007, 2e édition : 2010.
3. BEZUIDENHOUT, A. (2015). Implications for academic workload of the changing role of distance educators. Distance Education, 36, 246–262. doi:10.1080/01587919.2015.1055055
4. DE BILLY CLAIRE & al (2016). Comportement Humain et organisation, de, édition -6e édition, p.615-625
5. DAVIS, F. (1986). A technology acceptance model for empirically testing new end-user information systems: theory and result. Unpublished doctoral dissertation, MIT Sloan School of Management, Cambridge, MA.
6. FIRAT M. (2017). Reflections from dual-mode alumni on the differences between distance and F2F education. Open Learning: The Journal of Open, Distance and e-Learning, 32, 177–187. doi:10.1080/02680513.2017.1316186.
7. GIBSON, J. J. (1950). The perception of the visual world. Boston: Houghton Mifflin. GIBSON, J. J. (1961). Ecological Optics. Vision Research , 1, 253-262.
8. GIBSON, J. J. (1966). The senses considered as perceptual systems. Boston: Houghton Mifflin.
9. GIBSON, J. J. (1977). The theory of affordances. In R. Shaw, & J. Bransford (Eds.), Perceiving, acting, and knowing: Toward an ecological psychology (pp. 67-82). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
10. GIBSON, J. J. (1986). The Ecological Approach to visual perception. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc. (Original work published in 1979).
11. KANWAR, A. S., Carr, A., Ortlieb, K., & Mohee, R. (2018). Opportunities and challenges for campus-based universities in Africa to translate into dual-mode delivery. Distance Education, 39(2), 140-158. https://doi.org/10.1080/01587919.2018.1457944
12. MOORE M. G; Kearsley G (2012). Distance Education: A Systems View of Online Learning. Third Edition. 361 pages.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

13. RHEAUME, J. (2016). Changement, Collection : Questions de société; Éditeur : Érès, pp 75 à 84.
14. WISDOM, J. P., Chor, K. H., Hoagwood, K. E., & Horwitz, S. M. (2014). Innovation adoption: A review of theories and constructs. Administration and Policy in Mental Health and Mental Health Services Research, 41, 480–502. doi:10.1007/s10488-013-0486-4
15. YRJÖ E et ANNALISA S (2013). La volition et l'agentivité transformatrice: perspective théorique de l'activité, Revue internationale du CRIRES : innover dans la tradition de Vygotsky (2013) ISSN: 2291-6717, vol 1, no 1, pp. 4-19.

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Niveau de Recherche de Sensations et Comportement D'alcoolisation chez des Adolescents en Milieu Scolaire a Abidjan

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Résumé

Cette étude analyse la relation entre le niveau de recherche de sensations et le comportement d'alcoolisation chez des adolescents en milieu scolaire à Abidjan. Pour ce faire, deux-cent-quarante (240) participants dont l'âge est compris entre 12 et 19 ans, issus du Lycée Moderne Adjamé Harris, du Lycée International l'Ardoise sis à la Riviera dans la commune de Cocody et du groupe scolaire Sainte Adjoua la Fadette de Yopougon ont pris part à l'enquête. Ils ont été soumis, au test de mesure de la recherche de sensations (AISS) de Arnett (1994) pour évaluer leur niveau de recherche de sensations. Les comportements d'alcoolisation ont été déterminés par le questionnaire (ADOSPA) de Knight & al (2002) ainsi qu'un guide d'entretien. Les résultats indiquent que les adolescents dont le niveau de recherche de sensations est élevé manifestent un comportement d'alcoolisation autothérapeutique en association avec d'autres substances psychoactives pour répondre à leur besoin physiologique contrairement à leurs homologues qui ont un niveau de recherche de sensations faible. Cette étude pourrait servir à la réglementation de l'accès, la vente et la consommation des boissons alcoolisées. Notamment la réduction des espaces habilités à vendre l'alcool, l'interdiction d'achat d'alcool au moins de 18 ans et la limitation des publicités sur l'alcool.

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Mots-clés: Niveau de recherche de sensations; Comportements d'alcoolisation autothérapeutique; Comportements d'alcoolisation festif et récréatif ; Adolescents

Level of Sensation-Seeking and Drinking Behavior among Adolescents in Schools in Abidjan

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Abstract

This study analyzes the relationship between the level of sensation seeking and drinking behavior in adolescents in school in Abidjan. To do this, two hundred and forty (240) participants aged between 12 and 19, from the Lycée Moderne Adjamé Harris, the Lycée International l'Ardoise located on the Riviera in the town of Cocody and the group Sainte Adjoua la Fadette school in Yopougon took part in the investigation. They were subjected to the Arnett (1994) Sensation Seeking Measurement Test (ISSA) to assess their level of sensation seeking. Drinking behaviors were determined by the questionnaire (ADOSPA) of Knight & al (2002) as well as an interview guide. The results indicate that adolescents with a high level of sensation-seeking demonstrate self-medicating drinking behavior in combination with other psychoactive substances to meet their physiological needs, unlike their counterparts with a low level of sensation-seeking. This study could be used to regulate the access, sale, and consumption of alcoholic beverages. In particular the reduction of spaces authorized to sell alcohol, the prohibition of the purchase of alcohol at least 18 years old, and the limitation of alcohol advertisements.

Keywords: Level of sensation seeking; Self-care drinking behaviors; Festive and recreational drinking behaviors; teenagers

Introduction

La situation de l'usage d'alcool et d'autres substances psychoactives par des élèves dans des lycées et collèges à Abidjan est préoccupante. En effet, une enquête sur l'alcoolisme réalisée en 2009 par le Programme National de

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Lutte contre le Tabac et l'Alcool (PNLTA) dans plusieurs régions de la Côte d'ivoire a révélé que 70% des élèves consommaient l'alcool et l'âge d'initiation se situait entre 12 et 16 ans. Cette tranche d'âge qui correspond à la période de l'adolescence, donne lieu à l'expérimentation d'un grand nombre de comportements dont certains sont considérés comme dangereux pour la santé et le bien-être (Michel, Purper-Ouakil, & Mouren-Simeoni, 2006). Ces comportements susceptibles d'entrainer des effets dangereux tant pour soi-même que pour les autres, sont diversifiés (Coslin, 2003). Comme souligné par les auteurs (Desrichard & Denarié, 2005), certaines conduites à risque visent à satisfaire la curiosité, l'expérimentation de la vie et de la recherche de sensations (relations sexuelles non protégées, sport extrême, consommation de drogue et consommation d'alcool). La conduite à risque fournirait à l'adolescent des sensations nouvelles ou intenses qu'il recherche. Par exemple, traverser en courant alors que des voitures arrivent à toute vitesse donne une stimulation intense, prendre des drogues conduit à un état d'esprit nouveau. Certains comportements criminels de l'adolescent, tels que le vol, comportent le danger d'être arrêté, mais beaucoup d'adolescents décrivent cette sensation du danger comme excitante (Arnett, 1995). Cette réalité nous emmène à chercher à comprendre les raisons de cette aversion des adolescents contre les normes sociales à cette période de développement.

Des travaux ont été menés dans ce sens. En outre, plusieurs études se sont intéressées plus particulièrement à la relation entre la recherche de sensations et la prise de substances toxiques chez les adolescents. Elles ont montré que la recherche de sensations était impliquée dans la consommation de substances psychoactives (tabac, alcool, substances) chez des adolescents. Par exemple, Arnett (1995) explique qu'une des caractéristiques du développement de l'adolescent qui contribuent au comportement à risque est le niveau élevé de recherche de sensations. En effet, Pedersen (1991) a testé 1027 lycéens norvégiens âgés de 16 à 19 ans, en étudiant les relations entre la recherche de sensations et la consommation de substances. Les résultats de cette étude ont montré que le besoin de recherche de sensations était davantage impliqué dans l'usage de toxiques que les prédicteurs concernant l'estime de soi et la santé psychologique. Par ailleurs, une étude américaine de Bates et Labouvie (1997) a examiné l'implication de la recherche de sensations dans la consommation de substances et d'alcool : les auteurs ont suivi une cohorte de 1257 adolescents, évalués une première fois à l'âge de 12 ans puis à quatre reprises jusqu'à l'âge de 31 ans. Seule la dimension désinhibition de la recherche de sensations émerge significativement.

De même, dans une étude longitudinale (Michel, Purper-Ouakil & Mouren-Siméoni, 2001), des lycéens parisiens de seconde (n=278), première (n=171) et terminale (n=104) ont été suivis. Les résultats de cette étude ont montré que la recherche de sensations constitue un des facteurs importants

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dans les processus d'initiation et de maintien de la consommation de substances psychoactives. La recherche de sensations, notamment par des stimulations désinhibitrices augmente la probabilité de s'initier aux toxiques, surtout pour les substances et l'alcool. Dans une étude menée chez 575 étudiants, la recherche de sensations prédit la poly-consommation de tabac, d'alcool et de marijuana (Martin et al., 1992). Les adolescents ayant de forts scores sur l'échelle de recherche de sensations ont 7 à 8 fois plus de risques de prendre des substances un an plus tard. De façon similaire, les adolescents qui ont un haut niveau de recherche de sensations s'engagent dans de plus grands comportements à risque pour leur santé, tels que la consommation de drogues, la sexualité sans protection, la conduite routière imprudente et la consommation d'alcool (Martin et al., 2003 ; Cooper et al., 2004 ; Arnett et al., 1997).

Au vu de toutes ces informations, il est évident que le comportement d'alcoolisation est influencé par le niveau de recherche de sensations de l'adolescent. Ainsi, les différences de trait de personnalité, notamment les adolescents à niveau de recherche de sensations élevé et faible peuvent consommer de différentes manières l'alcool. Cette différence de personnalité, peut permettre de distinguer les comportements d'alcoolisation. Ainsi, selon Alvin et Marcelli (2005), l'on observe la consommation festive et récréative et la consommation autothérapeutique chez l'adolescent. Toutefois, les nombreuses études qui se sont intéressées à cette question en Côte d'ivoire se situent majoritairement dans des perspectives curatives en se contentant de déterminer les facteurs explicatifs de façon générale, ne prenant pas en compte de façon spécifique la recherche de sensations qui est une dimension de la personnalité typique de l'adolescence. D'où notre préoccupation dans cette étude qui a pour objectif d'identifier le lien entre le niveau de recherche de sensations et le comportement d'alcoolisation chez l'adolescent en milieu scolaire. Elle vise à apporter des solutions efficientes et efficaces qui soient adaptées aux adolescents usagers selon leurs niveaux de recherche de sensations et prévenir les éventuels risques de consommation chez les non usagers.

Une telle étude, constituera un apport à la littérature scientifique sur les différences individuelles dans l'alcoolisation des adolescents. Au plan social, les résultats de cette étude permettront d'instaurer un mécanisme de prévention suscitant la création des programmes de prévention de l'usage d'alcool chez les adolescents qui consisteront à créer des programmes de dépistage pour identifier les personnes ayant un niveau de recherche de sensations élevé et leur fournir des services susceptibles de développer des modèles de participation qui minimisent leur vulnérabilité à la consommation d'alcool. Au plan politique, les résultats pourront servir à la réglementation de l'accès, la vente et la consommation des boissons alcoolisées, notamment la

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réduction des espaces habilités à vendre l'alcool, l'interdiction d'achat d'alcool au moins de 18 ans et la limitation des publicités sur l'alcool.

1. Hypothèse de l'étude

Cette partie est consacrée à l'émission de l'hypothèse et à la description des variables de l'étude.

Au regard de l'objectif visé et des idées qui découlent des travaux examinés, nous déduisons que la proportion d'adolescents ayant un niveau de recherche de sensations élevé qui adoptent un comportement d'alcoolisation autothérapeutique est supérieure à celle de leurs pairs qui ont un niveau de recherche de sensations faible qui eux manifestent plus un comportement d'alcoolisation festif et récréatif. Cette hypothèse est mise à l'épreuve des faits à l'aide de la démarche méthodologique qui suit.

1-1- Variables de l'étude

1-1-1- Variable indépendante

La variable indépendante dans cet article est le niveau de recherche de sensations. La littérature scientifique nous permet de distinguer deux niveaux de recherche de sensations que sont le niveau recherche de sensations élevé et le niveau de recherche de sensations faible.

Le niveau de recherche de sensations élevé est le score le plus élevé sur l'échelle de recherche de sensations. Elle caractérise un individu qui a un besoin élevé d'intenses formes de stimulations et d'expériences nouvelles, complexes et variées" (Zuckerman, 1990). Selon Zuckerman, les individus ayant un niveau de recherche de sensations élevé, sont prêts à prendre des risques, tant physiques que sociaux permettant de maintenir un haut niveau d'activation cérébrale, dans le but d'assouvir à leurs besoins d'expériences et de sensations fortes. Le niveau de recherche de sensations élevé serait au cœur du développement de la plupart des dépendances et paraît particulièrement associée à la consommation à risque de substances psychoactives. Ainsi, les élèves à niveau de recherche de sensations élevé seraient particulièrement sensibles au renforcement positif et aux résultats gratifiants de l'alcool.

1-1-2- Variable dépendante

Le comportement d'alcoolisation constitue la variable dépendante dans le présent article. Le comportement d'alcoolisation renvoie à l'attitude, la conduite que l'adolescent adopte dans son usage d'alcool pour répondre à un besoin. Ce besoin peut être d'ordre psychophysiologique. De ce point de vue, le comportement d'alcoolisation peut être appréhendé de deux manières par le besoin d'équilibre physiologique et psychologique. Ainsi, les différences de personnalité, notamment les adolescents à niveau de recherche de sensations élevé et faible peuvent consommer de différentes manières

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l'alcool. Ainsi, Alvin et Marcelli (2005) distinguent la consommation festive et récréative de la consommation autothérapeutique chez l'adolescent. De ce qui précède, il apparaît que la variable dépendante comporte deux modalités : le comportement d'alcoolisation festif et récréatif et le comportement d'alcoolisation autothérapeutique. Elle est de nature qualitative. Dans le comportement d'alcoolisation festif et récréatif, c'est le rôle social et l'effet euphorisant de l'alcool qui sont particulièrement recherchés. Le cursus scolaire est maintenu ainsi que les autres investissements (sportifs, culturels et sociaux). Dans ce type de consommation, on ne retrouve pas nécessairement de facteurs de risque familiaux ou individuels. Même s'il peut entrainer certains dommages, notamment à court terme, ou évoluer de façon problématique vers une consommation abusive, il s'accompagne en général du maintien des activités scolaires et extrascolaires, et évolue avec l'âge vers une consommation plus raisonnée. Toutefois, le fléchissement scolaire est possible. De même, l'habitude de boire peut s'installer sous la pression du groupe et conduire à une escalade dans la consommation (Alvin & Marcelli, 2005). Par ailleurs, dans le comportement d'alcoolisation autothérapeutique, c'est l'effet anxiolytique ou antidépresseur voire excitant de l'alcool qui est recherché. L'alcool aide à oublier les problèmes, à soulager une souffrance. Cette consommation est souvent cachée, en particulier le soir dans la chambre. Toutefois, cette consommation solitaire peut alterner avec des moments de consommation en groupe. Les adolescents adoptant ce type de consommation d'alcool présentent fréquemment les premiers signes d'un décrochage scolaire voire d'un échec scolaire. Parfois il existe également un désintérêt pour les activités habituelles (sportives et culturelles). Ces conduites alcooliques évoquent de réels équivalents suicidaires. Le développement d'une dépendance est à craindre dans ce type de consommation d'alcool (Alvin & Marcelli, 2005).

2. Méthode

Cette section relative à la méthode porte successivement sur la présentation des participants, du matériel et de la procédure de collecte des données.

2-1- Participants

Notre étude s'est déroulée dans trois établissements scolaires du district d'Abidjan. Il s'agit du Lycée Moderne Adjamé Harris, le Lycée International l'Ardoise sis à la Riviera, dans la commune de Cocody et le groupe scolaire Sainte Adjoua la Fadette de Yopougon. Les adolescents qui constituent l'échantillon de notre recherche ont été sélectionnés selon une procédure bien définie. Ainsi, pour constituer notre échantillon, nous avons respecté un certain nombre de critères, de sorte que les groupes constitués

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soient comparables. Ce sont entre autres le sexe, l'âge, l'origine socioéconomique et la catégorie socioprofessionnelle des parents. Ces critères étant des facteurs susceptibles d'influencer les comportements d'alcoolisation, nous devons les contrôler afin d'éviter des biais éventuels. Etant donné que nous mesurons les comportements d'alcoolisation, nous n'avons sélectionné que les adolescents ayant déjà consommé l'alcool pour participer à la suite de l'enquête. L'application des différents critères de sélection sur la population d'étude nous permet d'obtenir un échantillon de 240 élèves âgés de 14 à 19 ans, dont 120 filles et 120 garçons.

2-2- Instruments de mesure

Les données de l'étude ont été essentiellement recueillies à l'aide de quatre instruments, que sont le questionnaire d'identification, le guide d'entretien, le questionnaire de mesure du niveau de recherche de sensations d'Arnett (1994) que nous adapté, le questionnaire ADOSPA (Auto, Détente, oublie, seul, Problèmes, Amis) de Knight et al., (2002) pour la mesure des comportements d'alcoolisation.

2-2-1- Questionnaire d'identification

Toute étude scientifique se veut de donner les moyens de généraliser les résultats de ses travaux. Pour ce faire, il lui faut un échantillon représentatif, rigoureusement sélectionné sur la base d'un questionnaire d'identification bien élaboré. Le questionnaire d'indentification des participants de notre étude, nous permet d'avoir des renseignements sur leurs caractéristiques sociodémographiques notamment, l'âge, le sexe, le niveau d'études, le type de famille et le statut socioéconomique des parents. Ce questionnaire permet d'obtenir un échantillon homogène pour parvenir à des résultats fiables.

2-2-2- Test de mesure de la recherche de sensations

Pour mesurer la recherche de sensations dans notre étude, nous avons utilisé l'instrument proposé par Arnett (1994), l'AISS (Arnett Inventory of Sensation Seeking). Cette version comporte 23 items répartis en deux échelles, 10 pour le besoin de sensations intenses et 13 pour le besoin de stimulations nouvelles. Or, dans notre étude nous voulons évaluer la recherche de sensations dans les boissons alcoolisées. C'est la raison pour laquelle nous retenons les 10 items pour le besoins de sensations intenses. Cette dernière version française de l'AISS a témoigné d'une bonne validité de construit, et les deux sous-échelles ont démontré une consistance interne élevée et une fiabilité test-retest acceptable. Mais dans l'optique de pallier cet état de fait causé par le choix du sujet parmi de nombreuses propositions, nous optons pour une échelle dichotomique. Autrement dit, les items que nous présentons aux sujets à l'étude présentent deux propositions de réponse, notamment les

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extrêmes de l'échelle de Likert à savoir : (1) « Pas du tout d'accord » et (5) « Tout à fait d'accord ». Après adaptation, nous obtenons un questionnaire qui mesure la recherche de sensation, comprenant dix(10) items qui offrent deux propositions de réponse.

2-2-2- Questionnaire ADOSPA

le comportement d'alcoolisation est évalué par le questionnaire ADOSPA de Knight et al., (2002) qui est une adaptation française d'un questionnaire validé aux États-Unis destiné à repérer les usages nocifs de substances psychoactives chez les adolescents et jeunes adultes. L'acronyme ADOSPA correspond à (ADOlescents et Substances Psycho-Actives). Il signifie aussi Auto/moto (conduite d'un véhicule sous influence ou par quelqu'un sous influence d'alcool ou d'autres drogues), Détente (usage auto-thérapeutique), Oubli (troubles mnésiques sous produits), Seul (consommation solitaire), Problèmes, Amis/famille (reproches faits par les amis ou la famille). Ce test est composé de six questions dans le but de détecter l'usage nocif de substances psychoactives (que ce soit l'alcool, le cannabis, les amphétamines ou autres toxiques) chez les adolescents. Les questions sont à choix fermé simple binaire. Sa passation dure environ une minute. Il s'avère être un excellent instrument de repérage précoce des usages réguliers, des usages quotidiens et des ivresses mixtes. Lorsque l'ADOSPA est inférieur à deux (02), il n'existe à priori pas d'usage nocif d'alcool, l'adolescent adopte un comportement d'alcoolisation festive et récréative. Par contre, lorsque l'ADOSPA est supérieur ou égal à deux (02), avec des réponses positives aux questions 2 et 4, usage détente et/ou solitaire, l'adolescent a un comportement autothérapeutique.

2-2-3- Guide d'entretien

Le guide d'entretien élaboré dans le cadre de ce travail, fournit des informations sur les types d'alcool consommés par l'adolescent, l'âge de la première consommation, l'âge de la première ivresse de l'adolescent, les liens avec les personnes ayant fait découvrir l'alcool à l'adolescent, les autres substances psychoactives consommées par l'adolescent et la fréquence de consommation d'alcool. Ce guide nous a permis de collecter auprès des participants, des informations complémentaires quant aux éléments qui peuvent influencer leur comportement d'alcoolisation.

2-3- Procédure de collecte des données

La collecte des données sur le terrain s'est déroulée sur une période de trois (3) mois. En effet, nous avons planifié l'administration de nos outils, avec la collaboration des chefs d'établissements et des éducateurs de niveau.

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Ceux-ci ont regroupé les élèves dans les salles de classe à leurs heures libres. En premier lieu, nous avons administré le questionnaire d'identification de façon individuelle auprès des élèves. Cette première sélection des participants effectuée, nous avons soumis ces derniers au questionnaire de mesure de la recherche de sensations (l'AISS) d'Arnett (1994), en vue de constituer les groupes composant l'échantillon définitif. Cette étape est suivie de la passation du questionnaire ADOSPA de Knight (2002). Afin d'obtenir des informations complémentaires sur les participants nous avons administré le guide d'entretien élaboré à cet effet, à dix(10) adolescents présentant des comportements d'alcoolisation à risque, afin de détecter d'autres substances psychoactifs associées à l'alcool et l'âge de la première consommation. Eu égard à la nature qualitative des variables à l'étude, le Khi Carré de Pearson a été utilisé comme technique statistique pour le traitement des données collectées. Par ailleurs, une analyse de contenu du discours des participants est réalisée. Et, les résultats obtenus à l'issue de ce traitement sont présentés et analysés dans la section qui suit.

3. Résultats

Le tableau suivant examine les comportements d'alcoolisation (CA) des adolescents en fonction de leur niveau de recherche de sensations (NRS).

		CA		Total
		Festif et récréatif	Autothérapeutique	
NRS	Elevé	57	136	193
	Faible	29	18	47
Total		86	154	240

$\chi_C^2 = 17{,}01$ (significatif, p=.05)

Le tableau ci-dessus montre qu'il y a une différence significative entre les effectifs des deux groupes de sujets. En effet, les sujets qui ont un niveau de recherche de sensations élevé et consommant de façon autothérapeutique sont au nombre de cent trente-six (136) soit 70%. Par contre, il y a dix-huit (18) soit 38% des adolescents dont le niveau de recherche de sensations est faible qui ont une consommation autothérapeutique.

On conclut que les sujets qui ont un niveau de recherche de sensations élevé, consomment plus de façon autothérapeutique que leurs pairs dont le niveau de recherche de sensations est faible. L'hypothèse émise pour l'étude est donc confirmée. Dans le but d'apporter plus de précisions, cette analyse est complétée par une représentation graphique.

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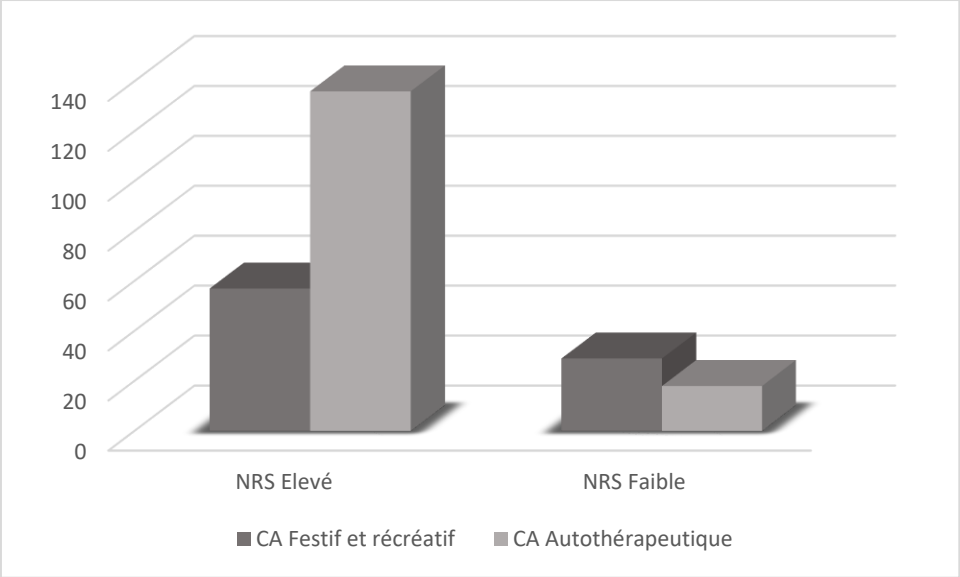

Histogramme des comportements d'alcoolisation des adolescents selon le niveau de recherche de sensation

Sur la figure ci-dessous, nous observons deux types d'histogrammes. Il y a d'un côté, des histogrammes représentant l'effectif des adolescents qui ont un comportement d'alcoolisation festif et récréatif et de l'autre, des histogrammes correspondant à la proportion d'adolescents qui adoptent un comportement d'alcoolisation autothérapeutique. Lorsque nous examinons cette figure, nous remarquons que la taille de l'histogramme qui se réfère au comportement d'alcoolisation autothérapeutique est la plus grande chez les adolescents qui ont un niveau de recherche de sensations élevé. A l'opposé, le comportement d'alcoolisation festif et récréatif est plus important chez les adolescents qui ont un niveau de recherche de sensations faible. Cela indique que les adolescents ayant un niveau de recherche de sensations élevé adoptent plus un comportement d'alcoolisation autothérapeutique. Cela est dû au fait que pour retrouver leur bien-être, ces derniers sont emmenés à consommer de l'alcool à chaque fois que l'envie se fait sentir, pour restaurer l'équilibre psychophysiologique de leur organisme. Ils vont donc rechercher de façon plus ou moins compulsive des substances ou des comportements capables d'augmenter cette activité neurobiologique. Aussi les adolescents chercheurs de sensations fortes ont-ils tendance à rechercher les sensations et les stimulations fortes afin d'élever de façon agréable leur niveau d'activation cérébrale. Ils ont besoin de plus de stimulations pour se maintenir mobilisés et maintenir un niveau d'excitation optimal. Ils recherchent donc l'effet excitant de l'alcool.

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Le contenu du discours des participants va également dans ce sens. Cela s'est révélé dans des propos tels que : « *Nous avons une cave à la maison, où les parents stockent la boisson pour recevoir leur amis. Donc quand j'ai besoin d'inspiration pour étudier, je bois*». Ces résultats que nous avons obtenus sont expliqués à la lumière des théories de la recherche de sensations de Zuckermann (1984) et confrontés à ceux d'auteurs ayant antérieurement exploré le domaine que nous étudions dans la partie consacrée à la discussion des résultats.

3- Discussion

Nous avons supposé que le niveau de recherche de sensations des élèves influence leurs comportements d'alcoolisation. A l'issue de nos investigations sur le terrain, nos résultats nous font conclure que, les adolescents de niveau de recherche de sensations élevé adoptent un comportement d'alcoolisation autothérapeutique alors que ceux de niveau de recherche de sensations faible manifestent un comportement d'alcoolisation festif et récréatif. Cela est dû au fait que les chercheurs de sensations fortes ont un taux de productions dopaminergique et catéchominergique élevé qui les incitent à l'utilisation excessive d'alcool qui leur permettent de retrouver l'équilibre physiologique. Ces résultats confirment ceux de Michel, Purper-Ouakil et Mouren-Siméoni, (2001), qui montrent que la recherche de sensations constitue un des facteurs importants dans les processus d'initiation et de maintien de la consommation de substances psychoactives. La recherche de sensations, notamment par des stimulations désinhibitrices (Désinhibition) augmente la probabilité de s'initier aux toxiques, surtout pour les substances et l'alcool. Dans le même ordre d'idées, les travaux de Charfi et al (2019) montrent qu'il y a une association significative entre la consommation d'alcool et la recherche de sensations, en particulier les dimensions de désinhibition, de recherche d'expériences et de susceptibilité à l'ennui.

Comme nous l'avons signifié, les recherches sur les comportements d'alcoolisation vont dans le même sens que nos résultats. Cependant, il existe des différences au plan méthodologique, au niveau de la taille des échantillons et du choix des instruments entre les travaux présentés antérieurement et les nôtres. Il nous parait alors juste de préconiser une certaine prudence quant à la généralisation de nos résultats. Nous ne perdons pas de vue que les résultats du présent article ont une portée circonscrite. Dans cette optique, ces résultats ne peuvent être considérés ou généralisés que dans les conditions spécifiques de l'enquête.

Conclusion

La présente étude a cherché à expliquer les comportements d'alcoolisations chez des élèves en fonction de leur niveau de recherche de

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sensations. Pour ce faire, nous avons émis l'hypothèse selon laquelle les élèves qui ont un niveau de recherche de sensations élevé manifestent un comportement d'alcoolisation autothérapeutique contrairement à leurs pairs de niveau de recherche sensations faible qui manifestent un comportement d'alcoolisation festif et récréatif. Ces derniers se contenteraient de consommer l'alcool occasionnellement à des moments de fête.

Pour circonscrire notre étude, nous avons fait référence à la théorie de la recherche de sensations de Zuckerman (1984) qui soutient que le comportement d'une personne est fonction de sa personnalité. Et en particulier la recherche de sensations comme trait de personnalité est un facteur de vulnérabilité aux substances psychoactives. Ainsi, les adolescents qui ont un niveau de recherche de sensations élevé ont tendance à consommer l'alcool de façon autothérapeutique. Ceux de niveau de recherche de sensations faible consomment l'alcool de façon festive et récréative.

Pour mettre en évidence la congruence de cette assertion, nous nous sommes intéressés à des adolescents de niveaux de recherche de sensations différents pour lesquels nous avons comparé les comportements d'alcoolisation. La méthodologie utilisée à cet effet se décline en quatre étapes. Les caractéristiques sociodémographiques sont identifiées au moyen d'un questionnaire. Ce qui nous a permis de présélectionner les participants susceptibles de répondre aux exigences de l'étude. L'administration de l'échelle de recherche de sensations aux participants présélectionnés, nous a permis de les classer en deux groupes selon leur niveau de recherche de sensations (élevé ou faible). L'échantillon retenu est composé de 240 adolescents issus de trois (3) établissements du district autonome d'Abidjan et ayant déjà consommé une fois l'alcool. Ces adolescents ont été soumis au questionnaire de mesure du comportement d'alcoolisation afin de déterminer le comportement qu'ils adoptent face à l'alcool. Dix d'entre eux présentant une alcoolisation autothérapeutique ont répondu au guide d'entretien en vue d'obtenir des informations complémentaires.

La dimension de la personnalité, qu'est la recherche de sensations vaut la peine d'être mise en évidence et prise en compte dans la prévention et la lutte contre l'alcoolisation et la consommation de la drogue en milieu scolaire. Elle fait intervenir les fonctions psychologiques telles que la régulation émotionnelle et l'inhibition. Au regard de son implication dans les comportements à risques, il est nécessaire d'étudier son rôle dans l'alcoolisation vu que cette dimension de la personnalité est particulièrement marquée à l'adolescence. Maitriser son fonctionnement permettra de mieux appréhender les problèmes comportementaux au cours de cette phase critique du développement de l'individu.

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References:

1. Alvin P, Marcelli D. (2005). *Médecine de l'adolescent*. Paris : Elsevier Masson.
2. Arnett, J. (1994). Sensation seeking: A new conceptualization and a new scale. *Personality and individual differences, 16*(2), 289-296.
3. Arnett, J. (1995). The young and the reckless: Adolescent reckless behavior. *Current Directions in Psychological Science*, *4*(3), 67-70.
4. Arnett, JJ, Offer, D., & Fine, MA (1997). Conduite imprudente à l'adolescence : facteurs d'« état » et de « traits ». *Analyse et prévention des accidents*, *29* (1), 57-63.
5. Bates, M. E., & Labouvie, E. W. (1997). Adolescent risk factors and the prediction of persistent alcohol and drug use into adulthood. *Alcoholism: Clinical and experimental research, 21*(5), 944-950.
6. Charfi, N., Smaoui, N., Turki, M., Bouali, M. M., Omri, S., Thabet, J. B., ... & Maâlej, M. (2019). Enquête sur la consommation d'alcool et sa relation avec la recherche de sensations et l'impulsivité chez l'adolescent de la région de Sfax, Tunisie. *Revue d'Épidémiologie et de Santé Publique, 67*(1), 13-20.
7. Coslin, P. (2003). *Les conduites à risque à l'adolescence*. Paris: Armaud Colin.
8. Desrichard, O. & Denarié, V. (2005). Sensation seeking and negative affectivity as predictors of risky behaviors: a distinction between occasional versus frequent risk-taking. *Addiction behaviors.30(7), 1449-1453.*
9. Knight, J. R., Sherritt, L., Shrier, L. A., Harris, S. K., & Chang, G. (2002). Validity of the 'crafft 'substance abuse screening test among general adolescent clinic outpatients. *Journal of Adolescent Health*, *30*(2), 97.
10. Martin, C. S., Clifford, P. R., & Clapper, R. L. (1992). Patterns and predictors of simultaneous and concurrent use of alcohol, tobacco, marijuana, and hallucinogens in first-year college students. *Journal of Substance Abuse*, *4*(3), 319-326.
11. Michel, G., Purper-Ouakil, D., & Mouren-Simeoni, M. C. (2006). Clinique et recherche sur les conduites à risques chez l'adolescent. *Neuropsychiatrie de l'enfance et de l'adolescence*, *54*(1), 62-76.
12. Michel, G., Purper-Ouakil, D., & Mouren-Siméoni, M. C. (2001, November). Facteurs de risques des conduites de consommation de substances psycho-actives à l'adolescence. *Annales Médico-psychologiques, revue psychiatrique 159* (9), 622-631.
13. PNLTA (2009) Rapport Enquête Alcoolisme en milieu scolaire *S.E.R.* 14 p.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

14. Zuckerman, M. (1984). Sensation seeking: A comparative approach to a human trait. *Behavioral and Brain Sciencesè 7*, 413-471.
15. Zuckerman, M., Ball, S., & Black, J. (1990). Influences of sensation seeking, gender, risk appraisal, and situational motivation on smoking. *Addictive behaviors*, *15*(3), 209-220.
16. Zuckerman, M. (2007). *Sensation seeking and risky behavior*. American Psychological Association.

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Entrepreneurial Orientation as Antecedent of Business Model Innovation in Medium Enterprises in Kenya

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Abstract

This study investigated the influence of entrepreneurial orientation on business model innovation in medium enterprises in Kenya. The study was grounded on the dynamic capabilities view. A descriptive cross-sectional survey research design was adopted to achieve the study's objective. The sampling frame was the Klynveld Peat Marwick Goerdeler (KPMG) East Africa and the Nation Media Group annual Top100 companies in Kenya. Stratified random sampling was utilized to derive 221 companies that were used in the study. Primary data were collected from single respondents comprising senior managers of the participating firms. A total of 134 questionnaires were analysed. Ordinary least squares regression analysis revealed that entrepreneurial orientation positively and significantly influenced business model innovation in medium enterprises in Kenya. On the basis of the results, this study concluded that entrepreneurial orientation is necessary for enterprises to benefit from business model innovation. The study recommends that managers of medium enterprises in Kenya embrace entrepreneurial behaviour and attitude to enhance business model innovation practices. It is further recommended that policymakers should develop and implement policies that encourage innovation and entrepreneurial behaviour.

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The study clarifies the position of entrepreneurial orientation in relation to BMI. Additional studies are recommended.

Keywords: Entrepreneurial orientation, business model innovation, medium enterprises, Kenya

Introduction

Medium enterprises constitute an essential cog in the global economy, contributing immensely to employment and value creation in many countries at different levels of development (Muriithi, 2017). They are considered a critical pillar in Europe's 2020 roadmap toward reaching smart, sustainable, and inclusive growth (Rotar et al., 2019). In the Kenyan context, medium enterprises are regarded as important because of their impact on the Gross Domestic Product (GDP) and employment generation. Based on Ndegwa et al. (2015), medium enterprises are essential players in terms of product and service innovations. Kenya's Vision 2030, the country's economic road map to industrial development recognises medium enterprises as critical in attaining its industrial development aspirations (the Republic of Kenya, 2012). Thus, efforts to enhance performance among medium enterprises will contribute to enabling the country to attain its development agenda by generating more jobs, solidifying sectors, and evolving business models that perform. Their importance suggests a need to be sufficiently examined to comprehend the drivers that can lead to improvement in their performance.

The background of entrepreneurial orientation as a firm-level construct is traced to the strategic management literature (Wales, 2016) and is applied to describe a firm whose apex managers exhibit entrepreneurial behaviour and attitude as demonstrated in their strategic decision making and operating philosophy (Gupta & Dutta, 2018). Although various conceptualisations have been advanced in literature (Anderson et al., 2015; Covin & Wales, 2019), Lomberg et al. (2017) observe that the literature on entrepreneurial orientation is mainly centered around two conceptualisations, that is, the Covin and Slevin (1989) and Lumpkin and Dess' (1996) conceptualisations. According to Covin and Sleven (1989), entrepreneurial orientation is characterised by a combination of innovativeness, risk taking, and proactiveness. Lumpkin and Dess (1996) on the hand view entrepreneurial orientation as a multidimensional construct exemplified by autonomy and competitive aggressiveness in addition to innovativeness, risk taking, and proactiveness. Thus, while Lumpkin and Dess consider the five dimensions of entrepreneurial orientation as independent from one another and therefore an enterprise would still be considered entrepreneurial even when only one indicator exists, Covin and Slevin's conceptualization considers an enterprise

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to be entrepreneurial if all the three dimensions are evident in the way of managerial behaviour and action (Okeyo et al., 2016).

According to Wales (2016), researchers can adopt any concemptualisations that align with their research problem. This study adopted Covin and Slevin's conceptualisation in which an entrepreneurial orientated company is defined as that which "engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with 'proactive' innovations, beating competitors to the punch" (Miller, 1983, p.771), According to Anderson et al. (2015), innovativeness characterises an enterprise's inclination to embrace new ideas, inventiveness, and experimentation in developing new products and processes. Proactiveness entails futuristic and opportunity-seeking tendencies that afford an enterprise a pioneering benefit over the competition by antedating future market trends. Risk taking on the other hand is about an enterprise's inclination to boldly commit resources towards initiatives portending high but unassured returns. This conceptualisation has been adopted successfully in preceding studies such as (Asemokha et al. (2019), Boucken et al. (2016), and Ferreras-Méndez et al. (2021).

Although entrepreneurial orientation is considered vital to an enterprise's enhanced performance (Ndemo & Aiko, 2016; Rauch., et al., 2009), a number of scholars have argued that entrepreneurial orientation might not have a direct influence on enterprise performance, hence, calling for the identification and assessment of immediate outcomes of entrepreneurial orientation (Markin et al., 2018; Wales et al., 2011). The calls to establish and assess the immediate outcomes of entrepreneurial orientation are attributed to mixed findings about the direct effect of entrepreneurial orientation on enterprise performance where some studies have reported negative or no significant effect contrary to those that have ascertained positive effect (Soares & Perin, 2019). According to Covin and Wales (2019), entrepreneurial orientation is characterised by dynamism and morphing causing a series of disruptions and network relationships requiring incessant management with the aim of capturing value, leading to a conclusion that entrepreneurial orientation independently is not a recipe for sustained enterprise success. Hence, the need to identify and assess synergistic variables through which entrepreneurial orientation enhances enterprise performance (Markin et al., 2018).

Concomitantly, business model innovation (BMI), which is described as a variation in the way a firm does its business that is novel to the firm and leads to evidential modifications in the way the firm creates, distributes, or captures value for all participants in the value chain including its customers (Bouwman et al, 2016), has been advanced as a source of enduring competitive edge and better performance (Afuah, 2014; Baden-Fuller & Haefliger, 2013;

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Bashir & Verma, 2017; Casadesus-Masanell & Zhu, 2013; Chesbrough, 2010; Demil & Lecocq, 2010). More importantly, in an environment where product and process innovations are prone to imitation and therefore, shortened shelf life (Zott & Amit, 2012). Ndemo and Aiko acknowledge the prevalence of product imitation in Kenya and on the African continent generally, where intellectual property protection laws are underdeveloped underpinning the need for BMI. Kim and Mauborgne (2005) emphasised the need to eschew the traditional sources of competition for new ways of doing business, that is, BMI. According to Carayannis et al. (2014), BMI can lead to organisational sustainability, resilience, and excellence. However, the literature on BMI is said to be at an infancy stage requiring identification and assessment of its antecedents (Foss & Saebi, 2017; Lambert & Montemari, 2017; Spieth et al., 2014).

Existing literature asserts a distinction between entrepreneurial orientation and BMI. While entrepreneurial orientation focuses on product and process innovation (Veidal & Korneliussen, 2013), BMI addresses how a firm creates, delivers, and appropriates value to the focal firm and its channel partners, including its customers (Bouwman et al, 2016; Snihur & Wiklund, 2019). According to Bucherer et al., (2012), BMI is a distinct form of innovation possessing a higher potential for value creation and capture as it is difficult to be imitated and implemented by competitors, unlike product and process innovations (Zott & Amit, 2012). While empirical studies have identified entrepreneurial orientation as an antecedent of BMI, these studies are mostly exploratory (Tian et al, 2019) and undeniably scarce (Asemokha et al., 2019). The purpose of this study, therefore, was to contribute to a better comprehension of entrepreneurial orientation as an antecedent of BMI by investigating the impact of entrepreneurial orientation on BMI in medium enterprises in Kenya.

Research Problem

The current study addresses several gaps identified in previous studies. First, although entrepreneurial orientation as a construct has been extensively investigated (Wales, 2016), the focus has mainly been in the context of developed economies such as the United States of America (USA) (Gupta & Dutta, 2018). Likewise, BMI studies have mainly been done in Europe, the USA, and Asia, with minimal effort to understand BMI practices in Africa. Situating this study in a developing country like Kenya was meant to bridge the identified contextual gap. Comprehending the nature and impact of entrepreneurial orientation and BMI in a context different from the developed countries may help managers develop and adopt strategies and operations more suitable to local conditions, thus evading possible adverse outcomes (Knight, 1997). Secondly, this study responds to scholars who have called for

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the identification and assessment of immediate outcomes of entrepreneurial orientation other than enterprise performance (Covin & Wales, 2019), as well as antecedents and consequences of BMI (Foss & Saebi, 2017). Prior studies assessing the outcome of entrepreneurial orientation have largely been focusing on enterprise performance as a direct outcome with those addressing other immediate outcomes of entrepreneurial orientation leaning towards learning orientation and innovativeness as mediator variables (Soares & Perin, 2019). Thus, studies linking BMI to entrepreneurial orientation are scarce (Asemokha et al., 2019), especially, in the African context. Thirdly, studies assessing BMI are predominantly case-based or conceptual (Böttcher & Weking, 2020), leading to a lack of conceptual clarity and generalisability (Foss & Saebi, 2017). Thus, a survey based on empirical data is timely. Additionally, this study provided an opportunity to assess Clauss' BMI measurement scales in a diverse industry setup as recommended by Clauss (2017).

Literature Review

Various theoretical perspectives such as the resource-based theory (Barney, 1991), Schumpeter's theory of entrepreneurship (Schumpeter, 1912, 1934, 1942), open innovation theory (Chesbrough, 2003), and the general systems theory (Bertalanffy, 1972) have been applied in business research assessing the profitability potential and innovation approaches in BMI and entrepreneurial orientation studies (Afuah, 2014; Wales et al., 2021). The resource-based theory has been applied in studies to help explain the role of resources in enhancing enterprise performance while Schumpeter's theory has emphasised the essentiality of incessant innovation in the attainment of competitiveness and superior performance. This study applied the dynamic capability view (Teece, 2007) to help explain entrepreneurial orientation as an internal antecedent of BMI. According to Teece (2007), sensing, shaping, and seizing are dynamic capabilities of a firm. Because a business model is a reflection of management's perception of customers' needs and how to satiate those needs and get paid (Teece, 2010), sensing (proactiveness) capability enables the discovery of opportunities or unmet customers' needs, which is a ground for innovating a business model of a firm. Shaping (innovativeness) capability is critical for the design of a new business model while seizing (risk taking) capability is associated with taking bold steps to exploit the opportunities. Thus, dynamic capabilities theory is relevant in this study advancing entrepreneurial orientation as an antecedent of BMI in the context of medium enterprises in Kenya.

Advancing the argument that entrepreneurial orientation enhances BMI by creating endogenous shifts in the prevailing conditions within an enterprise, Kocoglu et al. (2015) assessed entrepreneurial orientation and

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organizational emotional capacity as antecedents of BMI in a cross-sectional survey targeting 500 Turkish firms. The survey revealed that entrepreneurial orientation positively influenced firms to innovate their business models. In a case study of a Chinese high-end equipment manufacturer, Tian et al. (2019) identified entrepreneurial orientation as an internal antecedent of BMI. They argued that entrepreneurial orientation influences firms to perceive impending market trends (proactiveness), recognise and address customer needs (innovativeness), and act boldly to execute new business models, suggesting that entrepreneurial orientation is an antecedent of BMI. Similarly, Bouncken et al. (2016) argued in relation to the entrepreneurial orientation that innovativeness and risk taking behaviour and attitude cause the innovation of business models by influencing the generation of new ideas in service firms. Mütterlein and Kunz (2017) too, identified entrepreneurial orientation as an antecedent of BMI in a study of 50 media companies in German.

While acknowledging the scarcity of research linking BMI to entrepreneurial orientation, Asemokha et al. (2019) study of Finish small and medium enterprises operating in the international market suggested that entrepreneurial orientation could be an antecedent of BMI. Ferreras-Mendez et al. (2021) analysed the link between entrepreneurial orientation and new product development while considering BMI as a mediating variable, thus the effect of entrepreneurial orientation on BMI. The results of the analysis based on a survey of 400 small and medium enterprises in Spain established that entrepreneurial orientation had a positive effect on BMI as well as new product development.

Based on the foregoing literature review, the conceptual model in Figure 1 below was adopted to guide this study. Entrepreneurial orientation and BMI were conceptualised as antecedent and outcome variables, respectively, and the following null hypothesis was formulated for testing: H_0: entrepreneurial orientation does not influence BMI in medium enterprises in Kenya.

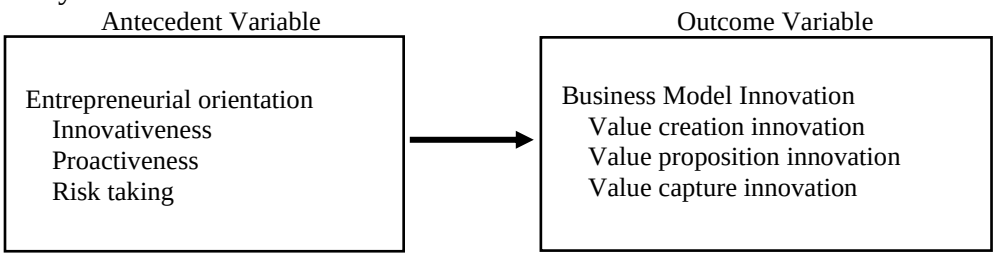

Figure 1. The Effect of Entrepreneurial Orientation on Business Model Innovation

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Methods

Research Design

The study employed a positivist philosophy, which according to Bryman (2008) often leans towards a deductive approach where hypotheses are developed on the basis of existing knowledge and tested to generate new knowledge. This study reviewed extant literature, enabling the formulation of the hypothesis about the study constructs. The study was descriptive as it sought to provide a description of the characteristics of the study population, determine the portion of the population possessing those characteristics as well as establish the association between the study variables (Easterby-Smith et al., 2008). A survey strategy of the cross-sectional timeframe was adopted, enabling the attainment of the required quantitative data in a relatively short time (Saunders et al., 2012).

Target Population and Sampling Strategy

The target population of the study was medium enterprises in Kenya. The Klynveld Peat Marwick Goerdeler (KPMG) East Africa and Nation Media Group (NMG) Top 100 companies provided the sampling frame (http://eastafricatop100.com). They are described as companies that have outperformed their peers in terms of profitability, revenue growth, and geographical expansion as well as contributing to employment opportunities, and have attained annual gross sales of Kenya shillings fifty million to one billion. Regulated companies such as banks, insurance, companies listed on the stock market, law, and accountancy firms are excluded from participating in the survey. According to the KPMG and NMG Top100 companies' website, 517 companies have been ranked among the Top 100 companies since 2008 when the survey was first initiated up to 2019. The Top 100 companies were purposively chosen because they have demonstrated excellence; beating their peers in annual revenue growth, profitability, geographical expansion, liquidity stability, and contribution to employment opportunities, suggesting that they have embraced best management practices. The Top 100 companies have been used in previous studies focusing on SMEs in Kenya (Bor, 2018; Ndegwa et al., 2015; Irungu & Marwa, 2015; Ng'aru, Mukulu, & Sakwa, 2018). The sample size was determined based on Cochran's (1977) sample size determination formula arriving at 221 medium enterprises. A stratified random sampling technique (Sharma, 2017) was applied in determining the ideal sample size across the industries.

Industry classification was based on the International Standard Industrial Classification of All Economic Activities (ISIC) industry categorisation (United Nations, 2008). Thus, the survey was carried out among companies from diverse industries including, accommodation and food service activities (10), administrative support (5), agriculture, forestry and

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fishing (5), construction (37), education (5), electricity, gas, steam, and air conditioning services (13), finance and insurance activities (24), human health and social work activities (22), information and communication (27), manufacturing (96), professional, scientific and technical activities (75), real estate (8), transportation and storage, including tour activities (61), water supply, sewerage, waste management and remediation activities (9), and wholesale and retail trade, repair of motor vehicles and motorcycles (120).

Data Collection

The study was based on primary data obtained by way of a self-administered questionnaire. A combination of drop and pick and email strategy which has been used in previous studies to enhance response rate (Ndegwa et al., 2015) was employed to deliver and collect the questionnaires from the respondents. One questionnaire targeting the chief executive officer or a senior manager was delivered to each of the sampled companies. Thus, the key respondent approach was adopted (Lechner et al., 2006; Hughes et al., 2015). This approach was deemed appropriate because the chief executive officer and other senior managers were considered highly knowledgeable about their companies' business strategies, making their responses more credible and reliable (Hussain et al., 2017; Snihur & Wiklund, 2019; Thuo et al., 2011). Secondary data was considered inaccessible because the participating enterprises were not listed companies.

Measurement of Variables

The study adapted validated instruments from prior studies. Entrepreneurial orientation was measured based on Covin and Slevin's (1989) nine items assessing proactiveness (three items), risk taking (three items), and innovativeness (three items) as composite indicators while BMI adapted Clauss' (2017) measurement scale comprising three dimensions, that is, value creation innovation (thirteen items), value proportion innovation (twelve items) and value capture innovation (eight items). Thus, thirty-three items in all. A five-point Likert scale was used where respondents were required to indicate the extent to which they agreed with a given statement on a scale of 1 to 5 representing "Strongly Disagree" to "Strongly Agree", respectively.

Missing Values, Outliers, and Common Method Variance

A preliminary analysis revealed that there were no cases of missing values. Further, an examination of the existence of outliers using Box plots (Walfish, 2006) and Cook's distance confirmed that there were no outliers (Hair et al, 2010). An assessment of common method variance based on Harman's Single-Factor Test (HSFT) was done revealing total variance explained by a single factor of 34.28 percent which was within the

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recommended threshold while nine items attained eigenvalues greater than one (1), meaning that common method variance was not pervasive (Chang et al., 2010).

Reliability and Validity of the Measures

Although the study adapted validated measurement scales, reliability and validity tests were done to assure that the instruments can yield the same results and measure what was purposed to be measured (Cooper and Schindler, 2014) in the context of medium enterprises in Kenya. Cronbach's alpha coefficients and composite reliability were computed to determine instrument reliability while the average variance extracted and the Fornell-Larcker criterion which weighs the square root of the average variance extracted values against the latent variable correlations were used to determine convergent and discriminant validity, respectively (Hair et al., 2021). Principal component analysis with the oblique rotation method (PROMAX) was performed to determine sampling adequacy and factor loadings about entrepreneurial orientation and BMI. The analysis confirmed sampling adequacy as attested by the Kaiser-Meyer-Olkin measure of sampling adequacy value of 0.896 and 0.747 for BMI and entrepreneurial orientation, respectively, and a significant Bartlett's test of Sphericity Chi-square for both constructs as shown in Table 1 below. According to Williams et al. (2012), a Kaiser-Meyer-Olkin value of 0.5 and above is a testament to sampling adequacy.

Table 1.Kaiser-Meyer-Olkin and Bartlett's Test Depicting Sampling Adequacy

Variable		EO	BMI
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.747	0.896
Bartlett's Test of Sphericity	Approx. Chi-Square	498.463	2740.386
	df	36	528
	Sig.	0.000	0.000

To determine the factor loadings, three factors for entrepreneurial orientation and ten factors for BMI were requested based on existing literature. The results of the principal component analysis confirmed three factors for entrepreneurial orientation (Covin & Slevin, 1989) and ten factors for BMI (Clauss, 2017, Clauss et al., 2019). Based on the confirmed factor loadings, confirmatory factor analysis was performed using AMOS version 26 with the Maximum likelihood estimation method to establish the reliability and validity of the measurement scales. As shown in Table 2 below, the results indicated that all items in relation to entrepreneurial orientation achieved strong factor loadings above 0.55. The computed average variance extracted values were 0.61, 0.59, and 0.58 for proactiveness, risk-taking, and innovativeness, respectively, while composite reliability values were 0.82, 081, and 0.81, in

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the same order. As presented in Table 3 below, the factor loadings in relation to BMI were all above 0.50, and the calculated average variance extracted as well as composite reliability values for all items were above 0.50 and 60, respectively. The square root of each construct's average variance extracted was higher than the corresponding highest correlation with any other construct suggesting discriminant validity (Fornell & Larcker, 1981).

Cronbach's alpha attained coefficient values of 0.77 and 0.95 for entrepreneurial orientation and BMI, respectively as shown in Table 4 below. The literature recommends cut-off values starting from 0.70, 0.50, 0.50, and 0.60 for Cronbach's alpha coefficients, factor loadings, average variance extracted, and composite reliability, in that order, for acceptable measures (Bonett & Wright, 2015; Hair et al., 2021; Nunnally & Bernstein, 1994). Accordingly, the reliability and validity of the instruments were established, thus permitting progression to the hypotheses testing stage.

Table 2. Factor Loadings, Average Variance Extracted, and Composite Reliability of Entrepreneurial Orientation Items

Item code	Item description	Factor loading	AVE/CR
	Proactiveness		
PRO_ii	Our firm has always been on the lookout to seize initiatives whenever possible in our target market operations.	0.77	AVE = .61 CR = .82
PRO_i	Our firm has always sought to exploit anticipated changes in future market conditions.	0.65	
PRO_iii	Our firm has always acted opportunistically to shape the business environment in which it operates.	0.91	
	Risk Taking		
RIS_iii	Our firm's business strategy has been characterized by a tendency to commit significant resources to projects with uncertain outcomes.	0.80	AVE = .59 CR = .81
RIS_ii	Our firm has shown a great deal of tolerance for venturing into the unknown	0.82	
RIS_i	Our firm has in general tended to invest in high-risk projects aiming at getting high returns.	0.68	
	Innovativeness		
INN_ii	Our firm has been at the forefront of technological leadership through new product/service development.	0.73	AVE = .58 CR = .81
INN_iii	Our firm has constantly experimented with unique new processes and methods of production to seek new and unique solutions.	0.79	
INN_i	Our firm has continuously promoted new innovative products/services to meet our customers' needs.	0.77	

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Table 3. Factor Loadings, Average Variance Extracted, and Composite Reliability of Business Model Innovation Items

Item code	Item description	Factor Loading	AVE/CR
	New customer relationships		
VPR_xii	We have taken many actions in order to strengthen customer relationships.	0.83	AVE = .67 CR = .86
VPR_xi	We have emphasized innovative or modern actions to increase customer retention.	0.84	
VPR_x	We have tried to increase customer retention through new service offerings	0.78	
New channels			
VPR_ix	We have consistently changed our portfolio of distribution channels	0.77	AVE = .72 CR = .88
VPR_vii	We have regularly utilized new distribution channels for our products and services	0.83	
VPR_viii	Constant changes in our distribution channels have led to improved efficiency of channel functions	0.93	
New capabilities			
VCR_i	Our employees have constantly received training in order to develop new competencies	0.8	AVE = .62 CR = .83
VCR_ii	0ur employees have been up-to-date in knowledge and capabilities.	0.82	
VCR_iii	We have constantly reflected on which new competencies need to be established in order to adapt to changing market requirements.	0.73	
New offerings/New customers and markets			
VPR_iv	We have regularly taken opportunities in new or growing markets.	0.75	AVE = .52 CR = .88
VPR_i	We have regularly addressed new, unmet customer needs.	0.77	
VPR_ii	Our products and services have been very innovative.	0.86	
VPR_v	We have regularly addressed new, unserved market segments.	0.69	
VPR_vi	We have constantly sought new customer segments and markets for our products and services.	0.65	
VPR_iii	We have solved customer needs by offering new and unique products and services.	0.75	
VCA_i	We have developed new revenue opportunities (for example, additional sales, and cross-selling).	0.55	
New cost structure			

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VCA_vi	We have actively sought opportunities to reduce production and service costs.	0.64	AVE = .52 CR = .76
VCA_vii	We have constantly examined our production and service costs and as necessary, amended them according to market prices.	0.79	
VCA_v	We have regularly reflected on our pricing strategy.	0.72	
New partnerships			
VCR_vii	We have constantly been searching for new collaboration partners.	0.8	AVE .68 CR = .82
VCR_viii	We have regularly utilized opportunities that arise from the integration of new partners into our processes	0.91	
VCR_x	New collaboration partners have been regularly helping us to further develop our business model.	0.76	
New processes			
VCR_xi	We have been able to significantly improve our internal processes.	0.72	AVE = .61 CR = .82
VCR_xii	We have been utilizing innovative procedures and processes during the manufacturing of our products and delivery of services.	0.77	
VCR_xiii	Our existing processes have been assessed regularly and significantly changed as needed.	0.84	
New revenue models			
VCA_iii	We have complemented or replaced one-time transaction revenues with long-term recurring revenue models (for example, Leasing).	0.66	AVE = .43 CR = .69
VCA_iv	We have not relied on the durability of our existing revenue sources.	0.51	
VCA_ii	We have been increasingly offering integrated services (for example, maintenance contracts, and after-sale service) in order to realize long-term financial returns.	0.78	
New technology/equipment			
VCR_v	Our technical equipment has been very innovative.	0.84	AVE = .61 CR = .82
VCR_vi	We have regularly utilized new technical opportunities to extend our product and service portfolio.	0.74	
VCR_iv	We have kept the technical resources of our company up-to-date.	0.76	
New cost structure			
VCR_ix	We have regularly been evaluating the potential benefits of outsourcing.	0.55	AVE = .47 CR = .63

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VCA_viii	We have regularly utilized opportunities that arise through price differentiation.	0.8	

Table 4. Cronbach's Alpha Coefficients Depicting Reliability of the Measurement Instruments

Variable	Cronbach's Alpha	Number of Items
Entrepreneurial Orientation	0.773	9
Business Model Innovation	0.946	33

Results

Descriptive and Correlation Analysis

Descriptive statistics were applied to ascertain the characteristics of the respondents and the firms they represented. Out of 221 questionnaires distributed, 141 were returned, attaining a response rate of 64 percent. However, seven questionnaires were eliminated because they were not filled by the target respondents leaving 134 valid responses, 60.6 percent of the sampled enterprises. The response rate was judged appropriate for regression analysis based on Hair et al.'s (2010) recommendation that a minimum of one hundred cases is acceptable. The study revealed that 59 percent of the firms were family-owned and 41 percent were non-family-owned. 72.4 percent of the firms had between 1-100 employees, 14.9 percent had between 101-200 employees, and 13 percent had over 300 employees while 4 percent of the firms had employees ranging from 201-300. According to Baker and Sinkula (2009), a firm's number of employees for the purpose of determining firm size depends on the industry in which it functions.

The respondents were 69.4 percent male and 30.6 percent female. They were senior managers occupying varying positions, such as the chief executive officer (29.9 percent), finance manager (16.4 percent), human resource manager (26.9 percent), marketing manager (14.2 percent), operations manager (5.2 percent), business development manager (4.5 percent) and procurement manager (3.0 percent). In terms of experience, 47.8 percent indicated that they had worked in their current industry for over 10 years, 23.1 percent between 5-10 years, and 29.1 percent had below 5 years of experience in their current industry. Regarding the level of education, 53.0 percent reported that they had attained an undergraduate degree, 25.4 percent had a master's degree, and 16.4 percent had obtained a diploma certificate. Those who reported having attained PhD were 2.2 percent, while those who had achieved high school and trade test certificates were 1.5 percent, respectively.

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Mean, Standard Deviation, Coefficient of Variation, and Pearson Correlation

Table 5 below provides descriptive statistics regarding mean, standard deviations, coefficient of variation, and correlation coefficients among the study variables. Based on the computed coefficient of variation, the spread from the mean for all the variables was low, meaning that there was less variation in the received responses. Pearson's correlation coefficient which measures the degree and direction of association between study variables (Onwuegbuzie et al., 2007; Taylor, 1990) as shown in Table 5 below indicated the association between BMI and entrepreneurial orientation was positive and moderate (Cohen & Holliday, 1982, Taylor, 1990), thus, providing initial expected results of the hypothesis testing.

Table 5. Mean, Standard Deviation, Coefficient of Variation, and Pearson Correlation

Construct	Sample size	Mean	Standard deviation	Coefficient of Variation (Percent)	Pearson Correlation	
					EO	BMI
EO	134	3.82	0.57	14.92	1	
BMI	134	3.97	0.51	12.85	.502**	1
**. Correlation is significant at the 0.01 level (2-tailed).						

Hypothesis Testing

The study's objective was to ascertain the influence of entrepreneurial orientation on BMI, thus, ordinary least square regression analysis was performed to test the hypothesis that entrepreneurial orientation does not influence BMI among medium enterprises in Kenya. The estimated simple linear regression equation was: $BMI = \beta_o + \beta_1 EO + \varepsilon$, where EO is entrepreneurial orientation, β_1 is the regression coefficient for EO, β_0 is the regression constant while ε is the error term. As revealed in Table 6 below, the influence of entrepreneurial orientation on BMI was weak and positive as evidenced by the coefficient of determination ($R^2 = 0.252$). The overall model was significant since the P-value was less than 0.05 level of significance. Thus, the null hypothesis that entrepreneurial orientation does not influence BMI among medium enterprises in Kenya was not supported by the analysis and therefore was rejected. On individual significance, both the constant and entrepreneurial orientation were significant. The consequent estimation equation was thus, $BMI = 2.266 + 0.445EO$, meaning that a unit change in entrepreneurial orientation will on average lead to 0.445 units increase in BMI.

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Table 6. Model Summary, Analysis of Variance and Coefficients of Entrepreneurial Orientation on Business Model Innovation

Model Summary (Goodness-of-fit)						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.502[a]	0.252	0.246	0.43975		
a. Predictors: (Constant), EO						
Analysis of Variance (Overall Significance)						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.596	1	8.596	44.452	.000[b]
	Residual	25.526	132	0.193		
	Total	34.122	133			
a. Dependent Variable: BMI, b. Predictors: (Constant), EO						
Coefficients (Individual Significance)						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.266	0.258		8.790	0.000
	EO	0.445	0.067	0.502	6.667	0.000
a. Dependent Variable: BMI						

Discussion

This study investigated the impact of entrepreneurial orientation on BMI in medium enterprises in Kenya. This was in response to calls from scholars requiring the identification of the immediate outcome of entrepreneurial orientation other than firm performance (Covin & Wales, 2019; Markin et al., 2018) since most studies had concentrated on the direct entrepreneurial orientation-performance link attaining mixed results (Soares & Perin, 2019. Additionally, other scholars contended that BMI literature was at an embryonic stage requiring the identification of its antecedents and outcomes (Foss & Saebi, 2017). This study established that entrepreneurial orientation positively influenced BMI in medium enterprises in Kenya, thus, suggesting that entrepreneurial orientation is an antecedent of BMI in medium enterprises in Kenya. However, as indicated by the coefficient of determination, the statistical power was weak suggesting that other variables not incorporated in the model contributed to the variance in BMI. The results suggested that entrepreneurial orientation accounted for about 25.2 percent (R^2

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= 0.252) of the variance in BMI while 74.8 percent was attributable to other variables not included in the model. The findings are consistent with other studies (Asemokha et al., 2019; Bouncken et al., 2016; Ferreras-Mendez et al., 2021; Kocoglu et al., 2015; Kunz, 2017; Mütterlein & Kunz, 2017) which established that entrepreneurial orientation had a positive influence on BMI.

The study contributes to the literature by demonstrating the importance of dynamic capability theory in explaining the effect of entrepreneurial orientation on BMI. Empirically, by establishing that entrepreneurial orientation had a positive influence on BMI, the study partially addressed the twin concerns raised by scholars calling for the identification and assessment of antecedents of BMI as well as the immediate outcome of entrepreneurial orientation other than enterprise performance. This is a novel frontier as there is no other study in the context of medium enterprises in Kenya, which has explored entrepreneurial orientation as an antecedent of BMI. Additionally, the study addressed a call to assess the BMI measurement scale as developed by Clauss (2017) in a heterogenous industry environment beyond the electronic sector. Regarding the implication to industry practitioners, the study highlights the importance of entrepreneurial orientation on BMI, hence, requiring managers to embrace entrepreneurial behaviour and attitude to enable BMI in their enterprises. The study suggests a need for the board of directors as policymakers to create an environment that embraces entrepreneurial orientation as well as provide resources to enable managers to embrace innovativeness, proactiveness, and risk taking behaviour and attitude in their decision making and operations. Additionally, there is a need for the government of Kenya to formulate policies that are supportive of entrepreneurial orientation behaviour and attitude in medium enterprises in Kenya.

This study was not without limitations, which on the flip side presents opportunities for future research. First, the study relied on cross-sectional survey data. Accordingly, it is recommended that future studies consider exploring the relationship among the study variables from a longitudinal perspective. Second, data in the current study was limited to the KPMG East Africa and NMG annual Top 100 medium enterprises in Kenya meaning that there are other medium enterprises left out in the study. Thus, there is a need to extend the sampling frame beyond the surveyed enterprises to incorporate other qualifying entities. Third, the study relied on self-reported data from single respondents, thus, it is recommended to conduct a study that complements self-reported data with secondary as well as using different respondents for predictor and outcome variables. Finally, the study did not explore other potential strategic orientations such as market orientation and learning orientation that could influence BMI and the potential outcome of BMI and entrepreneurial orientation such as enterprise performance in the

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surveyed medium enterprises. Since the ultimate goal of a business is performance, there is a need to extend the examined model to incorporate enterprise performance as the final outcome, thus assessing the indirect effect of entrepreneurial orientation on performance through BMI as mediating factor. Despite the limitations, the study employed a robust research design to mitigate the shortcomings. Thus, the study's contribution to the theory and knowledge development in entrepreneurship literature, practice, and policy formulation is immense.

Conclusion and Recommendation

The aim of this study was to determine the impact of entrepreneurial orientation on BMI in medium enterprises in Kenya. Based on the findings, the study concluded that entrepreneurial orientation had a positive significant impact on BMI in medium enterprises in Kenya. Thus, to enhance BMI in their enterprises, managers of medium enterprises in Kenya should embrace entrepreneurial behaviour and attitude among other strategies. Accordingly, the study recommends that managers of medium enterprises in Kenya should be entrepreneurially orientated to enhance BMI in their firms. The study further recommends that the board of directors as policymakers create an environment that embraces entrepreneurial orientation as well as provide resources to enable managers to embrace innovativeness, proactiveness, and risk taking behaviour and attitude in order to enhance BMI in medium enterprises in Kenya. The government of Kenya should as well formulate policies that encourage an entrepreneurial culture of innovativeness, proactiveness, and risk taking so as to promote BMI in medium enterprises in Kenya. Finally, the study recommends further studies to address the study's limitations.

Conflicts of Interests

We confirm that there is no conflict of interest to declare as far as this paper is concerned.

References:

1. Afuah, A. (2014). Business model innovation: concepts, analysis, and cases. Routledge.
2. Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. (2015). Reconceptualizing entrepreneurial orientation. *Strategic Management Journal*, 36, 1579–1596. http://dx.doi.org/10.1002/smj.2298.
3. Asemokha, A., Musona, J., Torkkeli, L., & Saarenketo, S. (2019). Business model innovation and entrepreneurial orientation relationships in SMEs: Implications for international performance.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Journal of International Entrepreneurship 17, 425-453. DOI: 10.1007/s10843-019-00254-3.

4. Baden-Fuller, C., and S. Haefliger. (2013). "Business Models and Technological Innovation." *Long Range Planning* 46 (6): 419–426.
5. Baker, W. E., & Sinkula, J. M. (2009). The complementary effects of market orientation and entrepreneurial orientation on profitability in small businesses. *Journal of Small Business Management* 47(4): 443–464.
6. Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
7. Bertalanffy, L. (1972, December). The history and status of general systems theory. *The Academy of Management Journal*, 15(4), 407-426.
8. Bashir, M. & Verma, R. (2017), "Why business model innovation is the new competitive advantage", *IUP Journal of Business Strategy*, 14(1), 7.
9. Bonett, D. G., & Wright, T. A. (2015), "Cronbach's alpha reliability: Interval estimation, hypothesis testing, and sample size planning", *Journal of Organizational Behavior*, 36 (1), 3-15.
10. Bor, G.K. (2018). A descriptive analysis of the influence of entrepreneurial orientation dimensions on SME performance in Kenya. *International Journal of Small Business and Entrepreneurship Research* 6(1), 31-45.
11. Böttcher, T, & Weking., J (2020). *Identifying antecedents & outcomes of digital business model innovation*, 28. European Conference on Information Systems (ECIS), Marrakech, Morocco.
12. Bouwman, H., Molina Castillo, F. J., & de Reuver, M. (2016). *Business Model Innovation in European SMEs: some preliminary findings*. In Proceedings of 29th Bled eConference: Digital Economy, 527-538.
13. Bouncken, R. B., Lehmann, C., & Fellnhofer, K. (2016). The role of entrepreneurial orientation and modularity for business model innovation in service companies. *International Journal of Entrepreneurial Venturing*, *8*(3), 237–260.
14. Bryman. A. (2008). *Social Research Methods*, (3rd ed) Oxford University Press, London UK.
15. Bucherer, E., Eisert, U., & Gassmann, O. (2012). Towards systematic business model innovation: Lessons from product innovation management. *Creativity & Innovation Management*, 21: 183-198.
16. Carayannis, E. G., Grigoroudis, E., Sindakis, S., & Walter, C. (2014). Business Model Innovation as Antecedent of Sustainable Enterprise Excellence and Resilience. *Journal of the Knowledge Economy*, 5(3), 440–463. https://doi.org/10.1007/S13132-014-0206-7.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

17. Casadesus-Masanell, R., & Zhu, F. (2013). Business model innovation and competitive imitation: The case of sponsor-based business models. *Strategic Management Journal*, 34: 464-482.
18. Chang, S. J., VanWitteloostuijn, A., & Eden, L. (2010). From the editors: Common method variance in international business research. *Journal of International Business Studies*, 41(2), 178–184.
19. Chesbrough, H. W. (2003). The Era of Open Innovation. *MIT Sloan Management Review, 44*(3), 35-41.
20. Chesbrough, H.W. (2010). Business Model Innovation: Opportunities and Barriers. *Long Range Planning*, 43(2–3) 354–363.
21. Clauss, T. (2017). Measuring business model innovation: conceptualization, scale development, and proof of performance. *R&D Management*, 47, 385-403.
22. Clauss, T., Abebe, M., Tangpong, C. & Hock, M. (2019), "Strategic agility, business model innovation, and firm performance: An empirical investigation", *IEEE Transactions on Engineering Management*, DOI: 10.1109/TEM.2019.2910381.
23. Cochran, W. G. (1977). *Sampling techniques* (3rd ed.). New York: John Wiley & Sons.
24. Cohen, L., & Holliday, M. (1982). *Statistics for the social sciences*. London: Harper & Row.
25. Cooper, D. R. & Schindler, P. S. (2014). *Business research methods*. (12th ed). McGraw-Hill Irwin.
26. Covin, J.G., & Slevin, D.P. (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10, 75–87.
27. Covin, J.G., & Wales, W.J. (2019). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. *Entrepreneurship Theory and Practice*, 43(1), 3-18.
28. Demil, B., & Lecocq, X., (2010). Business model evolution: In search of dynamic consistency. *Long-Range Plan*. 43, 227–246.
29. Easterby-Smith, M., Lyles, M., & Tsang, E., (2008). Inter-organizational knowledge transfer: Current themes and future prospects. *Journal of Management Studies* 45 (4), 677–690.
30. Ferreras-Méndez, J. L., Olmos-Peñuela, J., Salas-Vallina, A., & Alegre, J. (2021). Entrepreneurial orientation and new product development performance in SMEs: The mediating role of business model innovation. Technovation, 108, 102325.
31. Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

32. Foss, N. J., & Saebi. T., (2017). Fifteen years of research on business model innovation: How far have we come, and where should we go? *Journal of Management*. 43(1), 200-227.
33. Gupta, V. K., & Dutta, D. K. (2018) The rich legacy of Covin and Slevin (1989) and Lumpkin and Dess (1996): *A constructive critical analysis of their deep impact on entrepreneurial orientation research*. In: Javadian G, Gupta VK, Dutta DK, et al. (eds) Foundational Research in Entrepreneurship Studies. New York: Palgrave Macmillan,155–178.
34. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Englewood Cliffs: Prentice Hall.
35. Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.
36. Hughes, M., Eggers, F., Kraus, S., & Hughes, P. (2015). 'The relevance of slack resource availability and networking effectiveness for entrepreneurial orientation.' *International journal of entrepreneurship and small business*, 26 (1).116-138.
37. Hussain, J., Abbas, Q., & Khan, M. A. (2017). Entrepreneurial orientation and performance: The moderating effect of market orientation. *Global Management Journal for Academic & Corporate Studies*, 7(1), 9-18.
38. Irungu, D., & Marwa, M. (2015). Firm resources as determinants of internationalization of medium sized firms; evidence from Kenya. *International Journal of Small Business and Entrepreneurship Research*, 3(1), 53-63.
39. Kim, W.C., & Mauborgne, R. (2005), *Blue Ocean Strategy: How to create uncontested market space and make the competition irrelevant*, Boston: Harvard Business School Press.
40. Knight, G.A., (1997) Cross-cultural reliability and validity of a scale to measure firm entrepreneurial orientation. Journal of Business Venturing 12(3): 213–225.
41. Kocoglu, I., Imamoglu, S.Z., Akgun, A.E., Ince, H., & Keskin, H. (2015). Exploring the unseen: A collective emotional framework in entrepreneurial orientation and business model innovation. *Procedia Social and Behavioral Sciences*, 207, 729-738. https://doi.org/10.1016/j.sbspro.2015.10.148
42. Lambert, S. & Montemari, M. (2017). "Business Model Research: From Concepts to Theories." *International Journal of Business and Management* 12 (11).

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

43. Lechner, C., Dowling, M., & Welpe, I. (2006). "Firm networks and firm development: The role of the relational mix," *Journal of Business Venturing*, 21(4), 514–540.
44. Markin, E. T., Gupta, V. K., Pierce, C., & Covin, J. G. (2018). Does national culture moderate the relation between entrepreneurial orientation and firm performance? A meta-analytic investigation. *Academy of Management Meetings presentation*, Chicago, IL.
45. Muriithi, S. M. (2017). African small and medium enterprises (SMEs), contributions, challenges, and solutions. *European Journal of Research and Reflections in Management Sciences*, 5(1), 36-48.
46. Mütterlein, J., & Kunz, R. E. (2017). Innovate alone or with others? Influence of entrepreneurial orientation and alliance orientation on media business model innovation. *Journal of Media Business Studies*, 14(3), 173–187.
47. Ndegwa, J. W., Machuki V. N., Maalu J. K., Awino. Z. B., & Iraki X. N (2015). knowledge sharing, organizational learning and performance of top 100 medium enterprises in Kenya. *1st DBA-Africa Management Review International Conference*, 42-65.
48. Ndemo, B., & Aiko, D. (2016). *Nurturing creativity and innovation in African enterprises: A case study on Kenya*. In M. Franco, Entrepreneurship Practice Oriented Perspectives (p. Chapter 2). IntechOpen.
49. Ng'aru, N. P., Mukulu, E., & Sakwa, M., (2018). Relationship between proactiveness and growth of Top 100 enterprises in Kenya, *Journal of Entrepreneurship & Project Management*, 2(1), 1-14.
50. Nunnally, J. C. & Bernstein I. H. (1994) Psychometric theory (3rd ed.) New York, McGraw Hill.
51. Onwuegbuzie, A. J., Daniel, L., & Leech, N. L. (2007). *Pearson product-moment correlation coefficient*. In N. J. Salkind & K. Rasmussen (Eds.), Encyclopaedia of measurement and statistics, 751-756. Thousand Oaks, CA: Sage Publications.
52. Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2009). Entrepreneurial orientation and business performance: An assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice*, 33(3), 761–787.
53. Rotar, L.J., Pamic, R. K., & Bojnec. S. (2019). Contributions of small and medium enterprises to employment in the European Union countries, *Economic Research*, 32:1, 3296-3308, DOI: 10.1080/1331677X.2019.1658532.
54. Saunders, M. N., Lewis, P., & Thornhill, A. (2012). *Research method s for business students* (6th ed) Harlow, England: Pearson Education.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

55. Schumpeter, J.A. (1912). *The theory of economic development*, Stanford University Press, 1969 (Reprint).
56. Schumpeter, J.A. (1934). *The theory of economic development: An inquiry into profits. Capital, Credit. Interest and the Business Cycle*, 2nd ed. Cambridge, MA: Harvard University Press.
57. Schumpeter, J.A. (1942). *Capitalism, socialism and democracy*, 3rd edition, London.
58. Sharma, G. (2017). Pros and cons of different sampling techniques. *International Journal of Applied Research*, 3(7), 749-752.
59. Snihur, Y., & Wiklund, J. (2019). Searching for Innovation: Product, process, and business model innovations and search behavior in established firms. *Long Range Planning*, 52(3), 305-325.
60. Soares, M.C., & Perin, M.G. (2019). Entrepreneurial orientation and firm performance: an updated meta-analysis, *RAUSP Management Journal*, 55(2), 143-159. https://doi.org/10.1108/RAUSP-01-2019-0014.
61. Spieth, P., Schneckenberg, D., & Ricart, J. E. (2014). Business model innovation - State of the art and future challenges for the field. *R&D Management*, 44(3), 237-247. http://doi.org/10.1111/radm.12071.
62. Taylor, R., (1990). Interpretation of the correlation coefficient: A basic review, *Journal of Diagnostic Medical Sonography* 6, 35–39.
63. Teece, D. J. (2007). Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance, *Strategic Management Journal* 28(13), 1319 - 1350.
64. Teece, D. J. (2010). "Business Models, Business Strategy and Innovation." *Long Range Planning* 43 (2-3)**,** 172-194.
65. The Republic of Kenya (2012). *Sessional Paper No. 9 of 2012 on the National Industrialization Policy Framework for Kenya* 2012 – 2030.
66. Thuo, J. K., Kibera, F. N., K'Obonyo, P. P., & Wainaina, G. (2011). Customer relationship management and competitiveness of commercial banks in Kenya. *Journal of Science Technology Education and Management*, 4(1), 125-141.
67. Tian, Q., Zhang, S., Yu, H., & Cao, G. (2019). Exploring the factors influencing business model innovation using grounded theory: The case of a Chinese high-end equipment manufacturer. Sustainability, 11, 1455. doi:10.3390/su11051455.
68. United Nations. (2008). *The international standard industrial classification of all economic activities (ISIC).* New York.
69. Veidal, A. & Korneliussen, T. (2013) 'Entrepreneurial orientation and market orientation as antecedents of organisational innovation and performance', *Int. J. Entrepreneurship and Small Business*, 19 (2), .234–250.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

70. Wales, W.J. (2016). Entrepreneurial orientation: A review and synthesis of promising research directions. *International Small Business Journal*, 34(1), 3-15.
71. Wales, Gupta, & Mousa. (2011). Empirical research on entrepreneurial orientation: An assessment and suggestions for future research. *International Small Business Journal*, 0266242611418261.
72. Wales, W. J., Kraus, S., Filser, M., Stockmann, C., & Covin, J. G. (2021). The status quo of research on entrepreneurial orientation: Conversational landmarks and theoretical scaffolding. *Journal of Business Research*, 128, 564–577. https://doi.org/10.1016/j.jbusres.2020.10.046.
73. Walfish, S. (2006). A Review of statistical outlier methods. *Pharmaceutical Technology*, 30(11), 82-87.
74. Williams, B., Brown, T., & Boyle, M. (2012). Construct validation of the readiness for interprofessional learning scale: A Rasch and factor analysis. Journal of Interprofessional Care, 26, 326–332.
75. Zott, C & Amit, R. (2012). Creating value through business model innovation. *MIT Sloan Management Review*, 53:41-49.

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Ampleur des Disparités dans la Scolarisation Primaire et Secondaire en République Démocratique du Congo de 2006 à 2018

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Résumé

Cette étude analyse l'ampleur des disparités dans la scolarisation primaire et secondaire en République Démocratique du Congo au cours de la période de 2006 à 2018. Sur la base des données statistiques tirées des annuaires statistiques produits au niveau national, l'étude examine les disparités axées sur le taux de scolarisation et l'indice de parité. Elle analyse les disparités non seulement de manière synchronique, au cours de chaque année, mais aussi diachroniquement, en faisant ressortir leur évolution temporelle. L'étude exploite, pour cela, les indices de dispersion (l'étendue de variation totale et le coefficient de variation), le scattergram et le coefficient de corrélation *Rho* de Spearman. Elle montre que si la scolarisation primaire est quasi-universelle dans la plupart des provinces, la province du Katanga est

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la moins scolarisée de la RDC. Cependant, les disparités sont très faibles entre les provinces, entre la zone de conflit et celle de stabilité, entre les filles et les garçons. En revanche, en dehors de la ville de Kinshasa et de la province du Bandundu, aucune autre province n'a atteint au niveau du secondaire le taux de scolarisation de 50%. Les disparités de la scolarisation secondaire entre les provinces, entre la zone de conflit et la zone de stabilité, de même qu'entre les genres sont très prononcées et significatives. Par ailleurs, les disparités provinciales se sont faiblement réduites pour le taux brut de scolarisation aussi bien au primaire qu'au secondaire. Par contre, elles se sont significativement réduites pour l'indice de parité fille-garçon. Pour réduire les disparités, il s'avère important d'accroître l'offre de l'éducation au niveau du primaire et surtout au niveau du secondaire dans les provinces les plus défavorisées.

Mots-clés: Disparités, scolarisation primaire, scolarisation secondaire, conflit armé, République Démocratique du Congo

Extent of Disparities in Primary and Secondary Education in the Democratic Republic of Congo from 2006 to 2018

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Abstract

This study analyzes the extent of disparities in primary and secondary schooling in the Democratic Republic of Congo during the period from 2006 to 2018. Based on statistical data drawn from statistical yearbooks produced at the national level, the study examines the disparities based on the enrollment rate and the parity index. It analyzes the disparities not only synchronically, during each year, but also diachronically, highlighting their temporal evolution. For this, the study uses the dispersion indices (the total range of

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variation and the coefficient of variation), the scattergram and Spearman's Rho correlation coefficient. It shows that while primary education is almost universal in most provinces, the province of Katanga is the least educated in the DRC. However, the disparities are very low between the provinces, between the conflict zone and the stability zone, between girls and boys. On the other hand, apart from the city of Kinshasa and the province of Bandundu, no other province has reached the secondary school enrollment rate of 50%. Disparities in secondary education between provinces, between the conflict zone and the stability zone, as well as between genders are very pronounced and significant. Furthermore, provincial disparities have narrowed slightly for the gross enrollment rate at both primary and secondary level. On the other hand, they are significantly reduced for the girl-boy parity index. To reduce disparities, it is important to increase the supply of education at the primary level and especially at the secondary level in the most disadvantaged provinces.

Keywords: Disparities, primary schooling, secondary schooling, armed conflict, Democratic Republic of Congo

1. Introduction

A l'instar de plusieurs autres pays, la République Démocratique du Congo (RDC) a adhéré à la Déclaration Universelle des Droits de l'homme, au programme d'Education pour tous (UNESCO, 1990), aux Objectifs du Millénaire pour le Développement (OMD) (Gérardin et al., 2016) et aux Objectifs du Développement Durable. Ces programmes préconisent, entre autres, l'égalité en matière d'éducation et de scolarisation. Aussi la Constitution de la RDC, en son article 43, alinéa 1, stipule-t-elle que *toute personne a droit à l'éducation.* Pour l'article 45 de la même Constitution, *toute personne a accès aux établissements d'enseignement national, sans discrimination de lieu, d'origine, de race, de religion, de sexe, d'opinions politiques ou philosophiques, de son état physique, mental ou sensoriel, selon ses capacités* (Cabinet du Président de la République, 2011).

En dépit de l'adhésion aux programmes internationaux, des dispositions constitutionnelles et légales relatives à l'éducation inclusive, l'éducation pour tous n'est pas encore une réalité en RDC (Mokonzi et al. 2022 ; Ziulu et al., 2021). L'enseignement secondaire, en particulier, n'est pas à la portée de toute la population scolarisable (Mokonzi, 2022). A ce sujet, des études (Adjiwanou, 2005 ; Rwehera, 2004 ; UNESCO, 2017) ont montré que la pauvreté est la raison principale de la faible scolarisation dans le monde, notamment dans les pays en développement. En plus de cette cause, on note également l'absence de planification de l'éducation, la mauvaise gouvernance, l'insuffisance d'infrastructures scolaires, le manque du personnel enseignant,

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la discrimination et l'exclusion, les inégalités sociales, les coutumes et les modes de vie de certaines communautés, etc.

Les conflits armés déclenchés depuis la décennie 1990, particulièrement dans les provinces de l'Est (Nord-Kivu, Sud-Kivu, Maniema, Province Orientale et Katanga) ont impacté la scolarisation tant au niveau du primaire qu'au niveau du secondaire (Brandt et al. 2020). C'est pourquoi la RDC figure parmi les cinq pays où beaucoup d'enfants n'étaient pas scolarisés au début de ce siècle (Watchlist on Children & Armed Conflict, 2003).

Au-delà de l'impact des conflits armés, l'offre de l'éducation n'est pas équitablement répartie dans les différentes provinces, ce qui crée des disparités dans le développement de la scolarisation.

Cette étude analyse l'ampleur des disparités entre les provinces dans la scolarisation primaire et secondaire en RDC et se focalise sur l'accès au système éducatif et plus précisément à l'enseignement primaire et secondaire. Mais avant de procéder à cette analyse, nous décrivons brièvement le contexte politique et éducatif qui caractérise la période de référence de cette étude.

2. Contexte politique et éducatif de la période de 2006 à 2018

L'année 2006 marque à la fois la fin de la période de transition politique (2003-2006) et le début de l'organisation des élections pluralistes en RDC. En effet, après une longue période de guerres, déclenchées au cours de la décennie 1990, le gouvernement, les mouvements de rébellion, la société civile et les partis politiques d'opposition non armés ont signé le 19 avril 2002, à Sun City (Afrique du Sud), l'*Accord global et inclusif sur la transition en RDC*. Cet accord visait à mettre fin à plusieurs années de conflit armé et à instaurer la transition vers la démocratie. Il a donné lieu, dans l'immédiat, à l'organisation de la période de transition politique de 2003 à 2006 et à la formation d'un gouvernement d'union nationale, dirigé par le président Joseph Kabila et quatre vice-présidents, dont deux issus de deux principales rébellions, le Mouvement de Libération du Congo et le Rassemblement congolais pour la démocratie, et deux du gouvernement et de la société civile. Au terme de la transition politique, des élections ont été organisées le 30 juillet 2007, au niveau national et provincial, pour la désignation du président de la République, des gouverneurs des provinces, des députés nationaux et des députés provinciaux. Au niveau national, l'élection présidentielle a été remportée par Joseph Kabila tandis que 500 membres de 56 partis politiques et des candidats indépendants ont été élus comme députés nationaux. Le deuxième cycle électoral est intervenu en 2011 et a de nouveau été remporté par Joseph Kabila pour un second mandat de 5 ans. Néanmoins, c'est seulement le 26 décembre 2018 que les élections présidentielle et législative ont été organisées ; elles ont permis d'opérer l'alternance au sommet de l'Etat

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à travers l'élection de Felix-Antoine Tshisekedi comme président de la République.

Si l'accord global et inclusif a réunifié le pays, il n'a pas mis fin aux conflits armés sur l'ensemble du territoire national. Ainsi, « en 2020, les conflits et l'insécurité ont continué de sévir dans l'Est de la République démocratique du Congo. » (Groupe d'Etude sur le Congo, Baromètre sécuritaire du Kivu & Center on International Cooperation, 2021). Rien qu'au Sud-Kivu, on a dénombré au minimum 120 groupes armés actifs.

Sur le plan de l'éducation, la période sur laquelle porte cette étude est caractérisée par plusieurs faits, notamment (i) la priorisation de l'éducation dans le programme gouvernemental, (ii) l'instauration de la gratuité de l'enseignement primaire, (iii) l'élaboration de la Stratégie du développement de l'enseignement primaire, secondaire et professionnel, (iv) l'élaboration de la loi-cadre de l'enseignement national et (v) l'élaboration de la Stratégie Sectorielle de l'Education et de la Formation (SSEF).

L'éducation a été considérée comme l'une des cinq priorités du programme du gouvernement de Joseph Kabila, formé à l'issue des élections de 2006, ce qu'on a appelé à l'époque les cinq chantiers de la République. Pour le gouvernement, il était question de « mettre en place, à court terme, un cadre légal et réglementaire propice à la réalisation des Objectifs du Millénaire pour le Développement (OMD)… » (République Démocratique du Congo, 2007).

C'est pour cela que la Constitution de 2006 a instauré l'obligation et la gratuité de l'enseignement primaire dans les établissements publics. Cette disposition marque un tournant important par rapport aux constitutions antérieures qui prônaient l'obligation scolaire sans la fonder sur la gratuité. Pourtant, une première tentative d'application de la gratuité n'a été effectuée qu'en 2011. Malheureusement, suite à une mauvaise planification, celle-ci n'a pas été couronnée de succès, si bien que d'aucuns ont estimé qu'après la gratuité était égal avant la gratuité (Mokonzi, 2012).

En mars 2010, le pays a adopté la Stratégie pour le développement de l'enseignement primaire, secondaire et professionnel pour la période de 2010/2011 – 2015/2016. Celle-ci visait trois objectifs essentiels : (i) accroitre l'accès, l'équité et la rétention, (ii) améliorer la qualité et la pertinence et (iii) renforcer la gouvernance (Ministère de l'Enseignement Primaire, Secondaire et Professionnel, 2012).

Le 11 février 2014, une nouvelle loi-cadre de l'enseignement a été promulguée, en remplacement de celle du 22 septembre 1986. Couvrant aussi bien le formel que le non formel, cette loi se fonde sur l'évolution politique et sociale du pays, les instruments juridiques internationaux ratifiés par la RDC et le processus de Bologne (Cabinet du Président de la République, 2014). Elle vise à créer des conditions nécessaires pour assurer l'égalité de l'accès à

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l'éducation scolaire, la formation de l'élite pour un développement durable et l'éradication de l'analphabétisme.

Le contexte éducatif de la période de référence de cette étude est enfin marqué par l'adoption de la Stratégie Sectorielle de l'Education et de la Formation (SSEF). Elaborée en 2015, par tous les ministères en charge de l'éducation, à savoir les Ministères de l'Enseignement Primaire, Secondaire et Professionnel, de l'Enseignement Supérieur et Universitaire et des Affaires Sociales, la SSEF couvre la période de 2016 à 2025. Elle est, pour le gouvernement, un outil de « construction d'un système éducatif inclusif et de qualité, contribuant efficacement au développement national, à la promotion de la paix et d'une citoyenneté démocratique active ». La SSEF compte trois axes principaux : (i) Promouvoir un système éducatif plus équitable, au service de la croissance et de l'emploi ; (ii) Créer les conditions d'un système éducatif de qualité et (iii) Instaurer une gouvernance transparente et efficace (République Démocratique du Congo, 2015).

3. Méthode

Les données de cette étude ont été tirées des annuaires statistiques produits par la Cellule Technique de Statistiques pour l'Enseignement (CTSE, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2019) et l'Institut National des Statistiques (INS). Elles portent sur le taux brut de scolarisation et l'indice de parité de l'enseignement primaire et de l'enseignement secondaire et couvrent la période de 2006 à 2018.

L'analyse des disparités entre les provinces est effectuée de manière synchronique et diachronique. Synchroniquement, les disparités sont analysées pour chaque année de la période retenue dans cette étude, tandis que diachroniquement, elles sont étudiées dans leur aspect évolutif. L'analyse diachronique permet d'examiner si les disparités se sont soit renfoncées, soit réduites, soit encore si elles ont maintenu la même ampleur de 2006 à 2018. Les disparités sont analysées entre les provinces, entre la zone d'insécurité ou d'instabilité et la zone de stabilité sécuritaire et entre les filles et les garçons. Puisque le découpage territorial du pays en 26 provinces ne s'est opéré qu'en 2015, l'analyse effectuée dans cette étude est faite sur la base de 11 anciennes provinces (Voir figure 1). Font partie de la zone d'insécurité, les provinces Orientale, du Nord-Kivu, du Sud-Kivu, du Maniema et du Katanga.

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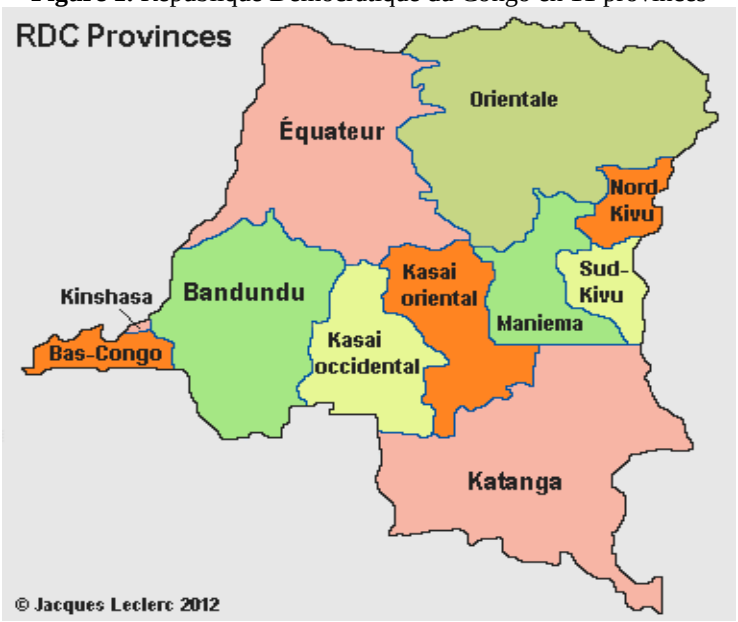
Figure 1. République Démocratique du Congo en 11 provinces



Source : https://www.axl.cefan.ulaval.ca/afrique/czaire_carte.htm

Pour l'analyse synchronique des disparités entre les provinces, nous avons recouru essentiellement à deux indices de dispersion : l'étendue de variation totale (EVT)[1] et le coefficient de variation (CV). Plus grande est l'EVT, plus fortes sont les disparités entre les provinces. Si le CV est :

- inférieur à 0,15, les disparités entre les provinces sont faibles ;
- compris entre 0,15 et 0,30, les disparités entre les provinces sont modérées ;
- est supérieur à 0,30, les disparités entre les provinces sont très fortes.

L'analyse diachronique des disparités provinciales est effectuée au moyen de quatre techniques : l'évolution de l'EVT, l'évolution du CV, le *scattergram* et le coefficient de corrélation *Rho* de Spearman. L'augmentation de l'EVT dans le temps, de même que celle du CV indiquent le renforcement des disparités. Leur diminution traduit la réduction des disparités alors que leur stagnation exprime le maintien de la même ampleur des disparités entre les provinces.

Pour le *scattergram*, les provinces dont le taux de scolarisation s'est amélioré de 2006 à 2018 se situent au-dessus de la diagonale. Les provinces

[1] L'étendue de variation totale (EVT) est l'écart entre la donnée la plus grande et la donnée la plus petite de la variable. Elle a l'inconvénient d'ignorer les données comprises entre les valeurs extrêmes. Le coefficient de variation (CV) est le rapport entre l'écart-type et la moyenne. Il exprime donc la dispersion autour de la moyenne.

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situées en-dessous de la diagonale sont celles dont les taux de scolarisation ont régressé de 2006 à 2018. Enfin, les provinces pour lesquelles cet indicateur n'a pas évolué du début à la fin de la période se situent sur la diagonale.

Pour qu'il y ait réduction des disparités, il faut que les provinces défavorisées au départ progressent plus rapidement que les provinces favorisées. Le coefficient de corrélation *Rho* de Spearman permet d'effectuer cette analyse. A cet effet, un coefficient positif exprime l'aggravation, un coefficient négatif indique la diminution, alors qu'un coefficient nul traduit la stabilité des disparités.

Pour analyser les disparités entre la zone d'instabilité et la zone de stabilité sécuritaire, nous avons exploité l'indice de parité (IP). Concrètement, nous avons mis en rapport le taux brut de scolarisation de la zone de conflit sur celui de la zone de stabilité sécuritaire. Un IP inférieur à 1,00 signifie que la zone d'insécurité est moins scolarisée que la zone de stabilité ; un IP supérieur à 1,00 indique que la scolarisation est plus développée dans la zone d'insécurité, tandis qu'un IP égal à 1,00 exprime l'égalité de la scolarisation dans les deux zones. Pour les inégalités entre les genres, nous avons également exploité l'indice de parité en mettant en rapport le TBS des filles avec celui des garçons. Un IP inférieur à 1,00 montre que les filles sont moins scolarisées que les garçons, un IP supérieur à 1,00 indique que les filles sont plus scolarisées que les garçons alors qu'un IP = 1,00 traduit l'égalité de scolarisation entre les deux sexes.

4. Résultats

Conformément aux analyses effectuées dans cette étude, les disparités sont présentées ci-après d'abord de manière synchronique et ensuite de manière diachronique.

4.1. Disparités synchroniques

De façon générale, si la province du Kasaï oriental est la seule à avoir un taux brut de scolarisation (TBS) supérieur à 100%, en 2006-2007 (voir tableau 1) au niveau primaire, le nombre de provinces ayant atteint ou dépassé 100% s'élève à 9 provinces sur 11 en 2016-2017. Néanmoins, la moyenne nationale du taux brut de scolarisation au niveau du primaire dépasse 100% seulement à partir de l'année scolaire 2012-2013. Font partie des provinces les plus avancées dans la scolarisation primaire, le Bandundu, l'Equateur, le Nord-Kivu, le Kasaï oriental et le Kasaï occidental. La province du Katanga est la moins scolarisée au cours de la période de référence de cette étude (voir tableau 1).

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Tableau 1. *Taux bruts de scolarisation (en %) et paramètres des disparités entre les provinces au primaire*

Province	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	Moyenne
Kinshasa	83,8	94,5	89,8	88,8	88,6	84,1	87,7	93,7	97,8	104,7	111,5	118,0	95,3
Bas-Congo	84,4	91,3	88,0	86,8	93,4	101,0	100,5	100,5	95,7	92,2	88,8	85,0	92,3
Bandundu	77,6	93,6	91,5	95,1	92,2	115,3	115,4	120,9	126,2	122,9	120,2	123,0	107,8
Equateur	79,7	90,1	89,5	91,6	104,6	102,0	103,8	110,0	115,7	134,9	155,3	143,0	110,0
Orientale	90,6	93,0	96,5	96,9	99,3	97,3	98,9	103,2	107,7	120,4	133,6	145,0	106,9
Maniema	76,4	81,5	84,2	85,5	83,8	97,9	109,6	110,2	115,0	101,3	92,0	85,0	92,9
Nord-Kivu	91,6	99,7	97,9	101,9	85,5	93,9	96,9	105,4	107,0	109,7	113,8	123,0	102,2
Sud-Kivu	88,4	94,8	90,0	88,1	86,6	89,6	92,7	101,0	105,1	112,8	118,2	85,0	96,7
Kasaï-Or.	101,3	99,4	95,0	93,9	105,4	109,3	111,7	121,7	125,5	117,4	110,7	104,0	107,9
Kasaï-Oc.	93,8	87,2	99,9	100,1	107,9	111,0	114,7	124,2	135,1	122,7	112,1	106,0	109,6
Katanga	64,3	76,8	76,8	75,5	76,8	82,7	91,9	93,1	92,8	82,6	74,2	82,0	80,8
RDC	84,7	90,7	90,3	90,8	92,7	97,8	101,3	106,8	110,3	110,5	110,6	112,3	99,9
EVT	37,0	22,6	23,1	26,4	31,1	32,6	27,7	31,1	22,9	52,3	81,1	63,0	28,8
CV	0,12	0,08	0,07	0,08	0,11	0,11	0,10	0,10	0,12	0,14	0,20	0,21	0,09

Au cours de chaque année, l'écart entre le TBS de la province la plus scolarisée et celui de la province la moins scolarisée (voir EVT dans le tableau 1), n'est pas négligeable, variant de 23% en 2007-2008 à 81% en 2016-2017. Cependant, considérés dans l'ensemble, les TBS au niveau de l'enseignement primaire ne différent pas significativement par provinces au cours de la période de 2006-2007 à 2015-2016 (voir tableau 1), le coefficient de variation étant systématiquement inférieur à 0,15. En revanche, les disparités provinciales sont modérées au cours des années 2016-2017 et 2017-2018.

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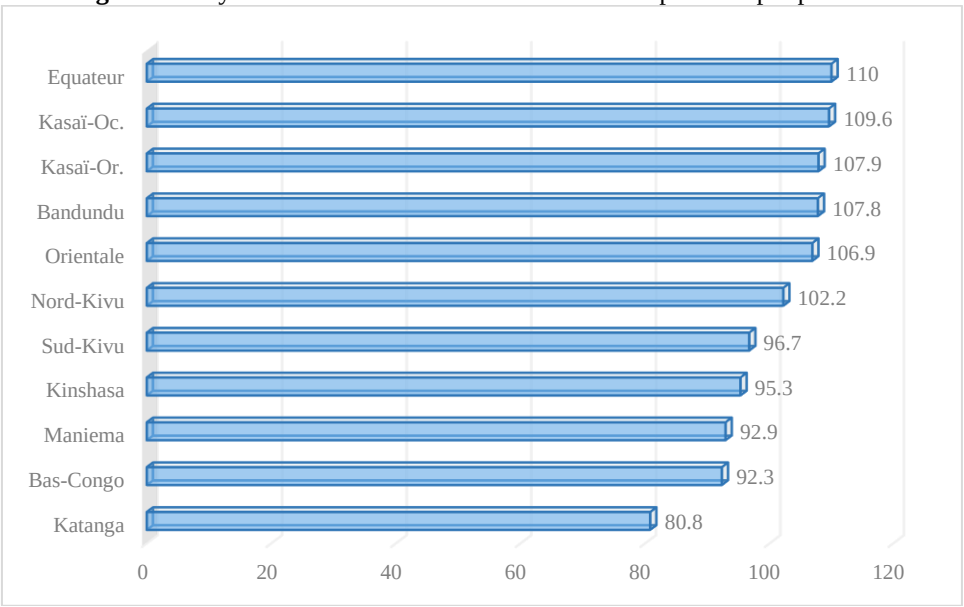
Figure 2. Moyennes des taux bruts de scolarisation du primaire par province



Etant donnée la moyenne des TBS de chaque province (voir tableau 1 et figure 2), les provinces peuvent être regroupées en quatre catégories :

- Les provinces dont les moyennes dépassent 100%. Ces provinces sont les plus scolarisées de la RDC. Elles comprennent l'Equateur, le Kasaï occidental, le Kasaï oriental, le Bandundu, la Province orientale et le Nord-Kivu.
- Les provinces ayant des moyennes proches de 100%. Appartiennent à cette catégorie la province du Sud-Kivu et la ville de Kinshasa.
- Les provinces dont les moyennes sont comprises entre 90% et 95%. Cette catégorie concerne les provinces du Maniema et du Bas-Congo.
- La province la moins scolarisée du pays, à savoir le Katanga, dont la moyenne se situe autour de 80%.

Les TBS sont encore plus faibles au secondaire qu'au primaire (voir tableau 2). En dehors de la ville de Kinshasa et de la province du Bandundu, les provinces enregistrent des TBS inférieurs à 50%. En conséquence, le TBS moyen de la RDC est inférieur à 50% au cours de chaque année de la période retenue dans cette étude. Autrement dit, plus de la moitié des jeunes âgés de 11 à 17 ans sont non scolarisés ou déscolarisés.

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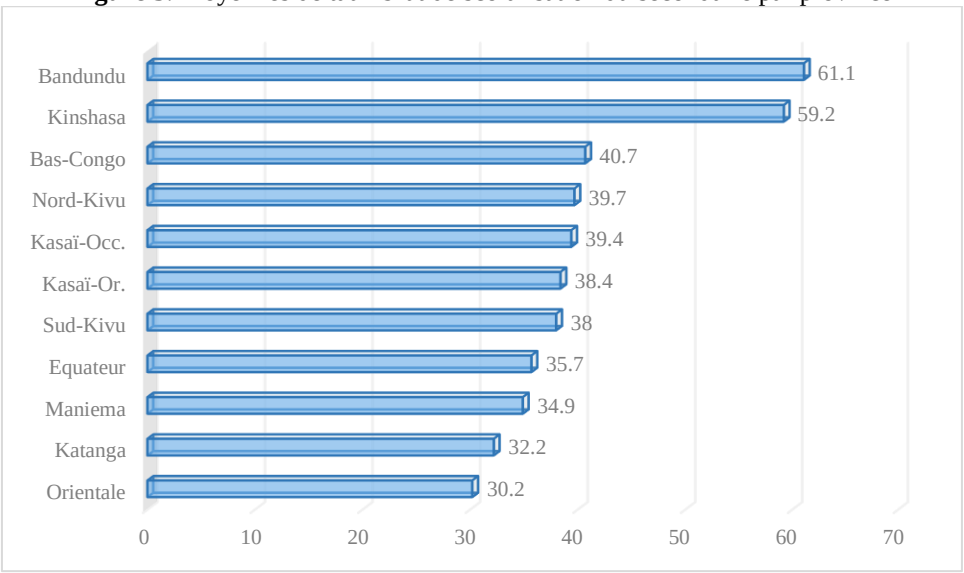
Tableau 2. Taux bruts de scolarisation (en %) et paramètres des disparités entre les provinces au secondaire

Province	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	Moyenne
Kinshasa	53,3	61,4	58,8	62,6	65,6	60,4	59,0	62,0	64,2	58,2	54,2	51,2	59,2
Bas-Congo	37,3	39,6	37,2	36,6	38,9	42,3	42,2	43,6	42,3	42,5	42,7	42,9	40,7
Bandundu	61,8	71,8	55,2	43,2	46,7	56,0	54,2	64,5	65,2	67,6	69,8	77,2	61,1
Equateur	29,2	36,1	33,9	30,0	32,3	32,9	31,7	32,3	33,6	39,7	45,5	51,4	35,7
Orientale	30,2	33,3	33,8	28,0	31,3	23,8	24,6	26,1	26,9	31,3	35,7	37,3	30,2
Maniema	28,7	31,4	38,1	34,1	53,7	42,2	40,9	42,5	16,1	20,5	26,5	35,4	34,9
Nord-Kivu	32,9	37,8	36,4	38,5	39,7	37,9	36,8	38,3	38,5	41,4	45,1	53,6	39,7
Sud-Kivu	34,0	40,0	38,4	33,6	36,8	33,6	32,8	36,5	37,5	43,7	48,7	48,7	38,0
Kasaï-Or.	48,6	41,8	38,9	33,3	35,0	35,9	35,1	35,9	37,2	39,5	41,9	38,0	38,4
Kasaï-Oc.	46,9	33,4	37,5	37,1	39,7	41,3	40,4	41,5	36,5	37	37,5	44,5	39,4
Katanga	29,1	30,3	32,8	30,0	25,6	28,6	32,0	33,1	34,4	35,8	37,1	38,0	32,2
RDC	39,3	41,9	40,0	36,5	38,5	38,4	38,3	40,9	39,5	42,4	45,1	47,1	40,7
EVT	33,1	41,5	26,0	34,6	40,0	36,6	34,4	38,4	49,1	47,1	43,3	41,8	28,9
CV	0,29	0,32	0,22	0,26	0,28	0,28	0,26	0,29	0,37	0,30	0,26	0,25	0,25

La différence entre le TBS de la province la plus scolarisée et celui de la province la moins scolarisée n'est pas négligeable au niveau du secondaire ; elle varie de 26% en 2008-2009 à 49% en 2014-2015. Aussi les disparités entre les provinces sont-elles très fortes et significatives en 2007-2008, 2014-2015 et 2015-2016 (CV ≥ 0.30) alors qu'elles sont modérées au cours des autres années.

Figure 3. Moyennes de taux brut de scolarisation du secondaire par province



L'observation des moyennes des TBS au secondaire (voir dernière colonne du tableau 2 et Figure 3) permet de dégager 4 catégories de provinces :

- Les provinces les plus favorisées, dont les moyennes sont supérieures à 50%. Il s'agit de la province du Bandundu et de la ville de Kinshasa.

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- Les provinces dont les moyennes se situent autour de 40%. Cette catégorie comprend le Bas-Congo, le Nord-Kivu, le Kasaï occidental, le Kasaï oriental et le Sud-Kivu.
- Les provinces dont les moyennes sont comprises entre 31% et 35%. Font partie de cette catégorie, l'Equateur, le Maniema et le Katanga.
- La province la moins scolarisée, à savoir la Province orientale, dont la moyenne se situe en-dessous de 30%.

Lorsqu'on regroupe les provinces selon qu'elles se situent dans la zone de conflits ou dans la zone de stabilité sécuritaire, la moyenne des TBS des premières est, chaque année, légèrement inférieure à celle des secondes (voir tableau 3). En d'autres termes, la scolarisation primaire est apparemment moins développée dans la zone de conflit que dans la zone de stabilité politique. Cependant, puisque l'IP est soit égal, soit proche (0,9) de 1,00, les différences entre les deux zones ne sont pas significatives.

Tableau 3. Paramètres des disparités zone de conflit-zone de stabilité suivant le taux de scolarisation au primaire

	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
Moyenne zone de stabilité	82,8 %	92,7 %	92,3 %	92,3 %	98,7 %	103,8%	105,6%	111,8%	116,2%	116,0%	116,0%	113,3%
Moyenne zone de conflit	82,2 %	89,1 %	89,1 %	89,1 %	86,4 %	92,3 %	98,0 %	102,6%	105,5%	110,3%	115,3%	110,8%
IP	1,0	1,0	1,0	1,0	0,9	0,9	0,9	0,9	0,9	1,0	1,0	1,0

Tableau 4. Paramètres des disparités zone de conflit-zone de stabilité suivant le taux de scolarisation au secondaire

	06-07	07-08	09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18
Moyenne zone de stabilité	45,9 %	47,2 %	43,5 %	40,4 %	43,0 %	44,8 %	43,9 %	46,6 %	46,7 %	48,1 %	49,5 %	51,0 %
Moyenne zone de conflit	31,0 %	34,5 %	35,8 %	32,8 %	37,4 %	33,2 %	33,4 %	35,3 %	30,7 %	34,8 %	38,9 %	43,0 %
IP	0,7	0,7	0,8	0,8	0,9	0,7	0,8	0,8	0,7	0,7	0,8	0,8

Au niveau de l'enseignement secondaire également, la moyenne des TBS de la zone de conflits est systématiquement inférieure à celle de la zone de stabilité (voir tableau 4). Puisque l'IP est inférieur à 1,00, voire inférieur à 0,9, contrairement à l'enseignement primaire, l'accès à l'enseignement secondaire est plus faible dans la zone de conflits que dans la zone de stabilité.

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L'examen des disparités selon le genre, montre qu'au niveau de l'enseignement primaire la parité fille-garçon est assurée uniquement dans la ville de Kinshasa au cours de la période de 2006-2007 à 2013-2014 (voir tableau 5). Dans les autres provinces, les filles sont moins scolarisées que les garçons. De 2014-2015 à 2017-2018, certaines provinces se sont ajoutées à la ville de Kinshasa pour réaliser la parité fille-garçon dans la scolarisation primaire, à savoir les provinces Orientale, du Bandundu, de l'Equateur, du Maniema, du Nord-Kivu, du Sud-Kivu et du Kasaï oriental. En revanche, les provinces du Kasaï Occidental et du Katanga n'ont assuré la parité au cours d'aucune année de la période de référence de cette étude. En considérant les taux moyens des IP (voir dernière colonne du tableau 5), seules la ville de Kinshasa et la province du Sud-Kivu assurent la parité fille-garçon dans la scolarisation primaire. Cependant, les différences entre les IP des provinces sont très faibles, l'EVT ne dépassant pas 0,3 et les CV étant tous inférieurs à 0,15.

Tableau 5. Indices de parité fille-garçon et paramètres de disparités provinciales au niveau primaire

	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	Moyenne
Kinshasa	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Bas-Congo	0,8	0,9	0,9	0,9	0,9	0,9	0,9	0,9	0,8	0,9	0,9	1,0	0,9
Bandundu	0,8	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,0	1,0	0,9	0,9	0,9
Equateur	0,7	0,7	0,8	0,8	0,8	0,8	0,8	0,9	0,9	1,0	1,0	0,9	0,8
Orientale	0,8	0,8	1,0	0,9	0,9	0,9	0,9	0,9	1,0	1,0	1,0	1,0	0,9
Maniema	0,8	0,8	0,9	0,9	0,9	0,9	0,9	0,9	1,0	0,9	0,9	0,8	0,9
Nord-Kivu	0,8	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,0	1,0	0,9	0,9	0,9
Sud-Kivu	0,8	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,0	1,0	1,0	1,0	1,0
Kasaï-Or.	0,8	0,8	0,9	0,9	0,8	0,8	0,9	0,9	1,0	1,0	0,9	0,9	0,9
Kasaï-Oc.	0,7	0,8	0,9	0,8	0,8	0,8	0,8	0,8	0,9	0,9	0,9	0,9	0,8
Katanga	0,7	0,8	0,9	0,8	0,8	0,8	0,8	0,8	0,9	0,9	0,9	0,9	0,9
RDC	0,8	0,3	0,9	0,9	0,9	0,9	0,9	0,9	0,9	1,0	0,9	0,9	0,9
EVT	0,3	0,3	0,2	0,3	0,2	0,2	0,2	0,2	0,2	0,1	0,1	0,2	0,2
CV	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,0	0,1	0,1

Les différences entre les TBS des garçons et ceux des filles sont plus importantes au secondaire (voir tableau 6). Les IP s'éloignent en effet plus encore de 1,00 qu'au primaire. La parité est assurée uniquement dans la ville de Kinshasa. Au vu des CV, les disparités entre les provinces sont très fortes (CV ≥ 0,30) au cours des années 2006-2007, 2007-2008, 2008-2009 et 2011-2012. Elles sont modérées au cours des autres années de la période de référence de cette étude.

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Tableau 6. Indices de parité fille-garçon et paramètres de disparités provinciales au niveau secondaire

Province	06-07	07-08	08-09	09-10	10-11	11-12	12-13	13-14	14-15	15-16	16-17	17-18	Moyenne
Kinshasa	0,9	1,0	1,0	0,9	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0	1,0
Bas-Congo	0,7	0,7	0,7	0,7	0,7	0,7	0,6	0,7	0,6	0,6	0,7	0,7	0,7
Bandundu	0,6	0,6	0,6	0,6	0,6	0,6	0,7	0,5	0,5	0,5	0,5	0,5	0,6
Equateur	0,3	0,3	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,6	0,6	0,5
Orientale	0,5	0,5	0,6	0,6	0,6	0,6	0,6	0,6	0,7	0,7	0,7	0,7	0,6
Maniema	0,3	0,3	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,4	0,4	0,4
Nord-Kivu	0,7	0,7	0,7	0,7	0,8	0,8	0,8	0,8	0,9	0,9	0,8	0,8	0,8
Sud-Kivu	0,5	0,6	0,6	0,6	0,6	0,6	0,7	0,7	0,8	0,8	0,8	0,8	0,7
Kasaï-Or.	0,4	0,4	0,5	0,5	0,5	0,5	0,6	0,6	0,6	0,6	0,6	0,6	0,5
Kasaï-Oc.	0,3	0,3	0,4	0,4	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,6	0,4
Katanga	0,4	0,4	0,4	0,5	0,5	0,5	0,5	0,6	0,5	0,5	0,6	0,6	0,5
RDC	0,5	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,6	0,7	0,7	0,6
EVT	0,6	0,7	0,6	0,5	0,6	0,6	0,6	0,5	0,5	0,5	0,5	0,6	0,6
CV	0,40	0,37	0,32	0,27	0,29	0,31	0,27	0,27	0,30	0,27	0,25	0,24	0,29

4.2. Analyse diachronique des disparités

Au niveau de l'enseignement primaire, alors qu'elles étaient faibles en 2006-2007, les disparités entre les provinces en matière de TBS sont modérées au cours des deux dernières années de la période de référence de cette étude. L'EVT est passée de 37% à 63% (voir figure 4) tandis que le CV a progressé de 0,12 à 0,21 de 2006-2007 à 2017-2018 (voir figure 5). Autrement dit, l'ampleur des disparités s'est renforcée à la fin par rapport au début de la période.

Figure 4. Evolution de l'EVT/TBS au primaire

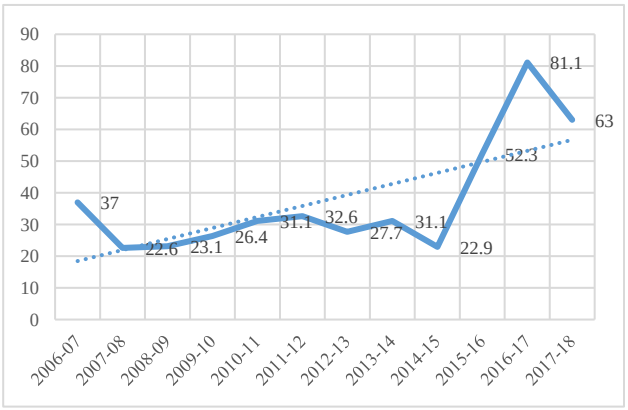

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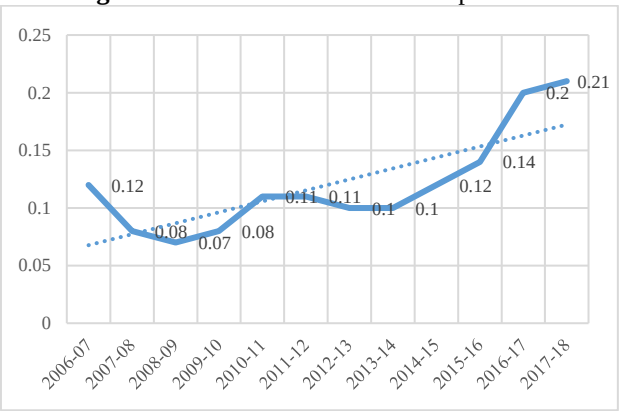
Figure 5. Evolution du CV/TBS au primaire



Au vu du *scattergram* (voir figure 6), la scolarisation s'est dégradée en 2017-2018 dans la province du Sud-Kivu par rapport à la situation qui prévalait en 2006-2007, elle est restée stable dans le Bas-Congo et s'est améliorée dans les 9 autres provinces. L'amélioration la plus remarquable a été enregistrée dans la province de l'Equateur et la Province Orientale.

Pour que les disparités entre les provinces se réduisent dans le temps, il faut que la scolarisation progresse plus rapidement dans les provinces défavorisées en 2006-2007 (Katanga, Maniema et Bandundu) que dans les provinces favorisées (Kasaï oriental, Kasaï occidental, Nord-Kivu et Province orientale). A ce sujet, étant donné que le coefficient de corrélation *Rho* de Spearman entre les TBS de l'année 2006-2007 et le progrès réalisé du début à la fin de la période est négatif (-0,24), les provinces défavorisées au départ ont progressé plus rapidement que les provinces favorisées. Cependant, ce coefficient n'étant pas significatif, la réduction des disparités entre les provinces est très faible.

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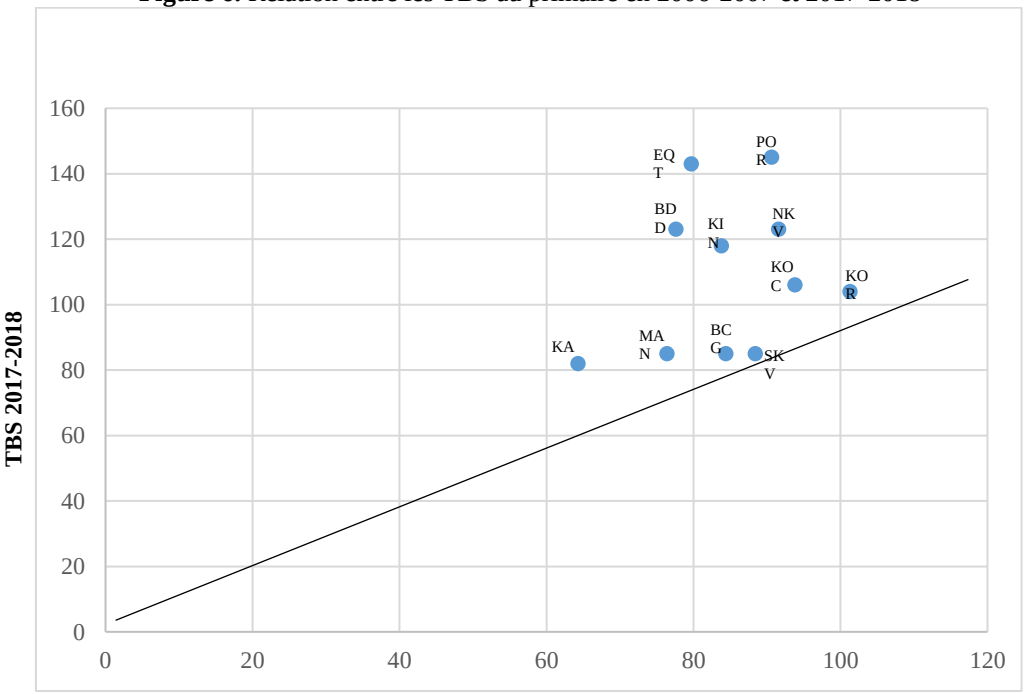
Figure 6. Relation entre les TBS au primaire en 2006-2007 et 2017-2018



Note : KIN = Kinshasa, BCG = Bas-Congo, BDD =Bandundu, EQT = Equateur, POR = Province Orientale, MAN = Maniema, NKV = Nord-Kivu, SKV = Sud-Kivu, KOR = Kasaï Oriental, KOC = Kasaï Occidental, KAT = Katanga

Au niveau du secondaire, par contre, si l'écart entre le TBS de la province la plus scolarisée et celui de la province la moins scolarisée s'est creusé au fil des années (voir figure 7), il n'en est pas autant du coefficient de variation (voir figure 8). Ce dernier est resté stable tout au long de la période, indiquant ainsi que les disparités entre les provinces ont gardé la même ampleur, en dépit de l'accentuation enregistrée en 2007-2008 (CV = 0,32) et 2014-2015 (CV = 0,37).

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Figure 7. Evolution de l'EVT/TBS au secondaire

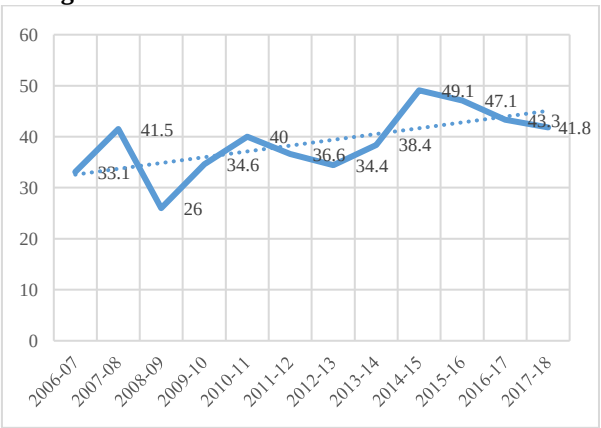
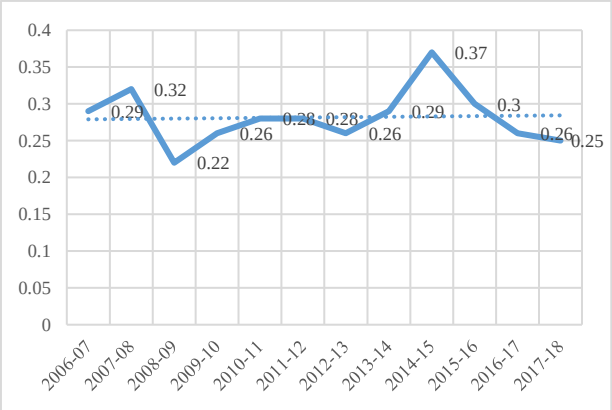


Figure 8. Evolution du CV/TBS au secondaire



L'observation du *scattergram* (figure 9) montre que la scolarisation au secondaire s'est dégradée dans les deux Kasaï et dans la ville de Kinshasa alors qu'elle s'est améliorée dans les 8 autres provinces. La détérioration la plus remarquable a été enregistrée par la province du Kasaï oriental tandis que l'amélioration la plus importante a été observée dans les provinces de l'Equateur et du Nord-Kivu. Puisque le coefficient *Rho* de Spearman est négatif (-0,36), les disparités se sont réduites dans le temps. Seulement, cette réduction n'est pas significative (p >.05).

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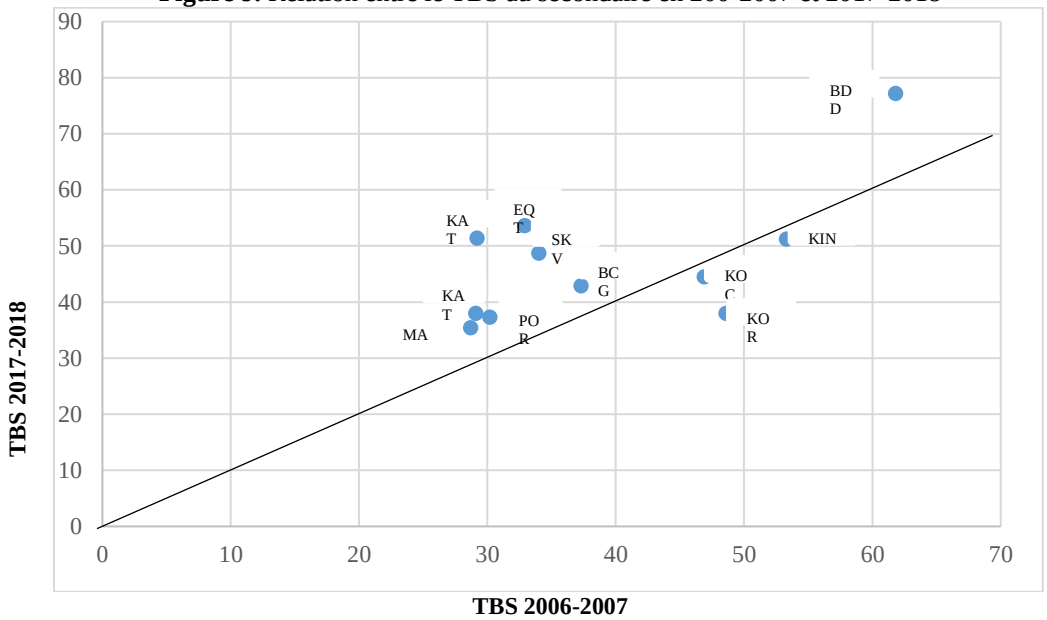
Figure 9. Relation entre le TBS au secondaire en 200-2007 et 2017-2018



Note : KIN = Kinshasa, BCG = Bas-Congo, BDD =Bandundu, EQT = Equateur, POR = Province Orientale, MAN = Maniema, NKV = Nord-Kivu, SKV = Sud-Kivu, KOR = Kasaï Oriental, KOC = Kasaï Occidental, KAT = Katanga

Le taux de scolarisation au primaire a progressé positivement aussi bien dans la zone de stabilité que dans la zone de conflit (voir tableau 3). L'écart entre les TBS des deux zones est aussi faible en 2006-2007 (0,6) qu'en 2017-2018 (2,5). Par ailleurs, si au secondaire le TBS a évolué positivement dans les deux zones, il s'est accru plus rapidement dans la zone de conflit que dans la zone de stabilité (voir tableau 4). C'est pourquoi, l'écart entre les TBS des deux zones est plus réduit en 2017-2018 (8) qu'en 2006-2007 (14,9). Ce résultat traduit la réduction des disparités de scolarisation entre les deux zones.

En ce qui concerne les inégalités suivant le genre, la figure 10 révèle que l'écart entre l'IP de la province où l'égalité de la scolarisation est la plus développée et la province où elle est la moins assurée s'est réduit au fil du temps. Toutefois, suivant le CV, l'ampleur des disparités entre les onze provinces de la RDC est restée la même (CV = 0,10) de 2006-2007 à 2017-2018 (voir figure 11). En dehors de la province du Bandundu, dont l'IP n'a pas connu d'évolution en 2017-2018 par rapport à 2006-2007, les autres provinces ont enregistré une évolution positive de l'égalité de la scolarisation des filles et des garçons.

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Figure 10. Evolution de l'EVT/IP au primaire

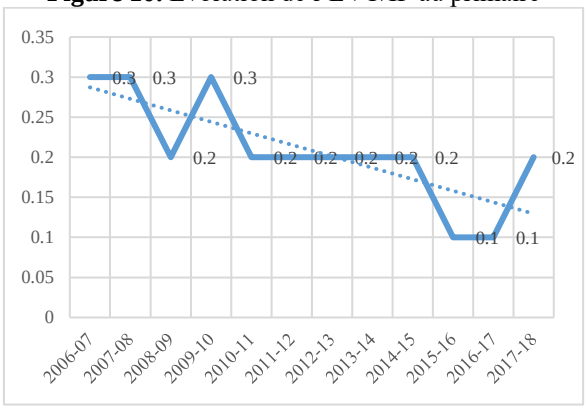
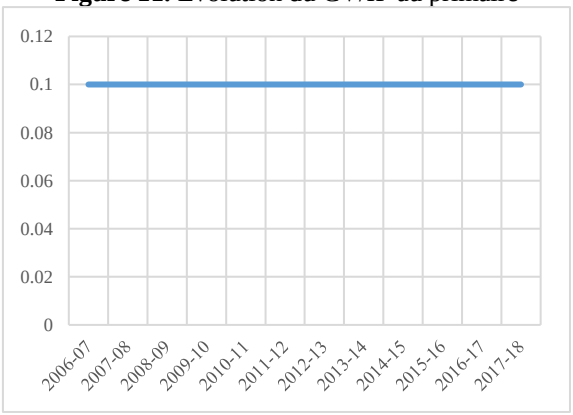


Figure 11. Evolution du CV/IP au primaire



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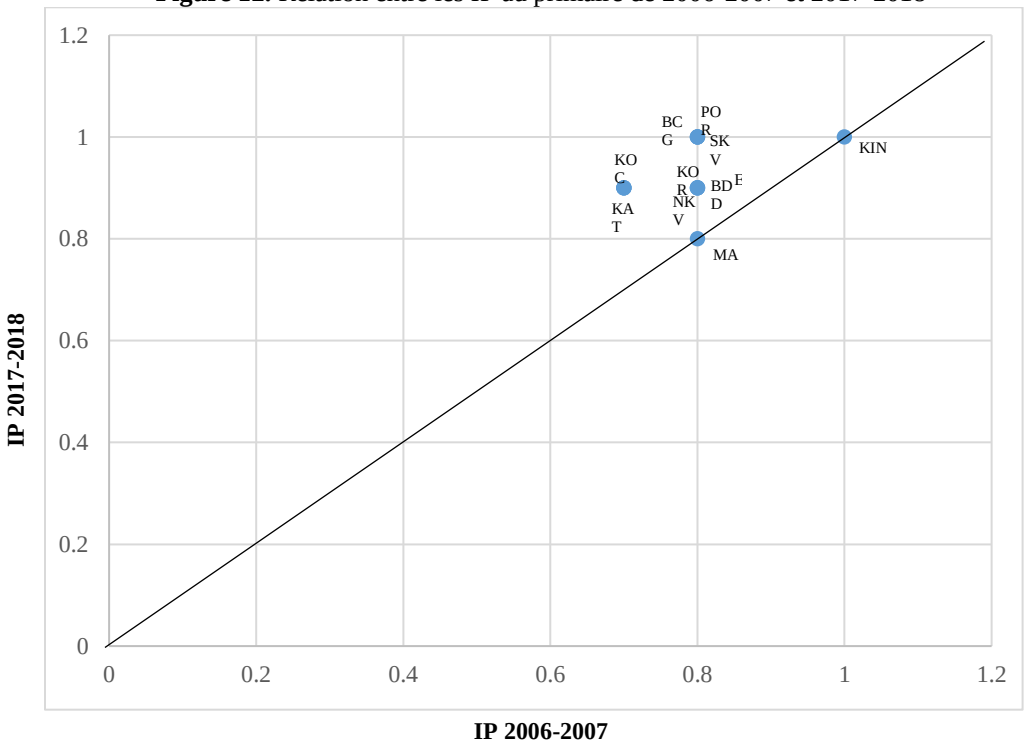
Bien que le CV soit faible au cours de toute la période, la corrélation entre les IP observés au début et la progression réalisée par chaque province du début à la fin est négative et significative (*Rho* = - 0,65 ; p < 0,05). En d'autres termes, plus une province était défavorisée au début, en matière d'égalité de scolarisation entre garçons et filles, mieux elle a progressé au cours de la période. En conséquence, les disparités entre provinces se sont amenuisées au cours de la période de 2006-2007 à 2017-2018.

Figure 12. Relation entre les IP au primaire de 2006-2007 et 2017-2018



Note : KIN = Kinshasa, BCG = Bas-Congo, BDD =Bandundu, EQT = Equateur, POR = Province Orientale, MAN = Maniema, NKV = Nord-Kivu, SKV = Sud-Kivu, KOR = Kasaï Oriental, KOC = Kasaï Occidental, KAT = Katanga

Au niveau de l'enseignement secondaire, bien qu'elle soit plus importante qu'au primaire, l'EVT s'est réduite au cours de la période (voir figure 13), exprimant ainsi la réduction des disparités entre les provinces en matière de scolarisation des garçons et des filles. Le CV s'est également réduit au fil des années (voir figure 14).

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Figure 13. Evolution de l'EVT/IP au secondaire

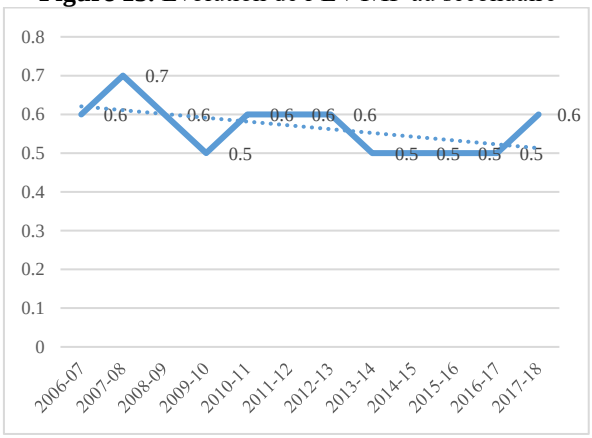
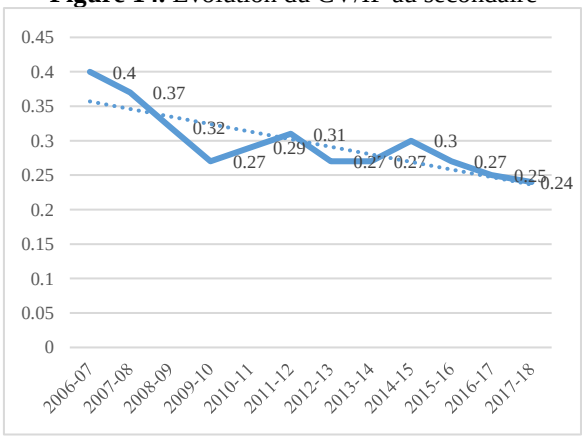


Figure 14. Evolution du CV/IP au secondaire



Si l'IP s'est dégradé dans la province du Bandundu, il est resté stable à Kinshasa et s'est amélioré dans les autres provinces (voir figure 15). L'amélioration la plus sensible a été observée dans la province du Kasaï occidental. Enfin, comme à l'enseignement primaire, les disparités entre provinces en matière d'égalité de scolarisation des filles et des garçons se sont réduites au cours de la période de 2006-2007 à 2017-2018 (*Rho* = - 0,62 ; p < 0,05).

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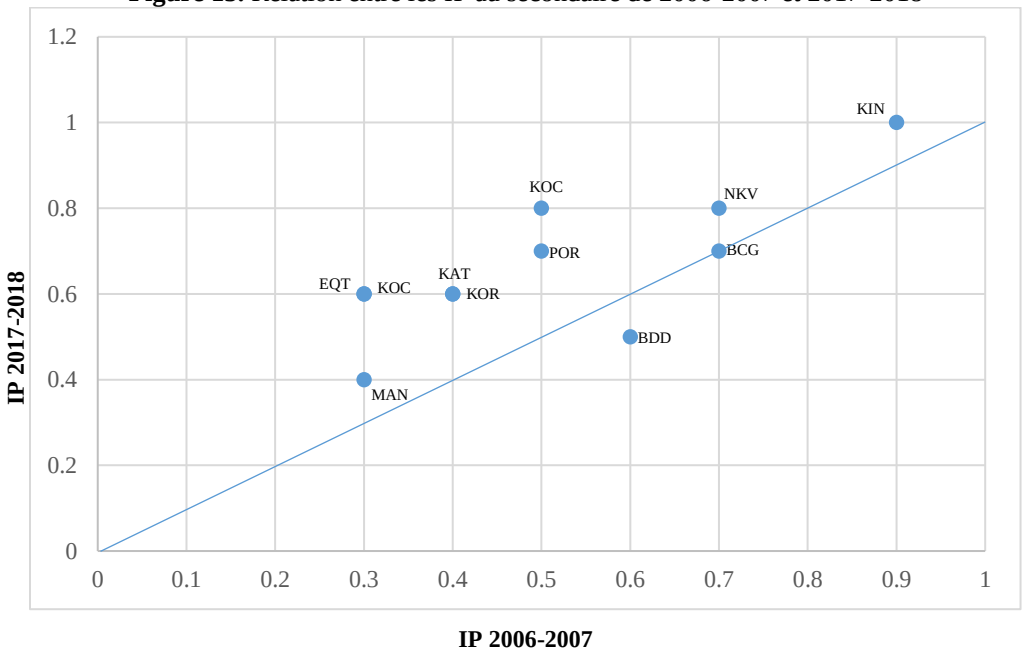
Figure 15. Relation entre les IP au secondaire de 2006-2007 et 2017-2018



Note : KIN = Kinshasa, BCG = Bas-Congo, BDD =Bandundu, EQT = Equateur, POR = Province Orientale, MAN = Maniema, NKV = Nord-Kivu, SKV = Sud-Kivu, KOR = Kasaï Oriental, KOC = Kasaï Occidental, KAT = Katanga

Discussion et conclusion

Cette étude montre qu'à partir de 2012-2013, la scolarisation primaire est quasi-universelle dans la plupart des provinces de la RDC. Cette scolarisation ne varie donc pas suivant les provinces, les zones (de conflit et de stabilité), ni suivant les genres. Cependant, la province du Katanga est la moins scolarisée du pays. Ceci pourrait partiellement s'expliquer par l'exploitation minière qui attire une frange importante d'enfants et de jeunes en âge scolaire. En effet, « on note plus d'abandons parmi les enfants impliqués dans des activités dommageables que ceux qui ne sont pas concernés » (Ministère du Plan, 2021).

Le manque de disparités entre la zone de conflit et celle de stabilité sécuritaire confirme le constat fait par la banque mondiale au début de ce siècle. Selon cette institution de Bretton Woods, « le système éducatif de la RDC a montré une résilience remarquable en dépit des crises récentes, et a même continué à se développer à tous les niveaux. » (Banque mondiale, 2005).

Les faibles disparités de scolarisation entre les filles et les garçons seraient en partie le résultat des campagnes menées en faveur de la scolarisation des filles depuis 2003 par le gouvernement et ses partenaires, en

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particulier l'UNICEF, le Partenariat Mondial pour l'Education et Save the children. Ces campagnes ont permis d'accroître l'accès des filles à l'école. Pour le programme du PME (, qui visait à lutter contre les inégalités entre les sexes dans les provinces du Kasaï-Occidental et de l'Équateur de 2013 à 2017, l'indice de parité entre les sexes est passé de 0,84 à 0,93 et 0,87, respectivement (Partenariat Mondial pour l'Education, 2020).

La présente étude montre ensuite qu'en plus d'être très peu développée, la scolarisation secondaire est marquée par des disparités provinciales. La ville de Kinshasa et la province du Bandundu se distinguent nettement des autres, bien qu'elles soient elles-mêmes loin de la scolarisation secondaire universelle préconisée par l'ODD4 (UNESCO, 2016). La faible scolarisation secondaire, notamment en milieu rural, serait due aux longues distances que les élèves sont parfois obligés de parcourir pour atteindre l'école la plus proche de leur milieu d'habitation. En cas de conflit, ces distances constituent un obstacle important à la scolarisation en général et à celle des filles en particulier. Ceci pourrait expliquer les disparités entre la zone de conflit et la zone de stabilité, ainsi que les inégalités relevées dans la présente étude entre la scolarisation des filles et celle des garçons.

En ce qui concerne l'évolution des disparités, cette étude montre qu'au niveau de l'enseignement primaire, les inégalités entre les provinces en matière de TBS qui étaient très faibles en 2006-2007 sont devenues modérées en 2017-2018. Par contre, en matière de parité fille-garçon, les disparités sont restées très faibles tout au long de la période de cette étude. Aussi, la progression réalisée par les provinces défavorisées au départ n'a-t-elle pas été suffisamment rapide pour combler leur retard en TBS par rapport aux provinces favorisées. En revanche, pour l'IP fille-garçon, il y a eu réduction significative des disparités entre les provinces.

Au niveau du secondaire, les disparités provinciales basées sur le TBS sont modérées et stables tout au long de la période considérée dans cette étude alors que les inégalités se rapportant à l'IP ont été très prononcées du début à la fin. Autant qu'au primaire, l'écart entre les provinces les plus favorisées au début en matière de TBS et les provinces défavorisées ne s'est pas significativement réduit au cours de la période. Les disparités entre les provinces se sont réduites uniquement en matière d'indice de parité fille-garçon.

La réduction des disparités entre les provinces ne peut être obtenue que si on accroît l'offre de scolarisation primaire et surtout secondaire dans les provinces les plus défavorisées. Il s'agit du Katanga, du Maniema et du Bas-Congo, pour l'enseignement primaire, de la Province Orientale, du Katanga, du Maniema et de l'Equateur, pour le secondaire. Outre l'accroissement de l'offre de l'éducation, la réduction des disparités provinciales nécessite la

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poursuite de la sensibilisation de la population pour l'importance de la scolarisation en général et celle des filles en particulier.

References:

1. Adjiwanou, V. (2005). Impact de la pauvreté sur la scolarisation et le travail des enfants de 6-14 ans au Togo. Centre d'Etudes et de Recherches sur le Développement International, Université de Lomé : Lomé.
2. Banque mondiale (2005). Le système éducatif de la république démocratique du Congo : Priorités et alternatives. Département du développement humain Région Afrique. https://documents1.worldbank.org/curated/ru/244781468026664848/pdf/328140DRC0Systeme0educatif0AFHDno68.pdf
3. Brandt, C., Marchais, G., Matabishi, S. & Mze, P.S (2020). Les interventions éducatives axées sur l'école sont limitées pour lutter contre les inégalités structurelles dans les contextes touchés par les conflits. https://www.reach.gse.harvard.edu/blogs/migration-displacement/series/school-focused-educational-interventions-are-limited-in-addressing-structural-inequality-in-conflict-affected-contexts-french-version.
4. Cabinet du Président de la République (2011) ; Constitution de la République Démocratique du Congo. Journal Officiel de la République Démocratique du Congo, n° spécial.
5. Cabinet du Président de la République (2014). Loi-cadre n°14/004 du 11 février 2014 de l'enseignement national, in Journal Officiel de la République Démocratique du Congo, n° spécial, 1-64.
6. Cellule Technique pour les Statistiques de l'Éducation (2008). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2006-2007. Ministère de l'EPSP.
7. Cellule Technique pour les Statistiques de l'Éducation (2009). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2007-2008. Ministère de l'EPSP.
8. Cellule Technique pour les Statistiques de l'Éducation (2010). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2008-2009. Ministère de l'EPSP.
9. Cellule Technique pour les Statistiques de l'Éducation (2011). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2009-2010. Ministère de l'EPSP.
10. Cellule Technique pour les Statistiques de l'Éducation (2012). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2010-2011. Ministère de l'EPSP.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

11. Cellule Technique pour les Statistiques de l'Éducation (2013). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2011-2012. Ministère de l'EPSP.
12. Cellule Technique pour les Statistiques de l'Éducation (2014). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2012-2013. Ministère de l'EPSP.
13. Cellule Technique pour les Statistiques de l'Éducation (2015). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2013-2014. Ministère de l'EPSP.
14. Cellule Technique pour les Statistiques de l'Éducation (2017). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2014-2015. Ministère de l'EPSP.
15. Cellule Technique pour les Statistiques de l'Éducation (2019). Annuaire statistique de l'enseignement primaire, secondaire et professionnel, année scolaire 2017-2018. Ministère de l'EPSP.
16. Gérardin, H., Dos Santos, S., & Gastineau, B. (2016). Des objectifs du millénaire pour le développement (OMD) aux objectifs de développement durable (ODD) : la problématique des indicateurs. Mondes en développement, 2(174), 7-14. DOI : 10.391/med.174.0007.
17. Groupe d'Etude sur le Congo, Baromètre sécuritaire du Kivu & Center on International Cooperation (2021). La cartographie des groupes armés dans l'Est du Congo : opportunités manquées, insécurité prolongée et prophéties auto-réalisatrices. https://kivusecurity.nyc3.digitaloceanspaces.com/reports/39/2021%20KST%20rapport%20FR.pdf
18. Ministère de l'Enseignement Primaire, Secondaire et Professionnel (2012). Plan Intérimaire de l'Education 2012-2014. Kinshasa.
19. Ministère du Plan (2021). Etude sur la situation des enfants dans les zones d'exploitation minière artisanale dans les provinces du Lualaba et du Sud-Kivu. INS – GIZ – UNICEF: Kinshasa. https://www.unicef.org/drcongo/media/7866/file/COD-rapport-ESEMA.pdf
20. Mokonzi, Gr. B. (2012). Gratuité et qualité de l'enseignement primaire en République Démocratique du Congo. Congo-Afrique, 470, 768-785.
21. Mokonzi, Gr. B. (2022). Évolution de l'objectif de développement durable de l'éducation en République Démocratique du Congo. Congo-Afrique.
22. Mokonzi, Gr. B., Issoy, A. A., Brandt, C. & Gboisso, O. A. (2022). Pleins feux sur l'achèvement de l'éducation de base et les apprentissages fondamentaux en République démocratique du Congo. Paris : UNESCO.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

23. Rwehera, M. (2004). Education, développement et pauvreté en Afrique subsaharienne. Genève : BIE & UNESCO.
24. Partenariat Mondial pour l'Education (2020). Combler l'écart entre filles et garçons en République démocratique du Congo. https://www.globalpartnership.org/fr/blog/combler-lecart-entre-filles-et-garcons-en-republique-democratique-du-congo.
25. République Démocratique du Congo (2007). Programme du Gouvernement (2007 – 2011), Kinshasa, p. 50. https://www.social-protection.org/gimi/gess/RessourcePDF.action;jsessionid=3tcZhJoC2iHJrXlFi28TQ9LK1MiNQOhKe4803UGzPxb5I6BX-_O2!1588761716?id=9546
26. République Démocratique du Congo (2015). Stratégie sectorielle de l'éducation et de la formation 2016-2025. Kinshasa.
27. UNESCO (1990). Déclaration mondiale sur l'éducation pour tous et Cadre d'action pour répondre aux besoins éducatifs fondamentaux. Paris : UNESCO.
28. UNESCO (2016). Déclaration d'Incheon et Cadre d'action pour la mise en œuvre de l'Objectif de développement durable 4. Assurer à tous une éducation équitable, inclusive et de qualité et des possibilités d'apprentissage tout au long de la vie. Paris : UNESCO.
29. UNESCO (2017). Réduire la pauvreté dans le monde à travers l'enseignement primaire et secondaire universel. Document d'orientation 32 / Bulletin d'information 44. Paris : UNESCO.
30. Watchlist on Chidren & Armed Conflict (2003). Impact des conflits armés sur les enfants en République Démocratique du Congo (RDC). New York, NY 10168-1289. 2003.
31. Ziulu E.N., Mokonzi G.B., Vitamara P.M. & Issoy A.A. (2021). Conflits armés et évolution de la scolarisation primaire et secondaire en République Démocratique du Congo de 2005 à 2015. European Scientific Journal, 17(19), 247-271. https://doi.org/10.19044/esj.2021.v17n19p247

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Efficacy of Adaptation of Smallholder Maize Production to Climate Variability in Selected Countries of Kenya

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Abstract

Maize is a staple food for 96 percent of Kenyans. Smallholders supply up to 75 percent of maize produced in Kenya but are affected by unpredictable timing, duration, and distribution of rainfall, especially during the growing season. To enhance maize productivity adoption of robust adaptation measures is vital. The study aimed to evaluate the level of efficacy of adaptation of smallholder maize production to climate variability in Kitui and Laikipia counties. Data from 273 smallholder maize producers drawn from Kitui and Laikipia counties was analyzed. A questionnaire was administered to collect data on demographic, socio-economic characteristics, and adaptation choices. The level of efficacy of adaptation was derived based on the Multiple Criteria Evaluation. Results showed that the majority of smallholders in the study (47 percent) reported a low level of efficacy of adaptation most of whom were from Laikipia County (54 percent) as compared to Kitui County (44 percent). Overall, a very small proportion of smallholders reported a high level of efficacy of adaptation (7 percent). The study concluded that the level of efficacy of adaptation of smallholder maize production to climate variability in semi-arid areas was low. The County Governments through the department of agriculture and environment could establish guidelines for a robust combination of adaptation choices to ensure the suitability and enhancement of maize production.

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Keywords: Adaptation, Multiple Criteria Evaluation, Efficacy of adaptation, criteria weighted score, index

1. Introduction

World over, there is heightened concern about the need to increase food production to feed the growing population owing to the magnitude of challenges relating to hunger and famine. To sustain the resolve to combat hunger, much focus is on support to agricultural practices that lead to increased agricultural output, protection of ecosystems that support agriculture, strengthening the capacity to adapt agriculture to climate change, improvement of the quality of soils, increased access to inputs and knowledge to enhance agriculture production among other ways in line with the Sustainable Development Goals (United Nations, 2015).

Agriculture is one of the sectors adversely affected by climate variability despite the important role in food security. Climate variability affects agriculture through increasing temperatures, rainfall variability, recurrent droughts, recurrent famine, pests, and diseases among others (Olsson et al., 2019). This is detrimental to maize production in Kenya, especially where 80 percent of the land area already constitutes Arid and Semi-Arid Lands receiving only between 200 and 700 millimeters (Republic of Netherlands, 2018). It was further predicted that temperature in Kenya would rise by 1.7 Degree Celcius by 2050s (World Bank Group, 2021). This poses a huge risk for maize production systems.

In Kenya, maize consumption outstrips production. This has a direct negative impact on food security since the highest incidents of food insecurity are associated with maize shortage (Kabubo-Mariara and Kabara, 2015). Maize is the staple food for approximately 96 percent of Kenyans and about 75 percent of its production is by smallholders (Njagi et al., 2017). Furthermore, it accounts for about 40 percent of the crop area in Kenya (International Maize and Wheat Improvement Center, 2015). However, unpredictable timing, duration, and distribution of rainfall especially during the growing season affect maize production adversely. Adaptation is therefore vital for sustained production and improved household livelihoods. Ahmad et al. (2020) found out that adaptation of maize production systems to increasing temperature contributed to increased maize yield in current and future maize production systems. This implies that wrong selection or inappropriate application of adaptation choices could exacerbate low maize yields leading to financial losses.

Adapting smallholder maize production to climate variability entails water management, weed management, soil fertility management, planting appropriate crop variety, accurate timing during planting as well as proper land tillage among other interventions. Water management also involves growing

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crops that utilize water efficiently and use of farming technologies that encourage moisture retention (Muhamad *et al.,* 2021).

On the other hand, soil fertility management requires that soil analysis is undertaken to determine the missing nutrients from the soil. In addition, it also requires that the right nutrients are added to soil depending on the crop to be grown since different crops require different quantities of soil nutrients (Ketterings, Czymmek, Beegle and Lawrence, 2016). Soil fertility can be managed in several ways such as using organic or inorganic fertilizer, intercropping with legumes that fix nitrogen biologically such as beans and pigeon peas and crop rotation (Fung, Tai, Yong, Liu and Lam, 2019). Besides legumes, crops such as cassava improve soil properties through creation of biomass, enhancement of nitrogen and soil organic carbon which is beneficial to maize (Udom, Benwari and Osaro, 2015). In addition, depletion of nitrogen and phosphorus is low thus such crops could be intercropped or rotated with maize (Howeler, 2017).

Weeds management is also crucial as weeds compete for water, light, nutrients and carbon dioxide with crops (Iderawumi, 2018). Some management measures for weeds include: growing weed tolerant varieties; sowing seeds that are not contaminated with weeds; rotating cereals with trap crops that induce abortion in weed germination; application of organic and inorganic fertilizer to improve fertility and to suppress germination; use of herbicides; pulling out the weeds (Maqsood et al., 2020).

In addition, proper crop husbandry requires appropriate timing of farming operations, selection of crop varieties that match available water and adjusting planting times to coincide with periods of adequate water. Some adaptation choices have multiple benefits. For instance, agroforestry enhances soil fertility, prevents soil erosion, provides shade for crops and provides off-farm incomes which can be ploughed back for maize production (Nyaga, Muthuri, Barrios, Oborn and Sinclair, 2019).

Smallholders are encouraged to practice Climate Smart Agriculture which involves enhancing agricultural productivity, incomes and the resilience of agriculture to climate change through adaptation and mitigation (Abegunde and Obi, 2022). However, resource and information limitations may affect the level or results of farm level adaptation despite awareness of the climatic changes (Schipper, 2020). It is therefore important to evaluate the efficacy of adaptation practiced by smallholders. Efficacy in the context of this study, is the perceived judgment of the capability of adaptation choices to successfully produce desired results with respect to effectiveness, high yield, affordability, farmer implementability, and additional benefits.

Studies on adapting agriculture to climate change (Hassan and Nhemachena, 2008; Kebede and Adane, 2011; Bryan et al., 2013; Mabe et al., 2014; Fadina and Barjolle, 2018; Ndamani and Watanabe, 2016; and Ahmed,

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2016) explored numerous adaptation choices employed by farmers and the determinants of adaptation. However, no studies in Kenya estimated the efficacy of adaptation, particularly in reference to smallholder maize production. In addition, most of the studies had challenges analyzing farmers' simultaneous application of multiple adaptation choices. Therefore, the main objective of this study was to evaluate the levels of efficacy of adaptation of smallholder maize production to climate variability in selected counties in Kenya to address the research gaps identified and add to existing knowledge.

2. Literature review

Hassan and Nhemachena (2008) investigated the determinants of farm-level adaptation strategies to climate change, the perception by farmers in Africa about climate change, and the actual adaptation strategies used. The study established that different adaptation alternatives were driven by seasonal climate changes. The findings of the study suggested that irrigation, multiple cropping, and mixed farming were the most popular adaptation strategies practiced by farmers. The study concluded that irrigation, multiple cropping, and mixed farming were the most preferred choices of adaptation while mono-cropping was the least preferred. The study's main limitation was that it did not consider specific adaptation measures but instead generalized them and grouped them into categories. Grouping adaptation alternatives may make it difficult to determine which alternatives led to increased yields.

Kebede and Adane (2011) carried out a study to assess and analyze farmers' perceptions and adaptations to climate change in the Lake Tana Basin and agro-pastoralist areas of Oromiya and Amhara regional states in Ethiopia. The results of the study depicted that the most popular adaptation alternatives were changing planting dates, change in crop variety, and crop diversification. The study concluded that agricultural production had declined and therefore households had been adjusting their farming practices to reverse this trend. The main limitation of this study was that although it analyzed specific adaptation choices practiced by households, the methodology used in estimation did not allow for the analysis of multiple adaptation choices.

Bryan *et al.* (2013) analyzed adaptation measures and factors influencing farmers' decision to adapt in Garissa, Mbeere, Njoro Mukurwe-ini, Othaya, Gem, and Siaya Districts in Kenya. The findings of the study showed that households were using multiple adaptation choices simultaneously. The adaptation choices identified were: planting trees (9 percent), change of planting dates (20 percent), change of crop type (33 percent), and soil water conservation (5 percent), while 19 percent of farmers did not adapt. The study concluded that although the majority of farmers had perceived changes in rainfall and temperature, they faced numerous challenges that inhibited their ability to adapt. One of the limitations of the study was that

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response categories by farmers were many and diverse making it difficult to group and analyze.

Mabe *et al.* (2014) investigated determinants of choice of climate change adaptation strategies in Northern Ghana. The farmers' adaptation choices identified in the study were: changing planting dates, changing crop varieties, destocking, fallowing, fertilization, mulching, increasing farm size, planting trees, and adaptation of a combination of at least five options. The results revealed that the choice of adaptation was mainly influenced by farmer characteristics and perception about the weather. The study combined crop and livestock sub-sectors during analysis yet the two sub-sectors had distinct adaptation choices that were not comparable.

Shongwe (2014) analyzed the factors influencing the choice of adaptation strategies by households in Mpolonjeni, Swaziland. Adaptation strategies were grouped into: no adaptation; drought-tolerant varieties, shifting planting dates and conservation agriculture; conservation agriculture and shifting planting dates; irrigation and any other adaptation strategies; and all strategies. Results indicated that 90.4 percent of land cultivated was dedicated for maize production and the rest was used to cultivate other crops. The results of the study showed that the most popular adaptation choices were: the use of drought-tolerant varieties, early and late planting, minimum tillage, crop rotation, intercropping, irrigation, and mulching. The main weakness of the study was that it combined some adaptation strategies making it difficult to determine how specific adaptation choices were influenced by the independent variables. It was also not clear whether the adaptation choices were suitable for all crops or the dominant crop.

Thi and Chavanapoonphol (2014) evaluated levels of adaptation for highland robusta coffee production in Daklak province in Vietnam. The adaptation options considered in the study were: crop diversification, irrigation techniques, soil conservation; crop diversification and irrigation technique; crop diversification and soil conservation; soil conservation and irrigation; and a combination of the three techniques. The study adopted the Multiple Criteria Evaluation (MCE) to evaluate adaptation strategies. The following aspects were assessed: effectiveness, economic efficiency, flexibility, farmer implementability, and independent benefits. Results indicated that economic efficiency and effectiveness were assigned the highest weight by farmers. The majority of the farmers adopted one adaptation choice while the minority adopted all the options. Farmers were in favor of adaptation choices such as irrigation through sprinkling, crop diversification, or soil conservation. The study concluded that farmers were reactive rather than proactive in adapting to climate change.

Ndamani and Watanabe (2016) analyzed the determinants of farmers' adaptation to climate change in Ghana. The adaptation choices identified

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were: the use of improved crop varieties, crop diversification, farm diversification, change in planting date, income-generating activities, irrigation, and agroforestry. The results of the study showed that the most popular adaptation choice was the diversification of crops. Ahmed (2016) analyzed the most commonly used adaptation strategies that farm households applied and the determinants of these choices for maize production in the Central Rift Valley of Ethiopia. The dependent variable was the choice of adaptation strategies that included: use of improved crop varieties, adjusting planting dates, crop diversification, and soil conservation practices. Results of the study showed that the majority of farmers chose the use of improved crop varieties and adjusting planting dates. The study concluded that the choice of adaptation was influenced by social economic characteristics. The studies by Ndamani and Watanabe (2016) and Ahmed (2016) could not analyze multiple adaptation strategies.

Fadina and Barjolle (2018) examined farmers' adaptation strategies to climate change and their implications in the Zou Department of South Benin. The adaptation options were: no adaptation; crop-livestock diversification (mixed cropping, crop rotation, mulching, organic fertilizer); use of improved varieties, chemical fertilizers, and pesticides; agroforestry and perennial plantation; diversification of income-generating activities and multiple coping strategies. Results of the study indicated that although 90.8 percent of farmers had observed changes in climate, only 85 percent of them acted. Most of the farmers preferred crop-livestock diversification, use of improved varieties and agroforestry, and perennial plantation while 14.2 percent did not adapt at all. The study concluded that crop-livestock diversification; use of improved varieties; agroforestry and perennial plantation; diversification of income-generating activities were the most preferred adaptation strategies. However, the study's main weakness was that adaptation strategies with different outcomes were grouped under crop-livestock diversification.

3. Methods

3.1. Area of study

Smallholders were the respondents who cultivated 5 acres of land and below. Two counties in the semi-arid areas were considered in the study: Kitui located in lowland areas and Laikipia County located in highland areas. The counties have also been reported to suffer from food insecurity.

In Kitui County, the absolute poverty level was estimated as 47.5 percent compared to the national average of 36.1 percent while the food poverty rate was estimated as 39.4 percent as compared to the national average of 32 percent (Republic of Kenya, 2018a). The annual rainfall varies between 500 millimeters and 1050 millimeters with 40 percent reliability while minimum temperature ranges from 22 to 28 Degree Celsius and maximum

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temperature ranges from 28 to 32 Degree Celsius (Khisa, 2017). Although a large area (77,551 Ha) was dedicated to maize production, the annual production was lower (10,858 metric tonnes) as compared to sorghum (11,989 metric tonnes) with a lower land area (68,307) (Republic of Kenya, 2018a).

In Laikipia County, the absolute poverty level was estimated as 46 percent compared to the national average of 36.1 percent while the food poverty rate was estimated as 24.2 percent as compared to the national average of 32 percent (Council of Governors and Kenya Institute of Policy, Research and Analysis, 2020). Agriculture supported over 60 percent of the population. The annual rainfall varies between 400 millimeters and 750 millimeters while the mean annual temperature ranges between 16 degrees Celsius and 26 Degree Celsius (Republic of Kenya, 2018b). The main crop cultivated is maize which comprises 51 percent of the total crop area.

3.2. Sampling and data collection

A cross-sectional research design was used where data with respect to the long rain growing season of 2017 (March to August) was collected from smallholders to facilitate the assessment of the level of efficacy of adaptation of smallholder maize production to climate variability. A questionnaire was used to collect data on adaptation practiced and socioeconomic variables. Both open-ended and closed-ended questions were used. The enumerators administered questionnaires to selected respondents in the farms. Data was collected on: smallholders' awareness of climate change; the nature of changes observed; access and accuracy of climate information received; type of landholding; farming experience; access to extension services; number of social groups and the challenges faced in maize production due to climate-related changes. Furthermore, the study analyzed adaptation strategies smallholders used to overcome the climate-related challenges in maize production. Thereafter, smallholders evaluated the adaptation strategies employed based on their perception. The adaptation strategies selected were the most commonly applied in maize production based on the literature reviewed.

The sample of smallholder maize producers was drawn from four sub-counties of Kitui County (Kitui Central, Kitui South, Kitui Rural, and Mwingi Central) and two sub-counties in Laikipia County (Laikipia North and Laikipia East). The targeted maize producers were those who had land sizes of five acres and below. The sampling frame for the smallholder maize producers was obtained from the County Directors of Agriculture of the respective counties. The sample size was obtained following Cochran (1977) as follows:

$$n = \frac{Z^2 P(1-P)}{e^2} \quad \ldots\ldots 1$$

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Where Z is the selected critical value of the desired confidence level (Israel, 2003). For the present study, 95 percent confidence level translating to 1.96 from the standard normal cumulative distribution table was preferred. P is the estimated proportion of the population of smallholder maize producers approximated as 0.5 while e is the desired level of precision estimated at ±5 percent (Israel, 2003). On the other hand, e represents the margin of allowable error between the sample and the population (Israel, 2003). This estimate represents maximum variability applied where there is a large population whose variability is not known (Israel, 2003). Therefore, the sample size was estimated as follows:

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05^2} = 384.16 \quad \text{.....2}$$

The sample size of 384 was distributed based on a ratio of 2 sub-counties in Laikipia County to 4 sub-counties in Kitui County leading to a total of 128 respondents for Laikipia County and 256 for Kitui County. Over and above the sample size of 384 respondents, 27 more respondents representing 7 percent of the sample size were included to compensate for targeted respondents who could not be reached, nonresponse or inadmissible questionnaires due to errors (Israel, 2003). Therefore, a total of four hundred and eleven (411) smallholder maize producers were sampled. Upon data cleaning, data from 397 smallholder maize producers was found fit for analysis. A total of 273 out of 397 smallholders adapted maize production to climate variability while 124 did not adapt. The level of efficacy was evaluated based on 273 smallholders.

Respondents were selected using multistage sampling. Respondents from each of the selected six sub-counties were clustered according to Wards and then selected using simple random sampling. All the Wards of the sub-counties were included except for Sosian and Mukogodo West Wards from Laikipia County which were mainly on the range lands and Nanyuki Ward in Laikipia County and Kitui Township Ward in Kitui County located in the urban areas. The sample was therefore drawn from the following Wards: Mutomo, Athi, Ikanga, Ikutha and Kanziko from Kitui South Sub-County; Kisasi, Yatta Kwa Vonza, Kanyangi and Mbitini from Kitui Rural; Kyagwitha East, Kyagwitha West, Miambani and Mulango from Kitui Central; Mwingi Central, Waita, Kivou, Mui, Nguni and Nuu from Mwingi Central; Mukogodo East and Segera from Laikipia North; Thingithu, Tigithi, Umande and Ngobit from Laikipia East.

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3.3. Measurement of the levels of efficacy of adaptation of smallholder maize production to climate variability

The multiple criteria evaluation method was used in deriving levels of efficacy. The approach of evaluating adaptation choices based on various criteria was established by the Intergovernmental Panel on Climate Change (Carter et al., 1994). Some of the criteria used in evaluating adaptation by earlier studies include effectiveness, efficiency, flexibility, farmer implementability, and independent benefits (Thi and Chaovanapoonphol, 2014). The evaluation of efficacy in the present study was based on five criteria: effectiveness, high yield, farmer implementability, affordability, and additional benefits. In the context of this study, effectiveness measures the ability of the adaptation choice to reduce losses in smallholder maize production. According to Smith (1996), effectiveness was used to measure the ability of adaptation to reduce vulnerability to climate change (Thi and Chaovanapoonphol, 2014). High yield in the present study was used to measure the ability of adaptation choice to increase yield despite climate variability. Titus (1990) measured the ability of adaptation choice to perform well under different climate change settings with the criteria of flexibility (Thi and Chaovanapoonphol, 2014). Affordability was used to measure smallholders' ability to meet the cost of adapting. According to Dolan et al. (2001), economic efficiency could be used to assess whether the additional cost of farming occasioned by adaptation exceeded the economic benefits of adaptation.

Farmer implementability was used to measure the extent to which smallholders could implement selected adaptation choices considering their level of knowledge and skills. Thi and Chaovanapoonphol (2014) measured farmer implementability as the degree to which an adaptation choice was understandable, observable, and compatible with farm operations. Additional benefits criterion was used to measure the extent to which an adaptation choice had additional benefits such as improving soil fertility, improving organic matter among other benefits. Smith and Lenhart (1996) suggested that the benefits of adaptation irrespective of the adverse impacts of climate change could be evaluated based on independent benefits criteria (Dolan et al., 2001).

Smallholders selected their preferred adaptation choices from the following options: manure, fertilizer, agroforestry, changing planting dates, increasing land size, decreasing land size, irrigation, mulching, mixed cropping, and conservation agriculture. Thereafter, they evaluated the adaptation choices by assigning scores to the adaptation applied using a five-point scale (1- lowest score and 5 highest-score) with respect to effectiveness, high yield, affordability, farmer implementability, and additional benefit criteria.

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Furthermore, extension officers evaluated the criteria for assessing the efficacy of adaptation by assigning scores to each criterion on a scale of 1 to 5 based on how best they perceived the criterion contributed to a reduction of the adverse impacts of climate variability (Dolan et al., 2001). The average criteria score corresponding to each criterion was divided by the total criteria score and weighted by 10 to derive the criteria weighted score (Cw) for each criterion as follows:

$$Cw = \frac{\sum_i^n ACs_i}{TCs_i} \times 10 \quad \text{.....1}$$

Where ACs_i is the average criteria score while TCs_i is the total criteria score.

Thereafter, the scores assigned by smallholders for the respective adaptation under each criterion was multiplied by the criteria weighted score to derive the weighted sum ($Wsum_{ij}$) as follows:

$$Wsum_{ij} = \sum_{i=1}^{n} S_j \times Cw \quad \text{.....2}$$

Where S_j is the score assigned by smallholder i for adaptation j, Cw is the criteria-weighted score (Thi and Chaovanapoonphol, 2014). A proportion of smallholders applied multiple adaptation alternatives at the same time. Therefore, the weighted sum with respect to all the adaptation choices employed by a smallholder was added up to create an index for efficacy. The index for efficacy of adaptation (Z_i) was expressed as follows:

$$Z_i = MWsum_i + FWsum_i + AGWsum_i + PWsum_i + INWsum_i +$$

$$DWsum_i + IRWsum_i + MUWsum_i + MXWsum_i + CAWsum_i \quad \text{.....3}$$

Where $MWsum_i$ is the weighted sum for manure, $FWsum_i$ is the weighted sum for fertilizer, $AGWsum_i$ is the weighted sum for agroforestry, $PWsum_i$ is the weighted sum for changing planting dates, $INWsum_i$ is the weighted sum for increasing land size, $DWsum_i$ is the weighted sum for decreasing land size, $IRWsum_i$ is the weighted sum for irrigation, $MUWsum_i$ is the weighted sum for mulching, $MXWsum_i$ is the weighted sum for mixed cropping and $CAWsum_i$ is the weighted sum for conservation agriculture.

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The equal interval scale was used in classifying the index for efficacy into three levels (low, moderate, and high) as shown below (Thi and Chaovanapoonphol, 2014):

$$\text{Interval} = \frac{\text{Highest Value} - \text{Lowest Value}}{3} \quad \text{.....4}$$

4. Results and Discussion

4.1. Weighted scores for evaluation criteria and adaptation choices

Seven government agricultural extension officers evaluated the following criteria and thereafter the criteria were weighted as per equation 3: effectiveness, high yield, affordability, farmer implementability, and additional benefits. The criteria weighted score is shown in table 1:

Table 1. Criteria weight

Criterion	Weight (Cw)
Effectiveness	3.2
High yield	2.3
Affordability	1.8
Farmer implementability	1.5
Additional benefit	1.2

Source: survey data

Table 1 shows the average score assigned by the seven extension officers for each criterion. It also shows the weighted score for each criterion. In addition, smallholders evaluated each of the following adaptation choices and assigned scores: manure, fertilizer, agroforestry, changing planting dates, increasing land size, decreasing land size, mulching, mixed cropping, and conservation agriculture. The scores assigned by smallholders with respect to each adaptation applied were multiplied by the criteria weighted score to obtain the weighted sum for each adaptation choice under each evaluation category. The summary results are presented in table 2.

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Table 2. Weighted scores for the adaptation choices

Adaptation choices	Effectiveness	High yield	Affordability	Farmer implementability	Additional benefit	Weighted sum	Ranking
Manure	10.9	9.55	7.51	4.73	4.74	37.42	4
Fertilizer	11.94	9.65	6.23	3.81	4.77	36.4	7
Agroforestry	10.2	8.76	6.83	4.13	4.55	34.47	9
Changing planting dates	11.59	9.42	7.58	4.14	4.76	37.49	3
Increasing land size	9.51	9.44	6.35	5.51	4.13	34.94	8
Decreasing land size	7.42	6.17	7.2	4.98	4.04	29.8	10
Irrigation	12.38	10.21	7.13	4.67	4.8	39.2	1
Mulching	10.63	8.84	7.26	5.03	4.8	36.56	6
Mixed cropping	11.2	9.05	7.48	4.49	4.72	36.94	5
Conservation Agriculture	12.04	9.8	7.66	3.78	4.85	38.12	2

Source: survey data

4.1.1. Effectiveness

Table 2 shows the two most effective adaptation choices in reducing maize production losses were irrigation and conservation agriculture. Conservation agriculture improves water holding capacity and reduces evaporation hence facilitating the minimization of the adverse impacts of climate variability (Su et al. (2021)). Verma (2021) also notes that conservation agriculture contributes to the reduction of warming of the atmosphere by sequestering carbon dioxide thereby reducing the vulnerability to the impacts of global warming. Liu and Basso (2020) simulated long-term maize yields using a crop model and confirmed that conservation agriculture reduced yield loss considerably as compared to conventional tillage. On the other hand, irrigation was found to moderate canopy temperature thus enhancing adaptation from heat stress thus suggesting that irrigation was effective in reducing loss in maize production (Moradi et al., 2013). The results suggest that dedicating more land to maize production to the conservation of agriculture and irrigation could be key to minimizing maize losses caused by climate variability.

The least effective adaptation choices were decreasing land size and increasing land size. The results suggest that adjustment of farm size may not be effective in reducing losses in maize production. Increasing maize farm size is associated with the loss of land area covered with trees which leads to an increase in maize yield in the short run and a decrease in the long run (Epule and Bryant, 2015). This is because deforested areas escalate the adverse

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impact of climate change on maize production when such areas become vulnerable to soil erosion and compromise nutrient storage (Khodadadi et al., 2021).

4.1.2. High yield

From table 2, irrigation was also found to contribute the most to high yield followed by conservation agriculture. This finding is consistent with previous studies on irrigation. Moradi et al. (2013) established that irrigation contributed to increased maize yields as compared to baseline values. Olajire et al. (2020) also classified irrigation among adaptation choices that were efficient in improving yields. On the other hand, findings that conservation agriculture contributed to high yields are supported by Su et al. (2021) who established that conservation agriculture enhanced yields and attributed this to the presence of crop residues which facilitated enhanced soil organic matter, water retention capacity and reduction in soil water evaporation and surface runoff. Furthermore, Mutuku et al. (2021) found that conservation agriculture increased yields in low-fertility land. The results suggest that enhancement of irrigation and conservation agriculture could contribute to increased maize production thereby improving food security.

Decreasing land size and agroforestry were found to contribute the least to high yield. The result is supported by Abdulaleem et al. (2019) who established a positive relationship between farm size and maize yield. However, increased yield due to a reduction in farm size could occur if the land used was of high quality (Gollin, 2018). This implies that if low-quality land was reduced, yields would decline. Noack and Larsen (2019) also found that in Uganda yield decreased with an increase in farm size. The finding on agroforestry was not as expected. However, although agroforestry is instrumental in improving microclimate, carbon sequestration, soil fertility, and soil moisture, it may contribute to low maize yields since smaller crops may compete for light, water, and nutrients with the trees (Nyaga et al., 2019). In addition, agroforestry may inhibit the use of machinery during farming due to hindrances by the roots of the trees (Ibrahim et al., 2019). The findings on agroforestry suggest that the provision of technical guidance on agroforestry to smallholders could enhance its adoption and its ability to promote increased yields. For instance, identification of the right tree species to combine with maize production and the right tree species for the respective agroecological zones since results could be site-specific (Raskin and Osborn, 2019). The findings further suggest the need for proper farm planning to enhance positive results.

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4.1.3. Affordability

Table 2 shows that conservation agriculture and changing planting dates had the highest weighted score on affordability. Conservation agriculture was found to significantly reduce the cost of farming since ploughing is not required and it preserves crop cover permanently (Verma, 2021). On the other hand, smallholders' practice of changing planting dates mostly depends on indigenous knowledge (Nyakaisiki et al., 2019). Therefore, it does not require any financial outlay. Waongo et al. (2015) observed that changing planting dates was a low-cost climate change adaptation strategy. Although affordable, smallholders may be challenged in determining when to commence planting. Mugiyo et al. (2021) found that there was no consistency in the dates reported by farmers as the early planting date. The findings suggest that accurate identification of appropriate planting time could facilitate the practice of changing planting dates. Mugiyo et al. (2021) therefore recommended the establishment of a crop calendar to facilitate the selection of planting time with respect to specific crop varieties.

The least affordable adaptation choices were fertilizer and increasing land size. Fagariba et al. (2018) found that fertilizer was less affordable to the majority of farmers even though they acknowledged that it boosted yields. It was therefore ranked low among other adaptation choices such as changing planting dates, agroforestry, manure, irrigation, and growing drought-resistant crops. Other studies (Wushuai et al., 2021; Elise et al., 2020) found that fertilizer costs could be prohibitive leading to low application, especially with an increase in land size. Ndamani and Wanatabe (2016) also established that adaptation to climate change was higher in small farm sizes than in large farms due to cost. In China, the increase in subsidies made fertilizer affordable leading to increased agricultural productivity (Ren et al., 2019). The results suggest that reduction of the cost of farm inputs such as fertilizer could render an increase in land size more affordable to smallholders.

4.1.4. Farmer implementability

Table 2 also shows that increasing land size and mulching had the highest weighted scores for farmer implementability. The results are plausible because the most commonly used mulches are largely available locally from the farms. Some of the materials used include crop residues such as ground nut cover, wheat and paddy straws, dry leaves, grass, bark, sawdust, and compost (Telkar et al., 2017). Mulch is applied artificially or naturally on the surface of the land and therefore is not knowledge-intensive (Ranjan et al., 2017).

Conservation agriculture and fertilizer had the lowest farmer implementability. According to Tadesse (2016), few farmers adopt conservation agriculture due to technical constraints. Conservation agriculture

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also requires specialized equipment, particularly for seeding and planting hence farmers may require training to use them appropriately (Verma, 2021). There could be uncertainties relating to the management of pests, especially for farmers accustomed to conventional tillage (Fanadzo et al., 2018). Smallholders may also need knowledge of sustainable weed management strategies (Lee and Thierfelder, 2017). The findings suggest that although conservation agriculture was found affordable, effective, and contributing to high yield, its adoption is hampered by technological challenges. On the other hand, knowledge of the right time, type, and quantity of fertilizer and the condition of the soil are necessary. Cairns et al. (2021) noted low adoption of fertilizer use among women. In addition, Mideksa et al. (2021) found that the majority of the farmers applied fertilizer below the recommended quantities. However, education was found to improve the intensity of fertilizer usage attributed to the ability of farmers to understand and interpret information (Mideksa et al., 2021). The results suggest that education and capacity building of farmers could enhance proper adoption of conservation agriculture and fertilizer.

4.1.5. Additional benefits

From table 2, conservation agriculture had the most additional benefits followed by irrigation and mulching. Conservation agriculture saves time, reduces production and environmental costs, increases yield, and improves soil quality (Jat et al., 2021). Irrigation also promotes an increase in farm income besides lessening the adverse impacts of climate change (Osewe et al., 2020; Da Cunha et al., 2015). Mulching on the other hand helps to moderate soil temperature, conserves soil moisture, and suppresses diseases and pests (Ranjan et al., 2017). Decreasing the land size and increasing land size were found to have the least additional benefits. Adjustment of land size could be affected by other factors such as the inability of farmers to apply adequate input to boost production in the case of increasing land size (Zhang et al., 2021). The results suggest that a combination of adjustment of land size and other adaptation choices could contribute to the realization of additional benefits.

Overall, conservation agriculture emerged as the most robust adaptation alternative based on the outlined criteria. This result suggests that enhancing smallholders' capacity to adopt conservation agriculture could boost maize production.

4.2. Distribution of smallholders based on the levels of efficacy of adaptation

Results showed that the lowest index of efficacy was 12.4 while the highest was 260.4. The difference between the highest and lowest index of

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efficacy was divided by three to establish the interval scale as 82.6. The interval scale was established in line with Thi and Chaovanapoonphol (2014). Based on the interval scale, the levels of efficacy were defined as follows: low level of efficacy of adaptation (12.4 to 95); moderate level of efficacy of adaptation (95.1 to 177.7), and high level of efficacy of adaptation (177.8 to 260.4). Table 3 shows the levels of efficacy of adaptation for Kitui and Laikipia counties.

Table 3. Distribution of smallholders as per the levels of efficacy of adaptation

Levels of efficacy	Laikipia County		Kitui County		Combined	
	Frequency	%	Frequency	%	Frequency	%
Low	45	54	84	44	129	47
Moderate	32	39	93	49	125	46
High	6	7	13	7	19	7

Source: survey data

Table 3 shows that most of the smallholders reported a low level of efficacy of adaptation (47 percent) while very few (7 percent) reported a high level of efficacy of adaptation. The majority of the smallholders who reported a low level of efficacy of adaptation were from Laikipia County (54 percent) while most of those who reported a moderate level of efficacy of adaptation were from Kitui County (49 percent). However, an equal proportion of smallholders (7 percent) reported a high level of efficacy of adaptation in both counties.

The findings indicate that although Laikipia County is located in the highlands and perceived to have agroecological zones with better potential for maize production than Kitui County, the level of efficacy of adaptation was low for most of the smallholders than in Kitui County. This suggests that there is a possibility that smallholders in areas perceived to have a better potential for maize production might not be practicing intensive adaptation despite the knowledge that climate was changing (Adeagbo et al., 2021). The results are also supported by Mutunga et al. (2017) who found that smallholders in drier areas adopted more than those who resided in wetter areas. This further brings to question the optimality of adaptation, especially where multiple adaptation choices are practiced. For instance, a combination of organic and inorganic fertilizers was found to enhance soil fertility and consequently maize productivity (Roba, 2018). However, the proportion to be applied when they are used in combination to achieve optimal results may not be obvious to smallholders. These results suggest that capacity building on multiple applications of adaptation choices could facilitate the enhancement of the level of efficacy of adaptation to smallholder maize production (Bedeke et al., 2019).

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Conclusion

In Kenya, maize is the staple food for approximately 96 percent of Kenyans hence its adequate production is synonymous with food security. Smallholders supply up to 75 percent of maize produced in Kenya but are affected by unpredictable timing, duration, and distribution of rainfall, especially during the growing season. Further, they experience increasing temperatures, increasing weeds infestation increasing incidents of pests and diseases among other issues. Smallholders recognize that the climate is changing and the majority of them are adapting to climate variability based on imitation, knowledge, and resources at their disposal. However, the outcome is not always as expected. Although the majority of smallholders could be practicing single or multiple adaptations, inappropriate application or wrong selection of adaptation choices coupled with limited knowledge by smallholders could further contribute to low maize yields and consequently financial losses. Thus, the need to evaluate the levels of efficacy of adaptation.

This study takes a departure from previous empirical studies as it undertakes a comparison of two semi-arid areas; one in the highlands and the other in the lowlands. In addition, this study focused on smallholder maize producers and not maize farmers in general, and examined the levels of efficacy of adaptation noting that previous studies in Kenya had mostly assessed adaptation and determinants of adaptation.

The objective of the study was to evaluate the level of efficacy of adaptation of smallholder maize production to climate variability. Primary data on demographic, and socio-economic characteristics was collected directly from smallholder maize producers. A total of 273 smallholder maize producers were sampled through multistage sampling. The respondents were drawn from the Ward level from Kitui South, Rural, Central, and Mwingi Central sub-counties of Kitui County and Laikipia North and East sub-counties of Laikipia County.

The level of efficacy of adaptation of smallholder maize production to climate variability was evaluated based on Multiple Criteria Evaluation. The results showed that on aggregate most of the smallholders reported a low level of efficacy of adaptation while very few reported a high level of efficacy of adaptation. This implies that although the majority of smallholders in the overall sample adapted maize production to climate variability, they did not achieve desired results. Majority of the smallholders who reported a low level of efficacy of adaptation were from Laikipia County while the majority of those who reported a moderate level of efficacy of adaptation was from Kitui County. Evaluation of individual adaptation choices showed that the two most effective adaptation choices in reducing maize production losses and also contributing to high yields were: irrigation and conservation agriculture while the least effective adaptation choices were decreasing land size and increasing

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land size. Decreasing land size was also found to contribute the least to high yield followed by agroforestry. The results also showed that the most affordable adaptation choices were conservation agriculture and changing planting dates while the least affordable adaptation choices were fertilizer and increasing land size. However, increasing land size had the highest farmer implementability followed by mulching while conservation agriculture and fertilizer had the lowest farmer implementability. The adaptation choices perceived to have the most additional benefits were conservation agriculture, irrigation, and mulching while decreasing land size and increasing land size were found to have the least additional benefits.

The study concludes that the level of efficacy of adaptation for smallholder maize production in semi-arid areas was low. The study also concludes that most of the smallholders in areas perceived to have better potential in maize production such as Laikipia County have low levels of efficacy of adaptation in comparison to smallholders in areas with lower maize production potential such as Kitui County.

This study provides evidence that smallholder maize production in semi-arid areas yields a low level of efficacy of adaptation, especially in areas that are considered less vulnerable. Increasing the levels of efficacy of adaptation calls for appropriate selection of the type and combination of adaptation practices by smallholders. The County Governments through the department of agriculture and environment could establish guidelines for a robust combination of adaptation choices. Smallholders may therefore require support from the department in charge of crop production through capacity-building programmes such as; field practical training on effective ways to implement conservation agriculture and irrigation to enhance adoption. The capacity building should also be backed up by policies and incentives such as affordable pricing for the requisite tools and equipment to encourage adaptation choices providing high levels of efficacy. The County Government in areas with a better potential for maize production should sensitize smallholders on the need to augment adaptation even in areas perceived to have fertile soil.

The present study addressed the research gap and contributed to knowledge by evaluating the efficacy of adaptation. Evaluation of adaptation practises could shed more light on why there was insufficient maize production despite adaptation by the majority of the smallholders. The study also explored an alternative approach that could be used in analyzing multiple adaptations to address the challenges faced by most empirical studies assessing adaptation. In addition, the study provided a methodology that can be used in ranking adaptation practises to facilitate policy decisions.

The scope of the present study was to assess smallholder maize production and the results of the analysis may not be generalized for large-

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scale maize production. In addition, the areas of study were mainly semi-arid and results may not be generalized for high-potential areas. Further research could be undertaken on determinants of levels of efficacy of adaptation. In addition, a study on maladaptation in smallholder maize production could explain low levels of efficacy despite adaptation by smallholder maize producers. Furthermore, the study covered the adaptation choices employed by smallholder maize producers and efficacy of the adaptation based on perception. Future studies could explore quantitative evaluation of the adaptation choices.

References:

1. Abdulaleem, M.A., Oluwatusin, F.M., & Ojo, O. (2019). Efficiency of Maize Production among Smallholder Farmers in Southwest, Nigeria. *Asian Journal of Agricultural Extension, Economics & Sociology*.
2. Abegunde, V.O. and Obi, A. (2022). The Role and Perspective of Climate Smart Agriculture in Africa: A Scientific Review. *Sustainability 2022*, 14, 2317. https://doi.org/10.3390/ su14042317.
3. Adeagbo, O.A., Ojo, T.O., & Adetoro, A.A. (2021). Understanding the Determinants of Climate Change Adaptation Strategies Among Smallholder Maize Farmers in South-West, Nigeria. *Heliyon, 7*.
4. Ahmad, I., Ahmad, B., Boote, K. (2020). Adaptation Strategies for Maize Production Under Climate Change for Semi-Arid Environments. European Journal of Agronomy. 115. 126040. 10.1016/j.eja.2020.126040.
5. Ahmed, M.H. (2016). Climate change adaptation strategies of maize producers of the Central Rift Valley of Ethiopia. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, 117, 175-186.
6. Bedeke, S., Vanhove, W., Wordofa, M., Natarajan, K., & Van Damme, P. (2018). Perception of and response to climate change by maize-dependent smallholders. *Climate Research*.
7. Bryan, E., Ringler, C., Okoba, B., Roncoli, C., Silvestre, S. & Herrero, M., (2013). Adapting Agriculture to Climate Change in Kenya: Household Strategies & Determinants. *Journal of Environmental Management* 114: 26-35.
8. Cairns, J.E., Chamberlin, J., Rutsaert, P., Voss, R.C., Ndhlela, T. & Magorokosho C. (2021). Challenges for Sustainable Maize Production of Smallholder Farmers in Sub-Saharan Africa. *Journal of Cereal Science*, Volume 101, 2021.
9. Carter, T.R., Harasawa, H. and Nishioka, S. (1994). Intergovernmental Panel on Climate Change Technical Guidelines for Assessing Climate

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Change Impacts and Adaptations, Department of Geography, University College London.

10. Council of Governors and Kenya Institute of Policy, Research and Analysis. (2020). County COVID-19 Re-engineering and Recovery Strategy 2020/2021-2022/2023. http://repository.kippra.or.ke/handle/123456789/2336.
11. Da Cunha, D., Coelho, A., & Féres, J. (2015). Irrigation as an Adaptive Strategy to Climate Change: An Economic Perspective on Brazilian Agriculture. Environment and Development Economics, 20(1), 57-79. doi:10.1017/S1355770X14000102.
12. Dolan, A. H., Smit, B., Skinner, M. W., Bradshaw, B. and Bryant, C. R. (2001). Adaptation to Climate Change in Agriculture: Evaluation of Options. *Occasional Paper* No. 26.
13. Elise, S., Mvodo, M. & Ivette, M. E. (2020). Assessing the Impacts of Variable Input Costs on Maize Production in Cameroon. *Agricultural Sciences*, 2020, 11, 1095-1108 https://www.scirp.org/journal/as ISSN Online: 2156-8561 ISSN Print: 2156-8553 DOI: 10.4236/as.2020.1111071.
14. Epule, T. E. & Bryant, C. (2015). Maize Production Responsiveness to Land Use Change and Climate Trends in Cameroon. *Sustainability* 7(1):384-397. 10.3390/su7010384.
15. Fadina, A.M., & Barjolle, D. (2018). Farmers' Adaptation Strategies to Climate Change and their Implications in the Zou Department of South Benin. *Environments*.
16. Fagariba, C.J., Song, S., & Baoro, S.K. (2018). Climate Change Adaptation Strategies and Constraints in Northern Ghana: Evidence of Farmers in Sissala West District. *Sustainability*, 10, 1484.
17. Fanadzo, M., Dalicuba, M. & Dube, E. (2018). Application of Conservation Agriculture Principles for the Management of Field Crops Pests. In book: Sustainable Agriculture.
18. Fung, K. M., Tai, A.P. K., Yong, T., Liu, X. & Lam, Hon-Ming. (2019). Co-benefits of Intercropping as A Sustainable Farming Method for Safeguarding Both Food Security and Air Quality. *Environmental Research Letters, Volume 14, Number 4.*
19. Gollin, D. (2018). Farm Size and Productivity: Lessons from Recent Literature. IFAD Research Series No. 34 ISBN: 978-92-9072-868-9. SSRN: https://ssrn.com/abstract=3321659.
20. Hassan, R. and Nhemachena, C. (2008). Determinants of Climate Change Strategies of African Farmers: Multinomial Choice Analysis. *African Journal of Agricultural and Resource Economics* Vol. 2 No. 1. ISSN 1993-3738.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

21. Howeler, R. (2017). Cassava Cultivation and Soil Productivity. Achieving Sustainable Cultivation of Cassava Volume 1 pages 285-300. 10.19103/AS.2016.0014.25.
22. Ibrahim, A.O., Adeji, A.S. & Meduna, P.N. (2019). Constraints Facing Agroforestry Practices Among Farmers in New Bussa, Nigeria. *Journal of Research in Forestry, Wildlife & Environment* Volume 11(3).
23. Iderawumi, A. M. (2018). Characteristics Effects of Weed on Growth Performance and Yield of Maize (Zea Mays). *Biomedical Journal of Scientific & Technical Research Volume 5 Issue 4: 2018.* 10.26717/BJSTR.2018.07.001495.
24. International Maize and Wheat Improvement Centre. (2015). DT Maize. Drought Tolerant Maize for Africa. A Quarterly Bulletin of the Drought Tolerant Maize for Africa Project Volume 4 no. 3.
25. Israel, G.D. (1992). Determining Sample Size. University of Florida. *Fact Sheet PEOD-6*.
26. Jat, H.S., Datta, A., Choudhary, M., Sharma, P.C., & Jat M.L. (2021). Conservation Agriculture: Factors and Drivers of Adoption and Scalable Innovative Practices in Indo-Gangetic Plains of India – a review. *Int. J. Agric. Sustain*., 19 (2021), pp. 40-55.
27. Kabubo-Mariara, J. and Kabara, M. (2015). Climate Change and Food Security in Kenya. Environment for Development Discussion Paper Series.
28. Kabubo-Mariara, J.K. (2008). Global Warming Crop Selection and Adaptation Options in Kenyan Agriculture. Climate Change Research Progress ISBN: 978-1-60021-998-6, Nova Science Publishers, pp 269-289.
29. Kebede D & Adane H. (2011). Climate Change Adaptations and Induced Livelihoods. Drylands Coordination Group Report No. 64.
30. Ketterings, Q. Czymmek, K., Beegle, D., Lawrence, J. (2016). NRCCA Soil Fertility & Nutrient Management – Study Guide. Soil Fertility and Nutrient Management.
31. Khisa, V.G. (2017). Rainfall and Temperature Variability and Effect on Food Security in Kitui County. International Journal of Development and Sustainability. Vol. 6 No. 8 (2017) pp. 924-939.
32. Khodadadi, M., Alewell, C., Mirzaei, M., & Ehssan-Malahat, E., Asadzadeh, F., Strauss, P. & Meusburger, K. (2021). Deforestation Effects on Soil Erosion Rates and Soil Physicochemical Properties in Iran: A Case Study of Using Fallout Radionuclides in a Chernobyl Contaminated Area. 10.5194/soil-2021-2.
33. Lee, N. & Thierfelder, C. (2017). Weed Control Under Conservation Agriculture in Dryland Smallholder Farming Systems of Southern

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Africa. A review. *Agron. Sustain*. Dev. 37, 48 (2017). https://doi.org/10.1007/s13593-017-0453-7.

34. Liu, L., & Basso, B. (2020). Impacts of Climate Variability and Adaptation Strategies on Crop Yields and Soil Organic Carbon in The US Midwest. PLoS ONE, 15.
35. Mabe, F.N., Sienso, G. and Donkoh, S. (2014). Determinants of Choice of Climate Change Adaptation Strategies in Northern Ghana. *Research in Applied Economics*; Vol 6, No. 4. ISSN 1948-5433.
36. Maqsood, Q., Nadeem, R., Iqbal, M. A., Serap, K., Iqbal, A., El Sabagh, A. (2020). Overviewing of Weed Management Practices to Reduce Weed Seed Bank and to Increase Maize Yield. Planta Daninha. 38. 10.1590/s0100-83582020380100075.
37. Mideksa, D.I., Moti, J. & Fikadu, M. (2021). Determinants and Profitability of Inorganic Fertilizer Use in Smallholder Maize Production in Ethiopia. *Cogent Food & Agriculture*, 7:1, 1911046, DOI: 10.1080/23311932.2021.1911046.
38. Moradi, R., Koocheki, A., Nassiri Mahallati M & Mansoori, H. (2013). Adaptation Strategies for Maize Cultivation Under Climate Change in Iran: Irrigation and Planting Date Management. *Mitig Adapt Strateg Glob Change* 18: 265−284.
39. Mugiyo, H., Mhizha, T., Chimonyo, V., & Mabhaudhi, T. (2021). Investigation of the Optimum Planting Dates for Maize Varieties Using A Hybrid Approach: A case of Hwedza, Zimbabwe. *Heliyon*, 7(2), e06109. https://doi.org/10.1016/j.heliyon.2021.e06109.
40. Muhammad, A. R., Hina, G. Jun, W., Hassan, S. Y., Ruijun, Q., Muhammad, H. B., Khalid, Muhammd, N., Ling, Y. F., Nasir, I., Harun, G., Shakeel, A., Martin, B., Muhammad, A., Feng, Y., Wenyu, Y. (2021). Land Productivity and Water Use Efficiency of Maize-Soybean Strip Intercropping Systems in Semi-Arid Areas: A Case Study in Punjab Province, Pakistan, *Journal of Cleaner Production, Volume 308, 2021,* 127282, ISSN 0959-6526.
41. Mutuku, E.A., Vanlauwe, B., Roobroeck, D., Boeckx, P., & Cornelis, W. (2021). Physico-Chemical Soil Attributes Under Conservation Agriculture and Integrated Soil Fertility Management. *Nutrient Cycling in Agroecosystems*, 1-16.
42. Mutunga, E.J., Ndung'e, C.K. & Muendo, P. (2017). Smallholder Farmers Perceptions and Adaptations to Climate Variability in Kitui County. *Journal of Earth Science and Climate Change*. 8:389 doi 10.4172/2157-7617.1000389.

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

43. Ndamani, F. & Watanabe, T. (2016). Determinants of Farmers' Adaptation to Climate Change: A Micro Level Analysis in Ghana. *Scientia Agricola*. 73. 201-208. 10.1590/0103-9016-2015-0163.
44. Njagi, T., Mathenge, M., Mukundi, E. and Carter, M. (2017). Maize Technology Bundles of Food Security in Kenya. Innovation Lab for Assets and Market Access Policy Brief. Feed the Future.
45. Noack, F. and Larsen, A. (2019) The Contrasting Effects of Farm Size on Farm Incomes and Food Production. *Environmental Research Letters*, 14. Article ID: 084024. https://doi.org/10.1088/1748-9326/ab2dbf.
46. Nyaga, J., Muthuri, C.W., Barrios, E., Oborn, I., Sinclair, F.L. (2019). Enhancing Maize Productivity in Agroforestry Systems Through Managing Competition: Lessons from Smallholders' Farms, Rift Valley, Kenya. *Agroforestry Systems* 93, 715–730 (2019). https://doi.org/10.1007/s10457-017-0169-3.
47. Nyakaisiki, K., Mugume, I., Ngailo, T. and Nakabugo, R. (2019). The Use of Indigenous Knowledge in Predicting Changes in Seasonal Rainfall by Smallholder Farmers of Ruteete Subcounty, Kabarole District. *Journal of Geoscience and Environment Protection*, 7, 13-22. doi: 10.4236/gep.2019.71002.
48. Olajire, M.A., Matthew, O.J., Omotara, O.A., & Aderanti, A. (2019). Assessment of Indigenous Climate Change Adaptation Strategies and Its Impacts on Food Crop Yields in Osun State, Southwestern Nigeria. *Agricultural Research*, 9, 222-231.
49. Olsson, L., H. Barbosa, S. Bhadwal, A. Cowie, K. Delusca, D. Flores-Renteria, K. Hermans, E. Jobbagy, W. Kurz, D. Li, D.J. Sonwa, L. Stringer. (2019). Land Degradation. In: Climate Change and Land. IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, And Greenhouse Gas Fluxes In Terrestrial Ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.-O. Pörtner, D. C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)]. In press.
50. Osewe, M., Liu, A. & Njagi, Timothy. (2020). Farmer-Led Irrigation and Its Impacts on Smallholder Farmers' Crop Income: Evidence from Southern Tanzania. *International Journal of Environmental Research and Public Health*. 17. 1512. 10.3390/ijerph17051512.
51. Ranjan, P., Patle, G.T., Prem, M., & Solanke, K.R. (2017). Organic Mulching- A Water Saving Technique to Increase the Production of

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Fruits and Vegetables. *Current Agriculture Research Journal*, 5, 371-380.

52. Ren, C., Liu, S., Grinsven, H., Reis, S., Jin, S., Liu, H. & Gu, B. (2019). The Impact of Farm Size on Agricultural Sustainability. *Journal of Cleaner Production*. 220. 10.1016/j.jclepro.2019.02.151.
53. Raskin, B. and Osborn, S. (2019). Agroforestry Handbook. Agroforestry for the UK July 2019.
54. Republic of Kenya. (2018a). County Integrated Development Plan (2018-2022). County Government of Kitui. Kenya.
55. Republic of Kenya. (2018b). County Integrated Development Plan (2018-2022). County Government of Laikipia. Kenya.
56. Republic of Netherlands. (2018). Climate Change Profile: Kenya. Ministry of Foreign Affairs, Netherlands. www.govenment.nl/foreign-policy-evaluations.
57. Roba, T. (2018). Review on: The Effect of Mixing Organic and Inorganic Fertilizer on Productivity and Soil Fertility. Open Access Library Journal 5, 1-11. doi: 10.4236/oalib.1104618.
58. Schipper, E. L. F. (2020). Maladaptation: When Adaptation to Climate Change Goes Very Wrong. *One Earth*, 3(4), 409–414.
59. Shongwe, P. (2014). Factors Influencing the Choice of Climate Change Adaptation Strategies by Households: A Case of Mpolonjeni Area Development Programme (ADP) in Swaziland. *Journal of Agricultural Studies Volume 2 No. 1*.
60. Su, Y., Gabrielle, B., Beillouin, D. & Makowski, D. (2021). High probability of yield gain through conservation agriculture in dry regions for major staple crops. Scientific Reports 11, 3344. https://doi.org/10.1038/s41598-021-82375-1.
61. Tadesse, Addis. (2016). Adaptation and Constraints of Conservation Agriculture. *Journal of Biology, Agriculture and Healthcare* Vol. 6 No. 1 of 2016. www.iiste.org.
62. Telkar, S. G., Singh, A. K. and Dey, J. K. (2017). Effect of Population Proportion of Component Crops on Growth, Yield and Nutrient Uptake of Component Crops in Maize+Soybean Intercropping. *International Journal of Bio-resource and Stress Management* 2017, 8(6):779-783. Doi: https://doi.org/10.23910/ijbsm/2017.8.6.3c0363.
63. Thi, T.P. and Chaovanapoonphol, Y. (2014). An Evaluation of Adaptation Options to Climate Pressure on Highland Robusta Coffee Production, Daklak Province, Vietnam. *World Journal of Agricultural Research*, Volume 2 No.:205-215.
64. Udom, B.E., Benwari, A.O. and Osaro, E.T. (2015). Organic Carbon and Nitrogen Distribution in Particle-size Fractions of Soils Under

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

Cassava, Plantain and Rubber Based Land Use. *International Journal of Soil Science, 10: 166-176*.

65. United Nations. (2015). Transforming Our World: The 2030 Agenda for Sustainable Development. A/RES/70/1. sustainabledevelopment.un.org.
66. Verma, H. (2021). Conservation Agriculture (CA) practices to improve Soil Fertility. In book: Sustainable Soil Fertility Management (pp.101- 127). Publisher: NOVA Science Publishers, New York, U.S.A.
67. Waongo, M., Laux, P., Kunstmann, H. (2015). Adaptation to Climate Change: The Impacts of Optimized Planting Dates on Attainable Maize Yields Under Rainfed Conditions in Burkina Faso. *Agricultural and Forest Meteorology*, Volume 205,2015, Pages 23-39, ISSN 0168-1923, https://doi.org/10.1016/j.agrformet.2015.02.006
68. World Bank. (2021). Climate Risk Country Profile: Kenya. (2021). The World Bank Group.
69. Wushuai, Z., Chunrong, Q., Kimberly, M., Carlson, X., Ge, X., Wang, X., Chen. (2021). Increasing Farm Size to Improve Energy Use Efficiency and Sustainability in Maize Production. *Food and Energy Security*. Volume10, Issue1 February 2021.
70. Zhang, W., Qian, C., Carlson, K.M., Ge, X., Wang, X. & Chen, X. (2021). Increasing Farm Size to Improve Energy Use Efficiency and Sustainability in Maize Production. *Food and Energy Security*. Issue 1 February 2021.