CBWA
CENTRE FOR BEHAVIOUR & WELLNESS ADVOCACY

Journal of Advocacy, Research and Education

ISSN 2410-4981. E-ISSN 2508-1055

2025. 12(1). Issued 3 times a year
Has been issued since 2014.

Journal is indexed by: **AJOL** (South Africa), **Scopus** (Netherlands), **EBSCOhost Electronic Journals Service** (EJS) (USA), **ERIH PLUS** (Norway), **Open Academic Journals Index** (USA), **Sherpa Romeo** (Spain), **Crossref** (USA), **ROAD**, the Directory of Open Access scholarly Resources.

Disclaimer: All manuscripts are peer-reviewed by experts in their respective fields. Authors of the manuscripts bear responsibility for their content, credibility, and reliability.

The Editorial Board does not expect the authors of the manuscripts to always agree with its opinion.

Postal Address: P. O. Box FW 22, Effiduase-Koforidua, Eastern Region, Ghana

Website: http://kadint.net/our-journal.html
E-mail: jacob.sarfo@cherkasgu.press

Founder and Editor: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA

Release date 30.04.25
Format 21 × 29,7/4.

Headset Georgia.

Order № 32.

CONTENTS

Editorial

Articles

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 3-4

DOI: 10.13187/jare.2025.1.3

Journal homepage:
http://kadint.net/our-journal.html

Editorial

Call for Papers – Special Collection on Advancing Qualitative Methodologies

Jacob Owusu Sarfo [a, b, c, *]

[a] University of Cape Coast, Cape Coast, Ghana
[b] Centre for Behaviour and Wellness Advocacy, Koforidua, Ghana
[c] Cherkas Global University, Washington, USA

Abstract

This call for papers invites contributions that explore methodological and theoretical innovations in qualitative research across various disciplines, including sociology, education, health, psychology, and development studies. We seek submissions that critically engage with the foundations, designs, techniques, and ethical considerations of qualitative inquiry. Topics of interest include sampling strategies, research design, reflexivity, philosophical paradigms, and emerging data collection methods. If volume permits, submissions may be included in general issues or grouped into a special thematic collection. This initiative aims to foster a dynamic dialogue on current and future directions of qualitative research.

Keywords: Methodological Innovation, Philosophical Paradigms, Qualitative Research, Reflexivity, Research Design, Sample Size, Sampling, Theoretical Foundations.

1. Special Collection on Advancing Qualitative Methodologies

Qualitative research continues to evolve as a rich, rigorous, and dynamic mode of inquiry across disciplines. The Journal of Advocacy, Research, and Education (JARE) invites submissions for an open call focused on qualitative methodological issues and innovations in response to the increasing complexity and innovation in methodological approaches. Whether rooted in anthropology, sociology, education, health, psychology, development studies, or other fields, we seek contributions that reflect both theoretical depth and practical insight into how qualitative research is conceptualised and conducted. This call aims to gather papers that critically engage with the foundations, techniques, and future directions of qualitative inquiry. We encourage diverse voices and approaches from researchers, refining methods and exploring new epistemological terrain.

Topics of Interest Include, But Are Not Limited To:

– Qualitative Research Design

Conceptualising coherent qualitative designs: case study, ethnography, grounded theory, phenomenology, narrative, and mixed or hybrid designs. Reflections on the alignment of design, research questions, and analytical strategy.

* Corresponding author
E-mail addresses: jacob.sarfo@ucc.edu.gh (J.O. Sarfo)
Received: 28 March 2025 Revised: 01 April 2025 Accepted: 03 April 2025
Published: 30 December 2025

– *Sampling and Sample Size in Qualitative Research*

Reconsidering the principles of purposive, theoretical, and critical case sampling, debates on data saturation and transparency in sampling rationale.

– *Reflexivity and Researcher Positionality*

Examining the ethical, political, and personal dimensions of researcher identity, power relations, and their influence on the research process.

– *Philosophical and Epistemological Foundations*

Critical engagement with how paradigms, such as interpretivism, constructivism, feminism, postcolonial theory, decoloniality, or posthumanism, shape methodological thinking.

– *Innovative and Emerging Qualitative Techniques*

Advances in digital ethnography, arts-based and visual methods, narrative inquiry, participatory action research, and sensory or embodied methods.

– *Cross-Disciplinary and Contextual Methodological Trends*

Insights into how qualitative methodology is adapted or reimagined within specific fields or regions (e.g., health research, community-based studies, Global South contexts).

– *Methodological Review Essays*

Syntheses of debates, comparative analyses of methodological approaches, and reflections on the state and direction of qualitative inquiry.

We are particularly interested in contributions that offer interdisciplinary, global, and contextually grounded perspectives, engaging with methodological questions in established and emerging research areas.

Publication Format

Accepted papers will be published as part of our general issues or as a special thematic collection on qualitative methodologies as a special issue (10+ papers per cycle). All papers will undergo double-blind peer review and be fully indexed and accessible alongside the journal's regular content.

Submission Details

– **Article Types**: We welcome full-length research articles (6,000–9,000 words), shorter methodological commentaries (3,000–5,000 words), theoretical essays, and comprehensive review articles.

– **How to Submit**: Please follow the journal's standard formatting and submission procedures and clearly indicate in your cover letter that your manuscript is in response to the *Qualitative Methodologies Call*.

– **Deadline**: Submissions are accepted on a rolling basis until December 2025. Early submissions may appear in general issues.

About the Journal

The JARE started as an open-access publication in 2014 to promote the unrestricted dissemination of scholarly research, especially in Africa (Sarfo, 2023). The JARE is published by the Centre for Behaviour and Wellness Advocacy, Ghana (formerly KAD International, Ghana), with technical and funding support from Cherkas Global University Press (Washington, District of Columbia, USA). Currently, the JARE is indexed in Scopus, EBSCOhost, ERIH PLUS, African Journals Online, Crossref, Electronic Journals Service, Electronic Scientific Library, Electronic Journals Library, Open Academic Journals Index, ROAD, the Directory of Open Access scholarly Resources, Sherpa Romeo, and Scimago Journal & Country Rank (SJR).

Publication costs for the JARE are fully covered by the Centre for Behaviour and Wellness Advocacy (formerly KAD International, Ghana). For more information about our journal, please visit: https://www.kadint.net/our-journal.html

Author's ORCID

Jacob Owusu Sarfo https://orcid.org/0000-0003-2859-7278

References

Sarfo, 2023 – *Sarfo, J.O.* (2023). From 2014 to 2024: Celebrating a decade of open access. *Journal of Advocacy, Research and Education*. 10(3): 106-109. DOI: 10.13187/jare.202

CBWA
CENTRE FOR BEHAVIOUR & WELLNESS ADVOCACY

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 5-16

DOI: 10.13187/jare.2025.1.5

Journal homepage:
http://kadint.net/our-journal.html

Parents' Perceptions of the Effectiveness of Ghana's School Feeding Programme in Improving Household Income: A Case Study of Assin South District in Ghana

Alexander Tetteh Kwasi Nuer [a, *], Daniel Adjei [a], Benjamin Chris Ampimah [b], Selorm Omega [a]

[a] University of Cape Coast, Cape Coast, Ghana
[b] Cape Coast Technical University, Cape Coast, Ghana

Abstract

In pursuit of the United Nations Development Goal of universal primary education, the Ghanaian government implemented the Ghana School Feeding Programme to increase school enrollment and mitigate poverty. This paper aims to determine whether or not the programme has successfully enhanced the financial circumstances of parents in each district. The philosophical paradigm of pragmatism, along with an explanatory sequential mixed design, was employed in the study. A basic random sampling procedure was utilised to select 63 samples out of a total of 109 respondents for the study. The study gathered respondents' perspectives and perceptions through questionnaires, informal interviews, and focus group discussions. The findings indicate that parents regarded the school feeding programme as efficacious in encouraging them to enrol their children due to alleviating feeding cost burdens (mean = 3.95, SD = 0.21). Furthermore, it was found that parents perceived the school feeding programme as a means to augment their income (Mean = 3.73, SD = 0.45). It was discovered that the number of dependents, age, marital status, and gender of the parents all had a statistically significant impact on the perceived efficacy of the school feeding programme. The research findings indicated that the school feeding programme significantly contributed to the rise in student enrollment by alleviating the financial burden it imposed on parents. The study suggests that the school feeding programme be expanded to include private schools and other institutions not currently included in the programme. The study contributes to advancing social support system fields of inquiry that suggest that external support and public good incentives significantly improve households' efforts to enrol their children in formal education. It also improves governance and policy decision-making, especially among governments and development partners connected with developing countries. Theoretically, this study contributes to the Incentive Theory of Motivation, which is extrinsic and applied in this field of inquiry.

Keywords: Assin South District, Ghana's School Feeding Programme, Income status, Parents.

1. Introduction

Education, in general, is considered a fundamental human right that must be enshrined in a

* Corresponding author
E-mail addresses: alexander.nuer@ucc.edu.gh (A.T.K. Nuer)
Received: 11 August 2024 Revised: 20 January 2025; 02 April 2025 Accepted: 03 April 2025
Published: 30 April 2025

country's policies. Article 26 of the 1948 Universal Declaration of Human Rights unequivocally affirmed this, stipulating that all individuals deserve to be educated, regardless of gender, religion, ethnic origin, or social standing (Mahama, 2018). A high-quality education system is essential to a nation's economic, social, and political development. Education serves as a conduit by which a person gains myriad physical and social competencies required by a particular society into which they are born (Dangara, 2016). According to the World Development Report (WDR) for 1998/1999, education is significantly associated with both poverty reduction and economic expansion. Quality education accounted for approximately 25 % of the per capita Gross Domestic Product (GDP) increase in the United States of America between 1939 and 1982 (Mahama, 2018).

The United Nations Educational, Scientific and Cultural Organization's (UNESCO) Institute for Statistics (UIS) data in 2019 indicates that 19 % of children between the ages of six (6) and eleven (11) are not enrolled in school in low-income countries. The observation compares to a mere 2 % of school enrollment recorded in high-income countries. This number rises to approximately 61 % among children aged between 15 and 17 in low-income countries. The number is again compared to 8 % in high-income countries. Approximately 43% of the high enrolment rate is located in sub-Saharan Africa, and 53 % of them are female (UNESCO, 2019). Additionally, it has been verified that due to poverty and malnutrition, the projected number of children not enrolled in schools in sub-Saharan Africa increased from 29 million in 2008 to 31 million in 2010 (World Food Program [WFP], 2013).

Children of school-going age must be adequately nourished in order to develop and concentrate on their studies. One of the constant obstacles identified as contributing to the low number of school enrolments and high dropout rates is malnutrition and poor health (United Nations Children's Fund [UNICEF], 2019). Although adequate food remains a universally recognised fundamental right for children, most children attending school cannot satisfy their dietary needs (UNICEF, 2019). Poverty poses a significant risk to the nutritional well-being of children attending school, particularly in sub-Saharan African countries (Bain et al., 2013).

The School Feeding Programme (SFP) is one of the policy interventions implemented by governments in many developing countries to combat threats to adequate nutrition and food security (WFP, 2013). The GSFPs have been implemented since the inception of the United Nations' Sustainable Development Goals. The aim of the programme has primarily been to mitigate the issue of malnutrition among school-going-age children classified as living within the poverty and hunger class spectrum. An additional objective of the GSFP is to contribute to the realisation of the Universal Primary Education (UPE) objective (Tagoe, 2018). Since 2005, the programme has been operating fully as part of the Comprehensive African Agricultural Development Programme. Further, the implementation of the GSFP is in fulfilment of the initial and subsequent Millennium Development Goals, which aim to eliminate extreme poverty and hunger, as well as establish UPE across countries.

The SFP's fundamental objective in Ghana was to ensure that children attending public primary and kindergarten schools are provided with a single, nourishing meal per day, comprised of locally sourced ingredients. Since its establishment, the programme has achieved notable outcomes in student enrolment, retention, academic achievement, attendance, and school attrition (Adjei et al., 2024; Mahama, 2018).

Major accomplishments of the GSFP have been the reduction of gender disparity in fundamental education, increased school enrollment, and improved student retention (Mahama, 2018). The provision of one daily, nourishing, hot meal was associated with higher enrollment, attendance, and retention rates among students, according to a study conducted in the Tamale Metropolis of Ghana (Awojobi, 2019). Similarly, enrollment increased in elementary schools in the Atwima Mponua and Atwima Nwabiagya Districts of the Ashanti Region, where meals were provided (Serebour, 2017).

Furthermore, there was an increase in the number of females able to attend school within the Wa Municipality after the school feeding intervention was implemented (Mahama, 2018). Enrollment in primary education was also significantly impacted by the SFP in the Northern Region's Telensi District (Awojobi, 2019). According to the study, there was a 213-student increase in school enrollment in the district after the implementation of the programme (Awojobi, 2019). To strengthen the aforementioned indicators regarding the contributions of SFPs to increased enrollment, retention, and attendance, it is necessary to expand our focus beyond Ghana's borders.

An evaluation of the efficacy of SFP in Burkina Faso found a positive correlation between school canteens and increased enrollment, as well as consistent attendance at school (Kamaludeen, 2014). In his study detailing the effects of the GSFP on student enrollment and retention, Mahama (2018) noted that the initiative sustains 1.6 million students across Ghana. Extensive research has been conducted on the programme's influence on the mentioned academic achievements and other noteworthy outcomes. Nevertheless, there is a dearth of literature regarding the perceived effectiveness of the SFP by parents, which creates a knowledge gap regarding its effect on parental income across the board. This study sets the pace with a focus on unravelling this at the district level. The study aims to address this deficiency by conducting a methodical investigation to determine whether or not the programme has successfully enhanced the financial circumstances of parents at the district level. The research aims to concentrate on the subsequent objectives: (a) examine parents' perceptions of the extent to which the SFP has been effective in motivating them to enrol their children, (b) examine parents' perceptions of the extent to which the SFP has been effective in improving their level of income and finances, and (c) determine the relationship between the socio-economic and demographic characteristics of parents and their perceptions on the extent of effectiveness of the SFP.

This study contributes to the existing corpus of knowledge on the SFP, as prior research has primarily focused on the effects of the intervention from the students' standpoint, specifically regarding enrollment, retention, and academic performance. Furthermore, the study's findings offer valuable insights and provide a foundation for policy development by both governmental and private entities. The results also guarantee the programme's sustainability and enhancement at the district level and, by extension, developing economies that use such business models in the education sector.

Theoretical Framework

Burrhus Frederick Skinner (1904–1990) formulated the Incentive Theory of Motivation. As defined broadly by Huitt (2011), motivation is the aspiration or desire that drives and directs individuals to engage in goal-oriented conduct. Olusegun (2012) also defines it as the capacity to induce behavioural change. A motivation for action exists because human conduct is oriented toward specific objectives (Olusegun, 2012). Accordingly, motivation is intrinsic when an individual's drive originates internally and is predicated on their aspirations and desires. In contrast to intrinsic motivation, extrinsic motivation is characterised by the influence of external factors, including promotions, rewards, and praise, on an individual's motivation. The extension of the theory is evident in the social and human capital theories.

For the purpose of this study, the Incentive Theory of Motivation, which is extrinsic in nature, is applied. This theory states that human actions change towards a positive direction when positive external forces or motivators activate these actions. The theory emphasises that human actions are repeatedly observed as long as these external forces remain and one continuously becomes attracted to them.

In most deprived communities, the daily cost of feeding at school represents a major challenge for most parents and guardians. They would quickly respond to the school feeding package by encouraging their school-going children to take advantage of it. Similarly, parents would be encouraged or motivated to develop a savings attitude by responding to the feeding package.

2. Materials and Methods

Research Philosophy/ Paradigm

In this paper, the pragmatist's philosophical paradigm is employed. It emphasises the research gap (problem) identified and assumes that knowledge about the identified gap can be obtained using different methods. Creswell (2014) also perceived the philosophy of pragmatism as a research paradigm that permits the researcher to choose from a range of techniques, approaches and processes that are presumed to be suitable for meeting the purpose for which a study is conducted. The rationale for selecting this paradigm for the research was to utilise an explanatory sequential mixed method to provide a more comprehensive qualitative explanation for the quantitative findings after their occurrence (Creswell, 2014).

Research Design

The research employed an explanatory sequential mixed design, which facilitated the acquisition of more reliable and comprehensive findings by supplementing the explanations of quantitative data results with subsequent qualitative data results (Creswell, 2014). A combination of quantitative and qualitative data acquired from participants (via interviews and questionnaires) was analysed both quantitatively and qualitatively as part of the mixed methods design of the study.

Study Area

Assin South District (Figure 1) is a constituent of the 22 Municipal and District Assemblies in the Central Region and one of 260 Metropolitan, Municipal, and District Assemblies in Ghana (Ghana Statistical Service, 2013). The geographical coordinates of Assin South District are 10 2" W longitude and 50 30" N latitude. Its neighbouring districts are Abura Asebu Kwamankese District to the south, Asikuma Odoben-Brakwa and Ajumako Enyan Essiam to the east, and Assin North Municipality to the north (Ghana Statistical Service, 2013). As of 2013, the Assin South District has a recorded population of 104,244 individuals (Ghana Statistical Service, 2013). The composition of the 104,244-person population is as follows: 50,936 males comprise the remaining 48.9%, while 53,308 females comprise 51.1%. Also, 77.3% of the population aged 11 and older are literate, while 22.75% lack literacy. Males constitute a greater proportion (85.3%) of the literate population than females (70.0%). Agriculture is a significant economic sector comprising approximately 68% of the district's economy. Additionally, small-scale cottage industries are present to facilitate the refining of oil palm, palm kernel, and cassava as value-added agribusinesses. These constitute the primary means of subsistence for the populace. The district cultivates cassava, plantain, maize, and legumes as its primary agricultural products. Cocoa, citrus, and oil palm comprise the component of cash commodities that sustain the population's way of life.

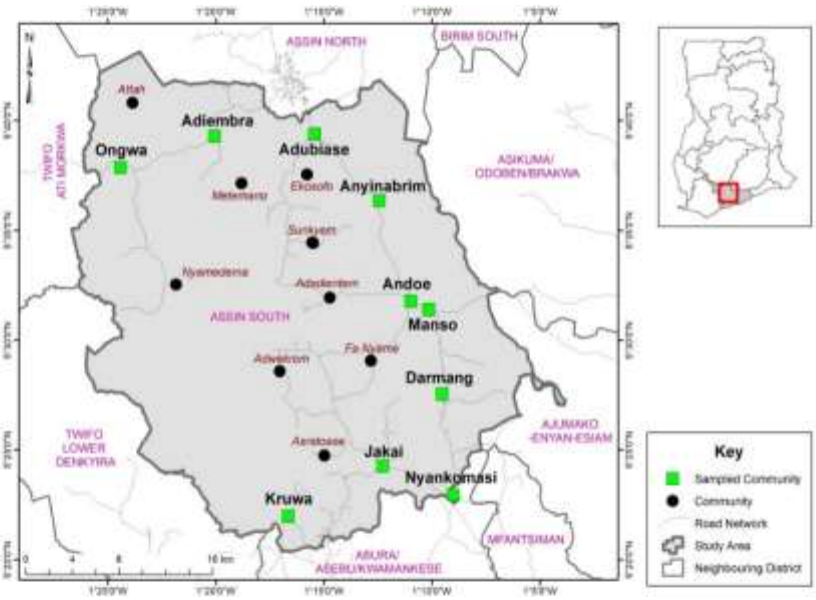

Fig. 1. Map of Assin South District showing the Study Area in Black Dots
(Department of Geography and Regional Planning, UCC)

Sampling Procedure and Sampling Size

The study used 109 beneficiary parents (Table 1). The number of parents was obtained from the 10 Educational Circuits in the district. The breakdown of the number of parents from the 10 Educational Circuits is represented in Table 1 below.

Table 1. Population of Parents from the 10 Educational Circuits in the Assin South District

Names of Circuits	Number of Parents
Adiembra	10
Andoe	10
Manso	13
Darmang	12
Ongwa	11
Jakai	10

Names of Circuits	Number of Parents
Kruwa	10
Nyankumasi	13
Adubiase	9
Anyinabrim	11
Total	**109**

Parent respondents were randomly selected from each of the 10 Educational Circuits schools' admission registers. Names of parents in the admission registers for each of the selected schools (Table 2) were listed. Respondents' names were randomly selected with the help of class teachers. Table 2 presents the number of parent respondents selected from the 10 Educational Circuits.

Table 2. Names of Circuits and Number of Parent Respondents

Name of Circuits	Number of Parents/Guardians
Adiembra	8
Andoe	7
Manso	8
Darmang	8
Ongwa	5
Jakai	5
Kruwa	4
Nyankumasi	8
Adubiase	5
Anyinabrim	5
Total	**63**

Data Collection

Quantitative data were gathered through the administration of questionnaires, while qualitative data were acquired through informal interviews. The combined research approach influenced our selection of these instruments. Additionally, variables such as the perceived effectiveness of SFP in motivating parents to enroll their school-going children and the perceived effectiveness of the SFP in improving the income level and finances of parents were measured on a Likert-type scale from 0 to 5 and interpreted as follows: 0 (cannot tell), 1 (Very Lowly Effective), 2 (Lowly Effective), 3 (Moderately Effective), 4 (Effective) and 5 (Very Effective).

A total of ten parents participated in the interview segment (Sarfo et al., 2021). We administered the validated and pretested research instruments to the participants in their native dialect. The participants' responses were meticulously and precisely documented to streamline the data analysis process. Respondents were informed of the study's objectives and guaranteed that any information they provided would be used solely for academic purposes and would be treated with the utmost confidentiality before administering the instruments. Additionally, the timetables of the respondents were considered to ensure that their daily activities did not disrupt the scheduled meeting hours.

Data Processing and Analysis

For the purpose of employing mixed methods in the study, data processing and analysis were done in two different stages. The quantitative data obtained from administered questionnaires were coded and entered into SPSS Version 25 during the initial phase. The rationale is to produce the necessary and suitable statistical tools for the analysis, including frequencies, percentages, means, standard deviations, and correlations.

In the second stage, the qualitative data collected through informal interviews were manually transcribed and analysed using thematic content analysis. The study conducted audio-recorded interviews in Fante and was verbatim transcribed by the research team. Here, the transcribed data were read through to identify meanings and patterns. The identified meanings and patterns were coded and categorised into basic themes. This was followed by grouping and sorting the basic themes into organising themes. The organising themes were then sorted, and similar themes merged into concluding themes, such as:

A. Perceived Effectiveness of SFP

i. Efficacy in Motivating School Enrollment

ii. Impact on Parents' Financial Well-being

These themes were made to constitute the general themes for interpretation and reporting.

4. Results

Socio-Economic and Demographic Characteristics of Respondents

The analysis of respondents' socio-economic and demographic characteristics is displayed in Table 3. A significant proportion of parents (71.4 %) were found to be aged 35 years or older. The demographic composition of respondents suggests that a significant proportion of them are financially accountable and may have greater financial obligations, such as covering the cost of feeding their children. As a result, they may be more receptive to the school feeding initiative, which can alleviate a portion of their feeding expenses. Again, the analysis outcomes regarding the respondents' marital status are presented in Table 3. The results indicate that 87.3 % of parents were married, which represents the majority of respondents' status.

Table 3. Socio-economic and Demographic Characteristics of Respondents (n = 63)

Characteristics of Respondents	Freq.	%
Age		
≤35	18	28.6
>35	45	71.4
Marital Status		
Unmarried	8	12.7
Married	55	87.3
Educational Status		
No formal education	4	6.3
Formal education	59	93.7
Alternative source of income		
Yes	61	96.8
No	2	3.2
Number of Dependents		
≤4	16	25.4
>4	47	74.6
Source of funds for the business		
Banks	0	0.0
Personal savings	39	61.9
Others	24	38.1

The observation that higher percentages of responses are attributed to the marital status of respondents may suggest that a significant proportion of them have sizable families, which could potentially enhance their labour availability in daily income-generating endeavours, and consequently improve their living conditions. Conversely, a greater proportion of married respondents may indicate that the majority of them have greater responsibilities regarding their dependents, which the school feeding initiative could assist in part with.

Additionally, the results regarding the respondents' educational attainment are presented in Table 3. The data in the table indicate that a significant proportion of parents (93.7 %) possessed some level of formal education, while only 6.3 % lacked any formal education. This finding may suggest that a significant proportion of them held favourable views regarding education and were thus incentivised to enrol their offspring in school.

Furthermore, the analysis of alternative sources of income for the respondents is presented in Table 3. A significant proportion of the parents, comprising 96.8 % of the sample, possessed supplementary sources of income. The presence of supplementary sources of income among the majority of respondents may indicate that the majority of them do not face economic disadvantages, thereby reducing their reliance on the feeding initiative as a means of subsistence. The outcomes may also indicate that the SFP has a greater potential to alleviate a portion of the financial strain experienced by parents who are unemployed.

Additionally, the outcomes of the analysis regarding the number of dependents of the respondents are presented in Table 3. Each respondent had a significant number of dependents, varying between three and eight. The findings may indicate that each respondent had a certain number of dependents who could supplement their labour requirements, thereby relieving them of the financial burden associated with labour in their economic and business endeavours and ultimately contributing to improving their standard of living. The findings may also suggest that some participants had obligations toward dependents and could have utilised the school feeding programme to alleviate some of these responsibilities.

The outcomes of the analysis regarding the sources of funds utilised by respondents for their businesses are concluded in Table 3. The data reveals that a significant proportion of the parents, comprising 61.9%, funded their enterprises with personal savings. Due to the fact that they obtained their funds from personal reserves, they may have been unable to obtain financing from financial institutions on account of insufficient collateral.

Perceived Effectiveness of SFP in Motivating Parents to Enrol Their School-Going Children

Table 4 provides the mean analysis of how parents in the Assin South District perceived the extent of effectiveness of SFP in motivating them to enrol their children. It can be observed that, for the ‘reduced sickness rate’ (mean = 3.21; SD = 0.57), respondents perceived the SFP as ‘moderate’. It can also be observed from the table that a composite mean of 3.7 with a standard deviation of 0.40 was obtained. This supports the fact that most parents perceived the SFP as ‘effective’ in driving them to enrol their children in school.

Table 4. Perceived Effectiveness of the SFP in Motivating Parents to Enrol Their Children

Perceived Effectiveness	Mean	SD
Burden of feeding costs alleviated	3.95	0.21
Quality and nutritious foods are served	3.70	0.46
Children eat less at home than they do in school	3.65	0.48
Children’s sickness rate is reduced due to the fortified foods	3.21	0.57
Diversity in foods served to children	3.89	0.32
Children eat whenever they attend school	3.83	0.38
Composite	**3.70**	**0.40**

Informal interviews with respondents yielded the following statements, which shared the reasons they were motivated to send their children to school. A female respondent summarised this as follows:

*“In fact, I can confidently say that this food intervention was brought to this village because of me and purposely to save my situation. I see no reason why I should not be motivated to let my children go to school. The cost of feeding is no longer my burden because the programme has taken care of it” [**IV-Parent Respondent 1**].*

In a similar informal interview, a 42-year-old smallholder farmer articulated why she got motivated to send her children to school:

*“Through the efforts of our local leaders, we are now enjoying the programme. My children can now boast of enjoying foods like ‘gari and beans’ with fried plantain, banku and okro stew, rice and stew, and others, which they (my children) did not have the opportunity to eat at home” [**IV-Parent Respondent 2**].*

Perceived Effectiveness of the SFP in Improving the Income Level and Finances of Parents

The mean analysis of parental perceptions regarding the effectiveness of the school feeding programme in enhancing their financial situation and income level is displayed in Table 5.

Regarding 'increased income level' (mean = 3.73; SD = 0.45) and 'provision of financial support to some family members' (mean = 3.11; SD = 0.41), Table 5 indicates that parents regarded the SFP as 'effective'. Furthermore, the results illustrate a composite mean of 3.24 and a standard deviation of 0.43. This result indicates that a significant proportion of participants assessed the programme's efficacy in assisting them in enhancing their financial situation and income as "moderately effective."

Table 5. Perceived Effectiveness of the SFP in Improving the Income Level and Finances of Parents

Perceived Effectiveness	**Mean**	**SD**
Increased income level	3.73	0.45
Decreased my debts.	3.33	0.48
Saved money on healthcare	3.13	0.42
Settled some financial commitments.	3.14	0.43
Increased savings with banks.	3.25	0.44
Paid school fees for my children in tertiary schools.	3.06	0.35
Acquired an appreciable loan amount due to increased	3.14	0.43
Saved money to support some family members.	3.11	0.41
Composite	**3.24**	**0.43**

Notes: n = 63

A respondent in an informal interview expressed her views and opinions as to how the SFP has brought improvement to her finances:

*"I have taken advantage of the SFP to save some money to take care of other expenses. This has been possible because the afternoon meal served to my children at school is able to sustain them till evening, so the issue of spending money on food for lunch is no longer a problem. I also do not spend much on food for supper because they come home with their stomachs already filled" [**IV-Parent Respondent 3**].*

Relationship between Parents' Demographic and Socio-economic Characteristics and their Perceptions on the extent of Effectiveness of the SFP

The objective of this study was to examine the correlation between the perceived efficacy of the SFP by participants and their demographic and socio-economic attributes. The correlation coefficients (r) and p-values for the different independent variables were calculated through analysis utilising the Pearson Product-Moment Correlation Coefficient.

The relationships between respondents' demographic and socio-economic characteristics and the perceived efficacy of the programme in improving their standard of living are displayed in Table 6. The findings suggest that the perceived efficacy of the programme is positively or negatively correlated with the gender of the respondents. A clear correlation can be observed between the perceived efficacy of the programme and the gender of the respondent. This finding implies that male and female participants might have distinct perspectives regarding the programme's influence on their means of subsistence.

Although educational achievement is correlated in a positive manner with the perceived efficacy of the programme, parental educational achievement does not inherently dictate the programme's effectiveness. The aforementioned discovery underscores the intricate nature of the correlation between education and programme outcomes. Individual motivation, resource accessibility, and skill development may exert a more substantial influence on the efficacy of programmes than parental educational attainment in isolation.

Table 6. Relationship between Parents' Demographic and Socio-economic Characteristics and their Perceptions on the extent of Effectiveness of SFP

Y=Perceived effectiveness (Dependent Variable)			
Independent Variables (X)	**Correlation Coefficient(r)**	**p-value**	**Type of correlation**
Sex (X_1)	0.31*	0.014	Point biserial

Age (X_2)	-0.31*	0.013	Pearson
Marital Status (X_3)	-0.42**	0.001	Point biserial
Educational Level (X_4)	0.02	0.875	Spearman
Number of Dependents (X_5)	-0.42**	0.001	Pearson
Alternative Sources of Income (X_6)	-0.10	0.459	Point biserial

Notes: n= 63, **p<0.01, *p< 0.05.

Additionally, while education may contribute to programme effectiveness, other factors should also be considered, such as access to resources, socio-economic status, and individual circumstances. Programme evaluations should be comprehensive and consider a range of demographic and socio-economic characteristics to understand better the factors influencing programme outcomes.

4. Discussion

Efficacy in Motivating School Enrollment

The results from Table 4 confirm the findings of the SFP survey carried out by Osei (2011), which showed that 92 % of parents perceived the SFP programme as effective in motivating them to maintain their children's enrollment in school. This corroborates the idea that the SFP plays a significant role in improving school enrollment by easing the financial burden on families, particularly concerning feeding costs. The fact that parents attribute this motivation to non-payment of feeding fees suggests that eliminating the cost of school meals substantially impacts families, especially those facing economic hardships. This observation is also aligned with the findings from Oganga (2013), which indicated that the WFP's School Feeding Initiative in Tanzania had a similar impact on ensuring higher enrollment rates. The finding was a motivating factor for parents to keep their children in school. The consistency of these results across different geographical regions (Ghana and Tanzania) reinforces the broader applicability and effectiveness of SFPs in encouraging school enrollment, particularly in low-income households.

Impact on Parents' Financial Well-being

The results regarding the perceived effectiveness of the SFP in improving parents' income and financial well-being are in agreement with similar findings made by Tagoe (2018), who found that many parents in the Ghana School Feeding Programme (GSFP) had adopted a culture of financial savings as a result of the programme. According to Tagoe's study, 73 % of parents perceived the SFP as effective in improving their finances by freeing up funds that would have otherwise been spent on feeding their children at school. Additionally, the WFP (2013) report concurs with this assertion, stating that the SFP has relieved poor parents from the financial burden of providing meals for their children every school day. This aligns with the findings of Table 5, suggesting that one of the key benefits of school feeding programmes is the financial relief they provide to families, which enables them to redirect resources to cater for other household needs or savings.

Complex Relationships Between Socio-economic Characteristics and Program Effectiveness

The discussion on the correlation between the socio-economic characteristics of parents and the perceived effectiveness of the SFP acknowledges the complex relationships that exist between demographic factors (such as gender, income, and ethnicity) and the programme's outcomes. Studies by Hübel et al. (2023) and Behrman (2015) have highlighted the influence of gender on perceptions of socio-economic issues and programme outcomes. Behrman's research in Bangladesh, for example, revealed that while stipend programmes can reduce gender gaps in school attainment, they fail to address underlying socio-economic disparities that continue to affect marginalised groups.

Moreover, research in Vietnam's upland regions by Tran et al. (2022) suggests that ethnicity can play a more substantial role than gender in determining the resilience of livelihoods. However, gender disparities are still observed in such studies. These findings suggest that when designing development programmes like the SFP, it is crucial to account for the intersectionality of different demographic factors, such as gender, ethnicity, income, and education. The results from these studies, which the current study supports, indicate that a programme's effectiveness is determined by the overall intervention and how well it addresses the unique needs of different demographic groups.

5. Limitations

A handful of parents lacked complete cooperation with the researchers throughout the data collection phase, citing their discontent with the quantity and quality of meals provided for their children. Furthermore, this caused a significant extension in the designated timeframe for data collection for this study, as the researcher had to invest a substantial amount of time convincing these participants to partake in the study. Once more, some teachers had recently been appointed substantive head teachers and, as a result, were unaware of certain programme-related matters related to the SFP within their schools. Hence, the potential existed for them to provide erroneous answers.

6. Implications of the study

The study makes a theoretical contribution to the comprehension of motivation theory through its investigation of the relationship between parental income status improvement perceptions and participation in the SFP. This elucidates the significance of community cohesion, social networks, and trust in facilitating access to opportunities and resources.

Furthermore, the research offers valuable insights regarding the correlation between education, which is considered a type of human capital, and the SFP's perceived efficacy. Contributing to the literature on human capital theory as a component of motivation theory, this study investigates whether parents with higher levels of education perceive the programme differently in terms of its effect on socio-economic status.

The study also contributes to the socio-economic status framework by examining the correlation between perceived SFP effectiveness and socio-economic status. Parental perceptions of the programme's efficacy in enhancing their income status may be clarified with variables including occupation and income.

The study's practical implication is that policymakers can utilise these findings to inform their decision-making processes concerning social welfare programmes and initiatives aimed at alleviating poverty in decentralised communities. Understanding how parents perceive the effectiveness of the SFP can inform policy modifications that seek to optimise the programme's influence on poverty reduction and income status.

In addition to promoting community involvement and participation in the SFP, the study provides a forum for parents to express their thoughts and apprehensions. By involving stakeholders in the decision-making and planning phases, programmes can increase their acceptance and sustainability.

Potential capacity-building initiatives that aim to empower parents and improve their economic livelihood prospects can be formulated in light of the study's findings. Supplementing the SFP's benefits may involve instruction in income-generating endeavours, financial literacy, and entrepreneurial competencies, which this study did not fully cover.

Lastly, the research emphasises the significance of continuous monitoring and evaluation of social welfare initiatives to gauge their efficacy and influence on recipients.

7. Conclusion and Recommendation

The Ghanaian government employs school feeding as one of its policy interventions to combat food insecurity in rural areas. The primary objective is to provide children attending specific public primary schools and kindergartens located in the most impoverished regions of the nation with a single hot, nutritious meal every day, composed entirely of locally sourced ingredients.

The findings of the research indicated that a significant proportion of parents regarded the intervention as "effective" (mean = 3.7, SD = 0.40) in incentivising them to register their children in school. These results offer a rationale for the recent substantial surge in student enrollment at the majority of elementary schools within the district.

The results of the study regarding parents' perceptions of the programme's efficacy in enhancing their financial situation and income level indicated that the majority of participants regarded its effectiveness as "moderate" (Mean = 3.24; SD = 0.43). Enrollment will increase even further, the study suggests that the Ministry of Education, Ghana Education Service, and the Ministry of Gender and Social Protection agency revise the programme to provide two hot meals per student, as opposed to just one. Once more, it is recommended that the programme be expanded to encompass private schools as well as other educational institutions across the nation.

8. Declarations

Ethics approval and consent to participate

A letter was composed and forwarded to the Department of Agricultural Extension and Economics before the initiation of field data collection. The purpose of this letter was to request a letter of introduction from the research respondents, which ensured their willingness to participate in the study. Prior to the commencement of data collection, ethical authorisation was additionally obtained from the Institutional Review Board of the University of Cape Coast (IRB-UCC). This served as an ethical justification and ensured the utmost importance of the research agenda. This also ensured the consent and assent of research respondents to the study.

Consent for publication

Not applicable

Availability of data and materials

Data and other relevant documents for this manuscript are available upon request.

Conflict of interest statement

The authors have declared that no competing interests exist.

Authors' contributions

A.T.K.N., D.A., S.O. and B.C designed this study. S.O. collected and analysed data. All authors contributed to the writing of the paper and reviewed the manuscript. All authors read and approved the manuscript.

Funding

This research received no external funding. However, the author sincerely thanks the Centre for Behaviour and Wellness Advocacy, Ghana, for providing financial support through the Institutional Open Access Publication Fund.

Acknowledgement

We acknowledge the contribution of field enumerators and colleagues who contributed to the paper. This paper was extracted from the master's dissertation titled, "*Perceived Effectiveness of the Ghana School Feeding Programme in Improving the Socio-economic Lives of Beneficiary Communities in the Assin South District in Central Region, Ghana*".

Authors' ORCID

Alexander Tetteh Kwasi Nuer https://orcid.org/0000-0001-6646-341X
Daniel Adjei https://orcid.org/0009-0009-7685-5762
Selorm Omega https://orcid.org/0000-0001-9159-9351
Benjamin Chris Ampimah https://orcid.org/0000-0003-2290-7853

References

Awojobi, 2019 – *Awojobi, O.N.* (2019). A systematic review of the impact of Ghana's School Feeding Programme on educational and nutritional outcomes. *Journal of Tropical Agriculture, Food, Environment and Extension*. 18(2): 42-50.

Adjei et al., 2024 – *Adjei, D., Nuer, A.T.K., Omega, S., Ampimah, B.C.* (2024). Perceived effectiveness of Ghana's School Feeding Programme in improving the livelihood of beneficiaries in Assin South District. *Journal of Advocacy, Research and Education*. *11*(1): 122-137.

Bain et al., 2013 – *Bain, L.E., Awah, P.K., Geraldine, N., Kindong, N.P., Siga, Y., Bernard, N., Tanjeko, A.T.* (2013). Malnutrition in sub–saharan africa: burden, causes and prospects. *Pan African Medical Journal*. 15(1): 1-20.

Behrman, 2015 – *Behrman, J.A.*(2015). Do targeted stipend programs reduce gender and socioeconomic inequalities in schooling attainment? Insights from rural Bangladesh. *Demography*. 52(6): 1917-1927.

Creswell, 2014 – *Creswell, J.W.* (2014). Research design: qualitative, quantitative, and mixed methods approaches. (4th ed.). Thousand Oaks, California: SAGE Publications.

Dangara, 2016 – *Dangara, U.Y.* (2016). Educational resources: an integral component for effective school administration in Nigeria. *Journal of Research on Humanities and Social Sciences*. 6(13): 1-11.

Ghana Statistical Service, 2013 – Ghana Statistical Service. 2010 population and housing census; national analytical report, Accra. Accra, Ghana: GSS, 2013.

Huitt, 2001 – *Huitt, W.* (2001). Motivation to learn: An overview. *Educational psychology interactive*. 12(3): 29-36.

Hübel et al., 2023 – *Hübel, Ş.R., Stan, M.I., Tasențe, T.* (2023). Assessing the role of gender in shaping perceptions of socio-economic issues in the context of sustainable local development: a study on respondents' influence. *Technium Sustainability*. 3(1), 76-90.

Kamaludeen, 2014 – *Kamaludeen, H.* (2014). The impact of the ghana school feeding programme on enrollment, attendance and retention in Ga South Municipal Schools (Masters' Dissertation, Universiry of Ghana).

Mahama, 2018 – *Mahama, S.* (2018). The impact of Ghana School Feeding Programme on female enrolment, attendance and retention in the Wa municipality of the upper west region of Ghana (Masters' Dissertation, University of Development Studies).

Oganga, 2013 – *Oganga, B.N.* (2013). Feeding students? examining views of parents, students and teachers on the world food program 's school feeding initiatives in Chamwino District in Tanzania (Masters' Dissertation, University of Massachusetts).

Olusegun, 2012 – *Olusegun, O.S.* (2012). Influence of motivation on turnover of library personnel in some public universities in South West Nigeria. *Library Philosophy and Practice (e-Journal)*. 3(2): 1-10.

Osei, 2011 – *Osei, F.A.* (2011). Evaluating the impact of the capitation grant and the school feeding programme on enrollment, attendance and retention in schools: The case of Weweso circuit (Masters' Dissertation, Kwame Nkrumah University of Science and Technology).

Sarfo et al., 2021 – *Sarfo, J.O., Debrah, T., Gbordzoe, N.I., Afful, W.T., Obeng, P.* (2021). Qualitative research designs, sample size and saturation: Is enough always enough. *Journal of Advocacy, Research and Education*. 8(3): 60-65.

Serebour, 2017 – *Serebour, R.* (2017). Assessing the implementation of the Ghana School Feeding Program (GSFP): A comparative case study of some selected schools in the Atwima Nwbiagya district and Atwima Mponua district of Ghana (Master's thesis, The University of Bergen).

Skinner, 2012 – *Skinner, B.F.* (2012). A brief survey of operant behavior. The B.F. Skinner Foundation. [Electronic resource]. URL: http://www.bfskinner.org/BFSkinner/SurveyOperantBehavior.html (date of access: 26.01.2012).

Tagoe, 2018 – *Tagoe, I.* (2018). The Ghana National School Feeding Program: peoples' perceptions about the program's impact on school enrolment, attendance and completion (Masters' Thesis, Graduate College of Bowling Green State University).

Tran et al., 2022 – *Tran, V., An-Vo, D.A., Mushtaq, S., Cockfield, G.* (2022). Nuanced assessment of livelihood resilience through the intersectional lens of gender and ethnicity: evidence from small-scale farming communities in the upland regions of Vietnam. *Journal of Rural Studies*. 9(2): 68-78.

UNESCO, 2019 – United Nations Educational, Scientific and Cultural Organization. (2019, September 13). *UNESCO warns that, without urgent action, 12 million children will never spend a day at school*. Paris, France: UNESCO.

United Nations Children's Fund, 2019 – United Nations Children's Fund. (2019). *Children, food and nutrition – Growing well in a changing world*. New York, USA: UNICEF.

World Food Program, 2013 – World Food Program. (2013). *State of school feeding worldwide*. Roma, Italy: WFP.

CBWA
CENTRE FOR BEHAVIOUR & WELLNESS ADVOCACY

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 17-32

DOI: 10.13187/jare.2025.1.17

Journal homepage:
http://kadint.net/our-journal.html

Entrepreneurial Orientation and Absorptive Capacity for Employability Skills Development through Extra-Curricular Activities

Keren Naa Abeka Arthur [a,*]

[a] University of Cape Coast, Ghana

Abstract

The unemployment challenges graduates face are alarming. Entrepreneurship education and training programmes have been proffered as a key solution to addressing this problem. This study investigates the relationship between students' entrepreneurial orientation and their absorptive capacity to enhance their ability to assimilate and apply new knowledge from extra-curricular activities, eventually leading to improved employability skills and competitive advantage. Using a cross-sectional descriptive survey design and a sample size of 283 respondents, the study revealed a significant positive relationship between entrepreneurial orientation and knowledge acquisition. Additionally, the study revealed a direct and indirect relationship, mediated by knowledge acquisition, between entrepreneurial orientation and knowledge assimilation, transformation and exploitation. The study concludes that entrepreneurial orientation is crucial to students' ability to spot opportunities for employability skill development through extra-curricular activities. The study recommends that higher education institutions should incentivise knowledge acquisition beyond the classroom to get the desired outcomes from knowledge assimilation, transformation and exploitation.

Keywords: Entrepreneurial Orientation, Absorptive Capacity, Employability Skills, Extra-Curricular Activities, Entrepreneurship Education, Public Universities.

1. Introduction

Universities have long served as production houses for talent across industries globally, with a large number of higher education graduates serving as a pool for entrepreneurship (Kang, Xiong, 2021). This supports the critical role of people in organisations. Despite advancements in artificial intelligence, humanness continues to be indispensable to firms (Rasmus et al., 2024). Humanness is evident in several soft skills that are key to graduate employability today. Researchers (Fajaryati et al., 2020; Rakowska, de Juana-Espinosa, 2021) suggest that human skills like self-awareness, communication, technology, and problem-solving are in high demand in the job market. Nevertheless, studies (Bauman, Lucy, 2021; Kang, Xiong, 2021) show a mismatch between university curricula and job market requirements, which affects not only the employability of graduates seeking traditional jobs or entrepreneurship opportunities. While employers blame academia for using pedagogies that emphasise theory over practice (Akdur, 2022; Kaiser, 2019), academia accuses the industry of shirking its responsibilities in providing on-the-job training to

* Corresponding author
E-mail addresses: keren.arthur@ucc.edu.gh (K.N.A. Arthur)
Received: 30 January 2025 Revised: 20 April 2025 Accepted: 23 April 2025
Published: 30 April 2025

bridge the gap (Palsokar, Tajne, 2018). In response, there have been calls for universities to produce graduates who can transition more effectively from education to the workforce and entrepreneurship (Akdur, 2022).

To encourage their students to become entrepreneurs, universities are developing environments that promote entrepreneurship and innovation (Adomdza et al., 2022). These environments include, among other things, educational programs on entrepreneurship (Guerrero et al., 2020). Entrepreneurship education programmes have rapidly expanded globally within higher education systems in response to the potential gains that entrepreneurship offers to mindset development (Mawson et al., 2023), fulfilling self-employment aspirations, wealth creation, and stimulating the economy (Bauman, Lucy, 2021; Mensah et al., 2023). Universities with strong entrepreneurship support systems are key to developing students' entrepreneurial abilities. These universities provide students with the resources, networks, and guidance needed to start and grow their businesses (Ayala-Gaytán et al., 2024). In response to the calls for universities to adopt more business-oriented practices (Pacheco et al., 2023), some institutions in Ghana offer entrepreneurship as a required university-wide course taken by all students at specific levels to develop their entrepreneurial mindset (Adomdza et al., 2022; Appiah-Nimo et al., 2018). Studies in teaching and learning in higher education highlight the learning atmosphere as the primary setting for generic skills development (Virtanen et al., 2022; Virtanen, Tynjälä, 2019). Thus, factors like large classroom sizes and limited infrastructure, especially in large public universities in developing countries, may limit the opportunities for experiential learning activities that can foster the crucial 21st-century skills that are lacking. This reality places the onus on students to seek other avenues for cultivating relevant employability skills.

Some empirical studies (Chapman et al., 2023; Lau et al., 2014) have revealed the proliferation of extra-curricular activities within higher education institutions to address this gap; and an entrepreneurial student will learn how to recognise, assimilate and exploit new external information from these sources to their benefit. Practical and empirical evidence shows that the entrepreneurial process begins with an individual's intention and idea generation, followed by searching the environment for opportunities, which culminate in the realisation of the idea (Bauman, Lucy, 2021). Entrepreneurship education is designed to inspire individuals to actively pursue and implement new opportunities by embracing challenges. It can spur students to start their businesses or seize new opportunities (Kim, Park, 2023). Central to this process is how entrepreneurship education influences students' entrepreneurial orientation, which can potentially enhance the absorptive capacity of undergraduates enrolled in entrepreneurship programmes. This paper argues that entrepreneurial orientation is a strategic mindset that can impact the absorptive capacity of students. Cohen and Levinthal (1990) describe absorptive capacity (AC) as the ability of a firm to recognise the value of new information, integrate it, and apply it to commercial ends based on prior related knowledge.

This study employs the resource-based view theory (Barney, Arikan, 2005) to investigate the relationship between students' entrepreneurial orientation and their absorptive capacity. Entrepreneurial orientation is conceptualised as a resource that predicts the increase in absorptive capacities of students enrolled in an entrepreneurship course in a Ghanaian public university. By using the strengths of the unique resources and capabilities, students can enhance their ability to assimilate and apply new knowledge from extra-curricular activities, eventually leading to improved employability skills and competitive advantage. To address the research objective stated above, the rest of the paper is organised as follows: first, a review of the literature on entrepreneurial orientation and absorptive capacity is conducted. This is followed by a description of the methods used in the study, a presentation of results, and a discussion of the results in relation to the literature. Conclusions, policy implications and limitations, as well as suggestions for future research, are then highlighted.

2. Literature review

Absorptive Capacity

Absorptive capacity has mainly been explored as an organisational-level construct in the literature. It refers to how well a company can learn and grow its skills by using new information and knowledge (Dzhengiz, Niesten, 2020). It describes how companies can take external knowledge and convert it into internal skills and capabilities (Gluch et al., 2009). Despite its exploration at firm level, there is a consensus among scholars that the foundation of an organisation's absorptive capacity lies within its employees (Junni, Sarala, 2013; Tian, Soo, 2018), and this necessitates its study also at an individual level. Individual absorptive capacity can be considered a dynamic capability (Zahra, George, 2002; Lowik et al., 2017) that requires prior knowledge and experience, strong networks and mental models that foster creative decision-making (Adner, Helfat, 2003; Lowik et al., 2017). For the purpose of this study, individual absorptive capacity is described as the ability of an individual to identify valuable knowledge, understand the knowledge, and use it to create new ideas or products to enhance the person's competitiveness.

Building on the original work of Cohen and Levinthal (1990), Zahra and George (2002) identified four key components of absorptive capacity: acquisition, assimilation, transformation, and exploitation. Knowledge assimilation involves the ability to analyse, process, interpret, and comprehend information acquired from external sources. When an individual or firm has a strong capacity for assimilation, it enhances its ability to integrate existing knowledge with newly acquired insights. The effectiveness of transformation capability relies on how well external information has been previously assimilated within the organisation. Knowledge exploitation is about using existing knowledge to learn more and create practical outcomes (Zobel, 2017). Zahra and George (2002) reconceptualised absorptive capacity as potential and realised capacities. Among students, potential absorptive capacity focuses on knowledge acquisition and assimilation, involving processes like learning and understanding new information, seeking information outside lecture rooms, scanning the external environment for new information, and analysing and interpreting the impact of changing market trends. Realised absorptive capacity centres on knowledge transformation and exploitation, which entails applying new knowledge to create commercial value.

Zahra and George (2002) and Vega-Jurado et al. (2008) argued that prior knowledge is the main antecedent to individual absorptive capacity. Among students, knowledge transformation is manifested in the process of recording and storing newly acquired knowledge for future reference and the ability to link existing knowledge with new knowledge or insights. Knowledge exploitation is demonstrated by the ability to apply acquired knowledge to develop new products, services, or processes, as well as leverage emerging technologies or knowledge. Cohen and Levinthal (1990) explain that an individual or firm's ability to evaluate and utilise knowledge depends largely on prior related knowledge. This makes the knowledge acquisition process a crucial starting point that connects to the other dimensions of absorptive capacity. Past research on absorptive capacity aggregates its features into a global construct to investigate its influence on firm performance or how other antecedents impact it. This study deconstructs absorptive capacity into its dimensions and focuses on the causal mechanisms by which those factors are collectively affected by entrepreneurial orientation.

Entrepreneurial Orientation

Entrepreneurial orientation refers to the strategic posture of an individual regarding issues of entrepreneurship (Covin, Lumpkin, 2011), which serves as a basis for entrepreneurial decision-making and actions (Rauch et al., 2009). It is considered an important construct in entrepreneurship, with empirical findings on the topic indicating, generally, a positive contribution to firm growth and performance (Usman, Mat, 2017; Smith, Jambulingam, 2018; Kosa et al., 2018; Okangi, 2019). Within the literature, entrepreneurial orientation is described using behaviours like innovativeness, proactiveness, competitive aggressiveness, risk-taking propensity and autonomy. However, this study emphasises four of these variables in entrepreneurial orientation research; namely, innovativeness, autonomy, risk-taking propensity and proactiveness (Rauch et al., 2009). These dimensions act as catalysts that propel entrepreneurs to leverage the acquired knowledge actively and strategically (Riaz et al., 2024).

Innovativeness refers to the individual's tendency to adopt mechanisms and creative systems that foster new products, processes, services and technologies (Lumpkin, Dess, 1996; Zhai et al., 2018). Among students, innovativeness may be evident in their affinity for innovative lecturers and their possession of high levels of creativity, which render entrepreneurship an attractive and feasible option for creative jobs (Laguía et al., 2019). Proactiveness emphasises the tendency of the individual to fashion out a strategy for the commercialisation of his or her innovations in a way that grants some competitive advantages (Lumpkin, 1996; Zhai et al., 2018). Proactive individuals are more likely to take initiative and set targets (Su, Zhang, 2020). Further, risk-taking propensity regards the tendency of the individual to initiate action amid uncertainties in exchange for some valuable return (Lumpkin, 1996; Zhai et al., 2018). Risk-taking tendency grows as the desire for success develops; hence, motivating students to make quick decisions in rugged environments with scarce information available (Al-Mamary, Alshallaqi, 2022). Autonomy provides entrepreneurs with the freedom and flexibility to develop and execute their business plans without undue constraints (Koloba, 2016). Al-Mamary and Alshallaqi (2022) found that students who scored higher on autonomy measures were more likely to perceive themselves as likely to start a business, including social enterprises.

Entrepreneurial orientation, knowledge acquisition and assimilation

Regardless of whether new knowledge is created internally or externally, it is essential for employees within an organisation to effectively understand and adopt it (Li et al., 2009). Learning and knowledge acquisition are shown to be very important in the entrepreneurship process (Ruiz-Arroyo et al., 2012). Dung et al. (2020) examined the relationship between entrepreneurial orientation, knowledge acquisition and collaborative performance in traditional smallholder agri-food value chains in an emerging economy and found that knowledge acquisition mediated this relationship. The mediating effect of knowledge acquisition in this relationship lends support to the argument that knowledge acquisition is an important starting point for the development of the other dimensions of absorptive capacity. Ruiz-Arroyo et al. (2012) found a significant positive relationship between innovation and knowledge acquisition from customers. Similarly, Becheikh (2013) emphasises that the ability of firms to acquire external knowledge and technologies increases their propensity to innovate, underscoring the importance of external knowledge sources in driving innovation.

Hock-Doepgen et al. (2021) further assert that strong knowledge acquisition processes not only keep firms aware of changes in the business environment but also enhance their alertness to potential threats, thus fostering organisational creativity and innovation. The interaction between absorptive capacity and entrepreneurial orientation is also significant. Kohtamäki et al. (2020) argued that the interplay of these two factors increases strategic agility and innovation capabilities, leading to business model innovation, firm growth, and profitability. Pinho et al. (2024) also add that firms with low absorptive capacity may struggle to identify promising market segments or react to industry trends, limiting entrepreneurial orientation's potential to enhance performance. Riaz et al. (2024) demonstrated that entrepreneurial orientation positively moderates the relationship between knowledge acquisition and entrepreneurial success by allowing entrepreneurs to better utilise their network resources and pursue more innovative opportunities. Similarly, Wahyuni and Sara (2020) found that entrepreneurial orientation indirectly enhances innovation through knowledge competence, particularly in processing customer and competitor knowledge.

Zhai et al. (2018) explored the moderating role of absorptive capacity in the relationship between entrepreneurial orientation and innovation performance, finding that firms with higher absorptive capacity can more effectively leverage entrepreneurial orientation to drive innovation. This relationship is further supported by Raisal et al. (2020), who found that absorptive capacity mediates the relationship between entrepreneurial orientation and financial performance. Sarsah et al. (2020) also found a positive relationship between entrepreneurial orientation and potential absorptive capacity (acquisition and assimilation) in manufacturing SMEs in Ghana.

Entrepreneurial orientation and knowledge transformation

Mao et al. (2021) examined the linkage between entrepreneurial orientation and realised absorptive capacities of managers of top Chinese companies. They found that entrepreneurial orientation positively impacted realised absorptive capacities, leading to the conclusion that absorptive capacity could help organisations, through the rapid absorption and transformation of knowledge, to issue innovative products that meet current market needs. Similarly, Wach et al. (2018) found a significant positive relationship between entrepreneurial orientation and how IT firms applied the acquired knowledge. Thus, an organisation that is high on entrepreneurial orientation will support the transformation of knowledge. Ha et al. (2021) examined the role of entrepreneurial orientation in the relationship between knowledge application and firm performance among leaders of SMEs in Malaysia. It was shown that entrepreneurial orientation was critical to the effective deployment of knowledge transformation.

Entrepreneurial orientation and knowledge exploitation

Lisboa et al. (2011), using data from 254 firms in Portugal, found that acquiring entirely new knowledge and skills, as well as discovering products and overseas markets, is motivated by the acceptance of risk and uncertainty, experimentation, and a forward-looking perspective. Furthermore, the study's results revealed that entrepreneurial orientation serves as a stimulus for the development of product development and overseas market-related exploitative capabilities. In a follow-up study, Lisboa et al. (2016) made an interesting finding that a firm characterised by a low propensity for risk-taking, which exhibits reluctance towards undertaking audacious initiatives, may nonetheless possess substantial capabilities for exploratory product development, provided that it concurrently adopts a proactive, future-oriented approach. They convincingly argued that a firm that is both forward-thinking and proactive in identifying, predicting, and responding promptly to forthcoming market shifts may mitigate the limitations of its conservative risk-taking stance and consequently enhance its exploratory capabilities in product development. Hou et al. (2019) also share this stance, finding a positive relationship between entrepreneurial orientation and exploitative capabilities among start-ups in China. Darwis (2022) maintains that Indonesian small and medium-sized enterprises (SMEs) should prioritise knowledge management and learning that is supported by a high level of entrepreneurial orientation. This approach is crucial for SMEs to compete effectively, maintain a long-term competitive edge, and eventually grow into larger corporations.

Conceptual framework

The reviewed studies examining the relationship between entrepreneurial orientation and various aspects of absorptive capacity have focused on the firm. However, since individuals form the foundation of organisations, it is valuable to explore this relationship at the individual level. Treating absorptive capacity as a firm-level capability hides a sufficient understanding of individuals' crucial role in absorbing new knowledge (Emre Yildiz et al., 2024). While there is a growing body of research emphasising the importance of understanding absorptive capacity at the individual level, the concept has primarily been explored at the organisational level. There is a growing interest in understanding innovation at the individual level because individuals bring innovation into practice (Lowik et al., 2017). Prior research predominantly examines absorptive capacity as an aggregate construct or its collective dimensions in linking EO to outcomes like innovation and firm performance (Makhloufi et al., 2024; Sun et al., 2023). These studies often overlook knowledge acquisition's unique mediating role between EO and subsequent absorptive capacity dimensions. As the foundational stage of absorptive capacity (Zahra, George, 2002), knowledge acquisition enables individuals and firms to capture external knowledge spurred by EO. While EO drives exploration (e.g., innovation, risk-taking), its influence on later absorptive capacity processes (assimilation, transformation, exploitation) depends first on effective knowledge acquisition.

To date, few studies have delved into the micro-foundations of individual absorptive capacity. This calls for an investigation into the subject, particularly among university undergraduates who are taking entrepreneurship courses to shape their absorptive capacity. Entrepreneurial orientation has received substantial attention in academic research due to its significant impact on organisational performance (Ibarra-Cisneros, Hernandez-Perlines, 2020). The reviewed studies indicate that there is a notable lack of research on the relationship between entrepreneurial orientation and certain dimensions of absorptive capacity, specifically knowledge assimilation and knowledge transformation. The literature has consistently demonstrated that knowledge acquisition plays a crucial role in driving innovation within firms. Thus, at the individual level, among students taking entrepreneurship programmes, the following hypotheses are proposed (see Figure 1):

H1: *Entrepreneurial orientation will significantly predict (a) knowledge acquisition, (b) knowledge assimilation, (c) knowledge exploitation and (d) knowledge transformation*

H2: *Knowledge acquisition will partially mediate the relationship between entrepreneurial orientation and knowledge assimilation.*

H3: *Knowledge acquisition will partially mediate the relationship between entrepreneurial orientation and knowledge transformation.*

H4: *Knowledge acquisition will partially mediate the relationship between entrepreneurial orientation and knowledge exploitation.*

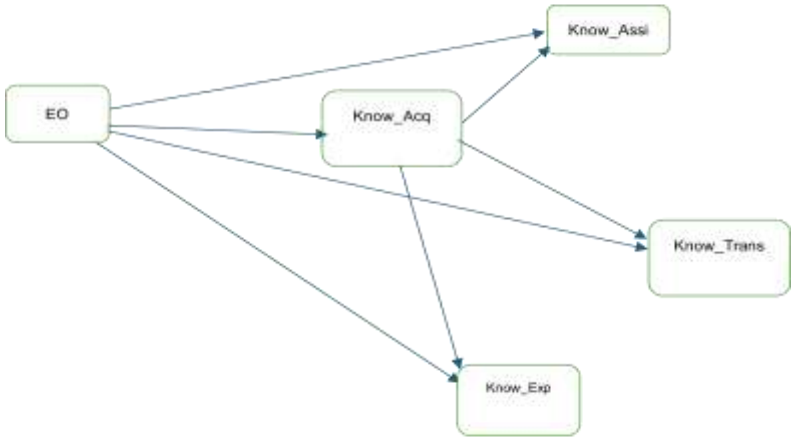

Fig. 1. Conceptual framework linking entrepreneurial orientation and individual absorptive capacity
Notes: EO – Entrepreneurial orientation; Know_Acq – Knowledge Acquisition; Know_Exp – Knowledge Exploitation; Know_Trans – Knowledge Transformation; Know_Assi – Knowledge Assimilation.

3. Methods and Materials

The study employed a quantitative research approach using a cross-sectional survey design to investigate the relationship between entrepreneurial orientation and different elements of absorptive capacity. This section describes the data sources and data collection procedure, as well as the dimension reduction and justification for the data analysis method employed.

Primary data for the study was obtained through a questionnaire administered to final-year undergraduate accounting students taking an introductory course in entrepreneurship. The belief is that the entrepreneurship mindset of these students constitutes a basis for the extent of their engagement in entrepreneurial projects. After a pre-test of the research instrument to ensure reliability and validity, the instrument was administered to a sample of 283 randomly selected students from a target population of 366, representing approximately 77 % of the target population. The items on the questionnaire were organised in three parts: first, a focus on demographic characteristics, specifically gender and age; second, data collection on student entrepreneurial orientation; and third, an investigation into students' absorptive capacity. All the materials were presented in English, the official language used in Ghana.

Entrepreneurial orientation was measured by innovativeness, proactiveness, autonomy and risk-taking propensity with 14 items on a Likert scale ranging from strongly disagree (1) to strongly agree (5). This scale was adapted from the 32-item entrepreneurial orientation scale by Gorostiaga et al. (2019). While proactiveness (I like to take initiative in almost everything I do) was measured with five items, autonomy (I try to learn new things each day) was captured with three items. Innovativeness (My goal is to have a job that is more about routine than creativity) featured four items, while risk-taking (I like to make risky decisions) was assessed with two items. The scale had a Cronbach's alpha of 0.90.

Absorptive capacity was measured using dimensions of knowledge acquisition, assimilation, transformation and exploitation with a 20-item instrument. Each dimension of absorptive capacity was measured using 5 items (e.g., "I regularly scan the external environment for new information, knowledge, or technologies" for knowledge acquisition; "I quickly recognised and understood the usefulness of new external knowledge" for knowledge assimilation; "My team was able to apply new knowledge in our practical work" for knowledge transformation; and "My team regularly reconsidered our current ideas on products, services, or processes and adapted them in accordance with new knowledge or technologies" for knowledge exploitation). Likert scale ranging from strongly disagree (1) to strongly agree (5). The Cronbach's alpha of the absorptive capacity dimensions ranged from 0.79 to .092

Partial Least Squares Structural Equation Modelling (PLS-SEM) was utilised as a data analysis method. PLS-SEM was chosen because it allowed for the estimation of a complex model that contained numerous constructs, indicator variables, and structural paths, all without imposing distributional assumptions on the data (Hair et al., 2019). Further, PLS-SEM is capable of estimating statistical models with considerably smaller sample size requirements compared to factor-based SEM methods (Sarstedt et al., 2021). The SmartPLS 4 software was employed to aid the analysis. In line with the guidelines by Hair et al. (2019) on reporting results for PLS-SEM analysis, the measurement model was first evaluated, followed by the assessment of the structural model. All the constructs used in this study were reflective. Also, this analytic approach has been used in other similar studies, and it aligns well with the study's focus (Fourie, Schlebusch, 2023).

4. Results

Descriptive Analysis

Table 1 is an overview of the distribution of the participants based on gender, age and academic level. The total sample size was 283, with males (n = 183) constituting the majority of the participants. Most of the participants belonged to the age group of 21 to 25 (n = 248) with only two participants being in the ages of 31 to 35.

Table 1. Demographic characteristics of the participants (n = 283)

Variables	Frequency	Percentage
Gender		
Male	183	64.7
Female	100	35.3
Age		
16-20	6	2.1
21-25	248	87.6
26-30	27	9.5
31-35	2	0.7

The descriptive statistics presented in Table 2 indicate that respondents rate their knowledge-related capabilities, including knowledge assimilation, acquisition, transformation, and exploitation, relatively highly, with mean scores ranging from 3.55 to 4.38. The consistency of these scores is reflected in the narrow standard deviations, indicating relatively uniform perceptions among respondents. Conversely, the dimensions of entrepreneurial orientation (autonomy, innovativeness, proactiveness and risk-taking) show higher average scores. The variability in responses for these dimensions is slightly higher, especially in innovativeness and autonomy, though still relatively moderate.

Table 2. Descriptive statistics of the study variables

Variable	Mean	Median	St.	Min	Max
Knowledge	3.99	4.00	0.73	1	5
Knowledge	3.55	3.60	0.77	1	5
Knowledge	3.88	4.00	0.72	1	5
Knowledge	3.90	4.00	0.71	1	5
Autonomy	4.38	4.67	0.72	1	5
Innovativeness	4.03	4.00	0.62	1	5
Risk taking	3.81	4.00	0.75	1	5
Proactiveness	4.38	4.67	0.72	1	5

Measurement model

Tables 3 and 4 present the results of the final measurement models for the reflective constructs. First, indicators with loadings below 0.70 were eliminated while checking the corresponding increase of the Average Variance Extracted (AVE). All the scales except entrepreneurial orientation had AVEs above the acceptable 0.50 (Garson, 2016). Although knowledge exploitation had an AVE of greater than 0.50, the loading of indicator 5 of that scale

(My team had difficulty in implementing new products and services) was very low (0.26). This was due to poor fit, possibly reflecting measurement error; hence, a decision was taken to delete it. It was also noted during the initial assessment of the entrepreneurial orientation that its AVE was 0.43 due to low indicator loadings for three items. It was observed that Items 4 (My goal is to have a job that is more about routine than creativity) (0.14), 7 (In class, I'm often the first person to propose things) (0.26) and 5 (I like to make risky decisions) (0.40) still needed clarity although they had been straight worded and did not require to be reversed before scoring. Therefore, the items were removed and this significantly enhanced the AVE (0.53).

The discriminant validity was assessed using the Heterotrait-monotrait ratio and did not exceed the threshold of 0.90 (Henseler et al., 2015). The composite reliabilities ranged from 0.84 to 0.92 and Cronbach's alphas ranged from 0.79 to 0.92. These figures were above the minimum threshold of 0.70 (Hair et al., 2019).

Table 3. Item listings, CR, AVE and outer loadings for the variables

Constructs	**Outer Loadings**				
	Knowledge Acq	Knowledge Assi	Knowledge Exp	Knowledge Trans	Entrepreneurial Orientation
Knowledge Acquisition (CR = 0.84; AVE = 0.54)					
KAcq_1	0.58				
KAcq_2	0.78				
KAcq_3	0.57				
KAcq_4	0.84				
KAcq_5	0.84				
Knowledge Assimilation (CR = 0.91 ; AVE = 0.73)					
KAss_1		0.86			
KAss_2		0.87			
KAss_3		0.85			
KAss_4		0.88			
KAss_5		0.81			
Knowledge Exploitation (CR = 0.91; AVE = 0.65)					
KExp_1			0.88		
KExp_2			0.91		
KExp_3			0.87		
KExp_4			0.91		
Knowledge Transformation (CR = 0.91; AVE = 0.64)					
KTrans_1				0.85	
KTrans_2				0.84	
KTrans_3				0.45	
KTrans_4				0.85	
KTrans_5				0.85	
Entrepreneurial Orientation (CR = 0.91; AVE = 0.54)					
Orient_1					0.65
Orient_2					0.67
Orient_3					0.68
Orient_6					0.67
Orient_8					0.71
Orient_9					0.79
Orient_10					0.68
Orient_11					0.80

Constructs	**Outer Loadings**				
	Knowledge Acq	Knowledge Assi	Knowledge Exp	Knowledge Trans	Entrepreneurial Orientation
Orient_12					0.81
Orient_13					0.78
Orient_14					0.74

Table 4. Summary of the psychometric properties of the reflective measures

	Variable	**Cronbach's α**	**Rho_a**	**Rho_c**	**AVE**	**Heterotrait-Monotrait Ratio**				
						1	**2**	**3**	**4**	**5**
1	Entrepreneurial Orientation	0.91	0.91	0.92	0.53	-	0.62	0.73	0.75	0.70
2	Knowledge Acquisition	0.79	0.84	0.93	0.54		-	0.65	0.73	0.60
3	Knowledge Assimilation	0.91	0.91	0.93	0.73			-	0.90	0.85
4	Knowledge Transformation	0.85	0.87	0.90	0.64				-	0.90
5	Knowledge Exploitation	0.92	0.92	0.94	0.80					-

Assessment of multicollinearity

To assess multicollinearity among the constructs in the path model, variance inflation factor (VIF) values were analysed (Hair et al., 2019). The analysis revealed no evidence of multicollinearity concerns since the VIF values fell between 1.00 and 1.45 (see Table 5).

Table 5. Collinearity statistics (VIF) for the mediation model

Latent Construct	**KAcq**	**KAss**	**KExp**	**KTrans**	**Orient**
K_Acq	-	1.45		-	1.45
K_Ass	-	-	1.45	-	-
K_Exp	-	-	-	-	-
K_Trans	1.45	-	-	-	1.45
Orient	1.00	1.45	1.45	-	-

Notes: K_Acq = Knowledge Acquisition; K_Ass = Knowledge Assimilation; K_Exp = Knowledge Experience; K_Trans = Knowledge Transformation

Assessment of model fit, predictive ability and predictive relevance of model

The standardised root mean square residual (SRMR) was employed to evaluate the path model's fit. With an SRMR value of 0.07, the model demonstrated a good fit because it was below the recommended threshold of ≤ 0.10 (Hair et al., 2019). In assessing the structural model, the coefficient of determination (R^2), which explains the variance in the hypothesised relationships, was also used. Additionally, the model's predictive accuracy was assessed using Q^2. This metric was computed using blindfolding, a technique that systematically omits individual data points, replaces them with the data's mean, and recalculates the model parameters (Rigdon, 2012). Q^2 values greater than zero indicate that the model has predictive relevance, whereas those less than zero indicate a lack of it (Sarstedt et al., 2023). The results of the R^2 and Q^2 are shown in Table 6.

The significance levels of the model were assessed with the path coefficients and the p-values. The path diagram and the path estimates are shown in Figure 2 and Table 7, respectively. The first hypothesis postulated that: entrepreneurial orientation will positively predict (a) knowledge acquisition, (b) knowledge assimilation, (c) knowledge exploitation and (d) knowledge transformation. The results from the model show that entrepreneurial orientation had a significant direct effect on knowledge acquisition (β = 0.56, p = 0.001), knowledge assimilation (β = 0.48, p = 0.001), knowledge exploitation (β = 0.48, p = 0.001), and knowledge transformation (β = 0.48, p = 0.001), This means that hypothesis 1 was supported. The results show that entrepreneurial orientation could increase the absorptive capacity (knowledge acquisition, knowledge assimilation, knowledge exploitation and knowledge transformation) of students.

Table 6. Results of the R^2 and Q^2

Variables	R2 values	Predictive power (Q2)
Knowledge Acquisition	0.31	0.31
Knowledge Assimilation	0.52	0.43
Knowledge Exploitation	0.47	0.41
Knowledge Transformation	0.53	0.44

Hypotheses 2, 3 and 4 tested the potential of knowledge acquisition as a mediating mechanism in the relationship between (a) entrepreneurial orientation and knowledge assimilation, (b) entrepreneurial orientation and knowledge exploitation, and (c) entrepreneurial orientation and knowledge transformation, respectively. To assess the mediating role of knowledge acquisition in the relationship between entrepreneurial orientation and the other dimensions of absorptive capacity, a bootstrapping procedure with bias-corrected intervals and 5,000 resamples was performed (Hair et al., 2019).

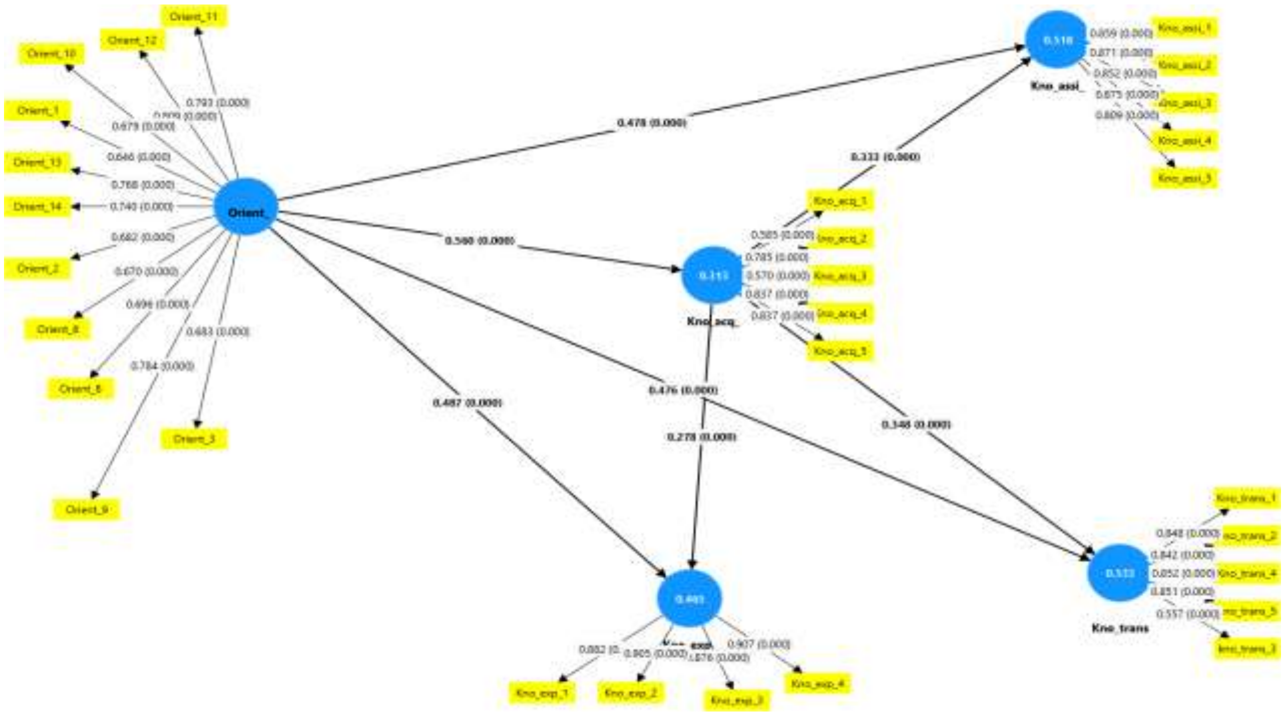

Fig. 2. The structural analysis showing the path estimates of the hypothesised relationships

The results are presented in Table 7. Mediation analysis was conducted to examine the mediating role of knowledge acquisition in the relationship between entrepreneurial orientation and knowledge assimilation. Results (Table 7) indicated a significant direct effect of entrepreneurial orientation on knowledge assimilation (β = 0.48, p < 0.001). This relationship was still significant, after introducing knowledge acquisition as a mediator (β = 0.19, p < 0.001).

The combined direct and indirect effects (total effect) were also significant (β = 0.67, p < 0.001). These findings support a partial mediation model, confirming Hypothesis 2.

Table 7. Summary of the psychometric properties of the reflective measures

Paths	**Path Coefficient (95 % CI)**	***SD***	***t*-value**	f^2
Direct effect (without mediator)				
EO -> K_Acq	0.56*** (0.47, 0.65)	0.05	12.06	0.45
EO -> K_Assi	0.48*** (0.33, 0.60)	0.07	7.00	0.32
EO -> K_Exp	0.48*** (0.34, 0.60)	0.07	7.18	0.29
EO -> K_Trans	0.48*** (0.33, 0.61)	0.07	6.89	0.34
Direct Effect (with mediator)				
EO -> K_Assi	0.19*** (0.12, 0.26)	0.04	5.38	
EO -> K_Exp	0.16*** (0.01, 0.23)	0.04	4.58	
EO -> K_Trans	0.20*** (0.13, 0.27)	0.04	5.26	
Specific Indirect Effect				
EO -> K_Acq -> K_Assi	0.66*** (0.55, 0.76)	0.05	12.20	
EO -> K_Acq -> K_Exp	0.64*** (0.54, 0.73)	0.05	12.68	
EO -> K_Acq -> K_Trans	0.67*** (0.56, 0.76)	0.05	13.19	

Notes: ***p < .001 EO = Entrepreneurial orientation; K_Acq = Knowledge acquisition; K_Assi = Knowledge assimilation; K_Exp = Knowledge exploitation; K_Trans = Knowledge transformation

Hypothesis 3 also supported the mediation effect of knowledge acquisition in the relationship between entrepreneurial orientation and knowledge exploitation. Both the direct effect (β = 0.49, p < 0.001) and the indirect effect (β = 0.16, p < 0.001) were significant, indicating partial mediation. Lastly, hypothesis 4 was supported by the presence of both significant direct (β = 0.48, p < 0.001) and indirect effects (β = 0.20, p < 0.001). Based on the confirmation of all the hypotheses, we conclude that knowledge acquisition serves as a mechanism through which students' entrepreneurial orientation can influence the other components of absorptive capacity.

5. Discussion

The relevance of this study stems from the desire to empower university graduates to seek and use knowledge gained from extra-curricular activities to improve their employability by investigating the relationship between 1) entrepreneurial orientation and knowledge acquisition and 2) the mediating role of knowledge acquisition in the relationship between entrepreneurial orientation and knowledge assimilation, transformation and exploitation. Findings from the study revealed a significant positive relationship between entrepreneurial orientation and knowledge acquisition as well as a direct and indirect relationship, mediated by knowledge acquisition, between entrepreneurial orientation and knowledge assimilation, transformation and exploitation. These results mirror findings observed by Mao et al. (2021) on the positive linkage between entrepreneurial orientation and both potential and realised absorptive capacity at the firm level.

As highlighted earlier in the literature, potential absorptive capacity comprises knowledge acquisition and assimilation, while realised absorptive capacity encompasses knowledge transformation and exploitation. Wach et al. (2018) also found a significant positive relationship between entrepreneurial orientation and knowledge acquisition in IT firms in Poland. Additionally, Ha et al. (2021) discovered that entrepreneurial orientation was critical to the effective deployment of knowledge transformation, while Hou et al. (2019) identified a positive relationship between entrepreneurial orientation and the exploitative capabilities of start-ups in China. It is interesting to note that knowledge acquisition recorded the lowest mean score compared to other elements of absorptive capacity among participants in our study. Having established the important role of knowledge acquisition in fostering absorptive capacity, this finding could imply limitations to knowledge assimilation, transformation and exploitation as respondents may be relying only on what they learn in class.

As explained in the background to the study, there are constraints with the traditional classroom and its suitability for fostering soft skill development, especially in public universities with resource constraints. This comparatively low engagement of respondents in knowledge acquisition may be due to their low risk-taking propensity, as Lisboa et al. (2011) highlight the crucial role that acceptance of risk and uncertainty plays in motivating the acquisition of new knowledge. In this study, respondents' risk-taking propensity was the least contributing variable to entrepreneurial orientation. Nevertheless, Lisboa et al. (2016) also argue that proactivity could mitigate the limitations of a conservative risk-taking stance and contribute substantially to exploratory capabilities in firm product development. This may be a reason for the above-average values observed for knowledge transformation and exploitation in this study since our findings showed that proactivity and autonomy contributed most to the entrepreneurial orientation of respondents.

6. Implications for Management Education

Findings from this study suggest that entrepreneurship education is essential for all students, regardless of their academic programme. As students improve their entrepreneurial orientation, they are likely to develop a greater desire and capacity to seek new knowledge beyond what they learn in class, thereby preparing themselves more effectively for the world of work. Higher education institutions must start exploring creative ways of embedding an entrepreneurial mindset training into the curriculum without overburdening students to create a fine balance between technical and 21st-century skills training. This will require innovative pedagogies that allow for the scalability of entrepreneurship education opportunities without compromising quality. Based on the study's results, we can also argue that management educators should intentionally create more opportunities for knowledge acquisition in their curricula and connect these to assimilation, transformation, and exploitation activities throughout the course. Effective curricular re-designing and implementing innovative pedagogies that align with experiential learning may require additional capacity building for both students and faculty.

7. Conclusion

The study concludes that entrepreneurial orientation is crucial to students' ability to spot opportunities for employability skill development through extra-curricular activities. The study also concludes that the effectiveness of knowledge assimilation, transformation and exploitation will depend, to some extent, on the strength of knowledge acquisition; therefore, higher education institutions need to be intentional in incentivising knowledge acquisition outside regular academic work. Policies that make participation in relevant extra-curricular activities easier, like freeing up time for these kinds of engagements so that they do not conflict with regular academic work, could be useful in this regard. Additionally, higher education institutions could explore the possibility of including participation in extra-curricular activities in the computation of cumulative grade point averages.

8. Strengths and Limitations

Despite the contributions of this study to management education, there are limitations that should be acknowledged. First, the study's focus on accounting students only could be seen as a limitation, considering that accounting knowledge, its form and how it is used could vary significantly from knowledge types, forms and use in other subject areas. Secondly, findings from this study may differ for students at different academic levels, although this was not considered. Additionally, convenience sampling restricts the generalizability of the findings and limits the external validity of the study. Future studies should include students in multiple subject areas and academic levels and consider alternative sampling methods to enhance the representativeness of the results. It will be interesting to understand how other characteristics aside from age and gender, like prior experiences, alter the findings of this study in future investigations. Due to software constraints (expiration of the SmartPLS trial version), measurement invariance for composite models analysis could not be conducted. While this does not affect the estimation of path coefficients, future studies should confirm measurement invariance across groups (if applicable) to ensure robust comparisons.

9. Declarations

Ethics approval and consent to participate

The study received the requisite institutional approval, and all participants provided informed consent for their participation in this study.

Consent for publication

Not applicable.

Availability of data and materials

All data are available in a password-protected file maintained by the researcher.

Conflict of interest statement

The author declares no conflict of interest.

Funding

This research received no external funding. However, the author sincerely thanks the Centre for Behaviour and Wellness Advocacy, Ghana, for providing financial support through the Institutional Open Access Publication Fund.

Authors' contribution

K.N.A.A. conceptualised, initiated, implemented, and wrote the paper.

Acknowledgements

The author acknowledges the contributions of participants who made time to complete the data collection instrument.

Author's ORCID

Keren Naa Abeka Arthur https://orcid.org/0000-0002-9904-4323

References

Adner, Helfat, 2003 – *Adner, R., Helfat, C.E.* (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*. 24(10): 1011-1025. DOI: https://doi.10.1002/smj.331

Adomdza et al., 2003 – *Adomdza, G., Asiedu, M., Sarfo, J.O.* (2022). Impact of entrepreneurial learning on entrepreneurial self-efficacy and intention: Role of a design-based entrepreneurship education. *European Journal of Contemporary Education*. 11(3): 674-685. DOI: https://doi.10.13187/ejced.2022.3.674.

Akdur, 2022 – *Akdur, D.* (2022). Analysis of Software Engineering Skills Gap in the Industry. *ACM Transactions on Computing Education*. 23(1). DOI: https://doi.org/10.1145/3567837

Al-Mamary, Alshallaqi 2022 – *Al-Mamary, Y.H., Alshallaqi, M.* (2022). Impact of autonomy, innovativeness, risk-taking, proactiveness, and competitive aggressiveness on students' intention to start a new venture. *Journal of Innovation and Knowledge*. 7(4): 100239. DOI: https://doi.org/10.1016/j.jik.2022.100239

Sarsah et al., 2020 – *Sarsah, A.S., Tian, H., Dogbe, C.S.K., Bamfo, B.A., Pomegbe, W.W.K.* (2020). Effect of entrepreneurial orientation on radical innovation performance among manufacturing SMEs: The mediating role of absorptive capacity. *Journal of Strategy and Management*. 13(4): 551-570. DOI: https://doi.org/10.1108/JSMA-03-2020-0053

Ayala-Gaytán, 2024 – *Ayala-Gaytán, E., Villasana, M., Naranjo-Priego, E.E.* (2024). University entrepreneurial ecosystems and graduate entrepreneurship. *Journal of Entrepreneurship*. 33(1): 88-117. DOI: https://doi.org/10.1177/09713557241233905

Becheikh, 2013 – *Becheikh, N.* (2013). The impact of knowledge acquisition and absorptive capacity on technological innova-tions in developing countries: Evidence from Egyptian small and medium-sized enterprises. *Journal of African Business*. 14(3): 127-140. DOI: https://doi.org/10.1080/15228916.2013.843997

Chapman et al., 2023 – *Chapman, G., Emambocus, W., Obembe, D.* (2023). Higher education student motivations for extra-curricular activities: Evidence from UK universities. *Journal of Education and Work*. 36(2): 138-152. DOI: https://doi.org/10.1080/13639080.2023.2167955

Cohen et al., 1990 – *Cohen, W.M., Levinthal, D.A.* (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*. 35(1): 128-152.

Darwis, 2022 – *Darwis, G.* (2022). Accelerated transformation of Indonesian SME's: Embracing entrepreneurial orientation and innovation on achieving dynamic capability to increase competitiveness. In *Borderless Communities & Nations with Borders: Challenges of Globalistion*, February 2017.

Dung et al., 2020 – *Dung, T.Q., Bonney, L.B., Adhikari, R.P., Miles, M.P.* (2020). Entrepreneurial orientation, knowledge ac-quisition and collaborative performance in agri-food value-chains in emerging markets. *Supply Chain Management*. 25(5): 521-533. DOI: https://doi.org/10.1108/SCM-09-2019-0327

Dhengiz, Niesten 2020 – *Dzhengiz, T., Niesten, E.* (2020). Competences for environmental sustainability: A systematic review on the impact of absorptive capacity and capabilities. *Journal of Business Ethics*. 162(4): 881-906. DOI: https://doi.org/10.1007/s10551-019-04360-z

Fajaryati et al., 2020 – *Fajaryati, N., Budiyono, B., Akhyar, M., Wiranto, W.* (2020). The employability skills needed to face the demands of work in the future: Systematic literature reviews. *Open Engineering*. 10(1): 595-603. DOI: https://doi.org/10.1515/eng-2020-0072

Fourie, Schlebusch, 2023 – *Fourie, M., Schlebusch, G.* (2023). A Cognitive Stance to Enhance Learner Information Processing Ability in the Classroom: Structural Equation Modelling Approach. *Journal of Advocacy, Research and Education*. 10(1): 18-31.

Garson, 2016 – *Garson, G.D.* (2016). *Partial Least Squares. Regression and Structural Equation Models*. Statistical Publishing Associates. DOI: https://doi.org/1626380392

Gluch et al., 2009 – *Gluch, P., Gustafsson, M., Thuvander, L.* (2009). An absorptive capacity model for green innovation and performance in the construction industry. *Construction Management and Economics*. 27(5): 451-464. DOI: https://doi.org/10.1080/01446190902896645

Gorostiae et al., 2019 – *Gorostiaga, A., Aliri, J., Ulacia, I., Soroa, G., Balluerka, N., Aritzeta, A., Muela, A.* (2019). Assessment of entrepreneurial orientation in vocational training students: Development of a new scale and relationships with self-efficacy and personal initiative. *Frontiers in Psychology*. 10(MAY): 1-10. DOI: https://doi.org/10.3389/fpsyg.2019.01125

Guerrero et al., 2020 – *Guerrero, M., Urbano, D., Gajón, E.* (2020). Entrepreneurial university ecosystems and graduates' career patterns: Do entrepreneurship education programmemes and university business incubators matter? *Journal of Management Development*. 39(5): 753-775. DOI: https://doi.org/10.1108/JMD-10-2019-0439

Ha et al., 2021 – *Ha, S.T., Lo, M.C., Suaidi, M.K., Mohamad, A.A., Razak, Z.B.* (2021). Knowledge management pro-cess, entrepreneurial orientation and performance in SMEs: Evidence from an emerging economy. *Sustainability* (Switzerland). 13(17). DOI: https://doi.org/10.3390/su13179791

Hair et al., 2019 – *Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M.* (2019). When to use and how to report the results of PLS-SEM. *European Business Review*. 31(1): 2-24. DOI: https://doi.org/10.1108/EBR-11-2018-0203

Henseler et al., 2015 – *Henseler, J., Ringle, C.M., Sarstedt, M.* (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*. 43(1): 115-135. DOI: https://doi.org/10.1007/s11747-014-0403-8

Hock-Doepgen et al., 2021 – *Hock-Doepgen, M., Clauss, T., Kraus, S., Cheng, C.F.* (2021). Knowledge management capabilities and or-ganizational risk-taking for business model innovation in SMEs. *Journal of Business Research*. 130(2020): 683-697. DOI: https://doi.org/10.1016/j.jbusres.2019.12.001

Junni, Sarala, 2013 – *Junni, P., Sarala, R.M.* (2013). The role of absorptive capacity in acquisition knowledge transfer. *Thunderbird International Business Review*. 55(4): 419-438. DOI: https://doi.org/10.1002/tie.21554

Kaiser, 2019 – *Kaiser, S.K.* (2019). Employer reports of skills gaps in the workforce (Issue August). University of Lincoln, Ne-braska.

Kohtamäki et al., 2020 – *Kohtamäki, M., Heimonen, J., Sjödin, D., Heikkilä, V.* (2020). Strategic agility in innovation: Unpacking the interaction between entrepreneurial orientation and absorptive capacity by using practice theory. *Journal of Business Research*. 118(June): 12-25. DOI: https://doi.org/10.1016/j.jbusres.2020.06.029

Koloba, 2016 – *Koloba, H.A.* (2016). Investigating generation Y students' entrepreneurial autonomy: A comparison of gen-der and race. *International Journal of Business and Management Studies*. 8(1): 185-201.

Laguía et al., 2019 – *Laguía, A., Moriano, J.A., Gorgievski, M.J.* (2019). A psychosocial study of self-perceived creativity and entrepreneurial intentions in a sample of university students. *Thinking Skills and Creativity*. 31(October 2017): 44-57. DOI: https://doi.org/10.1016/j.tsc.2018.11.004

Lau et al., 2014 – *Lau, H.H., Hsu, H.Y., Acosta, S., Hsu, T.L.* (2014). Impact of participation in extra-curricular activities dur-ing college on graduate employability: an empirical study of graduates of Taiwanese business schools. *Educational Studies*. 40(1): 26-47. DOI: https://doi.org/10.1080/03055698.2013.830244

Li et al., 2009 – *Li, Y., Liu, X., Wang, L., Li, M.* (2009). How entrepreneurial orientation moderates the effects of knowledge management on innovation. *Systems Research and Behavioral Science*. 26(6): 645-660. DOI: https://doi.org/10.1002/sres.980

Lisboa et al., 2011 – *Lisboa, A., Skarmeas, D., Lages, C.* (2011). Entrepreneurial orientation, exploitative and explorative capa-bilities, and performance outcomes in export markets: A resource-based approach. *Industrial Marketing Management*. 40(8): 1274-1284. DOI: https://doi.org/10.1016/j.indmarman.2011.10.013

Lisboa et al., 2016 – *Lisboa, A., Skarmeas, D., Saridakis, C.* (2016). Entrepreneurial orientation pathways to performance: A fuzzy-set analysis. *Journal of Business Research*. 69(4): 1319-1324. DOI: https://doi.org/10.1016/j.jbusres.2015.10.099

Makhloufi et al., 2024 – *Makhloufi, L., Laghouag, A.A., Ali Sahli, A.* (2024). Mediating effect of absorptive capacity on the relationship between knowledge sharing and entrepreneurial orientation and the moderating role of opportunity recognition. *Journal of Research in Marketing and Entrepreneurship*. 26(2): 415-439. DOI: https://doi.org/10.1108/JRME-07-2023-0123

Mao et al., 2021 – *Mao, H., Wang, Z., Yi, L.* (2021). Does entrepreneurial orientation lead to successful sustainable innovation? The evidence from Chinese environmentally friendly companies. *Sustainability*. 13(18). DOI: https://doi.org/10.3390/su131810294

Mawson et al., 2024 – *Mawson, S., Casulli, L., Simmons, E.L.* (2023). A competence development approach for entrepreneurial mindset in entrepreneurship education. *Entrepreneurship Education and Pedagogy*. 6(3): 481-501. DOI: https://doi.org/10.1177/25151274221143146

Pacheco et al., 2023 – *Pacheco, A., Ferreira, J.J., Simões, J.* (2023). The Role of higher education institutions and entrepreneurial orientation in the creation and development of academic spinoffs. *Journal of Entrepreneurship*. 32(3): 495-524. DOI: https://doi.org/10.1177/09713557231210674

Palsokar, Tajne, 2018 – *Palsokar, G., Tajne, M.* (2018). A study on the perceived gap in between industry and academia with reference to the curriculum of post-graduate courses in pharmaceutical sciences in India. *Indian Journal of Pharmaceutical Education and Research*. 52(1): 10-20. DOI: https://doi.org/10.5530/ijper.52.1.2

Pinho et al., 2024 – *Pinho, P.H.S., de Sousa Filho, J.M., de Souza Lessa, B., Sousa Costa, J.* (2024). Absorptive capacity, entrepreneurial orientation and organizational performance in state-owned companies. *International Journal of Public Sector Management*. DOI: https://doi.org/10.1108/IJPSM-12-2023-0372

Raisal et al., 2020 – *Raisal, I., Tarofder, A.K., Ilmudeen, A.* (2020). The nexus between entrepreneurial orientation and performance: Enabling roles of absorptive capacity. *World Journal of Entrepreneurship, Management and Sustainable Development*. 17(2): 153-166. DOI: https://doi.org/10.1108/WJEMSD-06-2019-0041

Rakowska, de Juana-Espinosa, 2021 – *Rakowska, A., de Juana-Espinosa, S.* (2021). Ready for the future? Employability skills and competencies in the twenty-first century: The view of international experts. *Human Systems Management*. 40(5): 669-684. DOI: https://doi.org/10.3233/HSM-201118

Riaz et al., 2024 – *Riaz, S., Yanqing, W., Ishaq, M.I., Raza, A., Siddiqui, R.A.* (2024). Role of social networks and entrepreneurial success: Understanding the dynamics of knowledge acquisition and green entrepreneurial orientation. *Journal of Cleaner Production*. 468(June), 143065. DOI: https://doi.org/10.1016/j.jclepro.2024.143065

Rigdon, 2012 – *Rigdon, E.E.* (2012). Rethinking Partial Least Squares Path Modeling: In Praise of Simple Methods. *Long Range Planning*. 45(5–6): 341-358. DOI: https://doi.org/10.1016/j.lrp.2012.09.010

Ruiz-Arroyo et al., 2012 – *Ruiz-Arroyo, M., del Mar Fuentes-Fuentes, M., Bojica, A.M., Rodríguez-Ariza, L.* (2012). Innovativeness and performance in women-owned small firms: The role of knowledge acquisition. *Journal of Small Business and Entrepreneurship*. 25(3): 307-326. DOI: https://doi.org/10.1080/08276331.2012.10593575

Sarstedt et al., 2023 – *Sarstedt, M., Hair, J.F., Ringle, C.M.* (2023). "PLS-SEM: indeed a silver bullet"–retrospective observations and recent advances. *Journal of Marketing Theory and Practice*. 31(3): 261-275. DOI: https://doi.org/10.1080/10696679.2022.2056488

Sarstedt et al., 2021 – *Sarstedt, M., Ringle, C.M., Hair, J.F.* (2021). Partial Least Squares Structural Equation Modeling. In *Handbook of Market Research* (Issue July, pp. 1–47). Springer International Publishing. DOI: https://doi.org/10.1007/978-3-319-05542-8_15-2

Su, Zhang, 2020 – *Su, F., Zhang, J.* (2020). Proactive personality and innovative behavior: A moderated mediation model. *Social Behavior and Personality*. 48(3). DOI: https://doi.org/10.2224/SBP.8622

Sun et al., 2023 – *Sun, W., Hou, X., Liang, L., Bi, X.* (2023). Many roads lead to Rome: How improvisation and absorptive capacity affect entrepreneurial orientation and new venture performance relationship. *PLoS ONE*. 18(3 March): 1-19. DOI: https://doi.org/10.1371/journal.pone.0281456

Tian, Soo, 2018 – *Tian, A.W., Soo, C.* (2018). Enriching individual absorptive capacity. *Personnel Review*. 47(5): 1121-1137. DOI: https://doi.org/10.1108/PR-04-2017-0110

Virtanen et al., 2022 – *Virtanen, A., Lauritsalo, K., Mäkinen, T., Hurskainen, H., Tynjälä, P.* (2022). The role of positive atmosphere on learning generic skills in higher education –Experiences of physical education students. *Frontiers in Education*. 7(July): 1-9. DOI: https://doi.org/10.3389/feduc.2022.886139

Virtanen, Tynjälä, 2019 – *Virtanen, A., Tynjälä, P.* (2019). Factors explaining the learning of generic skills: A study of university students' experiences. *Teaching in Higher Education*. 24(7): 880-894. DOI: https://doi.org/10.1080/13562517.2018.1515195

Wach et al., 2018 – Wach, K., Glodowska, A., Maciejewski, M. (2018). Entrepreneurial orientation, knowledge utilization and internationalization of firms. *Sustainability*. 10(12). DOI: https://doi.org/10.3390/su10124711

Wahyuni, Sara, 2020 – *Wahyuni, N.M., Sara, I.M.* (2020). The effect of entrepreneurial orientation variables on business performance in the SME industry context. *Journal of Workplace Learning*. 32(1): 35-62. DOI: https://doi.org/10.1108/JWL-03-2019-0033

Zahra, George, 2002 – *Zahra, S.A., George, G.* (2002). Absorptive capacity: A review, reconceptualization, and extension. *The Academy of Management*. 27(2): 185-203.

Zhai et al., 2018 – *Zhai, Y.M., Sun, W.Q., Tsai, S.B., Wang,Z., Zhao,Y., Chen, Q.* (2018). An empirical study on entrepreneurial orientation, absorptive capacity, and SMEs' innovation performance: A sustainable perspective. *Sustainability*. 10(2). DOI: https://doi.org/10.3390/su10020314

Zobel, 2017 – *Zobel, A.K.* (2017). Benefiting from open innovation: A multidimensional model of absorptive capacity. *Journal of Product Innovation Management*. 34(3): 269-288. https://doi.org/10.1111/jpim.12361

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 33-45

DOI: 10.13187/jare.2025.1.33

Journal homepage:
http://kadint.net/our-journal.html

Financial Capabilities and Their Relationship with Financial Well-being: Are There Gender Differences?

Milka Escalera-Chávez [a], Esmeralda Tejada-Peña [b], Arturo García-Santillán [c, d, *]

[a] Universidad Autónoma de San Luis Potosí, San Luis Potosí, Mexico
[b] Tecnológico Nacional de México, Tuxtepec Campus, Oaxaca, Mexico
[c] Tecnológico Nacional de México/ Sede ITSM, Mexico City, Mexico
[d] UCC Business School at Cristóbal Colón University, Veracruz, Mexico

Abstract

The objective of this study was to explore the relationship between financial capabilities and financial well-being, as well as to determine whether this relationship is moderated by the variable of gender. This study utilised a quantitative, correlational, and predictive design with a cross-sectional approach, where data were collected at a single point in time. The sample consisted of 345 participants over the age of 18, preferably from the workforce and higher education students, selected through a non-probability self-selection sampling method. Data were obtained through an online questionnaire and analysed using the PROCESS macro in SPSS, specifically Hayes' Model 1, to assess the moderation of gender in the relationship between financial capabilities (X) and financial well-being (Y). The analysis revealed that, overall, financial capabilities have a significant and positive impact on financial well-being, with this relationship being particularly relevant for participants of both genders. However, the results indicated that gender does not exert a significant moderating influence on this relationship, as the interaction term between financial capabilities and gender did not reach an adequate level of significance (p=0.069). Despite this, it was observed that women tend to report higher financial well-being as their financial capabilities increase, compared to men. This difference in the relationship between financial capabilities and well-being was significant when analysing the conditional effects of gender. Through this study, it is concluded that financial capabilities are a key predictor of financial well-being, but gender does not significantly moderate this relationship. Nevertheless, the influence of gender on the perception of financial well-being suggests that social or cultural factors might be intervening, which opens a space for future research to explore how other variables may affect the relationship between these two dimensions. Furthermore, the findings underscore the importance of promoting financial education as a vital factor in enhancing the financial well-being of all individuals, regardless of gender.

Keywords: Financial Education, Financial well-being, Financial Capabilities, Gender.

1. Introduction

Financial education is crucial for economic well-being, enabling individuals to make informed decisions about their finances. The lack of financial education can lead to suboptimal

*Corresponding author
E-mail addresses: agarcias@ucc.mx (A. García-Santillán)
Received: 24 April 2024 2024 Revised: 12 August 2024; 10 January 2025 Accepted: 12 January 2025
Published: 30 April 2025

decisions in key areas such as saving, investing, and debt management, directly impacting financial security (García-Santillán, 2024; Lusardi, Mitchell, 2014). In this context, financial capability is the ability to manage economic resources effectively, which is closely linked to financial well-being. According to Brüggen et al. (2017), financial well-being refers to an individual's perception of their desired standard of living and future financial freedom derived from proper management of financial resources. Gender differences play an important role in this area (del Carmen Briano-Turrent et al., 2024). Research has shown that women tend to be more conservative in their financial decisions, showing less confidence in their financial knowledge compared to men (Joo, Grable, 2004). This lack of confidence and a greater reluctance to take risks can limit women's ability to accumulate wealth and make strategic investment decisions, directly impacting their financial well-being. Furthermore, according to the study by Gignac et al. (2024), women with high financial literacy and homeownership have significantly higher financial well-being, as they are able to avoid over-indebtedness and manage their resources more effectively.

In this sense, financial knowledge and capabilities are crucial to individuals' well-being. A longitudinal study by Xiao et al. (2024) reveals that financial capability indices, which include both financial knowledge and desirable financial behaviors, are positively related to financial well-being over time. This highlights the importance of both men and women improving their financial capability in order to manage their finances better and achieve sustainable financial well-being. Financial advice also plays a key role in economic decision-making. As shown in the works of Agarwal et al. (2009) and Lusardi and Mitchell (2011a, 2011b), people with greater financial knowledge are more likely to seek external advice and achieve better financial outcomes. However, financial literacy is essential to effectively take advantage of this advice. Due to their lower financial literacy, women may face barriers to accessing recommendations from financial advisors, which limits their ability to improve their financial well-being.

Finally, financial stress negatively affects individuals' economic well-being. According to Kelley et al. (2023), fluctuations in financial stress during the pandemic had a profound impact on family relationships and financial behaviors, exacerbating economic difficulties. Improving financial education and stress management is crucial for mitigating these effects and enhancing financial well-being, particularly among individuals with limited educational or financial resources.

Preliminary Hypothesis

Considering that financial capabilities significantly influence financial well-being, as greater financial knowledge and skills contribute to better resource management and greater long-term economic security, it is hypothesised that women, due to lower financial literacy and higher risk aversion, experience lower financial well-being compared to men. This hypothesis highlights the need for specific educational programmes that address these gender differences. Thus, the following research question: Under what circumstances does a causal relationship exist between well-being and financial capabilities? That is, does the gender of the participants moderate the causal relationship between well-being and financial capabilities? Therefore, the following hypothesis is proposed: H1: *The gender of the participants will moderate the relationship between their financial capability and financial well-being, such that women with higher financial capability will have greater financial well-being compared to men.*

2. Review of Literature

Based on the key variables that form the core of the research questions, objectives, and hypotheses to be tested in this study, which are represented in the conceptual model of the empirical study described in Figure 1, the following is a theoretical analysis of the following concepts: financial capabilities, financial well-being, and gender differences.

Financial capabilities and financial well-being

In the field of financial well-being, it is essential to establish a clear definition that allows us to understand its scope and origin. According to Brüggen et al. (2017), financial well-being is an individual's perception of the desired standard of living and future financial freedom. This well-being has its roots in the proper management of personal financial resources, which is closely linked to individuals' financial capability. While the relationship between financial capability and financial well-being has been widely researched, few studies have adopted a longitudinal approach with long-term national data. Xiao et al. (2024) addressed this gap by utilising data from five waves of the National Financial Capability Study (NFCS) between 2009 and 2021, revealing a positive relationship between financial capability indices and financial well-being, with a focus on the significance of subjective financial knowledge and positive financial behaviors. Abdul et al. (2024) explored how parental financial socialisation strategies, especially with daughters, influence the financial well-being of Generation Z. Additionally, Gignac et al. (2024) investigated the impact of homeownership on the financial well-being of older adults in Australia, finding that combining homeownership with high financial literacy enhances financial well-being by reducing the risk of over-indebtedness.

In terms of public health approaches, Nykiforuk et al. (2023) proposed strategies to mitigate financial strain from the COVID-19 pandemic, which would help reduce inequalities in financial health. Globally, El Anshasy et al. (2023) found that negative perceptions of financial well-being could promote migration, particularly among those with a pessimistic view of the future economic outlook. This finding aligns with the work of Morrissey et al. (2023), who demonstrated that childhood economic hardship has a negative impact on mental well-being in adulthood, particularly during midlife. Karthika et al. (2023) noted that financial well-being is dependent on pension systems and access to healthcare services in old age. In different contexts, other studies also address financial well-being. For example, Nasr et al. (2024) documented how the economic crisis in Lebanon profoundly affected the well-being of university students, resulting in financial stress. Furthermore, cultural differences in understanding financial well-being highlighted the need to adapt measurement tools to these contexts (Sollis et al., 2024).

The pandemic crisis brought significant visibility to financial stress, as evidenced by Kelley et al. (2023), who demonstrated how the variability of financial stress during the pandemic affected both family relationships and economic behaviour. Zhang and Fan (2024) explored how excessive use of fintechs can negatively affect both financial behaviour and well-being. Regarding gender, Hasan et al. (2024) analysed how social class and gender influence financial well-being in Bangladesh, concluding that health is the primary determinant of this well-being, followed by financial status. Mundi et al. (2024) find that retirees with fixed pensions and high social capital enjoy greater financial well-being in India. Kim and Lee (2024) investigated how student loans in the U.S. affected financial well-being during the pandemic, noting an increase in financial anxiety and payment delinquency.

On the other hand, Birkenmaier et al. (2023) suggested that having a positive perception of the financial situation can counteract the adverse effects of a low credit score, favouring sustainable financial well-being. In this context, the adoption of Industry 4.0 technologies appears to have a positive impact on financial well-being, as indicated in a study by Wan Ismail et al. (2024), which examined how this adoption affects employees' social and financial well-being in Malaysia. Additionally, Gafoor and Amilan (2024) highlighted how fintech adoption improved both financial capability and the well-being of people with disabilities, facilitating access to financial services and emphasising the fundamental role of financial knowledge. Regarding specific socio-economic groups, Rahman et al. (2021) analysed financial well-being in the B40 group in Malaysia, concluding that improving financial education and managing stress are essential to enhancing this group's financial well-being. Algarni et al. (2024) emphasised the crucial role of parental financial socialisation in the well-being of young Saudis. Dhiraj et al. (2023) found that financial stress in the tourism sector in India is inversely related to employees' financial well-being, suggesting that improving stress management could increase financial quality of life. Similarly, Bashir et al. (2024) investigated the impact of financial well-being on labour productivity, finding more pronounced effects in men than in women. Finally, She et al. (2023) suggested that greater clarity in financial goals and better knowledge contribute positively to financial well-being among Chinese millennials.

All these studies highlighted the importance of financial education, stress reduction, and access to new technologies as essential factors for improving financial well-being. On the other hand, several studies supported the hypothesis that financial capabilities significantly impact financial well-being. For example, Xiao et al. (2024) demonstrated a positive relationship between financial capability indices and financial well-being over time, emphasising the crucial role of financial knowledge and appropriate financial behaviors. Similarly, Gignac et al. (2024) found that combining financial literacy and homeownership improved financial well-being, further emphasising the importance of financial capabilities. Likewise, Zhang and Fan (2024) suggested that financial literacy acts as a mediator between Fintech use and financial well-being, indicating that good financial knowledge is essential for improving well-being. In agreement, Hasan et al.

(2024) argued that financial capabilities are key factors in achieving well-being, as they influence the proper management of personal finances.

Finally, Kim and Lee (2024) reveal that a lack of financial skills, as observed among student loan borrowers, increases financial anxiety and deteriorates financial well-being, thereby reinforcing the relationship between financial capabilities and financial well-being. Based on the arguments presented in the review of the literature related to the variables of the conceptual model illustrated in Figure 1, the following hypothesis is proposed: H1: *The gender of the participants will moderate the relationship between their financial capability and financial well-being, such that women with higher financial capability will have greater financial well-being compared to men.*

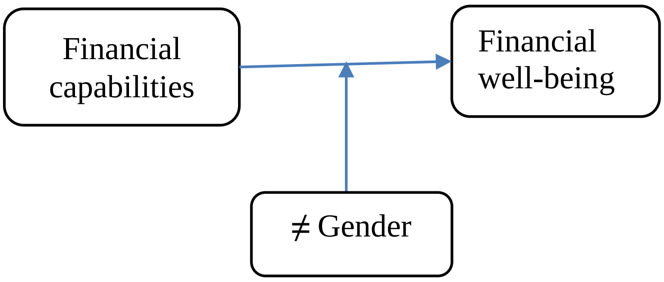

Fig. 1. Conceptual model (own)

3. Methods and Materials

Design

The study employs a quantitative design, specifically a correlational and predictive type, intending to explore the relationship between financial capabilities and financial well-being, as well as determining whether the variable of gender moderates this relationship. This study adopts a cross-sectional approach, where data is collected at a single time point, allowing the examination of relationships between the variables of interest.

Participants and sample

The target population consists of individuals aged 18 and above, preferably from the workforce, as well as students from higher education levels across different regions. The purpose of this selection is to obtain a preliminary global view of the behaviours related to the topics addressed in the study, which are part of the conceptual model and the instrument used for data collection. The sample was obtained through a non-probabilistic self-selection sampling method, with a total of 345 cases. An electronic format, utilising Google Forms, was employed for data collection, thereby facilitating the participation of as many individuals as possible.

Variables

The analysis focuses on three main variables:

Financial Capabilities (X): This variable reflects participants' skills, knowledge, and behaviors related to financial management.

Financial Well-being (Y): This variable reflects participants' perception of their financial situation and their general well-being in this regard.

Gender (M): This is considered a moderating variable. Participants will be classified by gender.

Procedure for Data Measurement – Moderation

To answer the question: Under what circumstances does the causal relationship between financial well-being and financial capabilities occur? That is, does participants' sex moderate the causal relationship between financial well-being and financial capabilities? Moderation, in statistical analysis, refers to a situation in which the relationship between an independent variable (predictor) and a dependent variable (criterion) is influenced by a third variable, known as the moderator. In other words, moderation occurs when the relationship between the independent variable and the dependent variable changes based on the level or value of the moderator variable. To analyse the data, the PROCESS macro in SPSS was used, specifically employing Hayes' PROCESS macro, which allows for mediation and moderation analyses. In this study, Model 1 of

PROCESS will be used to analyse the moderation of the gender variable in the relationship between financial capabilities (X) and financial well-being (Y).

The moderation model to be implemented is as follows:

$$Y = b_0 + b_1 X + b_2 M + b_3 (X * M) + e$$

Where:

Y = Financial Well-being (dependent variable),

X = Financial Capabilities (independent variable),

M = gender (moderator variable),

$X \times M$ = Interaction term between financial capabilities and gender.

The interaction coefficient (X × M) will be the main indicator of moderation. If this coefficient is significant, it will be interpreted to mean that the relationship between financial capabilities and financial well-being varies by gender. Regression coefficients and 95% confidence intervals will be analysed to determine the significance and magnitude of the moderating effect. Additionally, simple slope tests will be conducted to better understand how the relationship between financial capabilities and financial well-being varies by gender (i.e., comparing the effects for men and women).

Ethical Approval

This study was approved by the Ethics Committee of the School of Business at UCC, Cristóbal Colón University (Project ID P-03/2025), and by the Ethics Code for Research from the Division of Graduate Studies and Research at the National Technological Institute of Mexico. The principles set out in the Declaration of Helsinki were followed throughout the process. The objectives and procedures of the study were clearly explained to participants during the administration of the questionnaire, ensuring their confidentiality and anonymity. Informed consent was obtained from all participants after they had read and understood the provided instructions and statements.

Instrument

The questionnaire used consists of three sections. The first section collects data on the socio-demographic profile of the participants (García-Santillán et al., 2024). The second section covers dimensions of Financial Capabilities based on a scale adapted by Elrayah and Tufail (2024) from previous studies. Financial Capabilities were measured with five questions (Khan et al., 2022). Regarding Financial Well-being, which consists of eight perception indicators, the framework is based on the work of BBVA (2020), in collaboration with the BBVA Financial Education and Capabilities Center and the Center for Financial Services Innovation (CFSI). The survey used a Likert scale ranging from 1 to 5, where 5 indicated "strongly agree" and 1 indicated "strongly disagree".

Data analysis

The survey measures financial well-being through 8 items and financial capability through 9 items, using a Likert scale where 1 corresponds to "strongly disagree" and 5 corresponds to "strongly agree." To construct the dependent and independent variables, the items corresponding to each construct were summed. The scales achieved good internal consistency, with financial capability (Cronbach's α = 0.805) and financial well-being (Cronbach's α = 0.805). Table 1 shows the means and standard deviations for each item.

Table 1. Central measures of the variables

Financial capacities			Financial well-being		
Items	Media	Sd	Items	Media	Sd
FC1	3.61	1.285	FWB31	3.90	1.127
FC2	2.57	1.366	FWB32	4.24	0.989
FC3	3.52	1.454	FWB33	3.52	0.999
FC4	2.48	1.372	FWB34	2.70	1.099
FC5	3.31	1.229	FWB35	3.31	1.106
FC6	2.65	1.383	FWB36	3.61	1.196
FC7	2.44	1.354	FWB37	3.04	1.187
FC8	3.03	1.461	FWB38	3.56	1.180
FC9	3.35	1.214			

In Table 2, the frequencies obtained from the participants' profile variables are described. As can be seen, the participation of women and men was very balanced, with 48.7 % (n = 168) of the male gender and 49.3 % (n = 170) of the female gender. The age range varies from 18 years to over 40, with 29.6 % (n = 102) being older than 40, followed by 22.9 % (n = 79). Regarding marital status, 53.6 % (n = 185) are single, followed by 28.1 % (n = 97) who reported being married.

Table 2. Descriptive statistics of the socio-demographic profile

Variables	**Frequencies**	**%**
Gender		
Male	168	48.7
Female	170	49.3
Other	7	2.0
Age		
18 to 20	47	13.6
21 to 25	79	22.9
26 to 30	41	11.9
30 to 40	76	22.0
> 40	102	29.6
MaritalStatus		
Single	185	53.6
Married	97	28.1
Free Union	37	10.7
Separated	8	2.3
Divorced	18	5.2

Moderation Results

To address the proposed hypothesis, H1: the gender of the participants will moderate the relationship between their financial capability and financial well-being, such that women with higher financial capability will have greater financial well-being compared to men. According to the proposed conceptual model (Figure 1), PROCESS was used to analyse the data.

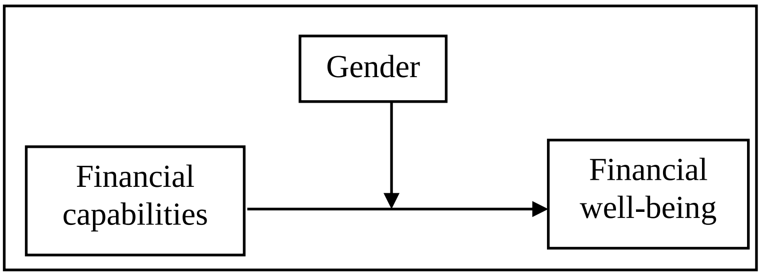

Fig. 2. Study model

Moderation occurs when a moderator variable (*Z*) influences the relationship between the independent variable (X) and the dependent variable (*Y*). This relationship can be expressed through appropriate equations to estimate the moderated effects and conduct statistical tests, as in the case of the single mediator model for X, M, and Y.

$$Y = i_1 + \mathrm{c}\,\mathrm{X} + e_1 \quad (1)$$
$$Y = i_2 + c'X + \mathrm{b}\,\mathrm{M} + e_2 \quad (2)$$
$$M = i_3 + \mathrm{a}\,\mathrm{X} + e_3 \quad (3)$$

Where *X* is the independent variable, *Y* is the dependent variable, and *M* is the mediator variable; the parameters i_1, i_2, and i_3 are intercepts in each equation; and e_1, e_2, and e_3 are residuals. In Equation 1, the coefficient c represents the total effect, that is, the total effect that X has on *Y*, the dependent variable. In equation 2, the parameter *c'* denotes the relationship between *X* and *Y* while controlling for *M*, which represents the direct effect: the effect of *X* on *Y* adjusted for *M*, and the parameter *b* denotes the relationship between *M* and *Y* adjusted for *X*. Finally, in equation 3, the coefficient *a* denotes the relationship between *X* and *M* (Igartua, Hayes, 2021).

Assumptions

To perform a moderation analysis, specific requirements must be met, which align with the prerequisites of a linear regression analysis. D. Osborne and Waters (2002) highlight the importance of four indicators that this analysis must fulfil: 1) normality, 2) linear association between variables, 3) reliability of the measure, and 4) homogeneity of variances (Table 3). The variables meet the assumptions: the significance of normality is greater than 0.01, and Levene's statistic ($p > 0.05$) indicates homogeneity between variables. The reliability value of both variables is greater than 0.500, indicating that the items forming the constructs of financial capacity and well-being are reliable and consistent. Additionally, Figure 3 shows the linearity between the variables.

Table 3. Normality, Homogeneity and Cronbach's Alpha

Variables	Kolmogorov-Smirnov	Sig.	Cronbach' alpha	Levene statistic	df_1	df_2	Sig.
Financial capacities	.055	.021	.805	1.359	1	336	.244
Financial well-being	053	.017	.781				

Source: own

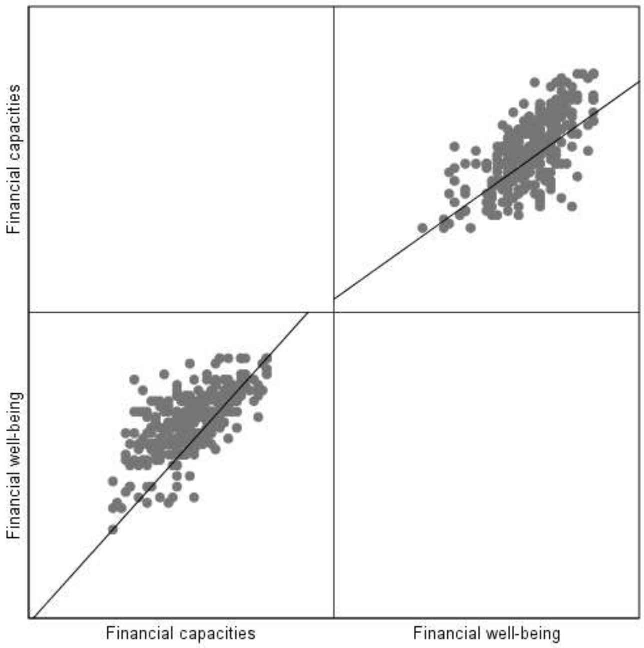

Fig. 3. Linearity between variables

5. Results

In response to the hypothesis posed, which states: Hi: The gender of the participants, men and women, will moderate the relationship between their financial capacity and financial well-being, in such a way that women with higher financial capacity will have greater financial well-being compared to men. To this end, the original proposed conceptual model (Figure 1) has been redesigned into an adjusted model, as shown in Figure 3.

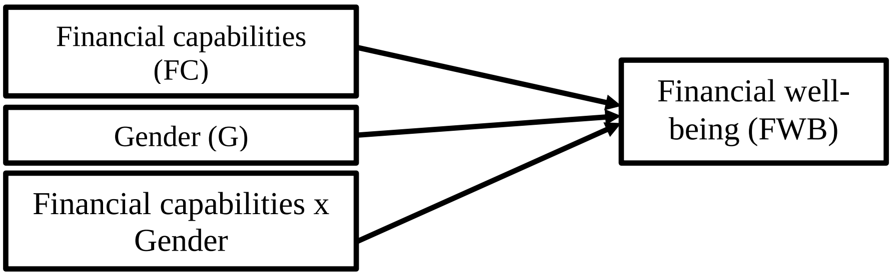

Fig. 4. Conceptual model proposed.

Table 4 and Figure 5 demonstrate a good fit for the statistical model (F = 99.453, $p < 0.001$), as the significance value is below 0.05. The model's variables explain 47.2 % of the model. The financial well-being variable contributes positively and significantly ($\beta = 27.240$, $p < 0.001$) to the financial well-being model. The gender variable also contributes significantly to the model, as its significance is less than 0.05. In contrast, the interaction between financial capacity and the participants' gender is not significant. These findings mean that the participants' gender does not moderate the relationship between their financial capacity and financial well-being.

Table 4. Summary of the Financial Well-Being and Financial Capacity Model

R	R^2	MSE	F	df1	df1	p
0.687	0.472	48096.588	99.452	3	334	.000
Model						
	Coefficient	**se**	**t**	**p**	**LLCI**	**ULCI**
Constant	-705.847	44.310	-15.930	0.000	-793.008	-618.685
Financial capacities	27.240	1.581	17.232	0.000	24.131	30.350
Gender	-705.847	88.619	-2.237	0.026	372.546	-23.901
Int_1	-5.770	3.162	1.825	0.069	-.449	11.989

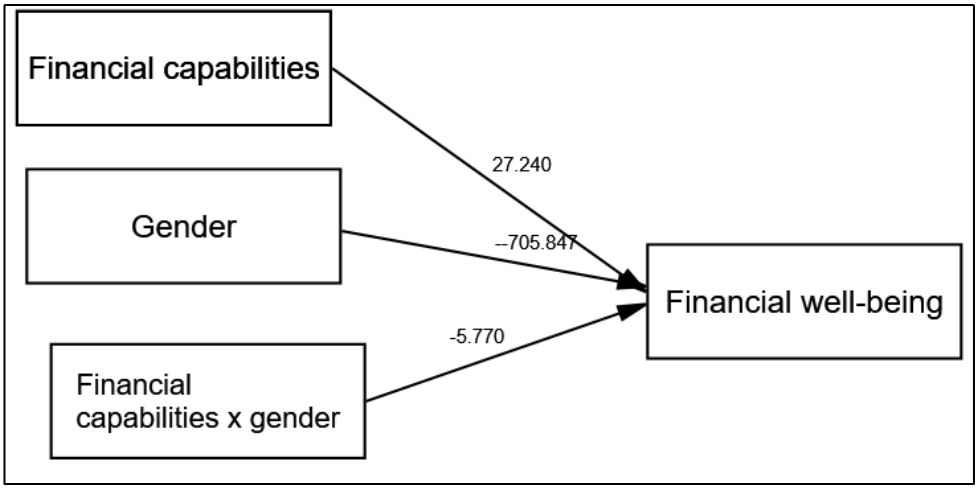

Fig. 5. Moderator statistical model

Similarly, Table 5 shows the conditional effects of the main predictor based on the values of the moderator. It is observed that there is a significant difference (p = 0.00) in the relationship between capabilities and financial well-being, regardless of whether the participant is male or female. Although the effect value appears to be increased."

Table 5. Total conditional effects

Conditional effects of the focal predictor at values of the moderator						
Gender	Effects	SE	t	p	LLCI	ULCI
-.500	24.356	2.158	11.284	0.000	20.110	28.601
.500	30.125	2.310	13.041	0.000	25.581	34.670

Table 6 displays the data to visualise financial capacity, gender, and financial well-being. The generated chart indicates that there is a difference in financial capacity and well-being between men and women. Women experience greater financial well-being as their financial capacity increases, but this can become equal when the financial capacity of both men and women is the same.

Table 6. Data to visualise the conditional effect of the focal predictor

Financial capacities	Gender	Financial well-being
19.00	-.500	-143.980
27.00	-.500	50.864
35.00	-.500	245.708
19.00	.500	232.576
27.00	500	8.427
35.00	500	249.430

Figure 6 illustrates that gender is not a significant variable in determining financial well-being. However, it is essential to note that financial well-being increases when the gender of the participants acts as a mediator for financial capacity.

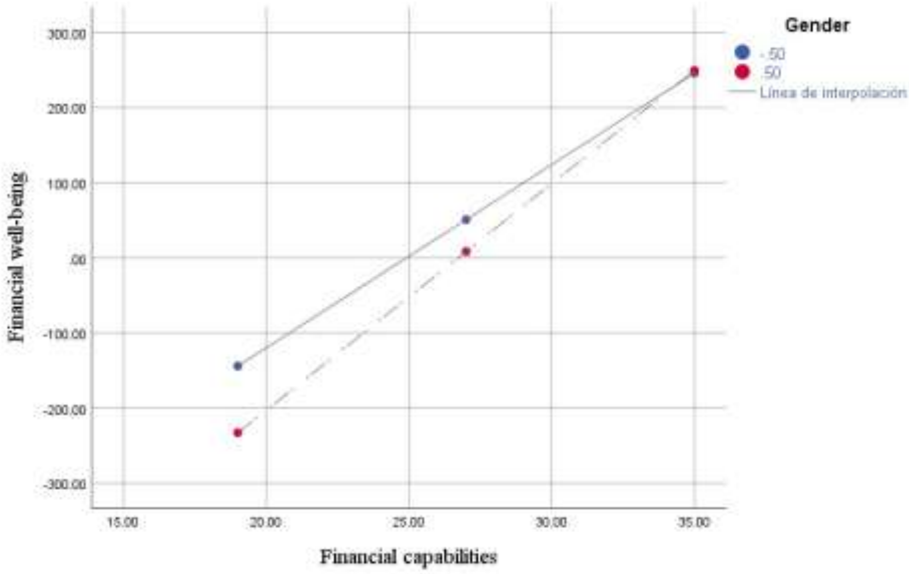

Fig. 6. Conditional effect of the focal predictor

6. Discussion

Within the theoretical framework of this study, it has been widely recognised that financial capabilities are key determinants of financial well-being. Lusardi and Mitchell (2014) emphasised the importance of adequate financial education for making informed decisions, which directly affects economic security and financial well-being. Also, Brüggen et al. (2017) define financial well-being as the perception of the desired standard of living and future financial freedom derived from proper management of personal resources. The results of this study support this perspective, showing a positive and statistically significant relationship between financial capabilities and financial well-being. Thus, it is confirmed that a greater ability to manage personal finances is closely linked to better economic well-being.

Regarding gender, various studies suggest that women, due to lower confidence in their financial knowledge and a tendency to make more conservative decisions, may face greater challenges in achieving satisfactory financial well-being. Consequently, Gignac et al. (2024) emphasised that women with high financial literacy and homeownership enjoy significantly higher financial well-being, as they are able to avoid over-indebtedness and manage their resources more efficiently. Hasan et al. (2024) argued, on the other hand, that both gender and social class play essential roles in the perception of financial well-being. However, the results of this study do not fully support this view. Although gender has a significant impact on financial well-being, it does not act as a significant moderator in the relationship between financial capabilities and financial well-being. The interaction between these two variables did not reach significance, suggesting that gender does not substantially moderate this relationship. Nevertheless, it is observed that women may experience greater financial well-being as their financial capabilities increase.

The literature also emphasises the significant role of financial knowledge and capabilities in enhancing economic well-being. Study after study, such as those by Agarwal et al. (2009) and Lusardi and Mitchell (2011a, 2011b), have demonstrated that people with greater financial knowledge tend to make more informed financial decisions, resulting in superior well-being. This study reaffirms the hypothesis that individuals with greater financial capabilities tend to experience higher levels of financial well-being. However, the absence of a significant moderating effect of gender underscores the importance of other factors, such as financial education and stress management, which may play a more relevant role in improving financial well-being, especially in a global context that remains unequal in terms of access to financial resources.

7. Conclusion

In conclusion, this study confirms that financial capabilities play a crucial role in improving financial well-being, regardless of gender. However, the results challenge the expectation that gender acts as a significant mediator in this relationship, suggesting that other underlying factors may be more determinative in the management of personal finances and economic well-being. The lack of a robust mediating effect by gender opens a broader research field, where financial education and equitable access to resources could be the true agents of change. This work not only reinforces the need to strengthen individuals' financial capabilities but also underscores the importance of inclusive policies that promote equal opportunities for access to and management of financial resources. Thus, improving financial capabilities could be the key to more robust and sustainable economic well-being, not just at the individual level, but also at the societal level, reducing inequality gaps and fostering economic stability across all sectors.

8. Implications

Theoretical Implications

This study makes a significant contribution to the theoretical body of work on financial capabilities and their impact on financial well-being. The results reinforce the notion that financial well-being is intrinsically linked to an individual's ability to manage their economic resources effectively. By observing that gender does not significantly moderate the relationship between financial capabilities and financial well-being, the findings suggest that other factors beyond gender differences may be influencing financial well-being. This study opens new lines of research to explore other moderating and mediating variables, such as access to financial education, financial culture, or the socio-economic environment.

Practical Implications

On a practical level, the findings suggest that public policies and educational programmes should focus on improving the financial capabilities of all individuals, regardless of gender. Although women exhibit higher financial well-being as their financial capabilities improve, the absence of a gender-moderating effect suggests that interventions should be inclusive, providing both genders with equal opportunities to enhance their financial skills. Moreover, it is crucial for financial education programmes to adapt to the needs of different groups, taking into account factors such as access to resources and stress management. The results also suggest that financial advisors should be mindful of gender differences in confidence and decision-making, offering a personalised approach that promotes financial inclusion and reduces economic well-being inequality.

Research Implications

Regarding future lines of research, it is suggested that other moderating variables be explored that may influence the relationship between financial capabilities and financial well-being. Factors such as access to educational resources, financial culture, or the socio-economic environment could provide a broader understanding of how financial capabilities interact with the economic well-being of different groups. Furthermore, longitudinal studies could be useful to observe the evolution of financial capabilities over time and their impact on financial well-being, considering factors such as age, life cycle changes, and economic fluctuations. Finally, another relevant area for future research would be to examine the impact of financial technology (Fintech) on individuals' financial capabilities and economic well-being, given that the use of digital tools is becoming increasingly important in personal financial management, especially in diverse socio-economic contexts.

9. Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of the School of Business at UCC, Cristóbal Colón University (*Project ID P-03/2025*), and by the Ethics Code for Research from the Division of Graduate Studies and Research at the National Technological Institute of Mexico. This study is conducted in accordance with the recommendations of the Code of Ethics of the National Technological Institute of Mexico, as well as those of the UCC Business School. The Research Ethics Committee of the Division of Graduate Studies and Research approved the protocol. In accordance with the Declaration of Helsinki, all workers gave their consent for participation in the study.

Consent for publication

Not applicable.

Availability of data and materials

Data and materials associated with this study are available upon request.

Conflict of interest statement

The author declares no conflict of interest.

Funding

This research received no external funding. However, the author sincerely thanks the Centre for Behaviour and Wellness Advocacy, Ghana, for providing financial support through the Institutional Open Access Publication Fund.

Authors' contributions

All authors, M.E-C., E.T-P., and A.G-S., designed this study. All authors collected and analysed data, contributed to the writing of the paper and reviewed the manuscript. All authors read and approved the manuscript.

Acknowledgements

Our gratitude goes to Prof. Sergio Hernández Mejía, Ph.D., for his contributions and recommendations in this manuscript.

Authors' ORCID

Milka Escalera-Chávez https://orcid.org/0000-0003-2102-7213
Esmeralda Tejada-Peña https://orcid.org/0000-0002-7658-4036
Arturo García-Santillán https://orcid.org/0000-0001-7284-5959

References

Abdul, Akhtar, 2024 – *Abdul Ghafoor, K., Akhtar, M.* (2024). Parents' financial socialization or socioeconomic characteristics: which has more influence on Gen-Z's financial wellbeing? *Humanities and Social Sciences Communications*. 11(1): 1-16. DOI: 10.1057/s41599-024-03007-3

Agarwal et al., 2009 – *Agarwal, S., Driscoll, J.C., Gabaix, X., Laibson, D.* (2009). The age of reason: Financial decisions over the lifecycle. *Working Paper 13191*. [Electronic resource]. URL: http://www.nber.org/papers/w13191

Algarni et al., 2024 – *Algarni, M.A., Ali, M., Ali, I.* (2024). The role of financial parenting, childhood financial socialization and childhood financial experiences in developing financial well-being among adolescents in their later life. *Journal of Economic and Administrative Sciences*. DOI: 10.1108/JEAS-07-2023-0194

Bashir et al., 2024 – *Bashir, I., Qureshi, I.H., Ilyas, Z.* (2024). How does employee financial well-being influence employee productivity: A moderated mediating examination. *International Journal of Social Economics*. 51(10): 1226-1246. DOI: 10.1108/IJSE-09-2023-0676

BBVA, 2020 – BBVA. Salud financiera: ocho indicadores para medirla [Financial health: eight indicators to measure]. 2020. [Electronic resource]. URL: https://www.bbva.com/es/salud-financiera/salud-financiera-ocho-indicadores-medirla/

Birkenmaier et al., 2023 – *Birkenmaier, J., Jung, E., McMillin, S., Qian, Z.* (2023). Are credit scores and financial well-being associated with physical health? *Social Work in Health Care*. 62(5): 162-178. DOI: 10.1080/00981389.2023.2207614

Brüggen et al., 2017 – *Brüggen, E.C., Hogreve, J., Holmlund, M., Kabadayi, S., Löfgren, M.* (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research*. 79: 228-237. DOI: 10.1016/j.jbusres.2017.03.013

del Carmen Briano-Turrent et al., 2024 – *del Carmen Briano-Turrent, G., Zerón-Félix, M., Moreno-García, E.* (2024). Impact of financial inclusion on human development indicators for women in Mexico. *Journal of Advocacy, Research and Education*. 11(2): 202-221.

Dhiraj et al., 2023 – *Dhiraj, A., Kumar, S. Rani, D.* (2023). Financial Well-being Among Tourism Industries Employees in India. In Grima, S., Thalassinos, E., Noja, G.G., Stamataopoulos, T.V., Vasiljeva, T. and Volkova, T. (Ed.) Digital Transformation, Strategic Resilience, Cyber Security and Risk Management (Contemporary Studies in Economic and Financial Analysis, Vol. 111B), Emerald Publishing Limited, Leeds, pp. 169-178. DOI: 10.1108/S1569-37592023000111B012

Gafoor, Amilan, 2024 – *Gafoor, A., Amilan, S.* (2024). Fintech adoption and financial well-being of persons with disabilities: the mediating role of financial access, financial knowledge and financial behaviour. *International Journal of Social Economics*. 51(11): 1388-1401

García-Santillán, 2024 – *García-Santillán, A.* (2024). Financial behavior and knowledge regarding debt payment and its relationship with sociodemographic variables. *Journal of Advocacy, Research and Education*. 11(1): 38-46. DOI: 10.13187/jare.2024.1.38

García-Santillán et al., 2024 – *García-Santillán, A., Escalera-Chávez, M.E., Santana, J.C.* (2024). Exploring resilience: A Bayesian study of psychological and financial factors across gender. *Cogent Economics & Finance*. 12(1). DOI: 10.1080/23322039.2024.2431544

Gignac et al., 2024 – *Gignac, G.E., Gepp, A., O'Neill, T.J., Xue, R.* (2024). The impact of housing tenure on financial wellbeing among elderly Australians. *Social Indicators Research*. 171(2): 655-675. DOI: 10.1007/s11205-023-03272-w

Hasan et al., 2024 – *Hasan, M.R., Jayasinghe, M., Selvanathan, E.A.* (2024). New approach to measure wellbeing: A case study on Bangladesh. *Social Indicators Research*. 172(1): 283-311. DOI: 10.1007/s11205-023-03305-4

Igartua, Hayes, 2021 – *Igartua, J.-J., Hayes, A.F.* (2021). Mediation, moderation, and conditional process analysis: Concepts, computations, and some common confusions. *The Spanish Journal of Psychology*. 24: e49. Doi:10.1017/SJP.2021.46

Joo, Grable, 2004 – *Joo, Sh., Grable, J.E.* (2004). An exploratory framework of the determinants of financial satisfaction. *Journal of Family and Economic Issues*. 25: 25-50. DOI: 10.1023/B:JEEI.0000016722.37994.9f

Karthika et al., 2023 – *Karthika, M., Abraham, J., Kodali, P.B., Mathews, E.* (2023). Financial wellbeing among older persons. In *Handbook of Aging, Health and Public Policy*. Springer, Singapore. DOI: 10.1007/978-981-16-1914-4_199-1

Kelley et al., 2023 – *Kelley, H.H., Lee, Y., LeBaron-Black, A., Dollahite, D.C., James, S., Marks, L.D., Hall, T.* (2023). Change in financial stress and relational wellbeing during COVID-19: Exacerbating and alleviating influences. *Journal of Family and Economic Issues*. 44(1). 34-52. DOI: 10.1007/s10834-022-09822-7

Khan et al., 2022 – *Khan, K.A., Çera, G., Pinto Alves, S.R.* (2022). Financial Capability as a Function of Financial Literacy, Financial Advice, and Financial Satisfaction. *E & M Ekonomie a Management*. 25(1): 143-160. DOI: 10.15240/tul/001/2022-1-009

Kim, Lee, 2024 – *Kim, K.T., Lee, J.* (2025). Financial well-being, anxiety and payment delinquency among student loan holders in the United States: Insights from the COVID-19 pandemic. *International Journal of Bank Marketing*. 43(2): 424-445. DOI: 10.1108/IJBM-05-2024-0277

Lusardi, Mitchell, 2011 – *Lusardi, A., Mitchell, O.S.* (2011). Financial literacy and retirement planning in the United States. *Journal of Pension Economics & Finance*. 10(4): 509-525. DOI: 10.1017/S147474721100045X

Lusardi, Mitchell, 2011 – *Lusardi, A., Mitchell, O.S.* (2011). Financial literacy around the world: An overview. *Journal of Pension Economics & Finance*. 10(4): 497-508.

Lusardi, Mitchell, 2014 – Lusardi, A., y Mitchell, O. (2014). The economic importance of financial literacy: Theory and evidence. *Journal of Economic Literature*. 52(1): 5-44.

Morrisey et al., 2023 – *Morrissey, K., Taylor, T., Tu, G.* (2023). Estimating the impact of relative financial circumstances in childhood on adult mental wellbeing: A mediation analysis. *Applied Research Quality Life*. 18: 915-930. DOI: 10.1007/s11482-022-10121-4

Mundi et al., 2024 – *Mundi, H.S., Vashisht, S., Rao, M.* (2025). A qualitative investigation into financial well-being and social capital of retired government school teachers. *Qualitative Research in Financial Markets*. 17(3): 576-603. DOI: 10.1108/QRFM-10-2023-0250

Elrayah, Tufail, 2024 – *Elrayah, M., Tufail, B.* (2024). Financial education, financial advice, financial attitude and financial literacy impact on university student's financial behaviour through financial *capabilities*. *Arts Educa*. 40: 193-207.

Nasr et al., 2024 – *Nasr, R., Rahman, A. A., Haddad, C., Nasr, N., Karam, J., Hayek, J., … , Alami, N.* (2024). The impact of financial stress on student wellbeing in Lebanese higher education. *BMC Public Health*. 24(1): 1809. DOI: 10.1186/s12889-024-19312-0

Nykiforuk et al., 2023 – *Nykiforuk, C.I., Belon, A. P., de Leeuw, E., Harris, P., Allen-Scott, L., Atkey, K., … , Yashadhana, A.* (2023). An action-oriented public health framework to reduce financial strain and promote financial wellbeing in high-income countries. *International Journal for Equity in Health*. *22*(1): 66. DOI: 10.1186/s12939-023-01877-8

Osborne, Waters, 2002 – *Osborne, J.W., Waters, E.* (2002). Four assumptions of multiple regression that researchers should always test. Practical Assessment, Research, and Evaluation. 8(1).

Rahman et al., 2021 – *Rahman, M., Isa, C.R., Masud, M.M., Sarker, M., Chowdhury, N.T.* (2021). The role of financial behaviour, financial literacy, and financial stress in explaining the financial well-being of B40 group in Malaysia. *Future Business Journal*. 7: 1-18. DOI: 10.1186/s43093-021-00099-0

She et al., 2023 – *She, L., Ray, A., Ma, L.* (2023). Future time perspective and consumer well-being of millennials: implications for consumer resilience. *International Journal of Bank Marketing*. 41(5): 1154-1176. DOI: 10.1108/IJBM-08-2022-0341

Sollis et al., 2024 – *Sollis, K., Biddle, N., Maulana, H., Yap, M., Campbell, P.* (2024). Measuring wellbeing across culture and context–are we getting it right? Evaluating the variation in wellbeing conceptualisations throughout the world. *Social Indicators Research*. 174(1): 123-155. DOI: 10.1007/s11205-024-03382-z

Wan Ismail et al., 2024 – *Wan Ismail, W.A., Madah Marzuki, M., Lode, N.A.* (2024). Financial reporting quality, industrial revolution 4.0 and social well-being among Malaysian public companies. *Asian Journal of Accounting Research*. 9(4): 294-308. DOI: 10.1108/AJAR-12-2021-0263

Xiao et al., 2024 – *Xiao, J.J., Kim, K.T. Lee, S.* (2024). Consumer financial capability and financial wellbeing; multi-year analyses. *Applied Research in Quality of Life*. 19(2): 547-580. DOI: 10.1007/s11482-023-10253-1

Zhang et al., 2024 – *Zhang, Y., Fan, L.* (2024). The nexus of financial education, literacy and mobile fintech: Unraveling pathways to financial well-being. *International Journal of Bank Marketing*. 42(7): 1789-1812. DOI: 10.1108/IJBM-09-2023-0531.

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 46-58

DOI: 10.13187/jare.2025.1.46

Journal homepage:
http://kadint.net/our-journal.html

Cognitive-Person Factors and Organisational Citizenship Behaviour: Mediating Role of Employee Engagement

Prince Addai [a, *], Isaac Okyere [a], Sena Esi Govina [a], Richard Amponsah [a], Augustine Osei Boakye [a]

[a] Ghana Communication Technology University, Accra, Ghana

Abstract

While research indicates that organisational citizenship behaviour is a positive employee outcome influenced by various cognitive-person factors, few studies have examined the specific individual cognitive processes that affect organisational citizenship behaviour. Drawing on Social Identity Theory and the Job Demands-Resources (JD-R) model, this study investigates the impact of prosocial values, cognitive moral development, and person-organisation fit as cognitive-person factors influencing organisational citizenship behaviour. Furthermore, it explores the mediating role of work engagement in these relationships. Data were collected using questionnaires from 302 civil servants across eight ministries in Ghana, employing a time-lagged design, and analysed using JASP software. The findings reveal that the three cognitive-person factors positively influence organisational citizenship behaviour. Additionally, work engagement mediates the link between these cognitive-person factors and organisational citizenship behaviour. This research is among the maiden studies to explore how work engagement mediates the positive relationship between cognitive-person factors such as prosocial values, cognitive moral development, and person-organisation fit and organisational citizenship behaviour in Ghana.

Keywords: Cognitive-person factors, Prosocial values, Cognitive moral development, Person-organisational fit, Organisational citizenship behaviour, Work engagement.

1. Introduction

To achieve higher performance levels, organisations must consider factors beyond executing assigned job responsibilities. Success cannot be attained, nor can public service be effectively delivered, if employees limit their efforts to fulfilling only their formal duties (Donkor, Segbenya, 2023). For organisations to thrive, it is essential to foster and reward organisational citizenship behaviour (OCB) among employees (Taamneh et al., 2024). The OCB encompasses discretionary and voluntary actions performed by employees that extend beyond their official job requirements, significantly enhancing the overall functioning and environment of the organisation (Asiedu et al., 2014; Boakye et al., 2022). These behaviours include collaboration, supporting colleagues, and willingly taking on additional tasks. Employees who demonstrate OCB contribute to increased efficiency and productivity by assisting peers, sharing knowledge, and going above and beyond their prescribed roles (Jayaraman et al., 2024). This, in turn, cultivates a supportive and cohesive

* Corresponding author
E-mail address: paddai@gctu.edu.gh (P. Addai)
Received: 27 February 2025 Revised: 03 March 2025; 15 April 2025 Accepted: 18 April 2025
Published: 30 April 2025

workplace, boosting morale and satisfaction. Moreover, OCB plays a crucial role in organisational effectiveness by encouraging proactive participation in decision-making and goal achievement (Asiedu et al., 2014; Boakye et al., 2022). Given its significant impact, OCB should be prioritised as a key determinant of organisational success (Halim et al., 2023). However, the complexities surrounding OCB stem from the variety of factors that influence individuals' decisions to engage in helpful behaviours without material incentives (Donkor, Segbenya, 2023). Both internal and external factors shape employee OCB, making it a dynamic and multifaceted phenomenon. Among these multifaceted factors, cognitive-person factors (CPFs) have been identified as key determinants of OCB (Arvanitis, 2023; Choy, Yeung, 2023; Jia et al., 2023; Lim et al., 2024).

The CPFs are individual characteristics and mental processes that affect how a person perceives, interprets, and responds to their environment (Jayaraman et al., 2024). Studies have examined CPFs such as self-efficacy (Soomro et al., 2023), empathy (Gong, 2024), organisational identification (Halder, Chatterjee, 2024), resilience (Boakye et al., 2022), and emotional intelligence (Fernandes, 2024) in relation to OCB. However, there is a paucity of studies assessing the influence of moral cognitive factors, such as prosocial values (PSV), cognitive moral development (CMD), and person-organisation fit (P-O fit), on OCB. The few studies investigating these factors have yielded contradictory results (Choong, Ng, 2023; Jayaraman et al., 2024). While Jayaraman et al. (2024) found that moral CPFs, such as CMD, influence OCB, Halder and Chatterjee (2024) indicated that CPFs, such as CMD, do not predict OCB. Additionally, no study has assessed all three factors simultaneously.

These research gaps concerning CPFs and employee OCB suggest that other factors may play a significant role in affecting the relationship. Moreover, according to Halder and Chatterjee (2024), assessing the relationship between CPFs and OCB is insufficient without considering the context, which plays a significant role in shaping the relationship. To address this research gap, the present study proposes that work engagement, which is vital for understanding how employees connect with their work, mediates the linkage. Work engagement refers to the positive, fulfilling state of mind where employees exhibit high levels of vigour, dedication, and enthusiasm for their tasks (Mishra et al., 2023). Although studies have revealed that work engagement positively affects employee attitudes and behaviours, such as OCB (Diko, Saxena, 2023; Nguyen, Ha, 2023), researchers have not found studies assessing WEB as a mediator in the link between moral CPFs and OCB. Moreover, while social identity theory (SIT) provides valuable insights into the influence of CPFs on OCB, it does not fully explain the mechanisms influencing the relationship. This study employs the Job Demands-Resources (JD-R) model to elucidate the underlying mechanism, including the role of work engagement in shaping the relationship.

This study aims to address the existing gap in research by examining how CPFs, such as prosocial values (PSV) and cognitive moral development (CMD), impact OCB among civil service employees, with a particular emphasis on the mediating role of work engagement. Drawing on the JD-R model, which highlights the interplay of resources and demands in shaping organisational outcomes (Bakker, Demerouti, 2017), the study argues that aligning CPFs with work engagement is critical for fostering OCB. Theoretically, this research contributes to the OCB literature by applying both the SIT and JD-R models to investigate how CPFs and work engagement jointly promote OCB in the civil service sector. The findings have practical implications for civil service organisations seeking to enhance OCB and improve overall performance. By prioritising work engagement and strengthening CPFs, civil service organisations can cultivate a more proactive workforce, enhancing efficiency and service delivery.

2. Literature Review and Hypothesis Development

Social identity theory (SIT)

Social Identity Theory (SIT) posits that an individual's self-concept and identity are shaped by their membership in social groups (Tajfel, Turner, 1986). SIT emphasises how an individual's sense of belonging to a social group, such as an organisation or team, influences their attitudes, behaviours, and interactions within that group (Halevy, Gross, 2024). According to SIT, people categorise themselves into various social groups, and this categorisation shapes their identity and self-esteem. When employees identify strongly with their organisation, they are more likely to engage in behaviours that benefit the organisation and its members. Employees with high levels of moral CPFs, such as person-organisation fit, are likely to perceive themselves as integral members of the organisation. This strong identification motivates them to engage in OCB because they see these actions as benefiting the collective identity of the group. The theory again suggests that employees are motivated to demonstrate OCB when they perceive their organisation as an in-group and value its goals and welfare (Chan et al., 2023). CPFs, such as prosocial values and cognitive moral development, help employees develop stronger bonds with their in-group (the organisation), making them more inclined to display voluntary behaviours that go beyond formal job requirements to support the in-group.

Job demand-resources theory (JD-R theory)

The JD-R theory (Bakker, Demerouti, 2007) suggests that the work environment comprises both job demands and job resources, and the balance between these elements influences employee well-being and performance. Job demands refer to aspects of the work environment that require sustained effort and can lead to stress, while job resources are those that help employees achieve their work goals, reduce demands, or stimulate personal growth. Cognitive-personal factors (CPFs), such as prosocial values, cognitive moral development, and person-organisation fit, are considered personal resources within the JD-R model. These resources enable employees to cope with job demands and enhance their ability to engage with work in a positive and proactive manner. When employees possess high levels of CPFs, they will be better equipped to deal with challenges, increase their motivation, and maintain focus and enthusiasm for their tasks. According to the theory, CPFs enhance employees' ability to manage job demands and experience higher levels of work engagement characterised by vigour, dedication, and absorption. This engagement fosters positive attitudes and behaviours that extend beyond formal job responsibilities, such as assisting colleagues and taking the initiative. Additionally, when employees are highly engaged in their work, they are more likely to utilise their cognitive-personal resources, leading to increased OCB effectively (Lim et al., 2024).

Prosocial values (PSVs) and OCB

Prosocial values (PSVs) refer to a set of beliefs and principles that prioritise the welfare and interests of others over one's self-interest (Kasler et al., 2023). Individuals with strong prosocial values (PSVs) tend to engage in behaviours that benefit others, such as helping, sharing, and cooperating, even at personal cost. These values are often rooted in empathy, compassion, and a sense of social responsibility, which drive individuals to participate in altruistic actions and contribute positively to their communities and society (Gujar et al., 2024). PSVs play a crucial role in promoting social cohesion, trust, and cooperation, fostering healthier interpersonal relationships and collective well-being (Gertsen et al., 2022). In organisational settings, employees with strong PSVs are more likely to exhibit higher levels of OCB, as their inclination to exceed job responsibilities and actively assist colleagues helps foster the overall success of the organisation (Caetano et al., 2023). Therefore, nurturing PSVs in both individuals and organisations can lead to a more compassionate and altruistic society, benefiting both individuals and the broader community (Gujar et al., 2024). In a study among employees, Choong and Ng (2023) found that PSVs predict altruism. Since both altruism and OCB involve voluntary actions that benefit others or the organisation beyond formal job requirements, contributing to a positive work environment, fostering cooperation, and enhancing organisational effectiveness, it is logical to propose that:

H1. *PSVs have a positive relationship with employees' OCB.*

Cognitive moral development and OCB

Cognitive moral development (CMD) refers to the progressive maturation of an individual's moral reasoning abilities (Matthys, Schutter, 2023). It suggests that individuals advance through distinct stages of moral understanding, becoming increasingly capable of complex ethical reasoning and decision-making (Camassa, 2024). According to Matthys and Schutter (2023), employees with higher levels of CMD tend to exhibit greater ethical awareness and a more substantial commitment to moral principles, leading them to engage in discretionary behaviours that benefit the organisation and its members. Such individuals are more likely to exceed formal job requirements, demonstrating altruistic actions, cooperation, and adherence to organisational values, which positively contribute to the overall functioning and effectiveness of the organisation (Arvanitis, 2023; Fernandes, 2024). Social Identity Theory (SIT) suggests that individuals with higher levels of CMD are more likely to perceive themselves as ethical members of their organisation, leading to a stronger identification with organisational values (Matthys, Schutter, 2023). This heightened identification fosters a sense of belonging and commitment, motivating individuals to engage in

OCB as a way of affirming their positive social identity within the organisation. In a study by Arvanitis (2023), CMD was found to correlate with OCB among students. However, other studies suggest that CMD does not predict OCB (Halder, Chatterjee, 2024). Given the contradictory findings regarding the relationship between CMD and OCB, it is prudent to assess this relationship within the context of Ghana. Therefore, it is predicted that:

H2. *CMD is positively and significantly associated with OCB.*

Person-organisational fit and OCB

Person-organisation fit (P-O fit) refers to the alignment between an individual's characteristics (such as values, skills, and preferences) and the attributes of the organisation (such as its culture, goals, and practices) (Farzaneh et al., 2014). It reflects how well an individual's qualities align with the organisation's culture and requirements, influencing job satisfaction and performance. According to Sharma and Tanwar (2023), a strong P-O fit is associated with enhanced job satisfaction, commitment, and performance. Employees who perceive a strong fit with the organisation are more likely to identify with its goals and values, fostering a sense of belonging and motivating them to engage in OCB, going beyond their formal duties to contribute to organisational success (Subramanian et al., 2023). From the perspective of social identity theory (SIT), individuals derive a significant part of their self-concept from their group memberships, including their identification with the organisation (Tran, 2023). A strong P-O fit strengthens this identification, increasing commitment and further motivating OCB (Choy, Yeung, 2023). Conversely, when there is a poor P-O fit, it may lead to dissatisfaction and disengagement, thereby decreasing the likelihood of engaging in OCB (Choy, Yeung, 2023). Based on the proposition of SIT, we hypothesise that:

H3. *P-O fit is positively and significantly associated with OCB among employees.*

The mediating role of work engagement

Work engagement represents a favourable psychological state at work, characterised by increased energy, enthusiasm, and dedication toward one's job (Singh, Sant, 2023). Engaged employees exhibit strong vigour, absorption, and a deep commitment to their tasks. Empirical studies across different contexts consistently show a positive correlation between CPFs, work engagement, and OCB (Jia et al., 2023). Furthermore, according to Social Identity Theory (SIT), employees who strongly identify with their organisation tend to be more engaged, experiencing a deep sense of belonging and commitment (George, Thomas, 2023). Thus, heightened engagement drives employees to exhibit OCB, motivated by their desire to contribute to the organisation's success. Zhou et al. (2023) argue that work engagement influences OCB by inspiring employees to exceed formal job duties, driven by passion and dedication.

The JD-R theory suggests that CPFs serve as personal resources that enhance work engagement (Bakker, Demerouti, 2007). When employees have sufficient job resources to meet demands, they become more engaged, which may lead to extra-role behaviours that benefit the organisation. Although the mediating role of work engagement between CPFs and OCB has not been extensively studied, the literature implies that work engagement acts as a pathway through which CPFs influence employee behaviours. Studies indicate that CPFs increase employee engagement (George, Thomas, 2023), fostering vigour, dedication, and absorption in work, which in turn leads to productive behaviours. Therefore, we argue that work engagement mediates the relationship between CPFs and OCB. As Diko and Saxena (2023) suggest, CPFs shape how individuals perceive their work environment and roles, influencing their engagement levels. When employees feel engaged, they experience a greater sense of fulfilment and meaning in their work, which can lead to a higher likelihood of engaging in OCB (Soomro et al., 2023). In light of these arguments, we posit that:

H4. *Work engagement mediates the association between PSVs and OCB among employees.*

H5. *Work engagement mediates the association between CDM and OCB among employees.*

H6. *Work engagement mediates the association between P-O fit and OCB among employees.*

3. Materials and Methods

Research design

To conduct the study, a pilot test involving 10 % of the 400 respondents targeted for this study was initially distributed to teachers in Accra, Ghana. Out of the 40 questionnaires distributed, 38 valid responses were collected, achieving a high response rate of 95 %. The analysis of the pilot survey confirmed the reliability and validity of the measurement constructs. Following this successful pilot phase, the main phase of data collection targeted all civil service employees working at the ministries in Accra. Civil servants play a critical role in formulating and implementing government policies and programmes, serving as the backbone of the public administration system. Their diverse responsibilities and structured work environment make them an ideal group for studying the mediating role of work engagement in the relationship between CPFs and OCB. Investigating this relationship within this context can provide valuable insights into how to enhance employee performance and organisational effectiveness in the public sector.

The study employed a time-lagged survey design to mitigate common method bias by temporally separating the measurement of independent and dependent variables (He et al., 2023). Based on calculations from the Raosoft online sample size calculator, the recommended sample size was 347 civil servants, considering a population of 3,500, a 50 % response rate, a 95 % confidence level, and a 5 % margin of error. Anticipating a high non-response rate typical of time-lagged studies (He et al., 2023), the sample size was increased to 400 civil servants. Data collection began by soliciting participation from willing respondents. Utilising an online survey platform, the first set of questionnaires (T1) focused on CPF, while the second set (T2) centred on the mediator and criterion variables. These questionnaires were distributed at two-month intervals. Initially, 400 questionnaires were distributed at T1, resulting in 387 responses. Subsequently, T2 questionnaires were sent to the 387 civil service employees who responded to the study in T1, with 306 providing complete responses. After excluding four incomplete responses, 302 valid responses remained, indicating a 75.5% valid response rate. Participation in the study was voluntary, and to ensure anonymity, all personal identifiers were removed from the data. Unique codes were assigned to maintain confidentiality throughout the research process. The data were analysed using JASP software.

Among the valid responses, 58.6 % were female, with an average age of 36.7 years. The distribution of respondents' managerial positions was as follows: 28.1 % in senior management, 43.4 % in middle management, and 28.5 % in junior management. In terms of educational qualifications, 36.1 % held a first degree, 28.5 % had a diploma, 24.8 % possessed a postgraduate degree, and 19.6 % were SSSCE graduates.

Instrument

Various published standardised scales developed and utilised by other researchers were used to assess the variables in this study. All scales were assessed on five-point response options ranging from 5 ("Strongly Agree") to 1 ("Strongly Disagree"). Below is an overview of the scales employed:

Prosocial values (PVs). We adapted 5 items from the study by Caetano et al. (2023) to measure PVs. Sample statements include: "I believe in making sacrifices to help those in need" and "I feel compelled to assist others whenever possible." The internal consistency reliability coefficient (Cronbach's alpha) of this scale in this study is 0.839.

Cognitive moral development (CMD). To assess respondents' CMD, we adapted 5 items from the studies by Rest et al. (1999). The items measure moral reasoning and ethical decision-making. Example items include statements such as "People should always tell the truth, even if it might harm someone" and "It is sometimes acceptable to break the rules if it leads to a good outcome." The Cronbach's alpha obtained in our study was 0.828.

Person-organisational fit (P-O fit). We assessed P-O fit using the 6-item Perceived Person-Organisation Fit scale devised by Kristof-Brown et al. (2023). Participants responded to statements such as "I feel that my values align well with the values of this organisation" and "I believe that the goals of this organisation are consistent with my own professional goals." The reliability coefficient for this scale in this study is 0.787.

Work engagement. We assessed work engagement using the 9-item Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2017). Items on the scale include: "At my work, I feel bursting with energy" and "I feel strong and vigorous when I am working." The reliability coefficient for this scale in this study was 0.833.

Organisational Citizenship Behaviour (OCB): OCB was measured using a 12-item scale adapted from Lee and Allen (2002). Sample items include "I offer suggestions for improving the work environment" and "I follow organisational rules and procedures even when no one is watching." The scale encompasses three dimensions: helping behaviour, civic virtue, and sportsmanship. For this study, all items were treated as a composite variable, yielding a reliability coefficient of 0.840.

Control variables. Control variables were chosen based on previous research indicating the influence of demographic factors on OCB. Studies suggest the impact of demographic characteristics such as age and managerial position on OCB (Saffariantoosi, Khaleghi, 2024; Zampetakis, Arvanitis, 2024). Consequently, age and managerial position were identified and controlled to mitigate their potentially confounding effects in this study.

Data analysis

The data analysis followed a three-step process. Initially, data entry was completed, incorporating checks for validity and reliability while also assessing data normality. Next, the model's suitability was examined using key indicators, including the root-mean-square error of approximation and the Parsimony Normed Fit Index. Finally, hypothesis testing was conducted using JASP software, utilising Bootstrap resampling with 5,000 iterations.

Psychometric properties

To assess the psychometric properties of the constructs, various measures of validity and reliability were examined. The internal consistency of the scales was evaluated, yielding convergent validity and composite reliability scores for each construct: PVs (AVE = 0.693, CR = 0.926), CMD (AVE = 0.685, CR = 0.917), P-O fit (AVE = 0.637, CR = 0.906), work engagement (AVE = 0.638, CR = 0.948), and OCB (AVE = 0.615, CR = 0.956). All average variance extracted (AVE) values exceeded the 0.5 threshold, indicating satisfactory convergent validity (Hair et al., 2019). The composite reliability values for all constructs surpassed the 0.70 benchmark, confirming the reliability of the measurement scales. The findings regarding both convergent validity (AVE) and composite reliability suggest the robustness and adequacy of the constructs for subsequent analyses (Table 1).

Table 1. Results showing composite reliability and average variance extracted

Variable	**Composite Reliability**	**Average variance extracted (AVE)**
Prosocial values	0.839	0.575
Cognitive moral development	0.778	0.694
Person-organisational fit	0.787	0.620
Work engagement	0.833	0.705
Organisational citizenship behaviour	0.840	0.689

Additionally, the items for CPFs, work engagement, and OCB demonstrated satisfactory Exploratory Factor Analysis (EFA) results, with factor loadings exceeding the recommended adequacy threshold of 0.07 (Hair et al., 2019). This further validated the measurement items. To assess the robustness of the data, a Confirmatory Factor Analysis was conducted. The chi-square statistics for the proposed five-factor model revealed a chi-square value of 1643.159, 665 degrees of freedom (df), and a p-value of 0.001, indicating a good fit. Additional fit indices supported this result (CFI = 0.974, SRMR = 0.029, RMSEA = 0.008). In contrast, the alternative single-factor model did not fit the data adequately, as evidenced by the following fit indices (χ^2 = 1773.353, df = 318, CFI = 0.528, SRMR = 0.189, RMSEA = 0.090). These results suggest that the five-factor model offers a superior fit to the data compared to the alternative single-factor model.

Discriminant validity and variance inflation factors

The discriminant validity of the variables was further evaluated using the heterotrait-monotrait ratio (HTMT) with a benchmark value of 0.85, as suggested by Verma and Verma (2024). As shown in Table 2, all HTMT values were below this threshold, confirming that the constructs exhibit distinctness from one another. This finding provides additional evidence for the discriminant validity of the measurement model. Furthermore, potential issues related to multicollinearity were assessed using variance inflation factors (VIF). According to the guidelines by Herkes et al. (2020), the VIF values for each predictor in the model were all below 0.5, suggesting that there are no concerns related to collinearity among the variables. These results further validate the robustness and reliability of the model used in the study.

Table 2. Discriminant validity using the HTMT benchmark

Variable	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	VIF
PSV	1.000					0.361
CMD	0.097	1.000				0.273
P-O fit	0.183	0.084	1.000			0.337
WEG	0.062	0.201	0.451	1.000		0.350
OCB	0.091	0.120	0.287	0.505	1.000	0.296

Notes: PSV – Prosocial values; CMD – Cognitive moral development, P-O fit – Person-organisational fit; WEG – Work engagement; OCB – Organisational citizenship behaviour.

4. Results

Descriptive statistics and intercorrelations

As shown in Table 3, prosocial values demonstrated significant correlations with cognitive moral development ($r = 0.38$, $p < .01$), person-organisation fit ($r = 0.42$, $p < .01$), work engagement ($r = 0.39$, $p < .01$), and OCB ($r = 0.47$, $p < .01$). Additionally, cognitive moral development was significantly correlated with person-organisation fit ($r = 0.35$, $p < .01$), work engagement ($r = 0.44$, $p < .01$), and OCB ($r = 0.52$, $p < .01$). Person-organisation fit also showed significant relationships with work engagement ($r = 0.41$, $p < .01$) and OCB ($r = 0.38$, $p < .01$). Furthermore, the skewness and kurtosis values for all constructs ranged between -1 and +1, indicating that the data followed a normal distribution.

Table 3. Descriptive statistics and intercorrelation among the variables

№	Variable	Mean	SD	1	2	3
1.	Prosocial values	2.93	2.31			
2.	Cognitive moral development	2.99	3.48	0.38**		
3.	Person-organisational fit	3.57	1.53	0.42**	0.35**	
4.	Work engagement	3.22	4.64	0.39**	0.44**	0.41**
5.	OCB	3.31	3.50	0.47**	0.52**	0.38**
4.	Skewness	-	-	0.04	0.18	0.33
4.	Kurtosis	-	-	-0.18	-0.27	-0.07

Notes: **$p < .01$

Hypothesis testing

According to Table 4, PSV has a significant positive effect on OCB, accounting for 4.6 % of its variance ($b = 0.046$, $z = 4.037$, $p < 0.001$). To confirm this result, a bootstrap analysis with 10,000 replications was conducted. The 95 % confidence interval from this analysis did not include zero (L95 % CI = 0.016, U95 % CI = 0.076), thus supporting H1.

Table 4. Direct effects of CPFs as determinants of OCB

					95 % Confidence Interval	
	Estimate	**Std. Error**	**z-value**	**P**	**Lower**	**Upper**
PSV → OCB	0.046	0.011	4.037	< .001	0.016	0.076
CMD → OCB	0.021	0.005	2.002	0.045	0.004	0.024
P-O fit → OCB	0.110	0.010	10.668	< .001	0.086	0.133

Notes: PSV – Prosocial values, CMD – Cognitive moral development, P-O fit – Person-organisational fit, OCB – Organisational citizenship behaviour

Similarly, CMD has a significant positive influence on OCB, accounting for 2.1 % of its variance ($b = 0.021$, $z = 2.002$, $p < 0.05$). This result was also verified using the bootstrap method with 10,000 replications, yielding confidence intervals that excluded zero (L95 % CI = 0.004, U95 % CI = 0.024). This also supported H2.

Furthermore, the P-O fit has a significantly positive impact on OCB, explaining 11% of the variance in OCB ($b = 0.110$, $z = 10.668$, $p < 0.001$). This result was further substantiated by the bootstrap method with a 95 % confidence interval excluding zero (L95 % CI = 0.086, U95 % CI = 0.133). Hence, H3 is also supported.

Table 5. Indirect effect of work engagement

					95% Confidence Interval	
	Estimate	Std. Error	z-value	P	Lower	Upper
PSV→WEG→OCB	0.008	0.003	2.368	0.018	0.001	0.020
CMD→WEG→OCB	0.006	0.002	3.077	0.002	0.003	0.010
P-O fit→WEG→OCB	0.013	0.004	3.364	< .001	0.006	0.024

Notes: PSV – Prosocial values, CMD – Cognitive moral development, P-O fit – Person-organisational fit, OCB – Organisational citizenship behaviour

Table 5 reveals that work engagement significantly mediated the relationship between PSV and OCB, with an indirect effect size of 0.8 % ($b = 0.008$, $z = 2.368$, $p < 0.05$). Bootstrapping analysis with a 95 % confidence interval shows that the upper and lower limits exclude zero (L95 % CI = 0.001, U95 % CI = 0.002). These results support H4.

Work engagement also positively mediated the relationship between CMD and OCB, accounting for 0.6 % of the variance ($b = 0.006$, $z = 3.077$, $p < 0.01$). This result is further corroborated by bootstrapping with 10,000 replications, as the confidence intervals excluded zero (L95 % CI = 0.003, U95 % CI = 0.010), supporting H5.

Additionally, work engagement significantly mediated the positive effect of P-O fit on OCB, accounting for 1.3 % of the variance ($b = 0.013$, $z = 3.364$, $p < 0.01$). This finding is confirmed by bootstrapping with 10,000 replications, where the confidence intervals exclude zero (L95 % CI = 0.006, U95 % CI = 0.024). Therefore, H6 is supported. These results indicate that work engagement partially mediates the positive relationship between CPFs (PSV, CMD, and P-O fit) and OCB.

Table 6. Path estimates of moral emotions

					95% Confidence	
		Std.	z-	P	Lower	Upper
WEG→OCB	0.201	0.043	4.689		0.119	0.298
PSV→OCB	0.046	0.011	4.037	< .001	0.016	0.076
CMD→OCB	0.021	0.005	2.002	0.045	0.004	0.024
P-O fit→OCB	0.110	0.010	10.668	< .001	0.086	0.133
PSV→WEG	0.041	0.015	2.744	0.006	0.005	0.077
CMD→WEG	0.029	0.007	4.077	< .001	0.014	0.044
P-O	0.064	0.013	4.827	< .001	0.037	0.095

Notes: PSV – Prosocial values, CMD – Cognitive moral development, P-O fit – Person-organisational fit, WEG – Work engagement. OCB – Organisational citizenship behaviour

Figure 1 represents the path estimates in Table 6.

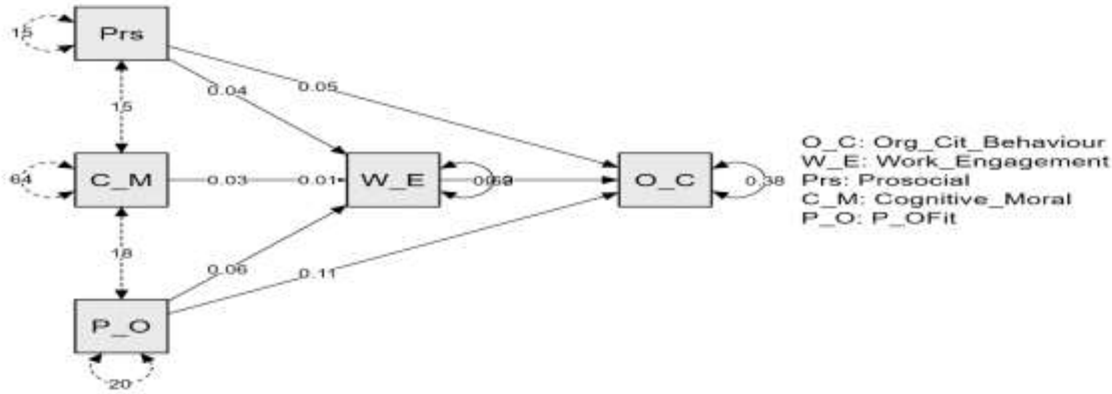

Fig. 1. Path plot showing the mediation effect

5. Discussion

The primary objective of this study is to evaluate the mediating effect of work engagement on the relationship between CPFs and OCB. The study contributes novel and significant findings on CPFs and OCB. Firstly, the findings indicate a significant positive influence of CPFs on OCB, thereby supporting hypotheses H1, H2, and H3. These results align with findings in other studies suggesting that moral CPFs such as PSV (Tran, 2023), cognitive CMD (Fernandes, 2024), and P-O fit (Choong, Ng, 2023) positively influence OCB by enhancing individuals' engagement and commitment to their roles. This enhancement promotes behaviours that benefit the organisation, fostering a deeper connection and alignment with organisational values and goals. As a result, employees will exert discretionary efforts and engage in cooperative behaviours.

Caetano et al. (2023) propose that PSV influences OCB by fostering a sense of appreciation and alignment with organisational values, motivating employees to exceed their formal job requirements. CMD also enhances employees' ability to make ethical decisions and consider the broader impact of their actions (Tran, 2023). Higher levels of CMD lead to increased moral reasoning, which encourages employees to engage in behaviours that benefit the organisation and its members (Fernandes, 2024). Additionally, according to Choy and Yeung (2023), P-O fit influences OCB by ensuring alignment between employees' values and goals and the organisation's culture. This alignment enhances job satisfaction and commitment, motivating employees to perform discretionary behaviours that support and enhance organisational effectiveness (Subramanian et al., 2023). These insights illustrate why CPFs such as PSV, CMD, and P-O fit are linked to OCB.

The results also supported the supplementary predictions, indicating that work engagement mediated the significant relationship between CPFs (PSV, CMD, and P-O fit) and OCB. These findings also agree with the assertion by Gertsen et al. (2022), who indicated that high levels of CPFs enhance work engagement, making employees more absorbed, dedicated, and energised in their roles. This increased engagement, in turn, motivates employees to exhibit OCB, such as helping colleagues and going beyond their job requirements to benefit the organisation. As suggested by Zhou et al. (2023), the way people perceive their work environment and their role within it is heavily influenced by CPFs, such as personality traits, values, and attitudes. These elements play a significant role in determining how invested individuals are in their work. When people feel connected and committed, they tend to find greater satisfaction, purpose, and meaning in what they do (George, Thomas, 2023), which often translates into a greater willingness to go above and beyond in their OCB.

6. Limitations and Future Studies

While this study offers valuable theoretical and practical contributions, it is important to acknowledge certain limitations. The research was restricted to civil servants employed within ministries in Accra, Ghana, which means the findings and their interpretations are context-specific. Therefore, the applicability of the results should be considered within this particular setting. To improve the generalisability of the outcomes, future studies should replicate the investigation in diverse environments. Expanding the sample to include civil servants from regions beyond Accra, as well as from other developing countries, would provide a broader perspective on the phenomena under study. Moreover, the study focuses solely on work engagement as a mediating variable in the relationship between CPFs and OCB within the Ghanaian context. While work engagement plays a significant role in this relationship, other factors, both contextual and personal, may also influence the dynamics between CPFs and OCB. Future research could explore additional variables, such as emotional intelligence, organisational culture, workload, and role conflict, to gain a more comprehensive understanding of the factors influencing OCB. By considering these additional variables, researchers would be able to uncover more nuanced insights into how CPFs shape organisational behaviours and performance across diverse contexts.

7. Conclusion and implications

This study examines the impact of CPFs on OCB among civil service employees while also investigating the mediating role of work engagement. By applying SIT and the JD-R theory, it sought to understand how CPFs influence OCB and how work engagement mediates this relationship. The research demonstrates that all three CPFs (PSVs, CMD, and P-O fit) significantly affect employees' OCB. This finding suggests that bolstering CPFs among employees could potentially enhance their OCB, thereby improving overall organisational performance. Additionally, the study reveals that work engagement acts as a mediator in this relationship. This implies that fostering higher levels of work engagement among employees has the potential to strengthen the connection between CPFs and OCB, ultimately contributing to enhanced organisational effectiveness.

This research significantly advances our understanding of the relationship between CPFs and OCB among civil service employees in Ghana by applying Social Identity Theory (SIT) as a theoretical framework. The findings highlight that CPFs, such as PSVs, CMD, and P-O fit, play a crucial role in motivating employees to engage in extra-role behaviours. This empirical evidence enriches the existing OCB literature, underscoring the importance of individual CPFs in shaping workplace behaviours. Additionally, the study broadens the application of SIT, which is traditionally employed in social psychology, into the organisational domain. Offering empirical support for how CPFs influence individuals' identification with their organisation and subsequent behaviours, it strengthens SIT's theoretical foundations, demonstrating its applicability beyond intergroup dynamics.

Furthermore, the research provides valuable insights into the JD-R theory by examining how work engagement mediates the relationship between CPFs and OCB. While JD-R theory typically focuses on the influence of job demands and resources on employee well-being and performance, this study extends the framework to include internal CPFs such as PSVs, CMD, and P-O fit. The findings suggest that these internal attributes impact OCB through work engagement, highlighting the need to integrate individual predispositions with external job factors to understand workplace behaviours fully.

The study also offers practical implications for organisations aiming to enhance OCB among their employees. By recognising how CPFs like PSVs, CMD, and P-O fit contribute to increased OCB, organisations can prioritise these factors in recruitment, selection, and employee development processes. Emphasising these elements in leadership training programmes, performance appraisal systems, and organisational policies can help cultivate an environment that fosters behaviours supporting the collective well-being of the organisation. Moreover, understanding that work engagement serves as a mediator in the CPF-OCB relationship suggests that efforts to enhance employee engagement can further amplify positive outcomes. Organisational strategies aimed at boosting work engagement, such as offering skill development opportunities, creating a supportive work environment, promoting autonomy, and recognising employee contributions (Choy, Yeung, 2023), can help maximise the positive effects of OCB.

8. Declarations

Ethics approval and consent to participate

Institutional approvals and participants' consent were obtained before the commencement of the study. The authors ensured that the study met the requirements per the Declaration of Helsinki

- Ethical Principles for Medical Research Involving Human Subjects, developed by the World Medical Association in 1964.

Consent for publication

All authors read and approved the final version of the manuscript for publication and agree to be accountable for all aspects of the work, ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Availability of data and materials

Available upon formal request to the corresponding author.

Conflict of interest statement

The authors report no conflicts of interest.

Funding

There is no funding to support this research. However, the authors sincerely thank the Centre for Behaviour and Wellness Advocacy, Ghana, for providing financial support through the Institutional Open Access Publication Fund.

Authors' contributions

All authors contributed equally to this work. They collaboratively developed the concept and design of the study, collected data, and contributed to the analysis and interpretation of the collected data. Additionally, all authors were involved in drafting, revising, and finalising the manuscript.

Acknowledgements

We appreciate all participants for their support.

Authors' ORCID

Prince Addai https://orcid.org/0000-0001-5803-0761
Isaac Okyere https://orcid.org/0000-0002-1190-4959
Sena Esi Govina https://orcid.org/0000-0002-9693-1488
Richard Amponsah https://orcid.org/0009-0002-9522-9301
Augustine Osei Boakye https://orcid.org/0000-0001-9852-5777

References

Asiedu et al., 2023 – *Asiedu, M., Sarfo, J.O., Adjei, D.* (2014). Organisational commitment and citizenship behaviour: tools to improve employee performance; an internal marketing approach. *European Scientific Journal*. 10(4): 288-305.

Arvanitis, 2023 – *Arvanitis, A.* (2023). Moral self-consistency as the self-organization of moral identity: A social-cognitive approach. *Humanities & Social Sciences Communications*. 10: 259. DOI: 10.1057/s41599-023-01763-2

Bakker, Demerouti, 2007 – *Bakker, A.B., Demerouti, E.* (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*. 22(3): 309-328.

Boakye et al., 2022 – *Boakye, A. N., Addai, P., Obuobiisa-Darko, T., Okyere, I.* (2022). Resilience and Organizational Citizenship Behaviour (OCB): The moderating role of leadership and interpersonal trust. *SEISENSE Business Review*. 2(1): 28-42. DOI: 10.33215/sbr.v2i1.765

Caetano et al., 2023 – *Caetano, L. M., Vieira, K. E., da Costa, R. Q. F., Oliveira, B., Dell'Agli, B. A. V., Carlo, G.* (2023). Adaptation and evidence of validity of the Prosocial Tendencies Measure (PTM) to the Brazilian context. *Journal of Psychopathology and Behavioral Assessment*. 45: 346-358. DOI: 10.1007/s10862-023-10035-x

Camassa, 2024 – *Camassa, M.* (2024). *Empathy and Moral Development. In On the power and limits of empathy*. Palgrave Macmillan, Cham. DOI: 10.1007/978-3-031-37522-4_9

Chan et al., 2023 – *Chan, A., Bradford, B., Stott, C.* (2023). A systematic review and meta-analysis of procedural justice and legitimacy in policing: The effect of social identity and social contexts. *Journal of Experimental Criminology*: 1-58. DOI: 10.1007/s11292-023-09595-5

Choong, Ng, 2023 – *Choong, Y. O., Ng, L.P.* (2023). The effects of trust on efficacy among teachers: The role of Organizational citizenship behavior as a mediator. *Current Psychology*. 42: 19087-19100. DOI: 10.1007/s12144-022-03067-1

Choy, Yeung, 2023 – *Choy, M.W.C., Yeung, A.S.* (2023). *Person-environment fit: Implications for vocational students' career in the era of crisis*. In C. Hong, W. W. K. Ma (Eds.), Applied Degree Education and the Shape of Things to Come (Lecture Notes in Educational Technology). Springer, Singapore. DOI: 10.1007/978-981-19-9315-2_18

Diko, Saxena, 2023 – *Diko, T.K., Saxena, S.* (2023). Antecedents and outcome of employee engagement: Empirical study of Ethiopian public higher education institutions. *SN Business & Economics*. 3: 159. DOI: 10.1007/s43546-023-00535-z

Donkor, Segbenya, 2023 – *Donkor, J., Segbenya, M.* (2023). Modelling the relationship between dimensions of organizational justice and organizational citizenship behavior in the Ghanaian workplaces. *Employee Responsibilities and Rights Journal*. 1-22. DOI: 10.1007/s10672-023-09477-y

Farzaneh et al., 2014 – *Farzaneh, J., Dehghanpour Farashah, A., Kazemi, M.* (2014). The impact of person-job fit and person-organization fit on OCB: The mediating and moderating effects of Organizational commitment and psychological empowerment. *Personnel Review*. 43(5): 672-691.

Fernandes, 2024 – *Fernandes, S.* (2024). *Understanding and promoting teachers' OCB during the COVID-19 pandemic*. In S.M. Patki, S.C. Abhyankar (Eds.), *Organizational citizenship behaviour (OCB) in India*. Springer, Singapore. DOI: 10.1007/978-981-99-9688-9_2

George, Thomas, 2023 – *George, S., Thomas, P.* (2023). Adapting employee engagement strategies amid crisis: Insights from the COVID-19 pandemic. *Employee Responsibilities and Rights Journal*. 1-26. DOI: 10.1007/s10672-023-09484-z

Gertsen et al., 2022 – *Gertsen, R., Klaassen, S., Butter, R.* (2022). Development and preliminary validation of the moral authorship questionnaire. *Learning Environments Research*. 25: 663-686. DOI: 10.1007/s10984-021-09400-y

Gong, 2024 – *Gong, T.* (2024). Unraveling the impact of unethical pro-organizational behavior: The roles of manager-employee exchange, customer-employee exchange, and reciprocity beliefs. *Current Psychology*. 43: 19066-19080. DOI: 10.1007/s12144-024-05737-8

Gujar et al., 2024 – *Gujar, N., Patki, S. M., Sethi, T.* (2024). *'New norms for the new normal?' Evaluating and enhancing employee OCB amidst evolving work environments*. In S. M. Patki, S. C. Abhyankar (Eds.), *Organizational citizenship behaviour (OCB) in India*. Springer, Singapore. DOI: 10.1007/978-981-99-9688-9_9

Hair et al., 2019 – *Hair, J.F., Jr., Gabriel, M.S., da Silva, D.* (2019). Development and validation of attitudes measurement scales: Fundamental and practical aspects. *RAUP Management Journal*. 54(4): 490-507. DOI: 10.1108/RAUSP-05-2019-008

Halder, Chatterjee, 2024 – *Halder, D., Chatterjee, I.* (2024). Work–Life Balance and OCB: A Review of Existing Literature. In S.M. Patki, S.C. Abhyankar (Eds.), *Organizational citizenship behaviour (OCB) in India*. Springer, Singapore. DOI: 10.1007/978-981-99-9688-9_4

Halevy, Gross, 2024 – *Halevy, G., Gross, Z.* (2024). Toward an integrative theory of identity formation; Three components of the religious identity formation process. *Pastoral Psychology*. 73: 253-270. DOI: 10.1007/s11089-023-01100-z

Halim et al., 2023 – *Halim, H.T., Halim, Y.T., Elsawy, O.M.* (2023). Fostering Organizational citizenship behaviour in the Egyptian hospitality industry: The role of internal brand management and leadership styles. *Future Business Journal*. 9: 101. DOI: 10.1186/s43093-023-00282-5

He et al., 2023 – *He, Z., Pan, S., Gu, X., Xu, M., Wang, M.* (2023). Study on the driving mechanism of lagged effects based on different time scales in a karst drainage basin in South China. *Scientific Reports*. 13: 9347. DOI: 10.1038/s41598-023-36098-0

Herkes et al., 2020 – *Herkes, J., Ellis, L.A., Churruca, K., Braithwaite, J.* (2020). The 'goodness-of-fit' of fit models: Creating a multidimensional survey for person-organization and person-group fit in health care. *BMC Medical Research Methodology*. 20: 144. DOI: 10.1186/s12874-020-01033-8

Jayarama et al., 2024 – *Jayaraman, V.K., Pandya, M., Malhotra, M., Patki, S.M.* (2024). AI in the context of OCB: One step forward or two steps back? In Patki, S.M., Abhyankar, S.C. (Eds), *Organizational citizenship behaviour (OCB) in India*. Springer, Singapore. DOI: 10.1007/978-981-99-9688-9_10

Jia et al., 2023 – *Jia, J., Wu, F., Liu, M., Tang, G., Cai, Y., Jia, H.* (2023). How leader-member exchange influences person-organisation fit: A social exchange perspective. *Asian Business & Management*. 22: 792-827. DOI: 10.1057/s41291-022-00199-x

Kasler et al., 2023 – *Kasler, J., Sharabi-Nov, A., Shinwell, E. S., Hen, M.* (2023). Who cheats? Do prosocial values make a difference? *International Journal of Educational Integrity*. 19: 6. DOI: 10.1007/s40979-023-00128-1

Kristof-Brown et al., 2023 – *Kristof-Brown, A., Schneider, B., Su, R.* (2023). Person-Organization fit theory and research: Conundrums, conclusions, and calls to action. *Personnel Psychology*. 76(2). DOI: 10.1111/peps.12581

Lee, Allen, 2002 – *Lee, K., Allen, N.J.* (2002). Organizational citizenship behavior and workplace deviance: The role of affect and cognitions. *Journal of Applied Psychology*. 87(1): 131-142. DOI: 10.1037/0021-9010.87.1.131

Lim et al., 2024 – *Lim, W.M., Malik, N., Gupta, S., Rai, H.* (2024). Harnessing brand authenticity to promote prosocial service behavior. *Journal of Brand Management*. 31(4):449-468. DOI: 10.1057/s41262-024-00352-1

Matthys, Schutter, 2023 – *Matthys, W., Schutter, D.J.L.G.* (2023). Moral thinking and empathy in cognitive behavioral therapy for children and adolescents with conduct problems: A narrative review. *Clinical Child and Family Psychology Review*. 26: 401-415. DOI: 10.1007/s10567-023-00429-4

Mishra et al., 2023 – *Mishra, A.K., Singh, S., Upadhyay, R.K.* (2023). Organization citizenship behavior among Indian nurses during SARS-COV-2: A direct effect moderation model. *Quality & Quantity*. *57*: 541-559. DOI: 10.1007/s11135-022-01325-9

Nguyen, Ha, 2023 – *Nguyen, C.M.A., Ha, M.T.* (2023). The interplay between internal communication, employee engagement, job satisfaction, and employee loyalty in higher education institutions in Vietnam. *Humanities & Social Sciences Communications*. 10: 329. DOI: 10.1057/s41599-023-01806-8

Rest et al., 1999 – *Rest, J.R., Narvaez, D., Bebeau, M.J., Thoma, S.J.* (1999). *Postconventional moral thinking: A Neo-Kohlbergian approach*. Mahwah, NJ: Lawrence Erlbaum Associates.

Saffariantoosi, Khaleghi, 2024 – *Saffariantoosi, K., Khaleghi, M.R.* (2024). The mediating role of Organizational citizenship behavior in the relationship between career self-efficacy and career success among construction project managers in Mashhad. *Current Psychology*. 43(28): 23971-23984. DOI: 10.1007/s12144-024-06127-w

Schaufeli et al., 2017 – *Schaufeli, W. B., Shimazu, A., Hakanen, J. J., Salanova, M., De Witte, H.* (2017). An ultra-short measure for work engagement: The UWES-3 validation across five countries. *European Journal of Psychological Assessment*. 35(4): 1-15. DOI: 10.1027/1015-5759/a000430

Sharma, Tanwar, 2023 – *Sharma, R., Tanwar, K.* (2023). Organization pursuit intention through perceived employer brand, person-organization fit and perceived Organizational prestige. *Corporate Reputation Review*. 26: 33-53. DOI: 10.1057/s41299-021-00132-6

Singh, Sant, 2023 – *Singh, S., Sant, S.* (2023). The moderating role of workplace (hybrid/remote) on employee engagement and employee turnover intention. *Employee Responsibilities and Rights Journal*. 1-16. DOI: 10.1007/s10672-023-09480-3

Soomro et al., 2023 – *Soomro, I.H., Abro, Z., Ahmad, M.S.* (2023). Psychological contract breach and employee engagement: Moderation of role of a high-performance work system. *Quality & Quantity*. 58(4): 3363-3377. DOI: 10.1007/s11135-023-01807-4

Subramanian et al., 2023 – *Subramanian, S., Billsberry, J., Barrett, M.* (2023). A bibliometric analysis of person-organization fit research: Significant features and contemporary trends. *Management Review Quarterly*. 73: 1971-1999. DOI: 10.1007/s11301-022-00290-9

Taamneh et al., 2024 – *Taamneh, M., Aljawarneh, N., Al-Okaily, M., Taamneh, A., Al-Oqaily, A.* (2024). The impact of ethical leadership on organizational citizenship behavior in higher education: The contingent role of organizational justice. *Cogent Business & Management*. 11(1): 2294834.

Tajfel, Turner, 1986 – *Tajfel, H., Turner, J.C.* (1986). The social identity theory of intergroup behaviour. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations* (pp. 7-24). Chicago, IL: Nelson-Hall.

Tran, 2023 – *Tran, Q.H.N.* (2023). Exploring relationships among overload stress, work-family conflict, job satisfaction, person-organization fit and organizational commitment in public Organizations. *Public Organization Review*. 23: 759-775. DOI: 10.1007/s11115-021-00589-3

Verma, Verma, 2024 – *Verma, J.P., Verma, P.* (2024). *Confirmatory Factor Analysis with Structural Equation Modelling. In: Understanding Structural Equation Modeling*. Synthesis lectures on mathematics & statistics. Springer, Cham. DOI: 10.1007/978-3-031-32673-8_7

Zhou et al., 2023 – *Zhou, Q., Li, H., Li, B.* (2023). Employee posts on personal social media: The mediation role of work-life conflict on employee engagement. *Current Psychology*. 42: 32338-32354. DOI: 10.1007/s12144-022-04218-0

CBWA
CENTRE FOR BEHAVIOUR & WELLNESS ADVOCACY

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 59-74

DOI: 10.13187/jare.2025.1.59

Journal homepage:
http://kadint.net/our-journal.html

Objective and Subjective Financial Wellbeing: A Gender Study of Financial Behavior in Mexico

Román Culebro-Martínez [a], Némesis Larracilla-Salazar [a, b, *], Elena Moreno-García [a, c]

[a] Financial Literacy Research Center, Universidad Cristóbal Colón, Veracruz, Mexico
[b] Tecnológico Nacional de México, sede Alvarado, Veracruz, Mexico
[c] Tecnológico Nacional de México, sede Misantla, Veracruz, Mexico

Abstract

Financial well-being can be measured objectively and also subjectively through people's perceptions of their financial condition. This research aims to identify the relationship between objective and subjective financial well-being and financial behavior based on gender. We analyzed data from the National Survey on Financial Health (ENSAFI), a national sample of the Mexican population with 20,448 participants from the thirty-two states of Mexico. Indices were constructed for the financial behavior, objective financial well-being, and subjective financial well-being variables, their correlations were analyzed, and a logistic regression model was estimated. The results confirm the existence of a positive and significant relationship between the two dimensions of financial well-being and financial behavior, being greater the objective dimension. Likewise, it was found that both levels are lower for women and that the difference is more pronounced in the objective dimension. In addition, control variables such as age, marital status, economic dependents and receipt of financial support were observed. Regarding age, the findings show a negative effect mainly on the objective component of financial well-being, and the impact is relatively more pronounced in the male population. About marital status, women show more significant negative relationships than men, the latter being affected in their financial well-being only when their marital status is a free union. The existence of dependents shows a clear and consistent negative association with objective and subjective financial well-being. Finally, the positive influence of government financial support is only found in the subjective component and, mainly, in the financial well-being of the male population.

Keywords: Financial Behavior, Gender, Mexico, Objective Well-Being, Subjective Well-Being.

1. Introduction

The term financial well-being refers to the fullness that a person has to fulfill their obligations, satisfy their needs, and plan their future with the economic resources they have available (CFPB, 2015; García-Santillán, 2024; Prendergast et al., 2018). Financial well-being, also known as financial health, refers to the ability to manage personal finances effectively, thereby mitigating the risk of facing financial difficulties and allowing individuals to feel secure and free to make daily and future expenses (INEGI, 2023c).

* Corresponding author
E-mail address: nlarracilla@ucc.mx (N. Larracilla-Salazar)
Received: 27 February 2025 Revised: 03 March 2025; 15 April 2025 Accepted: 18 April 2025
Published: 30 April 2025

Studies have been found to affirm that well-being is associated with the best financial behaviors of individuals when deciding on aspects of their economy (Brüggen et al., 2017; Iramani, Lutfi, 2021; Mejía, 2015). Responsible financial practices lead to the better utilization of economic resources, resulting in financial prosperity (Carpena, Zia, 2020; Serido, 2022; García-Mata, Zerón-Félix, 2023). When the concept of financial behavior is discussed, it is assumed as the cognitive and emotional tendency of individuals to make decisions related to their finances, evaluating the available options through their knowledge and skills (Hernández-Rivera, Flores-Lara, 2022; Ricciardi, 2008), which will be based on personal experiences or other people's experiences that have been shared by socializing agents (Chuliá et al., 2022).

The lack of appropriate financial behavior has been linked to health problems (Pew Research Center, 2021; Ryu, Fan, 2023), such as metabolic syndrome that causes glucose and body fat disorders (Duarte et al., 2014; Schlosser, 2001); emotional problems derived from interpersonal conflicts within the home (Duarte et al., 2014); as well as difficulties when managing personal finances for issues related to the management of credit cards, retirement plans and savings (Tyson, 2006), the use of banking and more electronic means (Arduino, Peñaloza, 2018), that is, the lack of appropriate behaviors affect the well-being of a person.

As studies on well-being have been covered, a comprehensive vision is manifested when the objective and subjective well-being of individuals is considered, the first being defined by specialists by taking into account necessary factors at a social level and the second focusing on the particular experience around the appreciation of each individual (INEGI, n.d.); Likewise, the current trend in the concept and measurement of financial well-being seeks to recognize the interdependence of the individual and society, identifying both objective and subjective components in this variable (Brüggen et al., 2017; Maggli et al., 2021). The objective of this research is to analyze the impact of financial behavior on the objective and subjective financial well-being of Mexicans and identify if this relationship differs depending on gender.

Theoretical framework

To analyze human behavior, a lot of contributions from different areas of knowledge must be considered since individuals react to external and internal stimuli. That is, there is an impulse in people to attend to their needs. Behavior is related to the biological, cognitive, and social spheres, spheres that could also be considered dimensions in everyone's life (Engel, 1977). To understand human behavior, the analysis must consider theories focused on psychology, as well as learning and motivation theories.

In psychological theory, personality shapes how human beings organise their ideas and perceptions based on their interactions with the world (Montaño et al., 2009). Thus, the situations experienced also define the learning process and, therefore, how to act under the circumstances. About the theories of the psychological model the following stand out: Psychodynamic theories, where personality describes behavior by means of three structures: It, ego and super ego (Freud, 1967), which will intervene in the decision making according to people needs and their reflective processes; the Phenomenological theory of personality, which explains the behavior of human beings through a self-motivating component with a positive tendency, it means, that all individuals possess a tendency to achievement but must cultivate it to obtain the maximum potential, otherwise they self-injure by inhibiting it (Rogers, 1959); the Trait theory (Catell, 1943), it explains personality on the particularities of each human being (abilities, temperament and adaptability); the Behavioral Theory, which states that the environment shapes the individual and that the individual behaves following patterns of his learning (Skinner, 1971); the Cognitive theory, which translates personality as a three-dimensional scheme in which cognition, learning and the environment interact to analyze the situations, allowing a person to modify behavior, that is, to process a stimulus in order to associate a behavior in response (Bandura, 1977); and, finally, the Integrating theory, which proposes broad models to explain the relationship between temperament, character and intelligence (Lluís, 2002).

Among the most representative learning theories are behaviorism, constructivism, and cognitivism. In behavioral learning, the person is instructed using stimuli and reinforcement, which allow them to modify their behavior to associate their response with a positive or negative stimulus (Méndez-Mantuano et al., 2021; Reátegui et al., 2022; Skinner, 1971); Cognitivist learning emphasizes the process of knowledge development based on autonomous codification and storage of new information, thus there is an awareness of obtaining results through oriented reasoning

(Méndez-Mantuano et al., 2021; Piaget, 1976; Vigotsky, 1987); and, finally, the constructivist theory, which seeks that human beings learn by constructing their knowledge from their referents and the instructor acts as a mediator of learning environments (Piaget, 1976; Reátegui et al., 2022; Vigotsky, 1987).

The theories of motivation include the following: Maslow's hierarchy of needs theory (Maslow, 1943), Herzberg's two-factor theory (Herzberg, 1959), McClelland's three-needs theory (McClelland, 1961), and Alderfer's ERG theory (Alderfer, 1972). Each places special emphasis on how individuals will assume a hierarchy in the attention to their demands and share that, once organic needs are met, they escalate to the level of psychological needs. Only in the case of McClelland's theory are three types of motivational drives considered, which are classified according to the particular interest of the individual's sense of belonging. Herzberg, for his part, does not indicate a level but a balance between the two factors represented in his theory.

Likewise, human behavior and its understanding are also linked to the rationality that leads to decision-making. The theory of decision-making comes from the study of management science and takes the business environment as a reference, conceiving the decision as the unit of analysis within the company. This theory is based on cognitive psychology and tries to explain how the rational response process is formed, which will consider both internal and external information, as well as alternatives when evaluating the implications, to manage the best possible and feasible decision (Simon, 1947). In approaching the behavioral construct, some authors explain it in terms of attitudes, beliefs, and affective reactions (Ajzen, 1991; Sahni, 1994; Van der Plight et al., 1998), as well as from experience, knowledge, circumstances, and financial education (Duarte et al., 2014; Personal Finance Research Centre, 2005).

Research hypotheses

The objective dimension of well-being implies universal aspects inherent to human beings that are valued as standards to cover needs (Veenhoven, 2009). In the economic sphere, the objective dimension of well-being refers to aspects such as net liquid assets, net wealth, debt-to-assets ratio, debt-to-income ratio, and liquidity ratio (Halandová, 2024; Tenney, Kalenkoski, 2019). To assess financial well-being, it is recommended that at least three areas be considered: one to identify the ease with which individuals cover their payments on time and can respond financially to emergencies, another to analyze solvency and the ability to pay debts, and one more related to the accumulation of wealth.

Financial ratios are optimal for predicting and examining changes in the economy both in firms and within households (Baek, Devaney, 2004), therefore, some studies use the financial ratios of liquidity, debt-to-assets ratio, and investment to assess objective financial well-being (Garret, James, 2013; Tenney, Kalenkoski, 2019). Others associate objective financial well-being with the amount of savings, emergency funds, net worth, and debt level (Chang, 1994; Fitzsimmons, Leach, 1994; Godwin, 1994; Hefferan, 1982; Titus et al., 1989).

Finally, the Organization for Economic Cooperation and Development, to achieve a consensus on the conceptualization and measurement of financial well-being, exposes the complexity inherent to each context, institution, and country, and proposes the measurement of objective financial well-being through the capacity of income to meet the individual's needs and obligations; surplus income for making decisions about unplanned expenses or savings plans for the future; and total savings, access to credit and social security (OECD, 2024).

In this sense, behavior influences how people manage their finances (Wangi, Baskara, 2021) and the achievement of financial goals, in addition to how they assume their own financial education through the continuous management of information that allows them to make conscious decisions in favor of their financial resources (Aristei, Gallo, 2021). Based on the above, the first hypothesis of the study is proposed: H1. *Financial behavior is significantly and positively related to objective financial well-being*.

The characteristics of objective financial well-being have an impact on the overall well-being and satisfaction that people can perceive in their lives (Tenney, Kalenkoski, 2019). In terms of gender, men are more satisfied with their lives than women (Halandová, 2024). The OECD confirms that gender is associated with financial well-being, agreeing that men have higher financial well-being compared to women. (OECD, 2024). In this sense, the second hypothesis of the study arises: H2. *The relationship between financial behavior and objective financial well-being differs according to gender*.

The measure of subjective financial well-being includes financial satisfaction or satisfaction with certain financial aspects, such as being satisfied with the level of income and savings (Xiao, 2016). Mahdzan et al. (2019) define subjective financial well-being as perceived satisfaction with one's current financial situation, confidence and ability to cope with current and emergency expenses, and the ability to possess the financial freedom to do the things one likes to do and feel secure about one's future retirement. Financial satisfaction plays an important role in life satisfaction (Iramani, Lutfi, 2021). According to Xiao et al. (2013), there is a positive relationship between financial behavior and subjective financial well-being; that is, individuals who improve their financial behaviour tend to experience a higher level of subjective financial well-being than those who do not. Loo et al. (2023) argue that the relationship between financial behavior and subjective financial well-being is triggered by the locus of control, i.e., each individual's determination and belief that they are the ones who can manage their lives. Based on the above, the third hypothesis of the research is presented: H3. *Financial behavior is significantly and positively related to subjective financial well-being*.

There is evidence that the relationship between financial behavior and subjective financial well-being may differ by gender based on different personality traits (Fan et al., 2022; Zyphur et al., 2015), i.e., gender roles lead to different money management capabilities, in financial decision making and, therefore, in subjective financial well-being (Loo et al., 2023). Based on this evidence, the fourth and final research hypothesis is as follows: H4. *The relationship between financial behavior and subjective financial well-being differs by gender*.

2. Materials and Methods

Research design

Given the techniques used for data analysis and the purpose of its scope, the present research is a quantitative paradigm that seeks to generalize the results. Since the study provides an analysis of the relationship between objective and subjective financial well-being, financial behavior, and gender variables, it is considered descriptive.

Participants

The sample is a national one and comes from ENSAFI (INEGI 2023a). According to the ENSAFI methodology, the sampling was probabilistic and cross-sectional, as the respondents' participation was considered proportional to the size of the population (ranging from 3.0% to 3.3% according to the total population of each state) and was conducted from September 25 to November 17, 2023, specifically. The population studied included members of Mexican households, whose informants were of legal age. The eligibility criteria for the sample included individuals aged 18 years or older, of Mexican nationality, living in Mexico and residing in the surveyed household. It also included people from rural or urban localities who knew about all the household members.

Instrument

A survey made up of 10 sections (INEGI, CONDUSEF, 2023) is the research instrument. Table 1 presents the questions that were considered by the ENSAFI to obtain the data for the analysis.

Table 1. Variables of research and questions of the survey (ENSAFI)

Variables	ENSAFI questions
Gender	Informant gender (Woman, man)
Marital status	5.3 Do you currently... live with your partner in a free union? are you separated? divorced widowed married single
Economic dependents	5.8 How many of your children are financial dependents in the household? 5.9 Do you have children outside the home who are your economic dependents?

Variables	ENSAFI questions
	5.10 Do you have any other person who is financially dependent on you, such as a spouse or partner, parents, parents-in-law, grandchildren, among others, whether or not they live in the household?
Government financial support	5.11 Do you receive any economic support or government welfare programmes, such as senior citizens, or the Benito Juárez grant, among others?
Financial behavior	7.1 Do you keep records of your income and expenditure? 7.2 Do you: 7.2.1 record expenses? 7.2.2 keep the money for payments or debts separate from everyday spending money? 7.2.3 keep a record of outstanding bills or debts to remember to pay them. 7.2.4 use an application to manage money or expenses?
Objective financial wellbeing	7.7.1 Can you buy a gift without it being a problem for your finances? 7.7.2 Do you have money left over at the end of the month? 7.8.1 Can you cope with a major unforeseen expense? 7.8.5 Do you have enough money to cover your expenses?
Subjective financial wellbeing	7.7.4 Do you feel you can manage your finances without a problem? 7.8.3 Given your financial situation, do you feel you will have the things you desire? 7.8.4 Can you enjoy life because of the way you manage your money? 7.8.6 Do you feel confident that the money you have saved is sufficient?

Source: INEGI and CONDUSEF (2023) data

Data analysis

To carry out the statistical analysis, the financial behavior and objective and subjective financial well-being indexes were constructed for the general population and by gender as well. The indices were constructed as follows:

Objective financial well-being index. Following the approach proposed by the OECD (2023), 4 questions (7.7.1, 7.7.2, 7.8.1, and 7.8.5) from the ENSAFI (INEGI, 2023c) were used, which are answered on a five-point Likert scale. In this way, the objective financial well-being score took values between 4 and 20. The indicator was normalized, taking values between zero and one hundred for a more intuitive interpretation. Therefore, the closer it is to zero, the worse the objective financial well-being level will be and the closer it is to one hundred, the better the objective financial well-being level will be.

Subjective financial well-being index. Taking the OECD (2023) approach as a reference, 4 questions (7.7.4, 7.8.3, 7.8.4 and 7.8.6) from the ENSAFI (INEGI, 2023c) were used. These are answered on a five-point Likert scale. Thus, the subjective financial well-being score took values between 4 and 20. The indicator was normalized at 100 for a more intuitive interpretation. The closer it is to one hundred, the better the level of subjective financial well-being.

Financial behavior index. To construct the financial behavior indicator, a scale consisting of five questions (7.1, 7.2.1, 7.2.2, 7.2.3, and 7.2.4) from ENSAFI (INEGI, 2023c) was used, which measures the control people have over their income and expenses. The answers are dichotomous: they are answered only with a "yes" or "no". A value of 1 was assigned for affirmative answers and 0 for negative ones. Therefore, the financial behavior score ranges between 0 and 5 points. The indicator was adjusted to a scale of 100, the closer the result is to one hundred, the better the behavior.

Once the financial behavior index was estimated, its relationship with the objective and subjective financial well-being indexes was evaluated. The same operation was done considering the male and female populations separately. The hypotheses suggest the existence of a positive relationship between behavior and financial well-being (objective and subjective) and gender differences in their magnitude and correlation. To contrast, the correlation between the behavior and financial well-being indexes was first evaluated, and then a Logit regression model was estimated. For the estimation, the Gretl statistical package was used, version May 2024.

For the estimation of the Logit model, a value of 1 was assigned to people who had a high level of objective/subjective financial well-being and a value of 0 to those who had a low level of objective/subjective financial well-being. The mean objective/subjective financial well-being index was used to separate the two groups: people who had a level of objective/subjective financial well-being below the mean were classified as having low objective/subjective financial well-being; while people who had a level of objective/subjective financial well-being above the mean were classified as having high objective/subjective financial well-being. The same procedure was carried out separately for women and men. Age, marital status, dependents, and government financial support were used as control variables.

The general regression model proposed took the following form:

$FinanWB_i = \beta_0 + \beta_1 (FinanBehav_i) + \beta_2 (Age_i) + \beta_3 (Gender_i) + \beta_4 (FreeUnion_i) + \beta_5 (Separated_i) + \beta_6 (Divorced_i) + \beta_7 (Widowed_i) + \beta_8 (Married_i) + \beta_9 (Dependant_i) + \beta_{10} (Support_i) + \mu_i$

Where (for person *i*):

$FinanWB_i$ = Probability of having a high financial well-being level (objective/subjective). 1 if the financial well-being index level (objective/subjective) on a 100-point scale is above the average; 0 otherwise.

$FinanBehav_i$ = Financial behavior index on a 100-point scale.

Age_i = How old the person is at the time of the survey

$Gender_i$ = 1 if the person is a woman; 0 if the person is a man.

$FreeUnion_i$ = 1 if the person is in a free union or lives with his/her partner; 0 otherwise.

$Separated_i$ = 1 if the person is separated; 0 otherwise.

$Divorced_i$ = 1 if the person is divorced; 0 otherwise.

$Widowed_i$ = 1 if the person is widowed; 0 otherwise.

$Married_i$ = 1 if the person is married; 0 otherwise.

$Dependent_i$ = 1 if the person has dependents; 0 otherwise.

$Support_i$ = 1 if the person receives financial support from the government; 0 otherwise.

μ = Error term.

Given the econometric specification, the work hypotheses translate into testing the signs of the coefficients β1 for all models (for the general population, the male population, and the female population), which are expected to be positive. That is, the higher the levels of financial behavior, the higher the levels of objective/subjective financial well-being. Likewise, it will be observed whether there are differences in the marginal effect of the β1 coefficient between objective and subjective financial well-being and also between the groups of men and women separately.

4. Results

Descriptive analysis

Table 2 shows the sociodemographic and economic aspects of the respondents.

Table 2. Sociodemographic and economic characteristics of the sample

Variable	Indicator	N= 20448	%
Gender	Male	9175	44.9
	Female	11273	55.1
Marital status	Free union	4141	20.3
	Separated	2105	10.3
	Divorced	776	3.8
	Widowed	1759	8.6
	Married	7390	36.1
	Single	4277	20.9
Economic dependents	Yes	11772	57.6
	No	8625	42.2
	Not specified	51	.2
Financial support	Yes	4053	19.8
	No	16395	80.2

The sample is made up of 20,448 participants whose ages range between 18 and 98 years of age, from the 32 states in Mexico. As for the gender variable, it is observed in the above table that the majority of the participants are women (55.1 %). Regarding their marital status, the majority are married (36.1 %), followed by singles (20.9 %) and people in a free union (20.3 %). Most of them have people in their care (57.6 %) and around 20 % of the participants reported having financial support.

Table 3 presents the descriptive statistics for the objective and subjective financial well-being and financial behavior indexes, normalized at 100.

Table 3. Descriptive indicators of the indices

Indexes	**General**	**Female**	**Male**
Objective financial well-being			
Mean	58.9	57.2	60.9
Standard deviation	18.57	18.19	18.83
Subjective financial well-being			
Mean	61.8	60.3	63.5
Standard deviation	19.13	19.02	19.11
Financial behavior			
Mean	26.0	26.5	25.3
Standard deviation	30.59	30.47	30.73

When observing the mean of the indexes, it can be noted that subjective financial well-being is greater than objective in all cases, which emphasizes that the satisfaction and perception people have about their financial situation and money management are greater than their ability to manage and administer their finances and liquidity.

Although both men and women register a greater subjective financial well-being than an objective one, there are differences between both groups. The financial well-being (objective and subjective) of men is greater than that of women. In the case of subjective financial well-being, the difference is 3.2 points, while for objective financial well-being, the difference is 3.7 points.

On the financial behavior side, the women's financial behavior indicator is relatively higher than that of men (with a difference of 1.2 points). Although women's financial behavior is higher than that of men, they report lower levels of financial well-being. This fact could suggest that there are factors beyond financial behavior that sustain gender inequality in financial well-being.

Objective and subjective well-being and financial behavior

Table 4 shows the Pearson correlation coefficient values obtained for the well-being and financial behavior indexes examined.

It can be observed that the correlation between objective and subjective financial well-being is high, which emphasizes the link between both dimensions of well-being. Regarding hypotheses 1 and 3 raised in the work, the results show a positive and significant correlation (p ≤ 0.01) between the two dimensions of financial well-being and financial behavior. It is also observed that the financial behavior correlation with objective financial well-being is relatively higher than that with subjective financial well-being, which suggests that financial behavior is more associated with people's ability to manage their finances than with satisfaction and perception of their financial situation.

Table 4. Indexes correlation

Variable	Objective	Subjective	Financial
Objective financial well-	1		
Subjective financial	0.560**	1	
Financial behavior	0.272**	0.253**	1

Notes: ***p* ≤ .01; N = 20448. Bilateral correlation.

Tables 5 and Table 6 present the same correlation exercise, but consider only the female and male populations, respectively.

Table 5. Correlation of female indexes

Variable	Objective	Subjective	Financial
Objective financial well-	1		
Subjective financial well-	0.565**	1	
Financial behavior	0.259**	0.231**	1

Notes: $^{**}p \leq .01$; N = 11273. Bilateral correlation

Table 6. Correlation of male indexes

Variable	Objective financial	Subjective	Financial
Objective financial well-	1		
Subjective financial well-	0.550**	1	
Financial behavior	0.295**	0.284**	1

Notes: $^{**}p \leq .01$; N = 9175. Bilateral correlation

It can be observed that, although financial behavior shows a positive and significant correlation ($p \leq 0.01$) with the two financial well-being dimensions for men and women, in both cases, the correlation with objective well-being is relatively higher than with subjective well-being. This fact reaffirms the importance of the link between financial behavior and people's ability to manage their finances. The tables also show that the financial behavior correlation with the two dimensions of financial well-being is higher for men compared to women, which provides evidence to the hypotheses regarding the gender difference and suggests that men's financial behaviors would be relatively more associated with financial well-being than women's financial behaviors.

Table 7 shows the results of the six estimated Logit models. All models consider subjective and objective financial well-being as dependent variables. However, models 1 and 2 are estimated with the entire population, models 3 and 4 only record the female population, while the last two models take into account the male population only.

Table 7. Logit estimation of objective and subjective financial well-being. Marginal effects

	(1) Objective financial well-being	**(2) Subjective financial well-being**	**(3) Objective financial well-being of women**	**(4) Subjective financial well-being of women**	**(5) Objective financial well-being of men**	**(6) Objective financial well-being of men**
Financial behavior	0.0044* (0.0005)	0.0042* (0.0005)	0.0040* (0.0006)	0.0037* (0.0006)	0.0049* (0.0008)	0.0048* (0.0007)
Age	−0.0052* (0.0012)	−0.0028* (0.0011)	−0.0049* (0.0016)	−0.0027* (0.0016)	−0.0057* (0.0018)	−0.0031* (0.0018)
Gender (Men)						
Women	−0.1061* (0.0305)	−0.0819* (0.0299)				
Marital status (Single)						
Free union	−0.0318* (0.0514)	−0.0196 (0.0504)	−0.0268 (0.0682)	0.0007 (0.0672)	−0.0456* (0.0793)	−0.0534* (0.0772)
Separated	−0.0627* (0.0613)	−0.0643* (0.0610)	−0.0995* (0.0797)	−0.0874* (0.0799)	−0.0038 (0.0972)	−0.0266 (0.0953)
Divorced	−0.0234 (0.0868)	−0.0104 (0.0858)	−0.0654* (0.1123)	−0.0388 (0.1116)	0.0364 (0.1379)	0.0318 (0.1351)
Widowed	−0.0169 (0.0726)	0.0057 (0.0712)	−0.0570* (0.0895)	−0.0129 (0.0881)	0.0495 (0.1278)	0.0356 (0.1257)

Married	−0.0083 (0.0496)	0.0095 (0.0487)	−0.0318* (0.0648)	0.0014 (0.0640)	0.0120 (0.0780)	0.0094 (0.0759)
Economic dependents (Without)						
With dependents	−0.0633* (0.0355)	−0.0808* (0.0349)	−0.0816* (0.0469)	−0.0930* (0.0464)	−0.0316* (0.0559)	−0.0559* (0.0547)
Government financial support (Without)						
With Support	−0.0088 (0.0436)	0.0335* (0.0432)	−0.0168 (0.0557)	0.0281 (0.0552)	0.0068 (0.0710)	0.0427* (0.0701)
Constant	1.0513	0.3259	0.7305	0.0767	0.9651	0.2417
R^2 McFadden	0.0852	0.0601	0.0743	0.0500	0.0913	0.0691
Likelihood ratio test	$\chi^2(10)=$ 2413.79 [0.0000]	$\chi^2(10)=$ 1700.26 [0.0000]	$\chi^2(9)=$ 1160.51 [0.0000]	$\chi^2(9)=$ 774.08 [0.0000]	$\chi^2(9)=$ 1145.95 [0.0000]	$\chi^2(9)=$ 880.06 [0.0000]
N	20448	20448	11273	11273	9175	9175

Notes: *p ≤ .05. The marginal effect is presented for each variable. In parentheses, reference groups and standard errors.

The estimates obtained in the six models indicate a positive and significant relationship between financial behavior and the probability of having a high financial well-being level, both objective and subjective ($p \leq 0.05$). This fact provides evidence in favor of hypotheses 1 and 3 and corroborates the importance of the practices people carry out regarding the recording and control of their income and expenses with their financial well-being. However, the marginal contributions of financial behavior are different. The results of models 1 and 2 show that the marginal effect of the financial behavior index on the probability that people have a high financial well-being level is relatively larger in the objective dimension than in the subjective one. The marginal effect on subjective financial well-being is 0.42 % while on objective financial well-being, it is 0.44 %. The results of models 1 and 2 also show that the probability of having a high financial well-being level (both objective and subjective) is lower and significant ($p \leq 0.05$) for women. This inequality in women's financial well-being compared to that of men's is not evenly distributed across the two financial well-being dimensions. It can be noted that the negative marginal effect is 10.61 % for the objective dimension and 8.19 % for the subjective dimension, suggesting that the largest difference between men and women is associated with their ability to manage finances.

The gender difference in financial well-being can also be seen by examining the relationship between women's and men's financial behavior with their respective subjective and objective financial well-being. Models 3 to 6 indicate that the marginal effect of men's financial behavior is greater than that of women's in both financial well-being dimensions. It can also be noted that, although the marginal effect of financial behavior in both men and women is greater for objective financial well-being in relation to subjective financial well-being, the difference is less pronounced in the case of men (the marginal effect of financial behavior in men is 0.48 % for subjective financial well-being and 0.49 % for objective financial well-being, while for women it is 0.37 % for the subjective dimension and 0.40 % for the objective dimension). These results suggest, on the one hand, that the link between financial behavior and financial well-being (objective and subjective) is relatively more pronounced for men than women; and, on the other hand, that the gap of financial behavior and financial well-being relationship (objective and subjective) is more prominent in women. Both of these findings emphasize the unequal effects of financial behavior on the financial well-being of men and women and support hypotheses 2 and 4 of the study, suggesting that men's financial behaviors may have a relatively stronger relationship with financial well-being compared to those of women.

Table 7 also illustrates the impact of the remaining demographic variables examined: age, marital status, dependents, and government financial support. Considering the results of models 1 and 2, the probability of having a high financial well-being level (objective and subjective) is lower and significant ($p \leq 0.05$) when one is older. However, the marginal effects are different.

The negative marginal effect of age is larger in the financial well-being objective dimension compared to the subjective one (0.52 % and 0.28 % respectively).

Regarding marital status, living in a free union and being separated were significantly negatively associated with the probability of keeping a high objective financial well-being level. Meanwhile, the separated status showed a negative and significant association with subjective financial well-being (in all cases, the reference base group was the single marital status). Having dependents, as expected, showed a significant, consistent, and negative relationship with the probability of keeping high objective and subjective financial well-being levels ($p \leq 0.05$). However, government financial support showed a significant and positive relationship only with subjective financial well-being ($p \leq 0.05$). The social cash transfer programmes implemented in recent years in Mexico have contributed to increasing the financial well-being of the population, but mainly in the subjective dimension, that is, the satisfaction of a better financial situation, but without significantly influencing the ability to manage resources. When dividing the population between men and women, models 3 to 6 show that there are gender differences in the influence that the different demographic variables have on financial well-being.

Age shows a greater negative and significant marginal effect ($p \leq 0.05$) in the objective component of financial well-being for both, men and women. However, the marginal effect in women (0.49 %) is smaller than in men (0.57 %), which could suggest that age reduces objective financial well-being relatively more in the male population. Regarding marital status, those who are separated show a significant negative relationship with the probability of having a high subjective financial well-being level for women ($p \leq 0.05$), while being separated, divorced, widowed, or married (all compared to being single) show a significant negative association with the probability of keeping a high objective financial well-being level ($p \leq 0.05$). In the case of men, only those living in free union (compared to being single) show a significant negative association with the probability of having a high financial well-being level, both objective and subjective ($p \leq 0.05$).

Even though having dependents shows, for both men and women, a clear and consistent significant negative relationship with objective and subjective financial well-being ($p \leq 0.05$), it can be noted that the marginal effects are ostensibly greater among the female population. This fact could emphasize women's financial vulnerability related to the division of chores within households.

Finally, when separating the effects of government economic support on financial well-being by gender, models 3 to 6 show that it is only the male population and only in the subjective dimension of financial well-being where a significant and positive relationship is found ($p \leq 0.05$). This last fact suggests that, although social cash transfer programmes have helped improve the financial well-being of the population in Mexico, their contribution has been greater for the male segment of the population and less for the female segment.

5. Discussion

The study suggested that financial behavior is significantly and positively related to objective and subjective financial well-being and that the relationship between financial behavior and objective and subjective financial well-being differs by gender. The results confirmed the existence of a positive and significant relationship between the two dimensions of financial well-being and financial behavior, which is consistent with most of the current literature (Dare et al., 2023; Falahati et al., 2012; Fan, Henager, 2022; Maggli et al., 2021; Mahendru et al., 2022; Xiao et al., 2013) and highlight the importance of maintaining positive financial behaviors related to planning and controlling income, expenses, savings, and debts; particularly in the context of a Latin American country like Mexico, with relatively low financial behavior indicators (SHCP, 2019).

Similarly, it was found that financial behavior's impact on financial well-being is greater in the objective dimension than in the subjective one. This finding is consistent with some previous studies (Erner et al., 2016; Gardarsdóttir, Dittmar, 2012) and suggests that financial behavior is more closely linked to people's ability to manage their economic resources than to their satisfaction or perception of their financial situation and their money management.

The results also showed significant evidence that the levels of both objective and subjective financial well-being are lower for the female population compared to the male one, and that this difference is more pronounced in the objective dimension. The results are consistent with different studies that indicate that women have less financial well-being than men (Delafrooz, Paim, 2011; Gerrans et al., 2014; Gutter, Copur, 2011; Salignac et al., 2020) and suggest that the disparity between women's and men's financial well-being would be associated with factors related to the ability to manage their finances. It is also found that the link between financial behavior and financial well-being (objective and subjective) is relatively more pronounced for men than for women, which would reaffirm the idea that financial behaviors could have a relatively closer relationship with financial well-being in men compared to women. Furthermore, this research has provided enough evidence on the existence of gender differences that influence various demographic factors on financial well-being, particularly within the Latin American context. The research shows that age is negatively related to the objective and subjective financial well-being of men and women, which contrasts with studies that indicate a positive relationship between age and financial well-being (Collins, Urban, 2019; Zaimah, 2019). However, it agrees with another part of the literature that observes a negative relationship, indicating that age would be linked to cognitive decline, which could lead to poor financial decisions and therefore reduce financial well-being (Finke et al., 2017; Tenney, Kalenkoski, 2019). The findings also show that the age negative effect occurs mainly in the objective component of financial well-being, but the impact is relatively more pronounced in the male population compared to the female one.

As for marital status, the results appear to align with findings from various studies, which indicate that being married is positively related to financial well-being. This is because married individuals tend to take on more responsibilities, which encourages them to manage their finances more effectively. Therefore, their financial well-being is greater (Delafrooz, Paim, 2011; Headey, Wooden, 2004; Iramani, Lutfi, 2021; Porter, Garman, 1993; Sahi, 2013). Having dependents shows a clear and consistent negative association with objective and subjective financial well-being, which is consistent with the existing literature. This indicates that the number of dependents reduces financial well-being because people acquire more expenses and require higher income (Hong, Swanson, 1995; Iramani, Lutfi, 2021). Finally, regarding government financial support, the existing literature points out the positive influence that government conditional and unconditional cash transfer programmes have on people's financial satisfaction and well-being (Campara et al., 2017; Haushofer et al., 2020; Lloyd-Sherlock et al., 2012; Pilkauskas et al., 2023; Romero et al., 2021). However, this study, by separating financial well-being into its objective and subjective dimensions, has found that the positive influence of government economic support occurs only in the subjective component and, mainly, in the financial well-being of the male population. This suggests, on the one hand, that social cash transfer programmes have helped improve the financial well-being of the population in Mexico, but their contribution has been greater for the male population and lower for the female population. On the other hand, the increase in financial well-being has been in financial situation satisfaction, but without significantly influencing the capacity to manage resources. These results are even more relevant for the case of Mexico since the government has implemented priority social programmes in the last six years that involve unconditional monetary transfers to different population segments.

6. Conclusion

Based on the study results, it is concluded that financial behavior is positively and significantly related to both dimensions of financial well-being, with the relationship being greater for the objective dimension. This means that the research results provide evidence that financial behavior is closely related to economic resources management (economic well-being) and not so much to how individuals feel or visualize themselves (psychological/emotional well-being). Regarding gender, Mexican women present lower financial well-being levels in both the objective and subjective dimensions compared to men, with the gap being greater in the objective dimension. The study reveals that financial behaviors maintain a closer relationship with financial well-being in men compared to women, which emphasizes the need to financially educate this group. It also considers that the housework women perform requires time, which limits their participation in the formal financial market as well as developing skills necessary to exercise informed financial decision-making (Struckell et al., 2022). Understanding the differences between men and women requires analyzing biological, psychological, and socio-environmental factors, that is, a biopsychosocial perspective. For example, culture and social norms can contribute to individuals having a marked role in financial decision-making according to gender (Aristei, Gallo, 2021; Botazzi, Lusardi, 2020; Rink et al., 2021), as well as the division of chores within households (Hsu, 2016) and financial socialization in an extended family environment through parents (Botazzi, Lusardi, 2020; Chuliá et al., 2022). The research results show that the ability to manage economic resources is still an area of opportunity in the Mexican population in general. By increasing this capacity, the population's economic and perceived well-being improves, especially in women who are the most vulnerable. If a person maintains responsible practices with their income and expense control, as well as in the way of controlling said expenses, they will achieve a better use of their financial resources and, therefore, a correct administration of their money, which will contribute to appropriate financial health.

7. Declarations

Consent for publication

Not applicable.

Availability of data and materials

The data used in the analysis can be found at: https://www.inegi.org.mx/ programas/ensafi/2023/

Conflict of interest statement

The authors report no conflicts of interest.

Funding

There is no external funding to support this research. However, the authors sincerely thank the Centre for Behaviour and Wellness Advocacy, Ghana, for providing financial support through the Institutional Open Access Publication Fund.

Authors' contributions

This document is the work of the authors as an intellectual contribution to the academic work, which they approved for publication. Conceptualization: EMG, RCM and NLS, methodology, data curation, data analysis: RCM, writing – original draft preparation, writing: RCM, NLS and EMG; writing – review and editing: EMG; writing – supervision: RCM and NLS. All authors have read and agreed to the final version of the manuscript for publication.

Authors' ORCID

Román Culebro-Martínez https://orcid.org/0000-0003-4643-4771
Némesis Larracilla-Salazar https://orcid.org/0000-0001-7380-0621
Elena Moreno-García https://orcid.org/0000-0001-9591-5921

References

Ajzen, 1991 – *Ajzen, I.* (1991). The theory of planned behaviour. *Organizational Behavior and Human Decision Processes*. 50: 179-211. DOI: 10.1016/0749-5978(91)90020-T

Alderfer, 1972 – *Alderfer, C.P.* (1972). Existence, relatedness, and growth: Human needs in organizational settings. Free Press.

Arduino, Peñaloza, 2018 – *Arduino, A., Peñaloza, A.* (2018). Comportamiento de los clientes bancarios frente a los servicios electrónicos. *Actualidad Contable Faces*. 21(37): 5-23.

Aristei, Gallo, 2021 – *Aristei, D., Gallo, M.* (2021). Financial knowledge, confidence, and sustainable financial behavior. *Sustainability*. 13(19): 1-21. DOI: 10.3390/su131910926

Bandura, 1977 – *Bandura, A.* (1977). Social learning theory. Prentice Hall.

Baek, De Vaney, 2004 – *Baek, E., De Vaney, S.A.* (2004). Assessing the baby boomers' financial wellness using financial ratios and a subjective measure. *Family and Consumer Sciences Research Journal*. 32(4): 321-348. DOI: 10.1177/1077727X04263826

Bottazzi, Lusardi, 2020 – *Bottazzi, L., Lusardi, A.* (2020). Stereotypes in financial literacy: evidence from PISA. *National Bureau of Economic Research Working Papers*, 28065. DOI: 10.3386/W28065

Brüggen et al., 2017 – *Brüggen, E.C., Hogreve, J., Holmlund, M., Kabadayi, S., Löfgren, M.* (2017). Financial well-being, a conceptualization and research agenda. *Journal of Business Research*. 79: 228-237. DOI: 10.1016/j.jbusres.2017.03.013

Campara et al., 2017 – *Campara, J.P., Vieira, K.M., Potrich, A.C.G.* (2017). Overall life satisfaction and financial well-being: Revealing the perceptions of the beneficiaries of the Bolsa Família Program. *Revista de Administração Pública*. 51(2): 182-200. DOI: 10.1590/0034-7612156168

Carpena, Zia, 2020 – *Carpena, F., Zia, B.* (2020). The causal mechanism of financial education: Evidence from mediation analysis. *Journal of Economic Behavior and Organization*. 177: 143-184. DOI: 10.1016/j.jebo.2020.05.001

Cattell, 1943 – *Cattell, R.B.* (1943). The description of personality. I. Foundations of trait measurement. *Psychological Review*. 50(6): 559-594. DOI: 10.1037/h0057276

Chang, 1994 – *Chang, Y.R.* (1994). Saving behavior of U.S. households in the 1980s: Results from the 1983 and 1986 Survey of Consumer Finance. *Financial Counseling and Planning*. 5: 45-64.

Chuliá et al., 2022 – *Chuliá, E., Garrido, L., Miyar, M.* (2022). Familia y socialización financiera: una aproximación empírica al caso español. *Panorama social*. (35): 137-154.

Collins, Urban, 2019 – *Collins, J.M., Urban, C.* (2019). Measuring financial well-being over the lifecourse. *The European Journal of Finance*. 26(4-5): 341-359. DOI: 10.1080/1351847X.2019.1682631

CFPB, 2015 – Consumer Financial Protection Bureau [CFPB]. (2015, January) Financial well-being: The goal of financial education. CFPB. [Electronic resource]. URL: https://www.consumerfinance.gov/data-research/research-reports/financial-well-being/

Dare et al., 2023 – *Dare, S.E., van Dijk, W.W., van Dijk, E., van Dillen, L.F., Gallucci, M., Simonse, O.* (2023). How executive functioning and financial self-efficacy predict subjective financial well-being via positive financial behaviors. *Journal of Family and Economic Issues*. 44(2): 232-248. DOI: 10.1007/s10834-022-09845-0

Delafrooz, Paim, 2011 – *Delafrooz, N., Paim, L.H.* (2011). Determinants of financial wellness among Malaysia workers. *African Journal of Business Management*. 5(24): 10092-10100. DOI: 10.5897/AJBM10.1267

Duarte et al., 2014 – *Duarte, L.G., Rosado, Y.L., Basulto, J.H.* (2014). Comportamiento y bienestar financiero como factores competitivos en el personal académico de una institución de educación superior. *Mercados y Negocios*. 15(2): 129-146.

Engel, 1977 – *Engel, G.L.* (1977). The need for a new medical model: a challenge for biomedicine. *Science*. 196(4286): 129-136. DOI: 10.1126/science.847460

Erner et al., 2016 – *Erner, C., Fox, C.R., Chalekian, J., De La Rosa, G., Trepel, C.* (2016). Objective and subjective consumer financial well-being. *SSRN Electronic Journal*. 1-50. DOI: 10.2139/ssrn.3643575

Falahati et al., 2012 – *Falahati, L., Sabri, M.F., Paim, L.H.J.* (2012). Assessment a model of financial satisfaction predictors: examining the mediate effect of financial behaviour and financial strain. *World Applied Sciences Journal*. 20(2): 190-197. DOI: 10.5829/idosi.wasj.2012.20.02.1832

Fan et al., 2022 – *Fan, L., Chatterjee, S., Kim, S.* (2022). Young adults' personality traits and subjective well-being: the role of perceived money management capability. *Journal of Behavioral and Experimental Finance*. 35: 100689. DOI: 10.1016/j.jbef.2022.100689.

Fan, Henager, 2022 – *Fan, L., Henager, R.* (2022) A structural determinants framework for financial well-being. *Journal of Family and Economic Issues*. 43(2): 415-428. DOI: 10.1007/s10834-021-09798-w

Finke et al., 2017 – *Finke, M.S., Howe, J.S., Huston, S.J.* (2017). Old age and the decline in financial literacy. *Management Science*. 63(1): 213-230. DOI: 10.1287/mnsc.2015.2293

Fitzsimmons, Leach, 1994 – *Fitzsimmons, V.S., Leach, L.J.* (1994). Net worth change: beginning and expanding life cycle stages. *Financial Counseling and Planning*. 5(1): 65-82.

Freud, (1967) – *Freud, S.* (1967). Obras completas. España: Biblioteca Nueva.

García-Mata, Zerón-Félix, 2023 – *García-Mata, O., Zerón-Félix*, M. (2023). Financial literacy, financial inclusion, and objective financial situation in México. *Consumer Interests Annual*. 69: 1-12.

García-Santillán, 2024 – *García-Santillán, A.* (2024). Financial behavior and knowledge regarding debt payment and its relationship with sociodemographic variables. *Journal of Advocacy, Research and Education*. 11(1): 38-46. DOI: 10.13187/jare.2024.1.38

Garrett, James, 2013 – *Garrett, S., James, R.N., III.* (2013). Financial ratios and perceived household financial satisfaction. *Journal of Financial Therapy*. 4(1): 39-62. DOI: 10.4148/jft.v4i1.1839

Gardarsdóttir, Dittmar, 2012 – *Gardarsdóttir, R.B., Dittmar, H.* (2012). The relationship of materialism to debt and financial well-being: the case of iceland's perceived prosperity. *Journal of Economic Psychology*. 33(3): 471-481. DOI: 10.1016/j.joep.2011.12.008

Gerrans et al., 2014 – *Gerrans, P., Speelman, C., Campitelli, G.* (2014). The relationship between personal financial wellness and financial wellbeing: a structural equation modeling approach. *Journal of Family and Economic Issues*. 35(2): 145-160. DOI: 10.1007/s10834-013-9358-z

Godwin, 1994 – *Godwin, D.D.* (1994). Antecedents and consequences of newlyweds' cash flow management. *Financial Counseling and Planning*. 5: 161-190.

Gutter, Copur, 2011 – *Gutter, M., Copur, Z.* (2011). Financial behaviors and financial well-being of college students: evidence from a national survey. *Journal of Family and Economic*

Issues. 32(4): 699-714. DOI: 10.1007/s10834-011-9255-2

Halandová, 2024 – *Halandová, K.* (2024). The influence of objective financial well-being on life satisfaction. *Ekonomické Rozhl'ady – Economic Review*. 53(2): 131-149. DOI: 10.53465/ER.2644-7185.2024.2.131-149

Haushofer et al., 2020 – *Haushofer, J., Mudida, R., Shapiro, J.P.* (2020, November). The comparative impact of cash transfers and a psychotherapy program on psychological and economic well-being (working paper 28106). *National Bureau of Economic Research, Working Paper Series*. [Electronic resource]. URL: https://www.nber.org/system/files/working_papers/w28106/w28106.pdf

Headey, Wooden, 2004 – *Headey, B., Wooden, M.* (2004). The effects of wealth and income on subjective well-being and ill-being. *Economic Record*. 80(1): 24-33. DOI: 10.1111/j.1475-4932.2004.00181.x

Hefferan, 1982 – *Hefferan, C.* (1982). Determinants and patterns of family saving. *Home Economics Research Journal*. 11(1): 47-55. DOI: 10.1177/1077727X8201100109

Hernández-Rivera, Flores-Lara, 2022 – *Hernández-Rivera, A., Flores-Lara, S.A.* (2022). El comportamiento financiero de los jóvenes universitarios en seis entidades federativas de México: un análisis desde la perspectiva financiera-conductual. *Diálogos sobre educación. Temas Actuales en Investigación Educativa*. 13(25): 1-19. DOI: 10.32870/dse.v0i25.1131

Herzberg, 1959 – *Herzberg, F.* (1959). *The motivation to work*. New York: John Wiley, Sons.

Hong, Swanson, 1995 – *Hong, G-S., Swanson, P.M.* (1995). Comparison of financial well-being of older women, 1977 and 1989. *Journal of Financial Counseling and Planning*. 6: 129-138.

Hsu, 2016 – *Hsu, J.* (2016). Aging and strategic learning: The impact of spousal incentives on financial literacy, *Journal of Human Resources,* 51(4): 1036-1067. DOI: 10.3368/JHR.51.4.1014-6712R

Instituto Nacional de Estadística y Geografía, 2023a – Instituto Nacional de Estadística y Geografía. (2023). Encuesta Nacional sobre Salud Financiera 2023: ENSAFI: Diseño muestral. INEGI. [Electronic resource]. URL: https://en.www.inegi.org.mx/app/biblioteca/ficha.html?upc=889463916840

Instituto Nacional de Estadística y Geografía, 2023b – Instituto Nacional de Estadística y Geografía. (2023b). Encuesta Nacional sobre Salud Financiera (ENSAFI) 2023. Datos abiertos. INEGI [Electronic resource]. URL: https://www.inegi.org.mx/programas/ensafi/2023/#datos_abiertos

Instituto Nacional de Estadística y Geografía, 2023c – Instituto Nacional de Estadística y Geografía. (2023c). Encuesta Nacional sobre Salud Financiera (ENSAFI) 2023. Nota técnica. INEGI [Electronic resource]. URL: https://www.inegi.org.mx/contenidos/programas/ensafi/2023/doc/ensafi_2023_nota_tecnica.pdf

Instituto Nacional de Estadística y Geografía, n.d. – Instituto Nacional de Estadística y Geografía. (n.d.). Bienestar subjetivo – BIARE Básico. INEGI. [Electronic resource]. URL: https://www.inegi.org.mx/investigacion/bienestar/basico/#documentacion

INEGI, 2023 – Instituto Nacional de Estadística y Geografía [INEGI] y Comisión Nacional Para la Protección y Defensa de los Usuarios de Servicios Financieros [CONDUSEF]. Encuesta Nacional sobre Salud Financiera (ENSAFI) 2023. Cuestionario. INEGI. 2023. [Electronic resource]. URL: https://www.inegi.org.mx/contenidos/programas/ensafi/2023/doc/ensafi_2023_cuestionario.pdf

Iramani, Lutfi, 2021 – *Iramani, R., Lutfi, L.* (2021) An integrated model of financial well-being: The role of financial behavior. *Accounting*. 7(3): 691-700. DOI: 10.5267/j.ac.2020.12.007

Lloyd-Sherlock et al., 2012 – *Lloyd-Sherlock, P., Saboia, J., Ramírez-Rodríguez, B.* (2012). Cash transfers and the well-being of older people in Brazil. *Development and Change*. 43(5): 1049-1072. DOI: 10.1111/j.1467-7660.2012.01790.x

Lluís, 2002 – *Lluís, J.* (2002). Personalidad: esbozo de una teoría integradora. *Psicothema*. 14(4): 693-701.

Loo et al., 2023 – *Loo, M.W., Kuah, Y.C., Liuh, F.M.* (2023). Factors affecting subjective financial well-being of emerging adults in Malaysia in A. Appolloni et al. (Eds.), *Advances in Economics, Business and Management Research* (Vol. 234: pp. 132-148). Atlantis Press. DOI: 10.2991/978-2-494069-99-2_11

Maggli et al., 2021 – *Maggli, A.S., Sabri, M.F., Rahim, H.A., Othman, M.A.* (2021). Influence of financial behavior, financial stress and locus of control on financial well-being among B40 households in selangor during the pandemic. *International Journal of Academic Research in Business & Social Sciences*. 11(12): 468-486. DOI: 10.6007/IJARBSS/v11-i12/11792

Mahdzan et al., 2019 – *Mahdzan, N.S., Zainudin, R., Sukor, M.E.A., Zainir, F., Wan Ahmad,* *W.M.* (2019). Determinants of subjective financial well-being across three different household income groups in Malaysia. *Social Indicators Research*. 146: 699-726. DOI: 10.1007/s11205-019-02138-4

Mahendru et al., 2022 – *Mahendru, M., Sharma, G.D., Hawkins, M.* (2022). Toward a new conceptualization of financial well-being. *Journal of Public Affairs*. 22(2): 1-15. DOI: 10.1002/pa.2505

Maslow, (1943) – *Maslow, A.H.* (1943). A theory of human motivation. *Psychological Review*. 50(4): 370–396. DOI: 10.1037/h0054346

McClelland, 1961 – *McClelland, D.C.* (1961) The Achieving Society. Princeton, NJ: Van Nostrand. DOI: 10.1037/14359-000

Mejía, 2015 – *Mejía, G.* (2015). Impacto de las capacidades financieras en el bienestar de los empleados. *RECAI Revista de Estudios en Contaduría, Administración e Infomática*. 4(11): 1-23.

Méndez-Mantuano et al., 2021 – *Méndez-Mantuano, M.O., Egüez, E.C., Ochoa, K.V., Plúas, D.R., Paredes, C.E.* (2021). Análisis del conductismo, cognitivismo, constructivismo y su interrelación con el conectivismo en la educación postpandemia. *South Florida Journal of Development*. 2(5): 6850-6863. DOI: 10.46932/sfjdv2n5-038

Montaño et al., 2009 – *Montaño, M., Palacios, J., Gantiva, C.* (2009). Teorías de la personalidad. Un análisis histórico del concepto y su medición. *Psychologia: Avances de la disciplina*. 3(2): 81-107.

Personal Finance Research Centre, 2005 – *Personal Finance Research Centre*. (2005). Measuring financial capability: An exploratory study. London: Financial Services Authority. [Electronic resource]. URL: https://www.bristol.ac.uk/media-library/sites/geography/migrated/documents/pfrc0510.pdf

Pew Research Center, 2021 – Pew Research Center. Many Americans continue to experience mental health difficulties as pandemic enters second year. Pew Research Center. 2021, March 16. [Electronic resource]. URL: https://www.pewresearch.org/fact-tank/2021/03/16/many-americans-continue-to-experience-mental-health-difficulties-as-pandemic-enters-second-year/

Piaget, 1976 – *Piaget, J.* (1976). Piaget's Theory. In: B. Inhelder, H.H. Chipman, C. Zwingmann (Eds.*), Piaget and His School*. Springer. DOI: 10.1007/978-3-642-46323-5_2

Pilkauskas et al., 2023 – *Pilkauskas, N.V., Jacob, B.A., Rhodes, E., Richard, K., Shaefer, H.L.* (2023). The COVID cash transfer study: The impacts of a one-time unconditional cash transfer on the well-being of families receiving SNAP in twelve states. *Journal of Policy Analysis and Management,* 42(3): 771-795. DOI: 10.1002/pam.22464

Porter, Garman, 1993 – *Porter, N.M., Garman, E.T.* (1993). Testing a conceptual model of financial well-being. *Journal of Financial Counseling and Planning*. 4: 135-165.

Prendergast et al., 2018 – *Prendergast, S., Blackmore, D., Kempson, E., Russell, R., Kutin, J.* (2018). Financial well-being, a survey of adults in Australia. ANZ. DOI: 10.13140/RG.2.2.32528.05128

Reátegui et al., 2022 – *Reátegui, G. R., Yahuana, R., Soplin, J. A. Vizcarra, A. M.* (2022). Conductismo, cognitivismo, constructivismo: Sus aportes y las características del docente y estudiante. *Paidagogo. Revista de Investigación en Ciencias de la Educación*. 4(2): 90-102. DOI: 10.52936/p.v4i2.136

Ricciardi, 2008 – *Ricciardi, V.* (2008). The Psychology of Risk: The behavioral finance perspective. En F.J. Fabozzi (Ed.), *Handbook of finance: Investment management and financial management* (Vol. 2: pp. 85-111). John Wiley, Sons. DOI: 10.1002/9780470404324.hof002010

Rink et al., 2021 – *Rink, U., Walle, Y.M., Klasen, S.* (2021). The financial literacy gender gap and the role of culture. *The Quarterly Review of Economics and Finance*. 80: 117-134. DOI: 10.1016/J.QREF.2021.02.006.

Rogers, 1959 – *Rogers, C.R.* (1959). A theory of therapy, personality, and interpersonal relationships, as developed in the client-cetenred framework. In S. Koch (Ed.). *Psychology: A study of a science*. *Study* 1 (Vol. 3: pp.184-256). McGraw-Hill.

Romero et al., 2021 – *Romero, J., Esopo, K., McGuire, J., Haushofer, J.* (2021). The effect of economic transfers on psychological well-being and mental health. *Mimeo*. 1-40.

Ryu, Fan, 2023 – *Ryu, S., Fan, L.* (2023). The relationship between financial worries and psychological distress Among U.S. Adults. *Journal of Family and Economic Issues*. 44(1): 16-33. DOI: 10.1007/s10834-022-09820-9

Sahi, 2013 – *Sahi, S.K.* (2013). Demographic and socio-economic determinants of financial satisfaction. *International Journal of Social Economics*. 40(2): 127-150. DOI: 10.1108/0306829 1311283607

Sahni, 1994 – *Sahni, A.* (1994). Incorporating perceptions of financial control in purchase prediction: An empirical examination of the theory of planned behavior. *Advances in Consumer Research*. 21(1): 442-448.

Salignac, 2020 – *Salignac, F., Hamilton, M., Noone, J., Marjolin, A., Muir, K.* (2020). conceptualizing financial wellbeing: an ecological life-course approach. *Journal of Happiness Studies*. 21: 1581-1602. DOI: 10.1007/s10902-019-00145-3

Schlosser, 2001 – *Schlosser, E.* (2001). Fast food nation: the dark side of the all-american meal. Houghton Miff Harcourt Company

SHCP, 2019 – Secretaría de Hacienda y Crédito Público [SHCP] y Comisión Nacional Bancaria y de Valores [CNBV]. 2019. Alfabetización Financiera en México (Estudios de Inclusión Financiera núm. 1). SHCP y CNBV. [Electronic resource]. URL: https://www.gob.mx/cms/uploads/attachment/file/613908/01_Indice_de_Alfabetizacion.pdf

Serido, 2022 – *Serido, J.* (2022). Financial literacy among young adults. In G. Nicolini and B.J. Cude (Eds.), *The Routledge Handbook of Financial Literacy* (1st ed., pp. 1-17). Routledge. Taylor and Francis Group. DOI: 10.4324/9781003025221-5

Simon, 1947 – *Simon, H.A.* (1947). Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization. New York: Macmillan.

Skinner, 1971 – *Skinner, B.F.* (1971). Ciencia y conducta humana. (2ª ed.). Fontanella.

Struckell et al., 2022 – *Struckell, E.M., Patel, P.C., Ojha, D., Oghazi, P.* (2022). Financial literacy and self employment – the moderating effect of gender and race. *Journal of Business Research*. 139: 639-653. DOI: 10.1016/j.jbusres.2021.10.003

Tenney, Kalenkoski, 2019 – *Tenney, J.A., Kalenkoski, C.* (2019). Financial ratios and financial satisfaction: exploring associations between objective and subjective measures of financial well-being among older americans. *Journal of Financial Counseling and Planning*. 30(2): 231-243. DOI: 10.1891/1052-3073.30.2.231

OECD, 2023 – The Organization for Economic Cooperation and Development [OECD]. 2023, December 14. OECD/INFE 2023 International Survey of Adult Financial Literacy. OECD. DOI: 10.1787/56003a32-en

OECD, 2024 – The Organization for Economic Cooperation and Development [OECD]. (2024). G20 Policy Note On Financial Well-Being. OECD. [Electronic resource]. URL: https://www.oecd.org/en/publications/g20-policy-note-on-financial-well-being_7332c99d-en.html

Titus et al., 1989 – *Titus, P.M., Fanslow, A.M., Hira, T.K.* (1989). Net worth and financial satisfaction as a function of household money managers' competencies. *Home Economics Research Journal*. 17(4): 309-318. DOI: https: 10.1177/1077727X8901700404

Tyson, 2006 – *Tyson, E.* (2006). Personal Finance for Dummies. Wiley Publishing.

Van der Pligt et al., 1998 – *Van der Pligt, J., Zeelenberg, M., Van Dijk, W.W., De Vries, N.K., Richard, R.* (1998). Affect, attitudes and decisions: Let's be more specific. In W. Stroebe, M. Hewstone (Eds.), *European Review of Social Psychology* (Vol. 8: pp. 33-66). John Wiley & Sons.

Veenhoven, 2009 – *Veenhoven, R.* (2009). Medidas de la felicidad nacional bruta. *Psychosocial Intervention*. 18(3): 279-299.

Vygotsky, 1987 – *Vygotsky, L.S.* (1987). The Collected Works of L. S. Vygotsky: Volume 1: Problems of General Psychology, Including the Volume Thinking and Speech. Plenum Press.

Wangi, Baskara, 2021 – *Wangi, L.A.L.G.C., Baskara, G.K.* (2021). The effect of financial attitude, financial behavior, financial knowledge and sociodemographic factors on individual investment decision behavior. *American Journal of Humanities and Social Sciences Research (AJHSSR)*. 5(2): 519-527.

Xiao et al., 2013 – *Xiao, J.J., Chen, C., Chen, F.* (2013). Consumer financial capability and financial satisfaction. *Social Indicators Research*. 118(1): 415-432. DOI: 10.1007/s11205-013-0414-8

Xiao, 2016 – *Xiao, J. J.* (2016). Consumer financial capability and wellbeing in J.J. Xiao (Ed.), *Handbook of Consumer Finance Research* (pp. 3-17). Springer. DOI: 10.1007/978-3-319-28887-1_1

Zaimah, 2019 – *Zaimah, R.* (2019). The probability factor influences the level of financial well-being of workers in Malaysia. *Geografia Online™ Malaysian Journal of Society and Space*. 15(3): 122-135. DOI: 10.17576/geo-2019-1503-09

Zyphur et al., 2015 – *Zyphur, M.J., Li, W.D., Zhang, Z., Arvey, R.D., Barsky, A.P.* (2015). Income, personality, and subjective financial well-being: the role of gender in their genetic and environmental relationships. *Frontiers in Psychology*. 6: 1-16. DOI: 10.3389/fpsyg.2015.0149

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 75-81

DOI: 10.13187/jare.2025.1.75

Journal homepage:
http://kadint.net/our-journal.html

Reflecting on Reflexivity and Positionality in Qualitative Research: What, Why, When, and How?

Jacob Owusu Sarfo [a, b, c, *], Dean Kormla Attigah [a, b, d]

[a] University of Cape Coast, Cape Coast, Ghana
[b] Centre for Behaviour and Wellness Advocacy, Koforidua, Ghana
[c] Cherkas Global University, Washington, USA
[d] Nursing and Midwifery Training College, Odumase-Krobo, Ghana

Abstract

Reflexivity has emerged as a central concern in qualitative research, emphasising the researcher's role as an observer and an integral part of the research process. Recognising the researcher as a 'tool' highlights the importance of self-awareness, positionality, and transparency throughout the study. This paper explores the concept of reflexivity by addressing four foundational questions that qualitative researchers must consider: What is reflexivity? Why is it vital to the integrity and depth of qualitative inquiry? When should it be applied? How can it be effectively practised? Adopting a conceptual and literature-informed reflective approach, this paper examines reflexivity's theoretical underpinnings and practical applications across various qualitative methodologies. The discussion aims to clarify the multifaceted nature of reflexivity and its implications for enhancing research quality, credibility, and ethical rigour. Drawing on key scholarly contributions, the paper provides insights and recommendations for researchers to critically examine their assumptions, values, and influences throughout the research process.

Keywords: Bias, Epistemology, Methodology, Qualitative Research, Reflexivity, Researcher Positionality, Self-awareness.

1. Introduction

Reflecting on our journeys as qualitative researchers, one major challenge raised by most researchers who intend to adopt the qualitative approach is the issue of reflexivity and positionality. Reflexivity is currently a commonly recognised aspect of methodological rigour and trustworthiness in qualitative research. Although often discussed as a contemporary concern, reflexivity is not a new concept; it has been a topic of discussion for centuries. Over the years, practitioners in some social and clinical sciences have engaged in reflexivity for over a century. According to Berger (2015), reflexivity "*means turning of the researcher lens back onto oneself to recognise and take responsibility for one's own situatedness within the research and the effect that it may have on the setting and people being studied, questions being asked, data being collected and its interpretation*" (p. 220). Thus, in qualitative research, it is vital to understand that

* Corresponding author
E-mail addresses: jacob.sarfo@ucc.edu.gh (J.O. Sarfo)
Received: 08 November 2024 Revised: 15 March 2025 Accepted: 18 March 2025
Published: 30 April 2025

the researchers who are not detached observers but active participants pose some levels of positionality, values, and interactions that shape every stage of the research process (Haynes, 2012; Mauthner, Doucet, 2003). As such, reflexivity – the practice of critically examining one's role and influence in the research – has become an essential component of qualitative inquiry.

For qualitative researchers, reflexive practice entails a self-examination of their assumptions, biases, and social positions, including other personal factors such as age, gender, race, socioeconomic status, educational level, professional experience, and cultural background, especially concerning their participants (Berger, 2015). Making these positionalities explicit enhances the credibility and depth of qualitative research. Furthermore, scholars such as Buetow (2019) stress the importance of recognising and mitigating unconscious cognitive biases, which may often lead researchers to favour interpretations that align with pre-existing beliefs. This issue is particularly pressing when theoretical frameworks are rigidly applied, potentially narrowing the lens through which data are interpreted.

This paper seeks to explore reflexivity in qualitative research by addressing four key questions: What is reflexivity? When should it be practised? How can it be effectively implemented? Why is it essential to do rigorous research? Through a conceptual and literature-informed reflection, the paper outlines the role of reflexivity in enhancing the integrity, credibility, and depth of qualitative inquiry.

2. Methods and Materials

This paper takes a reflective, literature-based approach. This approach offered a thoughtful and critical exploration of reflexivity – what it is, when it comes into play, how it can be practised, and why it matters. Although this paper benefited from established scholarship, it also presents personal interpretations on how reflexivity can be meaningfully integrated into qualitative research.

The following research questions guided this paper:

1. What is reflexivity?
2. Why is it essential to qualitative research?
3. When should it be practised?
4. How is it enacted throughout the research process?

In this approach, the focus is not on seeking generalisable conclusions. Instead, the paper aims to engage qualitative researchers, especially those newer to the field, in navigating the often complex practice of reflexivity.

3. Understanding Reflexivity: The "What"

Reflexivity, a long-standing concept in qualitative research, is associated with many definitions. One attempt to accommodate the variety of definitions is that of Olmos-Vega (2022), who defines reflexivity as an ongoing, conscious, collaborative, and multidimensional effort to appraise one's subjectivity in relation to the research process. It involves introspection and reflection, resulting in the researcher's conscious awareness of their influence on the research process (Braund et al., 2024). These definitions emphasise that reflexivity is not an event, but rather a process that spans the entire research process and reflects the researcher's acknowledgement of the various ways they can influence different stages of the research (Jamieson et al., 2023). Reflexivity further requires conscious effort, as its absence does not negate its influence on the proposed study. While Bright et al. (2024) agree with the dynamic nature of, they argue that the traditional notion of reflexivity dichotomises the researcher's positionality as that of an "outsider" or "insider," which, in their view, is overly simplistic. They contend that beyond the traditional role of reflexivity in developing the researcher's self-awareness of their subjectivity, reflexivity contributes to the transformation of the researcher. They draw on the Foucauldian concept of the "care of self" to argue that engaging in reflexivity, particularly for doctoral researchers, alongside self-discovery, facilitates identity formation (Bright et al., 2024).

Reflexivity can take different dimensions. Personal reflexivity involves examining one's own beliefs, values, and experiences to understand how they influence the interaction and interpretation of data (Olmos-Vega, 2022). Relational or interpersonal reflexivity refers to the reciprocal influence of interactions between the researcher and the researched and vice versa (Olmos-Vega, 2022). Epistemological reflexivity, on the other hand, critically examines the chosen paradigms and their relative assumptions, as well as how these inform the research design and the type of knowledge that can be generated. Closely related is methodological reflexivity, which examines the choice of research design and methods used in the research, as well as the restrictions they impose on knowledge creation (Olmos-Vega, 2022). Embedded within reflexivity are closely related concepts, including positionality, subjectivity, and reflectivity.

Positionality, subjectivity, and reflection are closely related to reflexivity and are sometimes used interchangeably in literature, but they are distinct from each other. Positionality encompasses the researcher's worldview and personal characteristics that influence the research process. (Darwin Holmes, 2020). Just like reflexivity, positionality affects various stages in the research process. The reflexive process shapes the discovery of one's positionality. In effect, positionality is informed through the reflexive process. Researchers typically reject the binary "insider" or "outsider" view of the researcher's position in relation to the research (Bright et al., 2024; Yip, 2024). Instead, the researcher is situated on a positional continuum with an insider and an outsider stance at opposite ends of the spectrum. Subjectivity is a core component of positionality. Subjectivities refer to the distinct understandings, views, and experiences often rooted in the researcher's philosophical stance, which should be communicated and used to strengthen the rigour of the research (Tomlinson, Medlinskiene, 2024). Finally, reflection is also distinct from reflexivity in terms of timing. While reflexivity spans the entire research process, which potentially shapes it, reflection, on the other hand, is done retrospectively to examine omissions in the process, thereby promoting learning (Jamieson et al., 2023).

4. Timing Reflexivity: The "When"

Reflexivity, rather than being considered an event, goes beyond the entire research process (Barrett et al., 2020), right from the research questions to research dissemination. As qualitative researchers, it is essential to consider the following critical phases in a qualitative study.

Pre-research stage

Researchers' choices of research questions and gaps are motivated by their biases (Jamieson et al., 2023). For instance, the researcher's subjectivities guide the choice of research questions, gaps, and population rather than others (Jamieson et al., 2023; Larzard, McAvoy, 2020). These choices involve complex cognitive processes; in effect, our subjectivities cannot be entirely detached. Similarly, the availability of multiple methodologies presents the researcher with a range of choices. These Methodological choices closely align with the philosophical stance adopted by the researcher, which further gives credence to the role of subjectivities in the conceptualisation of the research. Consequently, the researcher's adoption of a reflexive approach brings into conscious awareness some of these inherent biases and the potential influence on the conceptualisation of the research. The researcher critically appraises the assumptions and choices made in the preliminary research phase to make the positionality explicit.

During data collection

The outcome of the research hinges on the data collection process. Within the qualitative domain, the researcher is considered an instrument in data collection (Wa-Mbaleka, 2020). This perspective is a result of the nature of qualitative data collection tools, which are heavily reliant on the researcher's subjective understandings and interpretations (Yoon, Uliassi, 2022). The research outcome may, therefore, lean towards the researcher's subjectivities. Additionally, the researchers' positionality, as determined by the research, influences the degree of willingness participants have to share information (Holloway, Galvin, 2023). Developing a reflexive approach enables the researcher to acknowledge potential biases and their positionalities, thereby generating valid knowledge.

During data analysis and interpretation

Reflexivity enables researchers to critically evaluate the potential influence of their subjectivities on selecting relevant information and interpreting it (Jamieson et al., 2023). During qualitative research analysis, as participants bring their existing knowledge and perspectives to bear on knowledge creation, there is a risk that power may be skewed in favour of the researcher, allowing them to determine what counts as valid information (Jamieson et al., 2023). The theoretical stance of the researcher can reveal meanings while obscuring others, and reflexivity can help the researcher become self-aware of the limitations imposed by a theoretical lens.

During writing and dissemination

The use of reflexivity by the researcher acknowledges the role of the researcher's context in interpretations (Jamieson et al., 2023). It further upholds ethical reporting of findings by ensuring transparency in the process of knowledge construction (Vučković Juroš, 2022). The reader is thereby guided through the researcher's explicit documentation of the thought processes involved in the decision-making process across studies. Researchers often document their reflexive process using reflexive journals and memos, which can serve as a form of reference for reflection (Olmos Vega et al., 2023).

5. Practising Reflexivity: The "How"

Reflexivity is crucial in achieving methodological rigour. Therefore, it requires a conscious engagement with the process and a willingness to engage in self-inquiry (Barrett et al., 2020). A question about the "how" demands a range of tools and strategies. Some essential tools to support this process include the following:

Reflexive journaling

Keeping a reflexive journal helps document thought processes and emotions. This tool is beneficial in supporting both the researcher's reflective process and emotional regulation (Karcher et al., 2024). Additionally, reflexive journals help researchers understand their positionality and navigate the challenges that emerge during the research process (Meyer, Willis, 2019).

– ***Field notes and memos****:* In addition to documenting observations in the field, field memos are well-suited for capturing the researcher's subjective experiences and interpersonal tensions that may arise during the research process (Olmos Vega et al., 2023; Ozoguz, 2025).

– ***Peer debriefing and supervision****:* Engaging with peers, who are typically knowledgeable outsiders, is a helpful way to promote transparency and receive valuable feedback. Peers can serve as sounding boards for the researcher, allowing the researcher to benefit from alternative perspectives (Maritz, Jooste, 2011).

– ***Positionality statements****:* The documentation of the researcher's situatedness within the research enhances transparency, providing the reader with context to understand the study's findings (Darwin Holmes, 2020).

– ***Dialogic interviews****:* Encouraging mutual dialogue rather than one-sided questioning can shift power dynamics and make the co-construction of meaning more explicit (Nardon et al., 2021; Way et al., 2015).

Developing reflexive capacity also involves critical self-questioning, such as asking, "Why am I drawn to this topic?" *What assumptions am I making? How might my background influence this interaction?* Additionally, cultivating emotional awareness helps researchers recognise when feelings such as discomfort, defensiveness, or empathy are shaping their responses and choices.

5. Justifying Reflexivity: The "Why"

The goal of the research process is to maximise the validity of findings. Reflexivity becomes relevant throughout the research process in ensuring rigour (Olmos-Vega, 2022; Johnson et al., 2020) by upholding the principles of trustworthiness, credibility and transparency. Foregrounding the researcher's influence on the study provides additional benefits, encouraging a balanced view of communication.

Furthermore, while reflexivity does not eliminate subjectivity, it encourages transparency in making methodological decisions. Reflexive practice also fosters professionalism and enhances self-awareness and personal growth (Deshpande, Rao, 2024).

6. Challenges and Critiques of Reflexivity

The benefits of reflexivity in qualitative research are well documented (Vučković Juroš, 2022). Too much emphasis on introspection may result in the researchers' experiences gaining dominance over those of the participants (Olmos-Vega, 2022). Similarly, performative reflexivity, where self-disclosure is superficial or scripted, can compromise authenticity. The researcher's involvement in emotionally charged research can blur the researcher's reflexive stance (Janzen, 2016). Similarly, communicating the researcher's subjectivities is sometimes misconstrued, especially by positivists, as admitting bias, which in turn questions the validity of the findings (Jamieson et al., 2023; Savolainen et al., 2023). In effect, striking a balance between honestly communicating subjectivities and maintaining an analytic distance can be problematic. Institutional constraints, such as word limits, rigid structures, and disciplinary norms, may limit the documentation of reflexive practices (Olmos-Vega et al., 2022). Researchers engaging in reflexive practice must adapt these practices to suit diverse cultural and geopolitical contexts (Von Unger, 2021).

7. Conclusion and Recommendations

This paper addresses reflexivity using a questioning-based approach, examining what it is, when it is used, how it is applied, and why it is essential to the interpersonal nature of qualitative data collection and the active involvement of the researcher. Reflexivity fosters transparency and accountability, promoting the ethical application of the research process.

Researchers, supervisors and educators can draw lessons from this. Reflexivity should be included in the research process right from conceptualisation to dissemination. A variety of reflexive tools, such as journals, memos, and positionality statements, can be adopted for this purpose. Creation of an environment, such as supervisor or peer support, to engage in a critical discussion of the researcher's positionality. Educators and supervisors should teach and support their students to imbibe the skill of being a reflexive researcher.

Future research should focus on the interdisciplinary and intercultural applications of reflexivity and the practice in different institutional settings. Continuous engagement in reflexive practice enhances the validity of our research while strengthening our connection to the human experiences at its heart.

8. Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Conflict of interest statement

The authors report no conflicts of interest.

Funding

This research received no external funding. However, the authors sincerely thank the Centre for Behaviour and Wellness Advocacy, Ghana, for providing financial support through the Institutional Open Access Publication Fund.

Authors' contributions

All authors (JOS and DKA) conceptualised, designed the methodology, synthesised evidence, wrote the original draft, reviewed and edited, and approved the final version of the manuscript for publication.

Acknowledgements

We express our gratitude to the Centre for Behaviour and Wellness Advocacy, Ghana, for their editing support.

Authors' ORCID

Jacob Owusu Sarfo https://orcid.org/0000-0003-2859-7278

Dean Kormla Attigah https://orcid.org/0009-0002-0796-3072

References

Barrett et al., 2020 – *Barrett, A., Kajamaa, A., Johnston, J.* (2020). How to … be reflexive when conducting qualitative research. *The Clinical Teacher*. 17(1): 9-12. DOI: 10.1111/tct.13133

Berger, 2015 – *Berger, R.* (2015). Now I see it, now I don't: Researcher's position and reflexivity in qualitative research. *Qualitative Research*. 15(2): 219-234. DOI: 10.1177/1468794112468475

Braund et al., 2024 – *Braund, H., Turnnidge, J., Cofie, N., Kuforiji, O., Greco, S., Hastings-Truelove, A., Hill, S., Dalgarno, N.* (2024). Six ways to get a grip on developing reflexivity statements. *Canadian Medical Education Journal*. 15(5): 146-149. DOI: 10.36834/cmej.78824

Bright et al., 2024 – *Bright, D., McKay, A., Firth, K.* (2024). How to be reflexive: Foucault, ethics and writing qualitative research as a technology of the self. *International Journal of Research & Method in Education*. 47(4): 408-420. DOI: 10.1080/1743727X.2023.2290185

Buetow, 2019 – Buetow, S. (2019). Apophenia, unconscious bias and reflexivity in nursing qualitative research. *International Journal of Nursing Studies*. 89: 8-13.

Darwin Holmes, 2020 – *Darwin Holmes, A.G.* (2020). Researcher positionality – A consideration of its influence and place in qualitative research—A new researcher guide. *Shanlax International Journal of Education*. 8(4): 1-10. DOI: 10.34293/education.v8i4.3232

Deshpande, Rao, 2024 – *Deshpande, N., Rao, T.S.S.* (2024). Reflective practice and supervision in qualitative research: Enhancing credibility and care in studies on sensitive topics. *Journal of Psychosexual Health*. 6(3): 215-219. DOI: 10.1177/26318318241292534

Haynes, 2012 – *Haynes, K.* (2012). Reflexivity in qualitative research. *Qualitative Organisational Research: Core Methods and Current Challenges*. 26: 72-89.

Holloway, Galvin, 2023 – *Holloway, I., Galvin, K.* (2023). Qualitative research in nursing and healthcare. John Wiley & Sons.

Jamieson et al., 2023 – *Jamieson, M. K., Govaart, G. H., & Pownall, M.* (2023). Reflexivity in quantitative research: A rationale and beginner's guide. *Social and Personality Psychology Compass*. 17(4): e12735. DOI: 10.1111/spc3.12735

Jamieson, et al., 2023 – *Jamieson, M. K., Govaart, G. H., Pownall, M.* (2023). Reflexivity in quantitative research: A rationale and beginner's guide. *Social and Personality Psychology Compass*. 17(4): e12735. DOI: 10.1111/spc3.12735

Janzen, 2016 – *Janzen, K.* (2016). Into the depths of reflexivity and back again-When research mirrors personal experience: A personal journey into the spaces of liminality. *The Qualitative Report*. 21(8): 1495-1512. DOI: 10.46743/2160-3715/2016.2210

Johnson et al., 2020 – *Johnson, J. L., Adkins, D., Chauvin, S.* (2020). A review of the quality indicators of rigor in qualitative research. *American Journal of Pharmaceutical Education*. 84(1): 7120. DOI: 10.5688/ajpe7120

Karcher, et al., 2024 – *Karcher, K., McCuaig, J., King-Hill, S.* (2024). (Self-)Reflection / reflexivity in sensitive, qualitative research: A scoping review. *International Journal of Qualitative Methods*. 23: 16094069241261860. DOI: 10.1177/16094069241261860

Larzard, McAvoy, 2020 – *Lazard, L., McAvoy, J.* (2020). Doing reflexivity in psychological research: What's the point? What's the practice? *Qualitative Research in Psychology*. 17(2): 159-177. DOI: 10.1080/14780887.2017.1400144

Maritz, Jooste, 2011 – *Maritz, J., Jooste, K.* (2011). Debriefing interviews and coaching conversations: Strategies to promote student reflexivity and action. *South African Journal of Higher Education*. 25(5): 972-986.

Mauthner, Doucet, 2003 – *Mauthner, N.S., Doucet, A.* (2003). Reflexive accounts and accounts of reflexivity in qualitative data analysis. *Sociology*. 37(3): 413-431.

Meyer, Willis, 2019 – *Meyer, K., Willis, R.* (2019). Looking back to move forward: The value of reflexive journaling for novice researchers. *Journal of Gerontological Social Work*. 62(5): 578-585. DOI: 10.1080/01634372.2018.1559906

Nardon et al., 2021 – *Nardon, L., Hari, A., Aarma, K.* (2021). Reflective interviewing – Increasing social impact through research. *International Journal of Qualitative Methods*. 20: 16094069211065233. DOI: 10.1177/16094069211065233

Olmos-Vega et al., 2022 – *Olmos-Vega, F.M., Stalmeijer, R.E., Varpio, L., Kahlke, R.* (2022). A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. *Medical Teacher*. 45(3): 241-251. DOI: 10.1080/0142159X.2022.2057287

Ozoguz, 2025 – *Ozoguz, S.* (2025). "No but where are you really from?": Critically examining reflexivity through field notes from a feminist psychological research in Turkey. *Feminism & Psychology*. 35(1): 41-56. DOI: 10.1177/09593535241293546

Savolainen et al., 2023 – *Savolainen, J., Casey, P.J., McBrayer, J.P., Schwerdtle, P.N.* (2023). Positionality and its problems: Questioning the value of reflexivity statements in research. *Perspectives on Psychological Science*. 18(6): 1331-1338. DOI: 10.1177/17456916221144988

Tomlinson, Medlinskiene, 2024 – *Tomlinson, J., Medlinskiene, K.* (2024). Reflexivity in pharmacy practice qualitative research: Systematic review of twelve peer-reviewed journals. *International Journal of Pharmacy Practice*. 32(Supplement_1): i5-i6. DOI: 10.1093/ijpp/riae013.007

Von Unger, 2021 – *Von Unger, H.* (2021). Ethical reflexivity as research practice. *Historical Social Research/Historische Sozialforschung*. 46(2): 186-204.

Vučković Juroš, 2022 – *Vučković Juroš, T.* (2022). Good practices of reporting on qualitative research: Transparency and reflexivity. Revija Za Sociologiju. 52(3): 255-266.

Wa-Mbaleka, 2020 – *Wa-Mbaleka, S.* (2020). The researcher as an instrument. In A.P. Costa, L.P. Reis, A. Moreira (Eds.), *Computer Supported Qualitative Research: New Trends on Qualitative Research (WCQR2019) 4* (pp. 33-41). Springer International Publishing. DOI: 10.1007/978-3-030-31787-4_3

Way et al., 2015 – *Way, A.K., Kanak Zwier, R., Tracy, S.J.* (2015). Dialogic interviewing and flickers of transformation: An examination and delineation of interactional strategies that promote participant self-reflexivity. *Qualitative Inquiry*. 21(8): 720-731. DOI: 10.1177/1077800414566686

Yip, 2024 – *Yip, S.Y.* (2024). Positionality and reflexivity: Negotiating insider-outsider positions within and across cultures. *International Journal of Research & Method in Education*. 47(3): 222-232. DOI: 10.1080/1743727X.2023.2266375

Yoon, Uliassi, 2022 – Y*oon, B., Uliassi, C. (2022)*. “Researcher-as-instrument” in qualitative research: The complexities of the educational researcher’s identities. *The Qualitative Report*. 27(4): 1088-1102. DOI: 10.46743/2160-3715/2022.5074

CBWA
CENTRE FOR BEHAVIOUR & WELLNESS ADVOCACY

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 82-106

DOI: 10.13187/jare.2025.1.82

Journal homepage:
http://kadint.net/our-journal.html

AI Acceptance and Usage in Sub-Saharan African Education: A Systematic Review of Literature

Brandford Bervell [a], Dickson Okoree Mireku [a, *], Prosper Dzifa Dzamesi [a], Esther Bema Nimo [a], Raphael Papa Kweku Andoh [a], Moses Segbenya [a]

[a] University of Cape Coast, Cape Coast, Ghana

Abstract

The purpose of this review was to map the state of AI in sub-Saharan African (SSA) education based on published literature. The studies analysed comprised 96 AI-related studies over a decade (2013 to 2023). The findings revealed a concentration of AI-related studies in 2023, primarily originating from the western part of sub-Saharan Africa, specifically Ghana (26 studies) and Nigeria (26 studies). The reviewed studies primarily focused on students (35 studies) and teaching staff (28 studies) as users of AI. In terms of approach, 32 studies were quantitative, and 26 studies were qualitative. Key factors influencing AI adoption and usage in the SSA education landscape included global perspectives on AI usage, training and skill development, and readiness of institutions to integrate AI into education. The main benefits of AI usage in education, as reported in the reviewed studies, included promoting global collaboration, enhancing efficiency in learning and research, and the ability of AI to analyse vast amounts of data. Despite the increasing acceptance and usage of AI technologies within educational institutions in the sub-region, emerging challenges such as risks of AI discouraging learning and scepticism among students, and the potential of AI causing long-term unemployment were discussed by the authors. The review provides recommendations to address these challenges and enhance AI adoption and usage within the SSA educational landscape.

Keywords: AI, adoption, acceptance, usage, sub-Saharan Africa, education, systematic review.

1. Introduction

In sub-Saharan African (SSA) countries, Artificial Intelligence (AI) has become an integral component of the region's education system, permeating various facets of academic and administrative functions (Butcher et al., 2021; Okoruwa et al., 2022; Sarfo et al., 2024). Research indicates that the majority of SSA educational institutions are leveraging AI-driven tools to streamline administrative tasks related to academic resource management (Tapo et al., 2024). Furthermore, studies have highlighted additional benefits of AI usage in the SSA educational delivery system. For instance, AI-driven educational tools have been observed to have a transformative impact by offering tailored learning experiences to students and effectively addressing their deeper learning engagement outside of normal instructional hours (Dandachi, 2024). Additionally, AI technologies were noted for facilitating personalised feedback and

*Corresponding author
E-mail address: dmireku@ucc.edu.gh (O.D. Mireku)
Received: 06 February 2025 Revised: 16 April 2025 Accepted: 18 April 2025
Published: 30 April 2025

providing a more adaptive and inclusive learning environment at various levels of education in the SSA region (Tapo et al., 2024). These observations undoubtedly support the argument that the introduction of AI into the sub-Saharan education system indicates a commitment of the region to promoting innovative teaching methodologies and preparing students for the increasingly technology-driven market demand (Nolan, 2024). It appears that the integration of AI is currently aligning with broader efforts by the region's educational institutions to address employers' demands and preferences for long-term human capital development, crucial for SSA's growth and development (Barakabitze et al., 2019; Kulkov et al., 2023). Although there are some oppositions to the integration of AI into the region's education system, there is already a growing reliance on AI technologies, demonstrating the region's strategic response to be at the forefront of harnessing AI's benefits for tackling contemporary challenges that block its development agenda (Daniels et al., 2022).

In light of the foregoing discussions, we support the stands of contemporary researchers who argue that the rapid proliferation of AI technologies and usage within SSA's educational institutions must be given some level of attention (Engstrom et al., 2020), to understand the depth of issues that surround it. However, a thorough understanding of the depth of issues concerning AI adoption and usage in academia certainly requires a synthesis of existing literature (Reiger, 2022), as done for some regions. For instance, while systematic literature reviews exist for AI integration in education in developed regions such as Australia in Yigitcanlar et al.'s study (2020) about developing tertiary students' capacity to use AI for building smarter cities; in Europe, by Recht et al. (2020) who studied the use of AI in students' clinical exercises; and in Asia, by Su et al. (2022) in a study about the effective use of AI at K-12 level of teaching, no comparable synthesis exists for SSA. Given the cultural and contextual institutional acceptance and usage differences and nuances in AI integration in these diverse teaching and learning environments, it is imperative to approach this topic distinctively rather than adopting one-size-fits-all recommendations. That is, it will be inappropriate for SSA to tow or implement the unified views or suggestions expressed about AI usage from regions outside SSA.

Indeed, the above provides a clear viewpoint that AI adoption in SSA necessitates a literature review study to provide a comprehensive overview of, for example, trends in yearly publications, country distributions, authorship contributions, AI adoption and usage patterns, as well as benefits and threats emanating from usage within SSA education delivery. In view of this, the primary objective of this study aligns with the following specific research questions:

1. What are the yearly publication trends in AI-related studies?
2. Which countries have contributed to studies on the use of AI technologies in teaching, learning and research within the SSA education landscape?
3. What are the methodological characteristics of the AI-related studies about the SSA education delivery?
4. What factors have contributed to the acceptance/adoption and usage of AI technologies in SSA education?
5. What benefits do students, instructors, and researchers in SSA get from using AI technologies?
6. What challenges are associated with the integration of AI technologies in teaching and learning within the SSA education landscape?

Operational Definition of Methodological Terminologies

Before the analysis was performed for this study, the studies were categorised on the following basis:

– Country Representations of adoption, acceptance, benefits, and threats of AI usage-related Studies: Studies were grouped according to the countries within which the AI-related research was carried out. They were afterward grouped according to countries and into major parts (Northern, Southern, Eastern, Western, and Central) of the sub-Saharan Africa region.

– Study Approach: These are the broad research approaches, namely Quantitative, Qualitative, and Mixed Methods, prescribed by Creswell (2013) for categorising research approaches, designs or paradigms.

– Sample Size: Study sample sizes of subjects were also grouped into small, medium, and large. They were coded as follows: ≤ 150 (small),>150≤ 250 (medium), and> 250 (large), based on the recommendation by Bervell and Umar (2017) for sample size categorisation.

– AI usage by academic subject Area: The various academic disciplines where AI technologies are employed and integrated to improve processes, research, and outcomes within those specific fields.

– AI Usage by level of Education: This explains the different educational stages or levels where artificial intelligence (AI) technologies have been applied and integrated.

– Categories of AI users: These are the various groups or types of individuals and entities that utilise artificial intelligence (AI) technologies for different purposes.

– AI Adoption and Acceptance Factors: Factors considered when integrating artificial intelligence for production, research, or learning.

– Factors influencing AI usage: These are the factors that collectively or individually determine the integration or application of AI in various contexts.

– Benefits from AI usage: This refers to the opportunities, advantages, or help that AI usage offers to society. It may encompass improved efficiency, enhanced decision-making, automation of repetitive tasks, and the potential for innovative solutions, thereby fostering advancements across a diverse range of occupations or fields.

–Threats and Risks of AI Use: This involves the future dangers or unexpected contingencies that AI may cause in societies after continuous usage.

2. Methods and Materials

Article search procedures and processes

To conduct this systematic review, the process began with the identification and retrieval of relevant studies on the adoption, acceptance, benefits, and threats of Artificial Intelligence (AI) usage within the education research landscape of sub-Saharan Africa. A structured and rigorous methodology was employed, guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines as outlined by Moher et al. (2009). The PRISMA protocol provided a step-by-step framework for the systematic identification, selection, analysis, and synthesis of eligible studies.

Searches were conducted across four major electronic databases: Scopus, African Journals Online, Africa Digital Library, and PubMed. The search strategy was carefully designed to locate studies that examined key themes, such as AI adoption and acceptance in educational delivery, the benefits of AI usage, and the potential risks or threats associated with integrating AI technologies into SSA education systems. To ensure the comprehensiveness and relevance of the review, a set of inclusion and exclusion criteria was developed. Studies were included if they were published between 2013 and 2023 and focused specifically on AI-related issues within educational contexts in sub-Saharan Africa. Studies were excluded if they were duplicates, non-empirical, or fell outside the defined regional and thematic scope of the review.

Table 1. Criteria for Inclusion and Exclusion of AI Adoption and Usage Related Articles

Inclusion Criteria – Studies in the English language. – Research studies related to AI adoption and acceptance, benefits and threats, and risks of AI usage in the higher education context of SSA. – Studies within the period of 2013-2023. – Studies that emphasised a country of study.
Exclusion Criteria – Studies outside the sub-Saharan region. – Studies that solely concentrated on reports on only training programmes, policies and strategies limited in scope and depth of discussions on AI adoption, acceptance, benefits and threats of AI usage, and technical reports. – Studies that focused on AI adoption, acceptance, benefits and threats of AI usage, written in a language other than English.

Search terms were constructed to reflect the core focus of the review, with keyword combinations such as: TITLE-ABS-KEY ("AI Adoption and Acceptance" AND "education" AND "factors influencing AI usage" AND "institutions" AND "sub-Saharan Africa" AND "West Africa" AND "East Africa" AND "Central Africa" AND "Southern Africa") AND PUBYEAR >= 2013. This general search was complemented by a country-specific search strategy designed to capture AI research outputs focused on individual countries within the region. Countries included in the search string were: "Angola" OR "Benin" OR "Botswana" OR "Burkina Faso" OR "Burundi" OR "Cape Verde" OR "Cameroon" OR "Central African Republic" OR "Chad" OR "Comoros" OR "Congo" OR "DR Congo" OR "Cote d'Ivoire" OR "Equatorial Guinea" OR "Eritrea" OR "Eswatini" OR "Ethiopia" OR "Gabon" OR "Gambia" OR "Ghana" OR "Guinea" OR "Guinea Bissau" OR "Kenya" OR "Lesotho" OR "Liberia" OR "Madagascar" OR "Malawi" OR "Mali" OR "Mauritania" OR "Mauritius" OR "Mozambique" OR "Namibia" OR "Niger" OR "Nigeria" OR "Rwanda" OR "Sao Tome & Principe" OR "Senegal" OR "Seychelles" OR "Sierra Leone" OR "Somalia" OR "South Africa" OR "South Sudan" OR "Sudan" OR "Tanzania" OR "Togo" OR "Uganda" OR "Zambia" OR "Zimbabwe.

Boolean functions were also used in the database searches. The reference pages of retrieved articles were chain searched (through the snowballing technique) for relevant articles. The articles were then sorted and organised based on the predetermined criteria. During the selection of articles for the study, several steps were followed. Table 1 outlines the criteria for article inclusion and exclusion, while Figure 1 illustrates the article selection process. At the end of the search from the above-listed database sources (i.e., Scopus, African Journals Online, Africa Digital Library, and PubMed), 96 articles were identified for review (Appendix A).

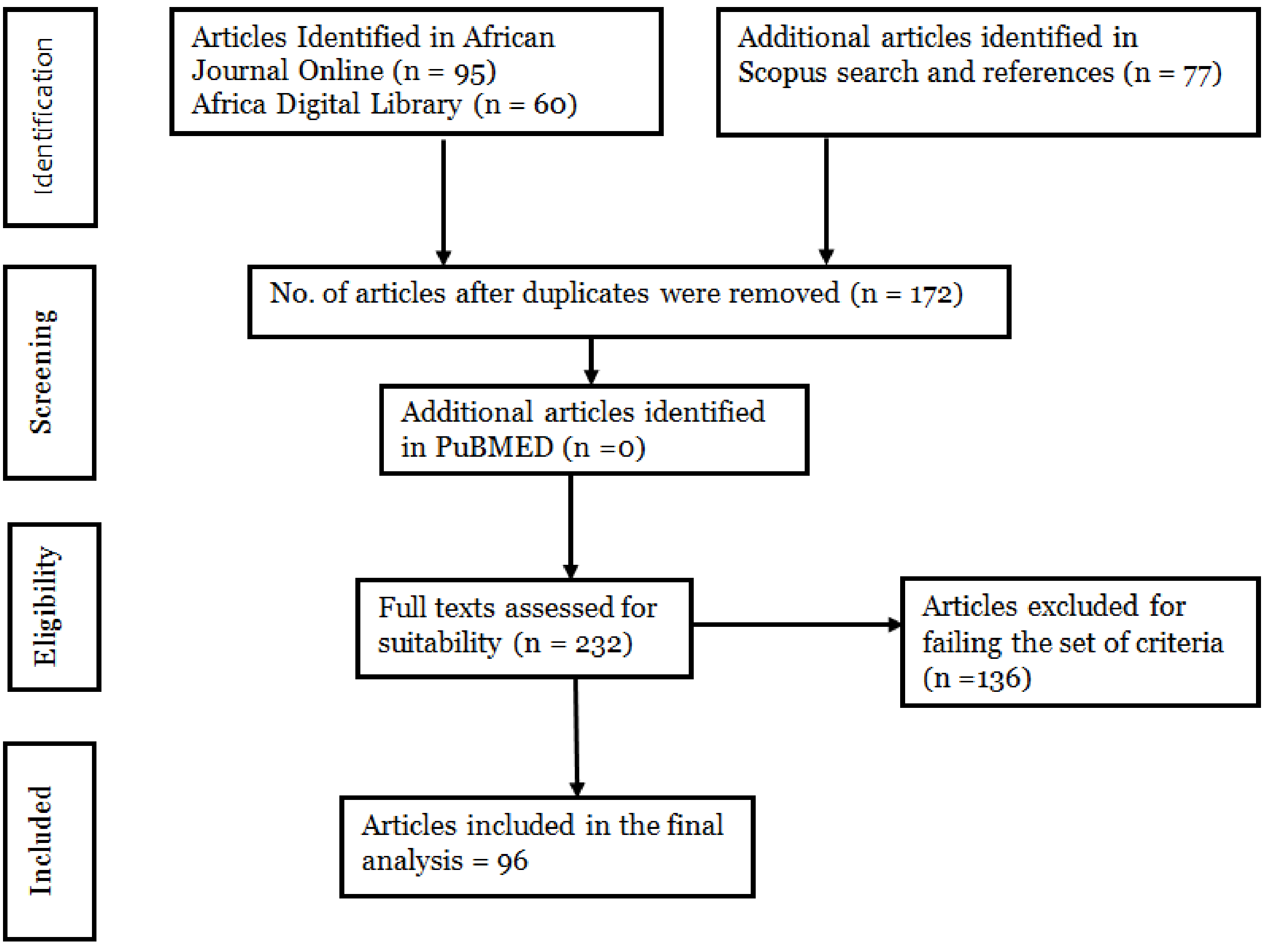

Fig. 1. Number of AI-related Studies about the SSA Education Concern

3. Findings: Empirical Results

This section presents the categorisations of AI adoption or acceptance and usage within the SSA educational institutions context, following Jiang et al.'s (2020) recommendation. According to the authors, the patterns of growth and distribution of phenomena define the trends in yearly occurrences, forms, authorship, and geographical distributions. Therefore, we present the patterns in AI acceptance and usage within the SSA educational context, based on the recommendations of Jiang et al. (2020).

Yearly Trends in AI-related Studies

Significant details from Figure 2 provided insights into the evolving landscape of AI research in the region. Between 2013 and 2016, there was only one publication, representing 1.04 % of the 96 studies reviewed. However, in 2017, there was a slight increase, with two publications, constituting 2.08 %. The subsequent years exhibit variations in publication counts, with a notable increase in 2023, when 55 publications were recorded, representing the majority at 57.29 %.

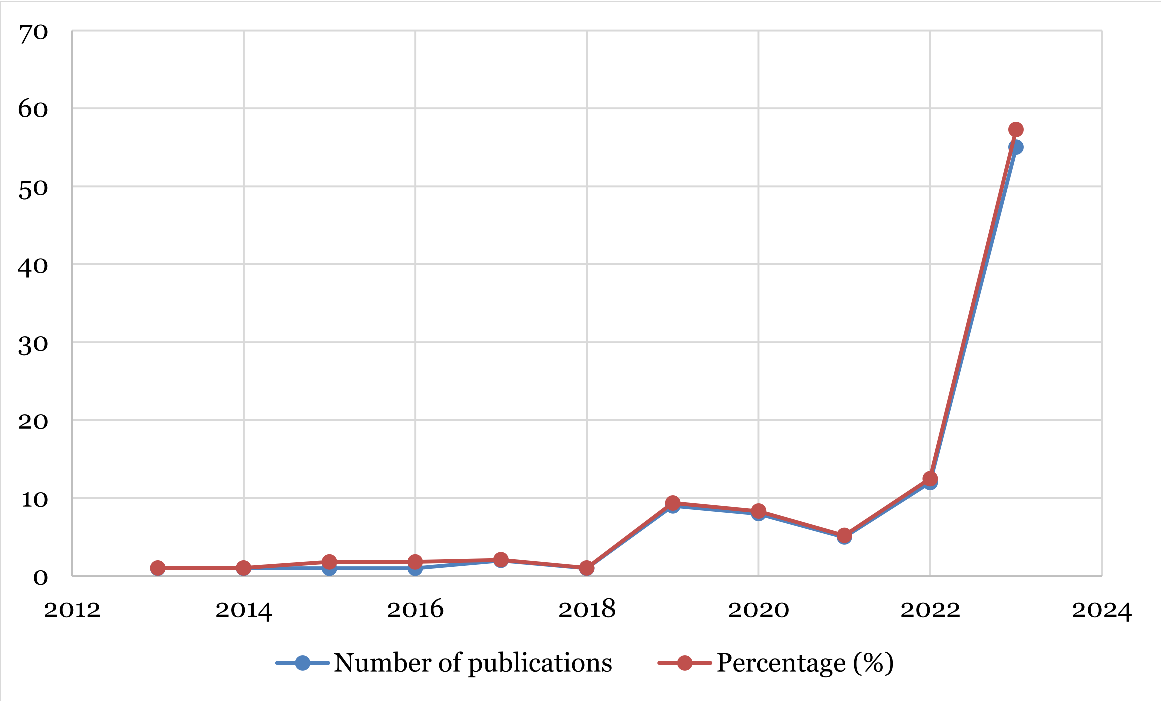

Fig. 2. Yearly Article Publication Trends in AI-related Studies about SSA Education Delivery

Countries and Parts of Sub-Saharan Africa that Contributed to AI Research

This section focuses on the geographical distribution of AI research contributions across Sub-Saharan Africa (SSA). It aims to identify the countries and regions within SSA that have actively contributed to AI research initiatives. The results are in Figure 3 as well as Table 2.

From Table 2, the AI-related studies spanned twenty-three SSA countries. Out of this number, seven of them were from the Western, eight from the Southern and five from the Eastern parts. Additionally, two countries are situated in the Central part, and a country is located in the Northern part of SSA. For the number of studies, Ghana and Nigeria had 26, being the highest number of studies, representing 27.09 % respectively out of the total number of 96 studies. This was followed by Togo, Kenya, Namibia and South Africa with 4 studies per country representing 4.16 %. Both Tanzania and Zambia produced three studies, each representing 3.14 %. Six countries, namely Botswana, Burundi, Cameroon, Mauritius, Rwanda, and Sierra Leone, published two AI-related articles each, representing 2.08 %. Central African Republic, Ethiopia, Mauritania, Niger Senegal, Sudan and Zimbabwe contributed only one study and the least, representing 1.04 %. Examining Table 1, more broadly, it became evident that the Western part of SSA had the highest number of studies 61 (63.54 %). However, the Southern part produced 19 (19.79 %) of studies, the Eastern and Central parts contributed 12 % and 4 % of studies, respectively.

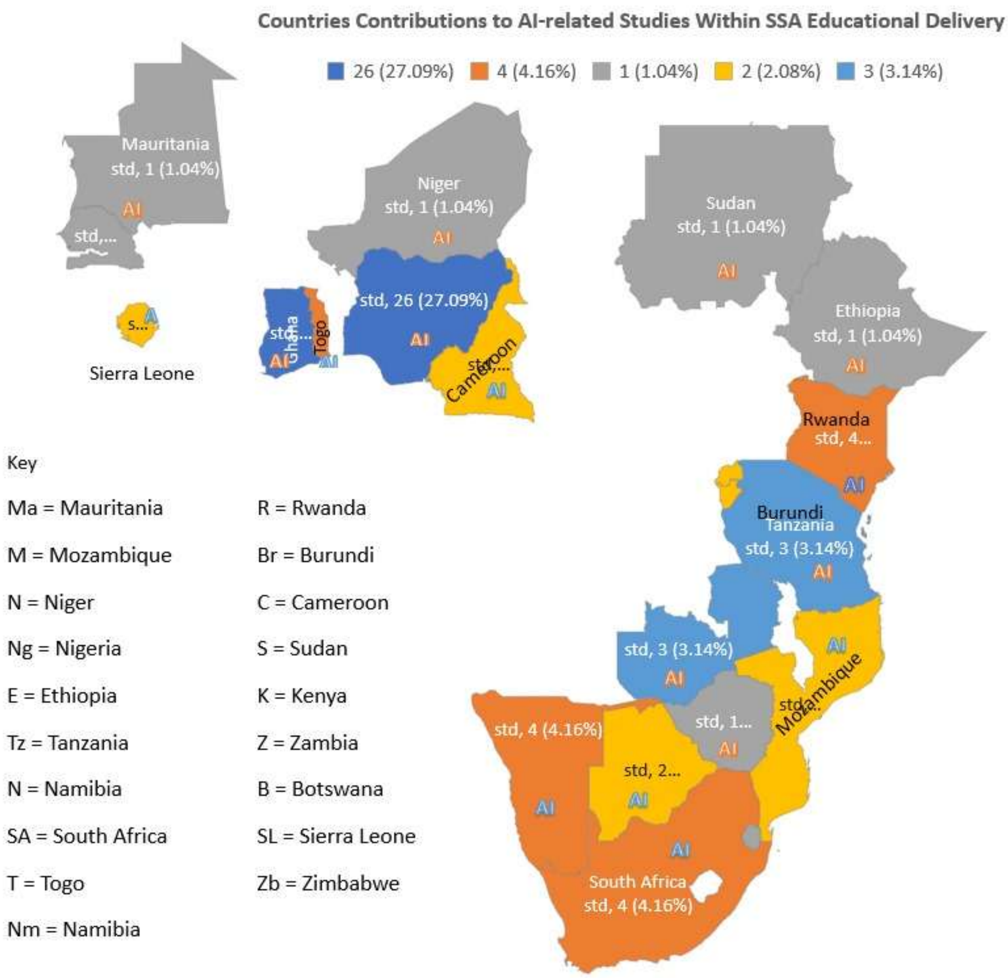

Fig. 3. Country contributions to AI-related studies within SSA educational delivery.
Source: Pew Forum..., 2025

Table 2. Country and Part of Sub-Saharan Africa with a number of Studies

Country	Part of SSA	No. of Studies	Percentage (%)	No. of Studies by Part of SSA	Percentage (%)
Ghana	Western	26	27.09	61	63.54
Nigeria	Western	26	27.09		
Togo	Western	4	4.16		
Mauritania	Western	1	1.04		
Niger	Western	1	1.04		
Senegal	Western	1	1.04		
Sierra Leone	Western	2	2.08		
Burundi	Eastern	2	2.08	12	12.50
Tanzania	Eastern	3	3.14		
Ethiopia	Eastern	1	1.04		
Kenya	Eastern	4	4.16		
Rwanda	Eastern	2	2.08		
Sudan	North Eastern	1	1.04	1	1.04
Cameroon	Central	2	2.08	3	3.12
Central AR	Central	1	1.04		
Botswana	Southern	2	2.08	19	19.79
Mauritius	Southern	2	2.08		
Mozambique	Southern	2	2.08		
Namibia	Southern	4	4.16		

Country	Part of SSA	No. of Studies	Percentage (%)	No. of Studies by Part of SSA	Percentage (%)
South Africa	Southern	4	4.16		
Swaziland	Southern	1	1.04		
Zambia	Southern	3	3.14		
Zimbabwe	Southern	1	1.04		
Total		96	100	96	

Methodological Characteristics of the AI-related Studies about the SSA Education Delivery

This section delves into the methodological characteristics of Artificial Intelligence (AI)-related studies within the context of Sub-Saharan Africa's (SSA) educational landscape. By examining the research design, data collection instruments, subjects, sample size and statistical tools used for analysis employed in these studies

Design and Instruments

The first aspects of the methodology assessed were the research design and instruments adopted for the various studies. Details on the research design and instruments are provided in Table 3.

Table 3. Research Design and Instruments

Design	No. of Stds.	Per (%)	Instruments			
			Questionnaire	Interview	Questionnaire & Interview	Literature Study
Quantitative	34	35.42	34(35.42 %)			
Qualitative	27	28.13		27(28.13 %)		
Mixed Method	12	12.5			12(12.5 %)	
Desktop Review	23	23.95				23(23.95 %)
Total	96	100 %				

Table 3 shows that the quantitative research design dominated most of the studies. This is underpinned by the fact that 34 out of the total studies, accounting for 35.42 %, employed this research design. This was followed by the qualitative approach, which recorded 27 (28.13 %) studies. Next is the Desktop review approach, which records 23 studies, presenting 23.95 %, with the mixed-method approach being the least used. In terms of the instruments utilised for data collection, the questionnaire was the most used instrument by 34 studies, representing 35.42 % followed by an interview, 27 (28.13 %). Next, the literature review comprised 23 (23.23%) studies, and both questionnaires and interviews were used in 12 (12.5%) cases, being the least employed instruments for collecting data.

Subjects and Sample Size

The subjects selected for study, along with their corresponding sample sizes, are presented in Table 4.

Table 4. Subjects and Sample Size

Subject	No of Studies	Percentage (%)	Sample Size		
			<= 150 Small	**>150 <=250 Medium**	**>250 Large**

Students	30	31.25	8 (30.77 %)	5 (21.74 %)	17 (36.17 %)
Teaching Staff	23	23.95	3 (11.54 %)	13 (56.52 %)	7 (14.89 %)
Both students & Teaching Staff	17	17.71	5 (19.23 %)	2 (8.70 %)	10 (21.28 %)
Administrative Staff	9	9.38	1 (3.85 %)	-	8 (17.02 %)
Both Teaching & Administrative staff	5	5.21	4 (15.38 %)	1 (4.35 %)	-
Researchers	8	8.33	3 (11.34 %)	2(8.70 %)	3 (6.38 %)
Librarians	4	4.17	2 (7.69 %)	-	2 (4.26 %)
Total	96	100	26 (26.8 %)	23(23.71 %)	48(49.48 %)

Details from Table 4 indicate that out of the 96 articles reviewed, 30, constituting 31.25 %, used university students as their subjects of study. This was followed by 23 (23.95 %) studies that used teaching staff as their subject. Of the remaining studies, 17 (17.71 %) of them made use of both students and teaching staff as subjects, and 9 (9.38 %) of the studies utilised administrative staff as subjects. Five (5.21 %) studies utilised both teaching and administrative staff, while 8 (8.33 %) and 4 (4.17 %) of the 96 studies considered researchers and librarians, respectively, for their studies. For sample sizes, the range was between small for 26 studies, medium size for 23 studies and large size for 48 research constituting 48.48 %. Overall, 48 out of the 96 articles published used large sample sizes for their studies.

Statistical Instruments/Tools Employed for Analysis

The quality and dependability of research findings significantly depend on the statistical instruments or tools adopted for analysis. Taking this into account, the study sought to explore the various statistical tools employed in analysing research about AI in SSA, as illustrated in Table 5.

Table 5. Statistical Instruments/Tools

Statistical Instruments/Tools	No. of Studies	Percentage (%)
Thematic Desktop Analysis	24	25.0
Descriptive Analysis	37	38.54
Correlation Analysis	8	8.33
Regression/Chi-square/GLM's/MANOVA	2	2.08
Structural Equation Modelling (SEM)	6	6.25
ANOVA	1	1.04
Content Analysis	14	14.6
Kolmogorov-Smirnov test	1	1.04
Univariate analysis	1	1.04
Mann-Whitney U test	1	1.04
Meta-Analysis	1	1.04
Total	96	100

From Table 5, the majority of the authors employed descriptive analysis, constituting 37 (38.5 %) of the studies. This was followed closely by thematic desktop analysis, with 24 studies representing (25.0 %) of the 96 studies reviewed. Content analysis, Correlation Analysis, SEM and Regression/Chi-square/GLM/MANOVA constituted the next set of tools the studies utilised, recording 14 (14.58 %), 8 (8.33 %), 6 (6.25 %), and 2 (2.08 %) respectively. Kolmogorov-Smirnov test, ANOVA Univariate analysis, Mann-Whitney U test, and Meta-Analysis were less frequently utilised, each study representing 1 (1.04 %) of the studies reviewed.

Distribution of AI Users in AI-related Research

Table 6 presents the dispersion of users within the scope of education examined in AI-related studies. Substantially, 35 studies, constituting approximately 36.46 % of the 96, focus on AI usage among students. Another significant portion of the studies, 28 (29.17 %) illustrate the use of AI by teaching staff. A noteworthy 9 studies, accounting for about 9.38 %, research into the involvement of administrative staff in utilising AI for educational purposes. The remaining 18 studies, representing 18.75 %, and 6 studies accounting for 6.25 %, concentrate on the use of AI among researchers and librarians, respectively. Moreover, the 96 studies reviewed offer a holistic perspective on the different users of AI in education.

Table 6. Users of AI in the SSA higher education delivery

Users of AI	No. of Studies	Percentage (%)
Students	35	36.46
Teaching Staff	28	29.17
Administrative Staff	9	9.38
Researchers	18	18.75
Librarians	6	6.25
Total	96	100

Factors influencing AI Adoption within the SSA educational institutions context

Table 2 categorises and quantifies the factors contributing to the adoption of AI within SSA education. Among the identified factors, "global perspectives on AI in education" with 11 studies emerges as the most prevalent theme, comprising 10 studies and constituting 38.5 % of the total. Following this, "training and skill development for adoption" accounts for 19.2 %. In contrast "the readiness of educational institutions to integrate AI" and “ethical considerations, training, professional development, and the cultural impact of AI in education” each with five studies representing 17.2 % follows in the order—cultural impact of AI in education, albeit to a lesser extent, with two studies.

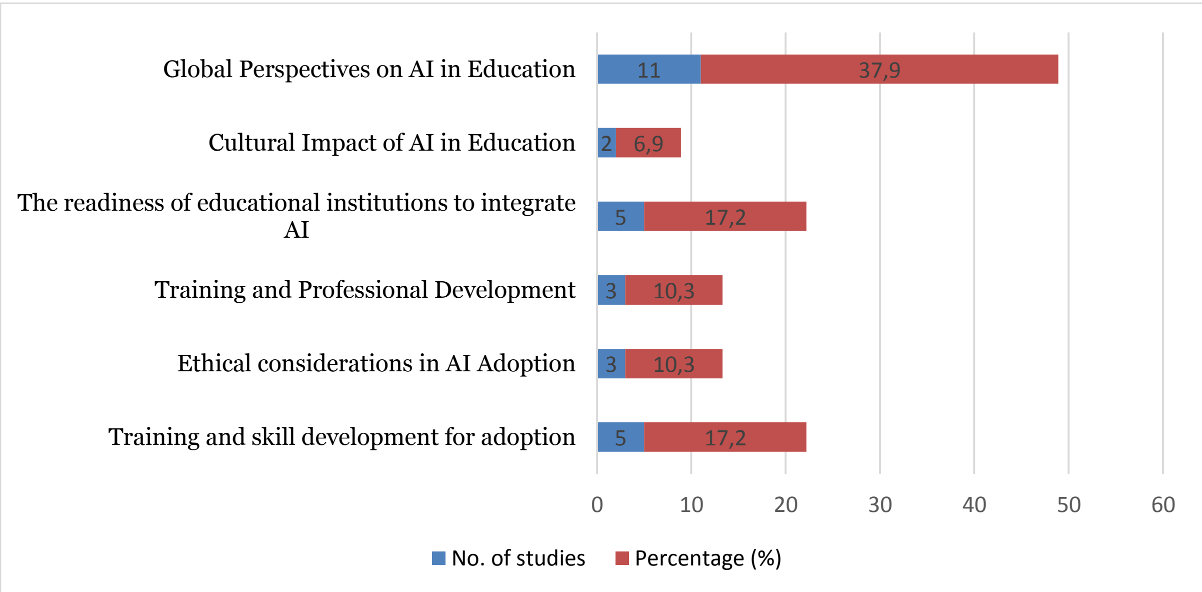

Fig. 3. Factors Influencing AI Adoption, Acceptance and Usage within SSA Education

Figure 3 depicts the factors influencing AI adoption and usage within SSA higher education. *Enhancement of global collaboration* emerges as the most prominent factor, accounting for

33.3 %, with 11 studies focusing on this aspect. *Student perspectives about AI usage* and *human-centric concerns* are significant contributors, representing 21.2 % and 24.7 %, contributing 7 and 8 studies, respectively. The ability of AI to support automated administrative and marketing processes with 3 studies (9.1 %), facilitate research with 1 study (3.0 %), support language learning and enhance accessibility with 1 study also with 1 study (3.0 %) were other factors noted to influence AI usage within the SSA higher education system.

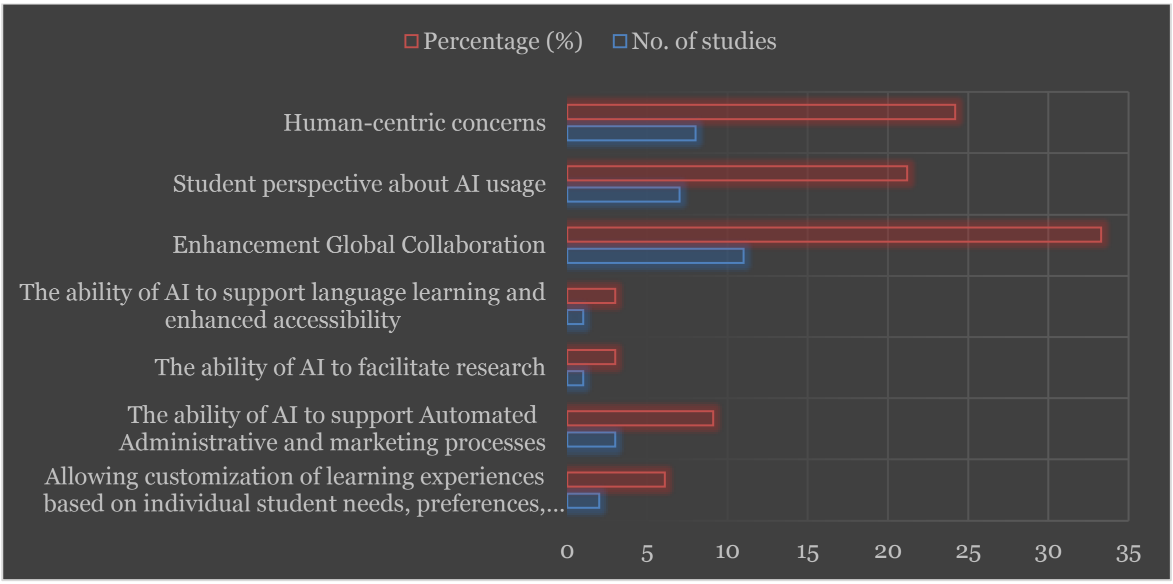

Fig. 4. Threat and risk of using AI within SSA education

Threats and risks of using AI discussed in related studies

Table 4 concisely presents the threats and risks of using AI within SSA education. Optimism and scepticism, harboured by some people who fear drawbacks, such as a loss of human connection in learning, constitute the majority, representing 77.8% in 7 studies. Additionally, the potential of AI causing AI-induced unemployment in the future is identified as a concern by the authors in 2 studies (22.2 %). These were the only two categorisation of the perceived threats and risks authors found with the integration of AI into SSA higher education delivery.

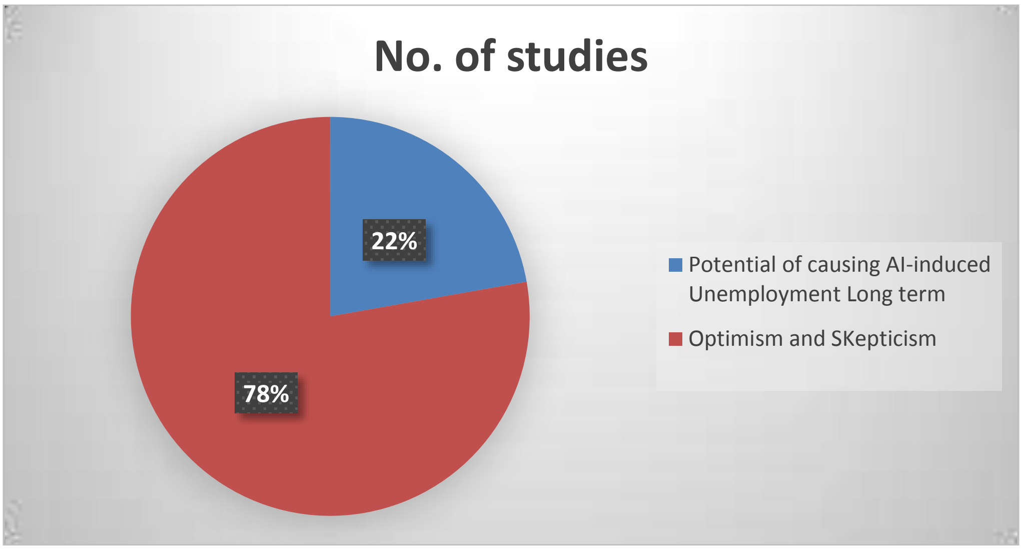

Fig. 5. Threat and risk of using AI

Beneficial uses of AI discussed in AI-related studies

Figure 6 provides an overview of the beneficial uses of AI within SSA education, showcasing its multifaceted positive impacts. 'Promotion of global collaboration' emerges as a predominant theme, constituting 44 % with 11 studies emphasising the role of AI in fostering international collaboration in project management, research and publications. Additionally, AI being recognised as a *beacon of innovation and efficiency in learning and research,* was found in 28.0 % of the studies representing 7 studies. Other benefits such as AI enhancing engagement and understanding to improve learning outcomes was in a study (4.0 %), More so, AI's ability to analyse vast amounts of data was discussed in 3 studies (12.0 %), and AI's support in the acceleration of research processes was mentioned in 2 studies (8.0 %). Furthermore, there is an acknowledgement of AI's support in language learning (4.3 %) in one of the studies reviewed.

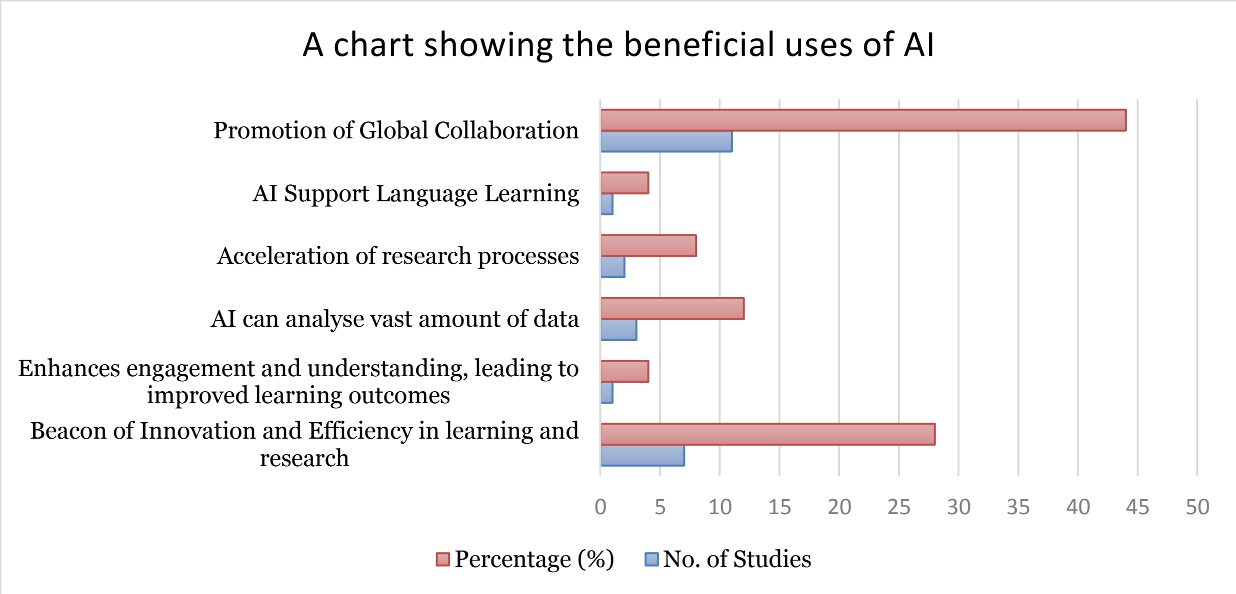

Fig. 6. Beneficial uses of AI

4. Discussion

Concerning country contributions to published studies related to AI adoption and usage within the SSA educational delivery, it was observed that Ghana and Nigeria had the highest number of studies on AI in education, followed by South Africa, Kenya, Namibia, and Togo. Sequentially, the countries with the fewest studies included Mauritania, Niger, Senegal, Sudan, Swaziland, the Central African Republic, Ethiopia, and Zimbabwe. This distribution seems to correlate with the AI readiness rankings of SSA countries, with Kenya, South Africa, Ghana, Cote d'Ivoire, and Nigeria being the top five AI-ready nations. Despite these variations, the popularity of AI studies in SSA began to surge in 2019 and reached its peak in 2023, aligning with global trends.

After the literature review, it was noted that investigations into AI adoption and acceptance in educational institutions in SSA gained popularity in 2019 and skyrocketed in 2023. Between 2013 and 2018, AI-themed studies received little scholarly and research attention. The observations regarding the popularity of AI studies in 2019 and its subsequent surge in 2023 are consistent with global trends, as discussed by the authors. To substantiate these findings, Adamopoulou and Moussiades (2020) demonstrated an astronomical increase in publications on chatbots since 2016. Moreover, as a region that often plays catch-up, especially in technology, it is understandable why studies on AI started to peak in 2019. This shift coincided, certainly with the increased attention to chatbots in education, especially after the release of ChatGPT in November 2022, as emphasised by the authors in the reviewed studies.

The findings from the review revealed that the authors consistently employed quantitative methods to explore the role of AI in SSA's education landscape. This preference for quantitative approaches indicated a commitment to rigorous and systematic analysis, allowing the researchers to employ statistical tools for the analysis of the results of the studies discovered. In addition to quantitative methods, desktop reviews and qualitative research were commonly employed by the authors, providing complementary perspectives for a holistic understanding of AI adoption and acceptance within the SSA educational concern. It was observed that the qualitative methods facilitated in-depth exploration of the nuances and contextual factors influencing the adoption and effectiveness of AI technologies. Although less common, the mixed methods approach was utilised in approximately half of the quantitative studies, signifying a recognition of the need for a comprehensive examination of AI-related issues in the SSA educational concern.

The users of AI constituted another notable observation derived from the reviewed studies. It was observed that the authors highlighted the primary internal stakeholders in the education environment as the users of AI in SSA, encompassing students, researchers, teaching staff, administrative staff, and librarians. This underscores the widespread integration of AI in SSA's educational landscape, involving all major groups. Regarding the frequency of AI usage among these groups, students emerged as the most frequent users, followed by teaching staff. Librarians were identified as the stakeholder group with the least utilisation of AI, and administrative staff ranked just above librarians in terms of AI usage according to the reviewed studies.

Concerning the factors contributing to the acceptance and adoption of AI in educational institutions in SSA, the reviewed studies revealed that a prominent factor is the global considerations about AI usage in education. Given the above circumstance, the authors emphasised the necessity for academic institutions to align their curricula with evolving AI technological trends and advancements, ensuring students are equipped with essential skills for using AI in teaching and learning. Fomunyam (2020) proposed machine learning as an alternative pathway for education in Africa, while Qin et al. (2022) demonstrated positive attitudes toward integrating chatbots in education, particularly in regions with high student-teacher ratios. Essentially, most authors suggested that educational authorities in the SSA region should demonstrate a commitment to embracing technological advancements in AI usage, as witnessed in other parts of the world.

The review extracted the threats and risks associated with AI usage in SSA educational concerns, with a particular focus on the potential for long-term unemployment and employee scepticism. While Ikedinachi et al. (2018) discussed the impact of AI advancements on jobs, suggesting that increased use and rapid progress could lead to competition with human workers and job insecurity, there was limited commentary on these findings. Authors noted instances where AI outperformed humans in tasks, contributing to scepticism and a cautious approach to AI adoption in educational institutions across the SSA region. This highlights the need for thoughtful consideration and strategic planning to address potential negative consequences while embracing AI in education.

The benefits of integrating AI technologies in SSA's educational landscape, as highlighted in the reviewed studies, emphasise the transformative potential of AI in various aspects of learning and academic performance. Specifically, AI's role in supporting language learning through immediate feedback on pronunciation, grammar, and vocabulary usage, as demonstrated by Dos Santos et al. (2021), signifies its contribution to enhancing language skills. Moreover, the recognition of AI as a beacon of innovation and efficiency in learning and research suggests its positive impact on entrepreneurial performance among university students. The consistent emphasis on the positive learning experience during virtual teaching, especially when students engage with AI technologies, aligns with the studies by Essel et al. (2022), Amegadzie et al. (2021), Khalid (2020), and Imhanyehor (2022). This collective evidence highlights the potential of AI to enhance engagement, understanding, and overall learning outcomes in SSA's educational context.

Implications for Practice in SSA Education

Educational institutions in sub-Saharan Africa should prioritise training and development programmes for students, lecturers, administrators, and librarians to build the necessary skills for effective AI usage. Such initiatives will ensure that key stakeholders are adequately equipped to integrate AI tools into teaching, learning, and administrative operations. Beyond technical skills, users must be made aware of ethical considerations and responsible usage to reduce the risk of academic dishonesty and misuse. Training students and faculty on acceptable academic conduct when using AI tools will help improve learning outcomes while maintaining academic integrity. Institutions are also encouraged to invest in AI-supportive infrastructure and digital platforms to facilitate seamless adoption. Furthermore, educators and academic staff should be encouraged to view AI as a supportive tool rather than a replacement, which can result in cognitive processing redundancy. Structured dialogue, workshops, and peer-led adoption strategies could help reduce scepticism and promote a more collaborative, open-minded approach to AI integration in education.

Implications for Research in SSA Education

In terms of research, the findings of the review suggest a need for broader geographical representation. While Ghana and Nigeria dominate the literature, underrepresented regions in Eastern, Central and Southern SSA must receive increased scholarly attention. Future studies should also employ mixed methods approaches, combining both quantitative and qualitative techniques to capture a more comprehensive view of AI adoption, acceptance, and usage in higher educational contexts. This blended approach offers richer insights into both numerical trends and contextual factors that influence AI implementation. Additionally, researchers should expand their focus beyond students and teachers to include other stakeholders such as school administrators, librarians, and technical staff whose roles are integral to the success of AI adoption. To enhance the generalisability and reliability of findings, it is recommended that researchers apply more robust analytical tools, including inferential statistics such as Partial Least Squares-Structural Equation Modelling (PLS-SEM), Generalised Structured Component Analysis (GSCA), Analysis of Moment Structures (AMOS) structural equation modelling, Correlation Analysis, Regression/Chi-square/GLM's/MANOVA, ANOVA, Kolmogorov-Smirnov test, Univariate analysis, Mann-Whitney U test and Meta-Analysis. This will enable researchers to shift from heavy reliance on desktop or thematic analysis and engage in more empirical research that documents real-world experiences and contributes to the global discourse on AI in education in SSA. Lastly, research in SSA should focus on specific AI tools (ChatBot, Image Generation, Content Writing, Project Management, Natural Language Processing, Computer Vision, Machine Learning, and Deep Learning) to unearth their affordances, challenges, and limitations based on their functionalities and usage.

Implications for Policy in SSA Education

At the policy level, it is evident that there is a need to formulate and promote policy on equity in AI research support across the region. National and regional policies should include funding provisions specifically targeted at AI research and capacity building within the education sector. These funds can support infrastructure, training, and collaborative research initiatives aimed at enhancing the use of AI in teaching and learning. Moreover, AI adoption must be embedded in broader national education policies and reform agendas. This alignment ensures that AI integration is not treated as an isolated innovation but rather as a core driver of educational transformation. Policymakers should also develop ethical frameworks for the use of AI in educational settings, with a focus on issues such as data privacy, academic integrity, and equitable access. Finally, creating policies that create environments for international research collaborations will position SSA institutions to contribute meaningfully to the global AI education landscape and benefit from shared knowledge and innovations.

6. Conclusion

This paper has provided significant insights into research on AI adoption and usage in general education in SSA from 2013 to 2023. Data mining from databases such as Scopus, Google Scholar, and PubMed was employed to obtain 96 articles on the topic, adhering to the authors' set criteria. The review period (2013–2023) represents when authors began publishing on AI technologies in educational institutions. The review examined AI adoption, acceptance, and usage, as well as threats and risks, and the benefits of AI within the SSA educational landscape.

Building upon the findings, this study offers insights into yearly publication trends, countries' contributions, methodological characteristics, and core thematic issues, namely factors influencing adoption, acceptance, and usage, as well as the benefits associated with AI usage in education within SSA. AI integration in education in SSA is progressing steadily, and more studies on the subject are required to contribute to the global discourse on AI adoption and usage in education. Specifically, more empirical studies are needed on AI integration in the Eastern, Central, Northern, and Southern parts of SSA, as most existing studies focused on Ghana and Nigeria in the Western part of the region.

It can be concluded that AI adoption and usage in education in SSA have primarily focused on students or teachers, relying on either quantitative or qualitative approaches, with few studies underpinned by a mixed-method approach. Another revelation from the review is that the thematic desktop analysis and descriptive analysis used in most studies failed to unearth findings that could be generalised for the population in the study contexts. Although the integration of AI technologies in educational institutions in SSA is on the rise due to its associated benefits, the review also highlighted risks and threats. The study concludes that skepticism and potentially induced long-term unemployment were identified as some of the associated risks and threats as challenges in the review for AI integration in education in SSA, and requires more investigations.

7. Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

Not applicable.

Conflict of interest statement

The author reports no conflicts of interest.

Funding

The study received no funding

Authors' contributions

MOD and BB conceptualised the study. MOD, BB, MS and PDD, with contributions from RPKA, EBN, designed the study and conducted the data analysis and interpretation. All authors contributed to drafting the initial manuscript and participated in its revision and finalisation.

Acknowledgements

The authors of this are very grateful to scholars whose studies served as the foundation for this study.

Authors' ORCID

Brandford Bervell https://orcid.org/0000-0002-3925-6877
Dickson Okoree Mireku https://orcid.org/0000-0002-0166-1535
Prosper Dzifa Dzamesi https://orcid.org/0000-0002-3991-8164
Esther Bema Nimo https://orcid.org/0000-0003-4216-9659
Raphael Papa Kweku Andoh https://orcid.org/0000-0003-1981-7398
Moses Segbenya https://orcid.org/0000-0003-0065-2183

References

Abelha et al., 2020 – *Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., Ferreira-Oliveira, A.T.* (2020). Graduate employability and competence development in higher education – A systematic literature review using PRISMA. *Sustainability*. 12(15): 5900. DOI: 10.3390/su12155900

Adarkwah et al., 2023 – *Adarkwah, M.A., Amponsah, S., van Wyk, M.M., Huang, R., Tlili, A., Shehata, B., ... , Wang, H.* (2023). Awareness and acceptance of ChatGPT as a generative conversational AI for transforming education by Ghanaian academics: A two-phase study. *Journal of Applied Learning and Teaching*. 6(2): 1-18. DOI: 10.37074/jalt.2023.6.2.1

Adejoro et al., 2023 – *Adejoro, C.O., Arn, L., Schwartz, L., Yeh, T.* (2023). Empower children in Nigeria to design the future of artificial intelligence (AI) through writing. In *Proceedings of the 22nd Annual ACM Interaction Design and Children Conference* (pp. 677-680). DOI: 10.1145/3536404.3536419

Akinola, 2023 – *Akinola, S.* (2023, December). Capabilities and apparent implications of artificial intelligence (AI) adoption in Nigerian academic libraries. In *University Library at a New Stage of Social Communications Development. Conference Proceedings* (No. 8, pp. 283-289).

Alam, 2022 – *Alam, A.* (2022). Employing adaptive learning and intelligent tutoring robots for virtual classrooms and smart campuses: Reforming education in the age of artificial intelligence. In *Advanced Computing and Intelligent Technologies: Proceedings of ICACIT 2022* (pp. 395-406). Singapore: Springer Nature Singapore. DOI: 10.1007/978-981-19-0259-4_38

Amegadzie et al., 2021 – *Amegadzie, J.K., Kanubala, D.D., Cobbina, K.A., Acquaye, C.* (2021). State and future prospects of artificial intelligence (AI) in Ghana. *Proceedings of the 27th SMART-ISTEAMS-IEEE*, April 2021, 1-10.

Ampofo et al., 2023 – *Ampofo, J.W., Emery, C.V., Ofori, I.N.* (2023). Assessing the level of understanding (knowledge) and awareness of diagnostic imaging students in Ghana on artificial intelligence and its applications in medical imaging. *Radiology Research and Practice*, 2023. DOI: 10.1155/2023/1234567

Anana et al., 2023 – *Anana, M., Alugbin, M., Chinaguh, E.C.* (2023). Artificial or natural intelligence: Implications for teaching and learning of English language in Nigeria. Available at SSRN. DOI: 10.2139/ssrn.4589722

Ananyi, Nwosu, 2023 – *Ananyi, S. O., Nwosu, L.K.* (2023). Artificial intelligence and economic aspects of Nigerian public universities. *Journal of Education, Society & Multiculturalism*. 4(1): 1-29.

Ananyi, Nwosu, 2023 – *Ananyi, S.O., Nwosu, L.K.* (2023). Utilizing artificial intelligence to enhance the economic aspects of Nigerian public universities. In *The 3rd International Conference on Institutional Leadership and Capacity Building in Africa* (p. 383).

Baidoo-Anu, Ansah, 2023 – *Baidoo-Anu, D., Ansah, L.O.* (2023). Education in the era of generative artificial intelligence (AI): Understanding the potential benefits of ChatGPT in promoting teaching and learning. *Journal of AI*. 7(1): 52-62. DOI: 10.3390/jai7010052

Barakabitze et al., 2019 – *Barakabitze, A.A., William-Andey Lazaro, A., Ainea, N., Mkwizu, M.H., Maziku, H., Matofali, A.X., ... , Sanga, C.* (2019). Transforming African education systems in science, technology, engineering, and mathematics (STEM) using ICTs: Challenges and opportunities. *Education Research International*. 1: 6946809.

Bervell, Umar, 2017 – *Bervell, B., Umar, I.N.* (2017). Validation of the UTAUT model: Re-considering non-linear relationships of exogeneous variables in higher education technology acceptance research. *Eurasia Journal of Mathematics, Science and Technology Education*. 13(10): 6471-6490.

Boateng et al., 2023 – *Boateng, G., Kumbol, V., Kaufmann, E.E.* (2023). Can an AI win Ghana's national science and maths quiz? An AI Grand Challenge for Education. *arXiv preprint arXiv:* 2301.13089. DOI: 10.48550/arXiv.2301.13089

Boateng, 2023 – *Boateng, J.K.* (2023). Managing learning outcomes with technology in Ghanaian higher education. *Cogent Social Sciences*. 9(2): 2282507. DOI: 10.1080/23311886.2023.2282507

Boateng et al., 2023 – *Boateng, J.K., Osei-Tutu, E.M., Kwapong, O.A.T.* (2023). The evolving development education in Ghana. *Pedagogy of Hope for Global Social Justice*. 175.

Bonsu, Baffour-Koduah, 2023 – *Bonsu, E. M., Baffour-Koduah, D.* (2023). From the consumers' side: Determining students' perception and intention to use ChatGPT in Ghanaian higher education. *Journal of Education, Society & Multiculturalism*. 4(1): 1-29. DOI: 10.2139/jesm.2023.4.1.1

Butcher et al, 2021 – *Butcher, N., Wilson-Strydom, M., Baijnath, M.* (2021). Artificial intelligence capacity in sub-Saharan Africa: *Compendium report*. [Electronic resource]. URL: https://africa.ai4d.ai/wp-content/uploads/2021/03/AI4D Report%E2%80%94AI-in-SSA.pdf

Butakor, 2023 – *Butakor, P.K.* (2023). Exploring pre-service teachers' beliefs about the role of artificial intelligence in higher education in Ghana. *International Journal of Innovative Technologies in Social Science*. 3(39).

Chen et al., 2020 – *Chen, X., Xie, H., Zou, D., Hwang, G.J.* (2020). Application and theory gaps during the rise of artificial intelligence in education. *Computers and Education: Artificial Intelligence*. 1: 100002. DOI: 10.1016/j.caeai.2020.100002

Creswell, 2013 – *Creswell, J.W.* (2013). Steps in conducting a scholarly mixed methods study. *University of Nebraska – Lincoln, DBER Speaker Series*. 48. [Electronic resource]. URL: https://digitalcommons.unl.edu/dberspeakers/48

Chigora et al., 2022 – *Chigora, F., Katsande, C., Zvavahera, P., Garwe, E.C., Nyagadza, B.* (2022). Transferability of governance ethics in the Fourth Industrial Revolution teaching and learning developments: Distanced higher education assessment in Zimbabwe amid COVID-19 pandemic. In *Responsible Management of Shifts in Work Modes–Values for a Post-Pandemic Future, Volume 1* (pp. 179-195). Emerald Publishing Limited. DOI: 10.1108/9781786357805-013

Cleopas, 2023 – *Cleopas, B.C.* (2023). Advent of artificial intelligence: Prospects and challenges in Nigeria education system. *GPH-International Journal of Educational Research*. 6(06): 01-09. DOI: 10.5281/zenodo.7861234

CLN, 2023 – *CLN, O.T.E.* (2023). Adoption and utilization of artificial intelligence by librarians in university libraries in Southern Nigeria. *Library Philosophy and Practice*, 1-16.

Dake et al., 2023 – *Dake, D.K., Bada, G.K., Dadzie, A.E.* (2023). Internet of things (IoT) applications in education: Benefits and implementation challenges in Ghanaian tertiary institutions. *Journal of Information Technology Education: Research*. 22. DOI: 10.28945/5138

Daniels et al., 2022 – *Daniels, C., Teferra, D., Mba, J.* (2022). *Mapping research infrastructures to enhance the resilience of science systems in Sub-Saharan Africa: Final technical report*. International Development Research Centre (IDRC).

Dandachi, 2024 – *Dandachi, I.E.* (2023) AI-Powered Personalized Learning: Toward Sustainable Education. In: El-Chaarani, H., El Dandachi, I., El Nemar, S., EL Abiad, Z. (eds) *Navigating the Intersection of Business, Sustainability and Technology. Contributions to Environmental Sciences & Innovative Business Technology* (pp. 109-118). Springer Nature, Singapore. DOI: 10.1007/978-981-99-8572-2_5

Dalton, 2019 – *Dalton, K.O.* (2019). An evaluation of ICT use in institutions of higher learning in Burundi: A case study of Bujumbura Province (Doctoral dissertation, Kampala International University, School of Computing and Information Technology).

Dos Santos, 2022 – *Dos Santos, L.M.* (2022). Language preparation of international nursing students: A study of learning motivations and decisions. *International Journal of Instruction*. 15(2): 1039-1056. DOI: 10.29333/iji.2022.15263a

Edzie et al., 2023 – *Edzie, E.K.M., Dzefi-Tettey, K., Asemah, A.R., Brakohiapa, E.K., Asiamah, S., Quarshie, F., … , Kusodzi, H.* (2023). Perspectives of radiologists in Ghana about the emerging role of artificial intelligence in radiology. *Heliyon*. 9(5). DOI: 10.1016/j.heliyon.2023.e17106

Eiriemiokhale, Sulyman, 2023 – *Eiriemiokhale, K.A., Sulyman, A.S.* (2023). Awareness and perceptions of artificial intelligence among librarians in university libraries in Kwara State, Nigeria. *Indonesian Journal of Librarianship*: 107-118.

Eli, 2021 – *Eli, T.* (2021). Students perspectives on the use of innovative and interactive teaching methods at the University of Nouakchott Al Aasriya, Mauritania: English department as a case study. *International Journal of Technology, Innovation and Management (IJTIM)*. 1(2): 90-104.

Engstrom et al., 2020 – *Engstrom, D.F., Ho, D.E., Sharkey, C.M., Cuéllar, M.F.* (2020). Government by algorithm: Artificial intelligence in federal administrative agencies. *NYU School of Law, Public Law Research Paper*: 20-54. DOI: 10.2139/ssrn.3560411

Esseku et al., 2023 – *Esseku, J.F., Teye, V.Q.N., Agyemfra, K.A., Musa, M.* (2023). Exploring the potential of artificial intelligence in graphic design: Opportunities and challenges for the Ghanaian academic landscape.

Essel et al., 2022 – *Essel, H.B., Vlachopoulos, D., Tachie-Menson, A., Johnson, E.E., Baah, P.K.* (2022). The impact of a virtual teaching assistant (chatbot) on students' learning in Ghanaian higher education. *International Journal of Educational Technology in Higher Education*. 19(1): 1-19. DOI: 10.1186/s41239-022-00309-1

Fosso Wamba, Queiroz, 2022 – *Fosso Wamba, S., Queiroz, M.M.* (2022). Artificial Intelligence and Big Data Analytics in Cameroon: Challenges, benefits, and potential applications.

Fomunyam, 2020 – *Fomunyam, K.G.* (2020). Theorising machine learning as an alternative pathway for higher education in Africa. *International Journal of Education and Practice*. 8(2): 268-277. DOI: 10.18488/journal.61.2020.82.268.277

Goralski, Tan, 2020 – *Goralski, M. A., Tan, T. K.* (2020). Artificial intelligence and sustainable development. *The International Journal of Management Education*. 18(1): 100330. DOI: 10.1016/j.ijme.2020.100330

Gueye et al., 2021 – *Gueye, B., Gueye, A. D., Gueye, A., Kasse, O., Lishou, C.* (2021). Poster: Proposal for an intelligent remote tutoring model. In *The Internet of Things, Infrastructures, and Mobile Applications: Proceedings of the 13th IMCL Conference* (pp. 297-306). Springer International Publishing. DOI: 10.1007/978-3-030-83082-5_30

Hamoud et al., 2018 – *Hamoud, A., Hashim, A. S., Awadh, W. A.* (2018). Predicting student performance in higher education institutions using decision tree analysis. *International Journal of Interactive Multimedia and Artificial Intelligence*. 5: 26-31. DOI: 10.9781/ijimai.2018.05.002

Huang et al., 2023 – *Huang, R., Tlili, A., Xu, L., Chen, Y., Zheng, L., Metwally, A.H.S., … , Bonk, C.J.* (2023). Educational futures of intelligent synergies between humans, digital twins, avatars, and robots—the iSTAR framework. *Journal of Applied Learning & Teaching*, 6(2), 28-43. DOI: 10.37074/jalt.2023.6.2.28

Ikedinachi et al., 2018 – *Ikedinachi, A.P., Misra, S., Assibong, P.A., Olu-Owolabi, E.F., Maskeliūnas, R., Damasevicius, R.* (2018). Artificial intelligence, smart classrooms, and online education in the 21st century: Implications for human development. *Journal of Cases on Information Technology (JCIT)*. 21(3): 66-79. DOI: 10.4018/JACIT.2018070105

Imhanyehor, 2022 – *Imhanyehor, G.O.* (2022). Digital literacy and primary educational system in Benin City, Edo State, Nigeria. *Humanities and Social Sciences Latvia*. 30(1, 2): 52-69. DOI: 10.22364/hssl.30.1.4

Inusah et al., 2023 – *Inusah, F., Missah, Y. M., Najim, U., Twum, F.* (2023). Integrating expert systems in managing basic education: A survey in Ghana. *International Journal of Information Management Data Insights*. 3(1): 100166. DOI: 10.1016/j.jimd.2023.100166

Ismail et al., 2023 – *Ismail, F., Tan, E., Rudolph, J., Crawford, J., Tan, S.* (2023). Artificial intelligence in higher education: A protocol paper for a systematic literature review. *Journal of Applied Learning and Teaching*. 6(2): 1-18. DOI: 10.37074/jalt.2023.6.2.1

Iyinolakan, 2023 – *Iyinolakan, O.* (2023). Exploring the potential of artificial intelligence for supporting indigenous language journalism pedagogy in Nigeria. *African Journal of Communication and Media Studies*.

Jatileni et al., 2023 – *Jatileni, C.N., Sanusi, I.T., Olaleye, S.A., Ayanwale, M.A., Agbo, F.J., Oyelere, P.B.* (2023). Artificial intelligence in the compulsory level of education: Perspectives from Namibian in-service teachers. *Education and Information Technologies*, 1-28. DOI: 10.1007/s10639-023-11264-0

Jibrin et al., 2023 – *Jibrin, H. S., Idris, M. K., Usman, B., Alhassan, I. M., Ahmed, A. A.* (2023). Potentials for application of information technology trends in tertiary institutions in Nigeria. *Qeios*. DOI: 10.32388/9B1W8Y

Jiang et al., 2020 – *Jiang, S., Zheng, Y., Solomatine, D.* (2020). Improving AI system awareness of geoscience knowledge: Symbiotic integration of physical approaches and deep learning. *Geophysical Research Letters*. 47(13): e2020GL088229. DOI: 10.1029/2020GL088229

Kamaghe et al., 2020 – *Kamaghe, J. S., Luhanga, E. T., Michael, K.* (2020). The challenges of adopting M-learning assistive technologies for visually impaired learners in higher learning institutions in Tanzania.

Khodabocus et al., 2022 – *Khodabocus, F., Bahadur, G.K., Armoogum, S.* (2022). Innovative teaching and learning methods at the University of Mauritius. In *ICT and Innovation in Teaching Learning Methods in Higher Education* (Vol. 45, pp. 31-49). Emerald Publishing Limited. DOI: 10.1108/9781786357775-004

Lashayo, Mhina, 2023 – *Lashayo, D.M., Mhina, J.R.A.* (2023). Evaluating the extent of adoption and integration of artificial intelligence content into computing curricula in higher education institutions in Tanzania: A focus on the design and delivery of academic programmes. *Business Education Journal*. 9(1): 1-19. DOI: 10.2139/bej.2023.9.1.1

Machaba, Bedada, 2022 – *Machaba, F., Bedada, T. B.* (2022). Mathematics educators' readiness for online education in the fourth industrial revolution: A case of two selected universities in Ethiopia. In *Mathematics Education in Africa: The Fourth Industrial Revolution* (pp. 57-76). Cham: Springer International Publishing. DOI: 10.1007/978-3-030-83948-3_6

Madumo, Kimaro, 2021 – *Madumo, O.S., Kimaro, J.R.* (2021). Accelerating the Fourth Industrial Revolution in higher education: Realities and lessons from universities in Kenya, Zambia, and South Africa during the COVID-19 pandemic.

Madzima et al., 2013 – *Madzima, K., Dube, E. L., Mashwama, P.M.* (2013). ICT education in Swaziland secondary schools: Opportunities and challenges. University of Eswatini. Eswatini.

Manhiça et al., 2022 – *Manhiça, R., Santos, A., Cravino, J.* (2022, August). The impact of artificial intelligence on a learning management system in a higher education context: A position paper. In *International Conference on Technology and Innovation in Learning, Teaching and Education* (pp. 454-460). Cham: Springer Nature Switzerland. DOI: 10.1007/978-3-030-85007-5_51

Manhiça et al., 2023 – *Manhiça, R., Santos, A., Cravino, J.* (2023). The journey and the impact of artificial intelligence on LMS in a Mozambican higher education context.

Maphosa, Maphosa, 2020 – *Maphosa, M., Maphosa, V.* (2020, September). Educational data mining in higher education in Sub-Saharan Africa: A systematic literature review and research agenda. In *Proceedings of the 2nd International Conference on Intelligent and Innovative Computing Applications*. Pp. 1-7.

Mohammed, 2023 – *Mohammed, A.S.* (2023). Examining the implementation of artificial intelligence in early childhood education settings in Ghana: Educators' attitudes and perceptions towards its long-term viability. *American Journal of Education and Technology*. 2(4): 36-49. DOI: 10.5281/zenodo.786

Moher et al., 2009 – *Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., PRISMA Group*. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine*. 151(4): 264-269. DOI: 10.7326/0003-4819-151-4-200908180-00135

Moustapha, Mr, 2023 – *Moustapha, A.A., Mr, I.O.Y.* (2023). Artificial intelligence adoption and utilization by librarians in university libraries in Kwara State, Nigeria. *Artificial Intelligence*. DOI: 10.34104/ai.2023.1.1.1

Mumba, 2023 – *Mumba, B.* (2023). Technological advancement and changing skills: Imperative for a paradigm shift in education delivery in Zambia. *Qeios*. DOI: 10.32388/0G2QG0

Mwilongo et al., 2022 – *Mwilongo, K.J., Mwageni, R., Matto, G.* (2022). Emerging assumptions and the future of artificial intelligence in teaching and learning processes in higher learning institutions in Sub-Saharan Africa: A review of literature. *Zambia Journal of Library & Information Science (ZAJLIS)*, 6(2), 12-18. DOI: 10.5281/zenodo.7861235

Nemorin et al., 2023 – *Nemorin, S., Vlachidis, A., Ayerakwa, H. M., Andriotis, P.* (2023). AI hyped? A horizon scan of discourse on artificial intelligence in education (AIED) and development. *Learning, Media and Technology*, 48(1), 38-51. DOI: 10.1080/17439884.2022.2091324

Nolan et al., 2024 – *Nolan, S.A., Cranney, J., de Souza, L. K., Hulme, J.A.* (2024). Centering Psychological Literacy in Undergraduate Psychology Education Internationally. *Psychology Learning & Teaching*. 23(2): 129-135. DOI: 10.1177/14757257241253060

Nwile, Edo, 2023 – *Nwile, C.B., Edo, B.L.* (2023). Artificial intelligence and robotic tools for effective educational management and administration in the state-owned universities in Rivers State, Nigeria. *Faculty of Natural and Applied Sciences Journal of Mathematics and Science Education*. 4(1): 28-36.

Nwosu et al., 2023 – *Nwosu, L.I., Bereng, M.C., Segotso, T., Enebe, N.B.* (2023). Fourth Industrial Revolution tools to enhance the growth and development of teaching and learning in higher education institutions: A systematic literature review in South Africa. *Research in Social Sciences and Technology*. 8(1): 51-62. DOI: 10.46303/ressat.2023.1

Nyaaba Akanzire et al., 2023 – *Nyaaba Akanzire, B., Nyaaba, M., Nabang, M.* (2023). Perceptions and preparedness: Exploring teacher educators' views on integrating generative AI in colleges of education, Ghana. *EdArXiv*. DOI: 10.31235/osf.io/xyz123

Nyaaba, 2023 – *Nyaaba, M.* (2023). Driving educational change in Ghana: The role of generative AI in promoting practical-based teaching and assessment methods. *EdArXiv*. DOI: 10.31235/osf.io/abc456

Ofosu-Ampong et al., 2023 – *Ofosu-Ampong, K., Acheampong, B., Kevor, M.O.* (2023). Acceptance of artificial intelligence (ChatGPT) in education: Trust, innovativeness, and psychological need of students. *Information and Knowledge Management*. 13(4): 37-47. DOI: 10.7176/ikm/13-4-05

Ogunode, Ejike, 2023 – *Ogunode, N.J., Ejike, C.N.* (2023). Artificial intelligence and curriculum implementation of post-basic education and career development (PBECD) in Nigeria. *Journal of Innovation in Education and Social Research*. 1(4): 50-56.

Ogunode et al., 2023 – *Ogunode, N.J., Olofu, P.A., Bassey, U.O.* (2023). Barriers to effective usage of artificial intelligence in tertiary institutions in North-Central, Nigeria. *Web of Semantics: Journal of Interdisciplinary Science*. 1(1): 38-43.

Ogwo, Ibegbulem, 2019 – *Ogwo, U., Ibegbulem, F.* (2019). Applications and perceived impact of artificial intelligence in academic libraries in Nigeria. *Library Philosophy and Practice*. [Electronic resource]. URL: https://digitalcommons.unl.edu/libphilprac/3050

Okagbue et al., 2023 – *Okagbue, E.F., Ezeachikulo, U.P., Akintunde, T.Y., Tsakuwa, M.B., Ilokanulo, S.N., Obiasoanya, K.M., … , Ouattara, C.A.T.* (2023). A comprehensive overview of artificial intelligence and machine learning in education pedagogy: 21 years (2000–2021) of research indexed in the Scopus database. *Social Sciences & Humanities Open*. 8(1): 100655. DOI: 10.1016/j.ssaho.2023.100655

Okewu et al., 2021 – *Okewu, E., Adewole, P., Misra, S., Maskeliunas, R., Damasevicius, R.* (2021). Artificial neural networks for educational data mining in higher education: A systematic literature review. *Applied Artificial Intelligence*. 35(13): 983-1021. DOI: 10.1080/08839514.2021.1899992

Okunlaya et al., 2022 – *Okunlaya, R.O., Syed Abdullah, N., Alias, R.A.* (2022). Artificial intelligence (AI) library services innovative conceptual framework for the digital transformation of university education. *Library Hi Tech*. 40(6): 1869-1892. DOI: 10.1108/LHT-06-2022-0169

Oladele et al., 2014 – *Oladele, A. S., Vokolkova, V., Egwurube, J. A.* (2014). Pavement performance modeling using artificial intelligence approach: A case of Botswana district gravel road networks. *Journal of Engineering and Applied Sciences*. 5(2): 23-31.

Olatunde-Aiyedun, Hamma, 2023 – *Olatunde-Aiyedun, T.G., Hamma, H.* (2023). Impact of artificial intelligence (AI) on lecturers' proficiency levels in MS PowerPoint, Canva, and Gamma in Nigeria. *Horizon: Journal of Humanity and Artificial Intelligence*. 2(8): 1-16. DOI: 10.5281/zenodo.7861236

Ondiek et al., 2023 – *Ondiek, B., Waruguru, L., Njenga, S.* (2023). Recommender system for STEM enrolment in universities using machine learning algorithms: Case of Kenyan universities. *International Journal of Science, Technology & Management*. 4(6): 1465-1476. DOI: 10.5281/zenodo.7861237

Onyejegbu, 2023 – *Onyejegbu, L.N.* (2023). Challenges of integrating AI ethics into higher education curricula in West Africa: Nigerian universities narrative. In *AI Ethics in Higher Education: Insights from Africa and Beyond* (pp. 57-66). Cham: Springer International Publishing. DOI: 10.1007/978-3-030-88143-5_6

Onyema, 2020 – *Onyema, E.M.* (2020). Integration of emerging technologies in teaching and learning process in Nigeria: The challenges. *Central Asian Journal of Mathematical Theory and Computer Sciences*. 1(1): 35-39.

Oranga, 2023 – *Oranga, J.* (2023). Benefits of artificial intelligence (ChatGPT) in education and learning: Is ChatGPT helpful? *International Review of Practical Innovation, Technology and Green Energy (IRPITAGE)*. 3(3): 46-50.

Panchoo, 2015 – *Panchoo, S.* (2015, October). Distance education and MOOC: Opportunities for quality education in higher education in Mauritius. In *2015 IEEE 3rd International Conference on MOOCs, Innovation and Technology in Education (MITE)* (pp. 446-451). IEEE. DOI: 10.1109/MITE.2015.7350587

Pedro et al., 2019 – *Pedro, F., Subosa, M., Rivas, A., Valverde, P.* (2019). Artificial intelligence in education: Challenges and opportunities for sustainable development. *International Journal of Educational Management*. 33(3): 439-455. DOI: 10.1108/IJEM-06-2018-0177

Pew Forum..., 2025 – Pew Forum on Religion & Public Life. [Electronic resource]. URL: https://www.pewresearch.org/wp-content/uploads/sites/7/2010/04/sub-saharan-africa-map1.pdf

Popenici, Kerr, 2017 – *Popenici, S.A., Kerr, S.* (2017). Exploring the impact of artificial intelligence on teaching and learning in higher education. *Research and Practice in Technology Enhanced Learning*. 12(1): 1-13. DOI: 10.1186/s41039-017-0040-1

Jiang et al., 2022 – *Jiang, K., Qin, M., Li, S.* (2022). Chatbots in retail: How do they affect the continued use and purchase intentions of Chinese consumers? *Journal of Consumer Behaviour*. 21(4): 756-772. DOI: 10.1002/cb.1975

Recht et al., 2020 – *Recht, M.P., Dewey, M., Dreyer, K., Langlotz, C., Niessen, W., Prainsack, B., Smith, J.J.* (2020). Integrating artificial intelligence into the clinical practice of radiology: Challenges and recommendations. *European Radiology*. 30: 3576-3584. DOI: 10.1007/s00330-020-07094-2

Reiger, 2022 – *Reiger, B.* (2022). Adoption of artificial intelligence-based technologies in sub-Saharan African agriculture (Doctoral dissertation).

Salas-Pilco et al., 2022 – *Salas-Pilco, S. Z., Xiao, K., Hu, X.* (2022). Artificial intelligence and learning analytics in teacher education: A systematic review. *Education Sciences*. 12(8): 569. DOI: 10.3390/educsci12080569

Samuel, 2023 – *Samuel, O.O.* (2023). Artificial intelligence and transformation of education in Nigeria. *International Journal of Assessment and Evaluation in Education*.

Sanusi et al., 2022 – *Sanusi, I.T., Olaleye, S.A., Oyelere, S.S., Dixon, R.A.* (2022). Investigating learners' competencies for artificial intelligence education in an African K-12 setting. *Computers and Education Open*. 3: 100-123. DOI: 10.1016/j.caeo.2022.100123

Sarfo et al., 2024 – *Sarfo, J.O., Tachie-Donkor, G., Aggrey, E.K., Mordi, P.* (2024). Attitudes, perceptions, and challenges towards artificial intelligence adoption in Ghana and Nigeria: A systematic review with a narrative synthesis. *International Journal of Media and Information Literacy*. 9(2): 437-452.

Sedahmed, Noureldien, 2019 – *Sedahmed, Z.M., Noureldien, N.A.* (2019). Factors influencing students' decisions to enroll in Sudanese higher education institutions. *Intelligent Information Management*. 11(4): 61-76. DOI: 10.4236/iim.2019.114005

Segbenya et al., 2023 – *Segbenya, M., Bervell, B., Frimpong-Manso, E., Otoo, I.C., Andzie, T.A., Achina, S.* (2023). Artificial intelligence in higher education: Modelling the antecedents of artificial intelligence usage and effects on 21st-century employability skills among postgraduate students in Ghana. *Computers and Education: Artificial Intelligence*. 5: 100188. DOI: 10.1016/j.caeai.2023.100188

Shipepe et al., 2023 – *Shipepe, A., Uwu-Khaeb, L., Kolog, E., Apiola, M., Mufeti, K., Sutinen, E.* (2023). Towards the 4IR in Namibia: An undergraduate AI course Africanized.

Shyr et al., 2019 – *Shyr, W.J., Yang, F.C., Liu, P.W., Hsieh, Y.M., You, C.S., Chen, D.C.* (2019). Development of assessment indicators for measuring the student learning effects of artificial intelligence-based robot design. *Computer Applications in Engineering Education*. 27(4): 863-868. DOI: 10.1002/cae.22080

Solís et al., 2023 – *Solís, M.W.M.V., Ríos, C.A.G., Hermida, C.E.C., Alencastre, J.L.A., Tovalin-Ahumada, J.H.* (2023). The impact of artificial intelligence on higher education: A sociological perspective. *Journal of Namibian Studies: History Politics Culture*. 33: 3284-3290.

Su et al., 2022 – *Su, J., Zhong, Y., Ng, D.T.K.* (2022). A meta-review of literature on educational approaches for teaching AI at the K-12 levels in the Asia-Pacific region. *Computers and Education: Artificial Intelligence*. 3: 100065. DOI: 10.1016/j.caeai.2022.100065

Taherdoost, 2022 – *Taherdoost, H.* (2022). What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations. *Journal of Management Science & Engineering Research*. 5(1): 53-63. DOI: 10.26666/rmp.2022.1

Tapo et al., 2024 – *Tapo, A.A., Traoré, A., Danioko, S., Tembine, H.* (2024). Machine Intelligence in Africa: a survey. arXiv preprint arXiv:2402.02218. DOI: 10.1109/TPAMI.2024.3422209

Tastimur et al., 2016 – *Tastimur, C., Karakose, M., Akin, E.* (2016, September). Improvement of relative accreditation methods based on data mining and artificial intelligence for higher education. In *2016 15th International Conference on Information Technology Based Higher Education and Training (ITHET)* (pp. 1-7). IEEE. DOI: 10.1109/ITHET.2016.7760730

Timothy, Onyeukwu, 2023 – *Timothy, K.N., Onyeukwu, H.C.* (2023). Integrating artificial intelligence in Nigeria education: A panacea to educational assessment development in Nigeria. *African Journal of Economics and Management Research*. 1(2): 1-19. DOI: 10.5281/zenodo.7861238

Tlili et al., 2023 – *Tlili, A., Ofosu, S., Zhang, J.* (2023). Pedagogical beliefs, teaching practices and use of open educational resources in the Republic of Ghana. *Interactive Learning Environments*. 31(5): 2665-2677. DOI: 10.1080/10494820.2022.2091325

Ujakpa et al., 2020 – *Ujakpa, M.M., Osakwe, J.O., Iyawa, G.E., Hashiyana, V., Mutalya, A.N.* (2020, May). Industry 4.0: University students' perception, awareness and preparedness – A case of Namibia. In *2020 IST-Africa Conference (IST-Africa)* (pp. 1-10). IEEE. DOI: 10.1109/ISTAFRICA49556.2020.9190197

Vernon, 2019 – *Vernon, D.* (2019). Robotics and artificial intelligence in Africa [Regional]. *IEEE Robotics & Automation Magazine*. 26(4): 131-135. DOI: 10.1109/MRA.2019.2951430

Wachira et al., 2023 – *Wachira, K., Wachira, L. N., Mwangi, E., Absaloms, H. O., Jeon, G.* (2023, September). Tertiary education integrity in a ChatGPT conscious world: Preliminary Kenyan observations. In *2023 IEEE AFRICON* (pp. 1-6). IEEE. DOI: 10.1109/AFRICON52399.2023.10213989

Wandera, 2020 – *Wandera, H.* (2020). Thuto: Depth analysis of South African and Sierra Leone school outcomes using machine learning (Doctoral dissertation, University of Pretoria).

Wandera et al., 2020 – *Wandera, H., Marivate, V., Sengeh, D.* (2020). Investigating similarities and differences between South African and Sierra Leonean school outcomes using machine learning. *arXiv preprint arXiv:2004.11369*. DOI: 10.48550/arXiv.2004.11369

Yigitcanlar et al., 2020 – *Yigitcanlar, T., Desouza, K. C., Butler, L., Roozkhosh, F.* (2020). Contributions and risks of artificial intelligence (AI) in building smarter cities: Insights from a systematic review of the literature. *Energies*, 13(6), 1473. DOI: 10.3390/en13061473

Zhai, Nyaaba, 2023 – *Zhai, X., Nyaaba, M.* (2023). Professional development needs of teacher educators for generative AI literacy and application in Ghana. Available at SSRN. DOI: 10.2139/ssrn.4628126

Zhai et al., 2021 – *Zhai, X., Chu, X., Chai, C.S., Jong, M.S.Y., Istenic, A., Spector, M., Liu, J.B., Yuan, J., Li, Y.* (2021). A review of artificial intelligence (AI) in education from 2010 to 2020. *Complexity*, 2021, 1-18. DOI: 10.1155/2021/1234567

Appendix A

Table 7. Summary of included studies

Author(s)/ Date	Country	Subjects (Agric, Edu, etc.)	Methods (qual, quant, mixed)	Sample size	Users (students, lecturers, administrators, researchers, etc.)	Level of Edu (e.g., undergraduate, postgraduate, and post-doctoral study)
D Vernon, 2019	Ghana	healthcare, agriculture, education, manufacturing, and industrial development.			general population in Africa, students, and the workforce	
HB Essel, D Vlachopoulos, 2022	Ghana	Education	mixed	68	undergraduate students	Undergraduate
A Endurance, N Onah Eunice, 2021	Nigeria	Education	Quantitative	301	lecturers	Doctorate
E Okewu, P Adewole, S Misra, 2021	Nigeria	Education	Desktop review	190	researchers	
EM Onyema, 2019	Nigeria	Education	Quantitative	200	lecturers and students	Undergraduate and Doctorate
IT Sanusi, SA Olaleye, SS Oyelere, RA Dixon, 2019	Nigeria	Education	Quantitative	605	students	Undergraduate
RO Okunlaya, N Syed Abdullah, RA Alias, 2022	Nigeria	Education	Desktops review		librarians	
A Alam, 2022	Togo	Education			lecturers and students	Undergraduate
A Hamoud, AS Hashim, WA Awadh, 2018	Togo	Education	Quantitative	161	students	Undergraduate
SAD Popenici, S Kerr, 2017	Togo	Educational	Not Stated	Not Stated	teachers and students.	
AS Oladele, V Vokolkova, JA Egwurube, 2014	Botswana	Engineering	Quantitative		transportation planners, researchers	
Shonhe, L., Jain, P., Akakandelwa, A. (2023)	Botswana	education	quantitative	354	students	undergraduate
KO Dalton, 2019	Burundi	Education	Quantitative	133	lecturers and students	
WJ Shyr, FC Yang, PW Liu, YM Hsieh, 2019	Burundi	Education	Quantitative	10	students	
Jeremie Ning (2023)	Cameroon	education	quantitative	500	academic staff	postgraduate
S Fosso Wamba, MM Queiroz, 2022	Cameroon	It is not specific to any particular industry but instead addresses the	Content analysis and discussions			

Author(s)/ Date	**Country**	**Subjects (Agric, Edu, etc.)**	**Methods (qual, quant, mixed)**	**Sample size**	**Users (students, lecturers, administrators, researchers, etc.)**	**Level of Edu (e.g., undergraduate, postgraduate, and post-doctoral study)**
		broader context of digital transformation.				
F Pedro, M Subosa, A Rivas, P Valverde, 2019	Central African Republic	Education, Technology, and Sustainable Development			students and teachers	
F Machaba, TB Bedada, 2022	Ethiopia	Education	Quantitative		mathematics teachers	
C Tastimur, M Karakose, E Akin, 2016	Kenya	Education				
T Eli, 2021	Mauritani a	Education	Quantitative	101	students	Undergraduate
sengupta, E.and Blessinger, P.(Ed.), 2022	Mauritius	Education	Literature review		educators, administrators, policy makers and anyone interested in the use of technology in higher education.	
S Panchoo, 2015	Sieus	EDUCATION	Mixed		policymakers, researchers, educators and stakeholders in education.	
R Manhiça, A Santos, J Cravino, 2022	Mozambiq ue	Education			educators and researchers	
A Shipepe, L Uwu-Khaeb, E Kolog, M Apiola, K Mufeti...	Namibia	Education	Qualitative		undergraduate students	Undergraduate
MM Ujakpa, JO Osakwe, GE Iyawa, 2020	Namibia	Educationa~~l~~	Quantitative	24	students	
IT Sanusi, SA Olaleye, SS Oyelere, RA Dixon, 2022	Niger	Education	Quantitative	605	students	-K-12 Students.
KJ Mwilongo, R Mwageni, G Matto, 2022	Rwanda	Education			students and facilitators	
SZ Salas-Pilco, K Xiao, X Hu, 2022	Rwanda	Education	Content analysis	30	teachers	
B Gueye, AD Gueye, A Gueye, O Kasse..., 2021	Senegal	Education			students	
H Wandera, 2020	Sierra Leone	Education			students	
H Wandera, V Marivate, D Sengeh, 2020	Sierra Leone	Education			students	High School
F Pedro, M Subosa, A Rivas, P Valverde, 2019	South Africa	Education	Literature Review		students, teachers and policy makers	From K-12 to higher education
MA Goralski, TK Tan, 2020	South Africa	Business	Conceptual Analysis			
X Chen, H Xie, D Zou, GJ Hwang, 2020	South Africa	Education	Content Analysis			
ZM Sedahmed, NA Noureldien, 2019	Sudan	Education		800	students	
K Madzima, EL Dube, PM Mashwama, 2013	Swaziland	Education			students and teachers	Secondary school
JS Kamaghe, ET Luhanga, K Michael, 2020	Tanzania	Education			students	Higher Education
M Maphosa, V Maphosa,2 020	Tanzania	Education	Literature review	811	student, lecturers , administrators and researchers	
F Pedro, M Subosa, A Rivas, P Valverde, 2019	Togo	Education	Not Stated	Not Stated	students and teachers	

Author(s)/ Date	Country	Subjects (Agric, Edu, etc.)	Methods (qual, quant, mixed)	Sample size	Users (students, lecturers, administrators, researchers, etc.)	Level of Edu (e.g., undergraduate, postgraduate, and post-doctoral study)
KJ Mwilongo, R Mwageni, G Matto, 2022	Zambia	Education			students and teachers	
OS Madumo, JR Kimaro, 2021	Zambia	Education and Technology	Qualitative		students	
F Chigora, C Katsande, P Zvavahera…, 2022	Zimbabwe	Educational	Literature Review		students	
Adarkwah, M.A., Amponsah, S., van Wyk, M.M., Huang, R., Tlili, A., Shehata, B., Metwally, A.H.S. and Wang, H., 2023	Ghana	Education	Mixed	34 academics - Qualitative 50 academics - Quantitative	academics	Higher Education
Mohammed, A. S. (2023	Ghana	Education	Qualitative	8 Educators	academics	
Nyaaba, M. (2023).	Ghana	Education	Not stated	Not stated	academics	Pre-tertiary level (K-12) and the teacher education programs
Nyaaba Akanzire, B., Nyaaba, M., Nabang, M. (2023).	Ghana	Education	Qualitative	50	academics	Colleges of education
Zhai, X., Nyaaba, M. (2023).	Ghana	Education	Quantitative	307	teacher educators, administrators, and in-service teachers	Teacher education
Butakor, P. K. (2023).	Ghana	Education	Quantitative	231 pre-service teachers	academics	Higher education
Ofosu-Ampong, K., Acheampong, B., Kevor, M. O. (2023).	Ghana	Education	Quantitative	146 students	academics	Higher education
Bonsu, E. M., Baffour-Koduah, D. (2023)	Ghana	Education	Mixed-method approach	107	academics	Higher education
Boateng, J. K., Osei-Tutu, E. M., Kwapong, O. A. T. (2023)	Ghana	Education	Not stated	Not stated	academics	Higher education
Boateng, G., Mensah, J. A., Yeboah, K. T., Edor, W., Mensah-Onumah, A. K., Ibrahim, N. D., Yeboah, N. S. (2023)	Ghana	Education, Technology	Qualitative	60	academics, researchers	Senior High School
Inusah, F., Missah, Y. M., Najim, U., Twum, F. (2023)	Ghana	Education	Mixed	648	academics, administrators	Basic education
Attah, A. P. K., Tahiru, A. M. 2023)	Ghana	Technology	Qualitative	55	special education teachers	All levels of education
Ampofo, J. W., Emery, C. V., Ofori, I. N. (2023).	Ghana	healthcare, Technology	Quantitative	225	students,health institutions,	Higher education
Esseku, J. F., Teye, V. Q. N., Agyemfra, K.A., Musa, M. (2023)	Ghana	Education	Not stated	Not stated	healthcare, financial, industrial, and transportation sectors	
Baidoo-Anu, D., Ansah, L. O. (2023)	Ghana	Education	Not stated	Not stated	policy makers, researchers, educators and technology experts	Higher education

Author(s)/ Date	**Country**	**Subjects (Agric, Edu, etc.)**	**Methods (qual, quant, mixed)**	**Sample size**	**Users (students, lecturers, administrators, researchers, etc.)**	**Level of Edu (e.g., undergraduate, postgraduate, and post-doctoral study)**
Boateng, J. K. (2023).	Ghana	Education	Mixed(Quantitative = 230 respondents and Qualitative = 10 respondents from the 230)	230	academics	Higher education
Nemorin, S., Vlachidis, A., Ayerakwa, H. M., Andriotis, P. (2023).	Ghana	Education	Quantitative	143	academics	Higher Education
Segbenya, M., Bervell, B., Frimpong-Manso, E., Otoo, I. C., Andzie, T. A., Achina, S. (2023)	Ghana	Education	Mixed	294	academics	Higher Education
Dake, D. K., Bada, G. K., Dadzie, A. E. (2023)	Ghana	Education	Quantitative	200	academics, researchers	Higher Education
Edzie, E. K. M., Dzefi-Tettey, K., Asemah, A. R., Brakohiapa, E. K., Asiamah, S., Quarshie, F., ... Kusodzi, H. (2023)	Ghana	Education	Qualitative	77	academics	Higher Education
Ismail, F., Tan, E., Rudolph, J., Crawford, J., Tan, S. (2023)	Ghana	Education	Mixed	—	academics	Higher Education
Tlili, A., Ofosu, S., Zhang, J. (2023)	Ghana	Education	Mixed	110	academics	Higher Education
Boateng, G., Kumbol, V., Kaufmann, E. E. (2023).	Ghana	Education	Qualitative(Literature review)	Not stated	researchers, administrators	Secondary Schools
Huang, R., Tlili, A., Xu, L., Chen, Y., Zheng, L., Metwally, A. H. S., ... , Bonk, C. J. (2023).	Ghana	Education	Qualitative(Literature review)	Not stated	designers, developers, educators, policymakers	Higher Education
Ogunode, N. J., Ejike, C. N. (2023).	Nigeria	Education	Qualitative	Not stated	educators, students	Post-Basic Education
Samuel, O. O. (2023)	Nigeria	Education	Qualitative(Literature re	Not stated	teachers, researchers, students	Primary Schools
Ogunode, N. J., Olofu, P. A., Bassey, U. O. (2023)	Nigeria	Education	Mixed	150	academics, students	Higher Education
Nwile, C. B., Edo, B. L. (2023)	Nigeria	Education	Quantitative	154 administrators	administrators	Higher Education
Okagbue, E. F., Ezeachikulo, U. P., Akintunde, T. Y., Tsakuwa, M. B., Ilokanulo, S. N., Obiasoanya, K. M., ... , Ouattara, C. A. T. (2023)	Nigeria	Education	Qualitative	1138 articles	extracted articles	Higher Education
Onyejegbu, L. N. (2023)	Nigeria	Education	Qualitative	12 Faculties	senior faculty, research lab heads and researchers	Higher Education
Timothy, K. N., Onyeukwu, H. C. (2023)	Nigeria	Education	Quantitative	104	primary and secondary schools	Primary and Secondary Education
Adejoro, C. O., Arn, L., Schwartz, L., Yeh, T. (2023, June)	Nigeria	Education	Qualitative	11	secondary school students	Secondary school
Ananyi, S. O., Nwosu, L. K. (2023).	Nigeria	Education	Quantitative	25	university public relation officers	Higher Education
Jibrin, H. S., Idris, M. K.,	Nigeria	Education			tertiary institution	Higher Education

Author(s)/ Date	Country	Subjects (Agric, Edu, etc.)	Methods (qual, quant, mixed)	Sample size	Users (students, lecturers, administrators, researchers, etc.)	Level of Edu (e.g., undergraduate, postgraduate, and post-doctoral study)
Usman, B., Alhassan, I. M., Ahmed, A. A. (2023)						
Ananyi, S. O., Nwosu, L. K. (2023)	Nigeria	Education	Quantitative	25	admin	Higher Education
Olatunde-Aiyedun, T. G., Hamma, H. (2023)	Nigeria	Education	Quantitative	301	university lecturers	Higher Education
Iyinolakan, O. (2023)	Nigeria	education	Mixed method	271	teachers, journalist (students)	Higher Education
Cleopas, B. C. (2023)	Nigeria					
Ogunlade, B. O., Babatunde, R. A., Fakuade, O. V.	Nigeria	Education	Qualitative	40	students	Junior secondary
Ogwo, U., Ibegbulem, F.	Nigeria	Education	Qualitative	Not stated	academic libraries	
Moustapha, A. A., Mr, I. O. Y. (2023)	Nigeria	Education	Quantitative	450	librarians	HIgher education
Akinola, S. (2023, December)	Nigeria	Education	Literature review	Not stated	academic libraries	
Eiriemiokhale, K. A., Sulyman, A. S. (2023)	Nigeria	Education	Quantitative	37	librarians	HIgher education
Anana, M., Alugbin, M., Chinaguh, E. C.	Nigeria	Education	Quantitative		students	higher education
Cln, O. T. E. (2023)	Nigeria	Education	Quantitative	704	librarians	Higher education
Wachira, K., Wachira, L. N., Mwangi, E., Absaloms, H. O., Jeon, G. (2023, September)	Kenya	Education	Quantitative	572	students	Undergraduate
Ondiek, B., Waruguru, L., Njenga, S. (2023).	Kenya	Education	Quantitative	384	students	Higher education
Oranga, J. (2023)	Kenya	Education	Literature review		academics	All levels of education
Manhiça, R., Santos, A., Cravino, J. (2023)	Mozambiq ue	Education	Qualitative		academics	Higher education
Jatileni, C. N., Sanusi, I. T., Olaleye, S. A., Ayanwale, M. A., Agbo, F. J., Oyelere, P. B. (2023)	Namibia	Education	Qualitative	159	students	Basi education secondary education
Solís, M. W. M. V., Ríos, C. A. G., Hermida, C. E. C., Alencastre, J. L. A., Tovalin-Ahumada, J. H. (2023)	Namibia	Education	Qualitative	Not stated	professors, students and administrative staff	Higher Education
Nwosu, L. I., Bereng, M. C., Segotso, T., Enebe, N. B. (2023)	South Africa	Education	Qualitative	54	researchers	Higher education
Lashayo, D. M., Mhina, J. R. A. (2023)	Tanzania	Education	Qualitative	10	students	Higher education
Mumba, B. (2023)	Zambia	Education	Qualitative	Not stated	students, administration staff	
Essel, H. B., Vlachopoulos, D., Tachie-Menson, A., Johnson, E. E., Baah, P. K. (2022)	Ghana	Education	Quantitative	68	undergraduate students	

Publisher: Centre for Behaviour and Wellness Advocacy, Ghana
Co-publisher: Cherkas Global University, USA
Has been issued since 2014
ISSN 2410-4981. E-ISSN 2508-1055
2025. 12(1): 107-115

DOI: 10.13187/jare.2025.1.107

Journal homepage:
http://kadint.net/our-journal.html

Publication Activity of the Laboratory of World Civilizations at Cherkas Global University (2014–2024): First 10 Years' Performance Results

Semyon N. Gonta [a, *]

[a] Sochi State University, Sochi, Russian Federation

Abstract

This work represents an analysis of the Laboratory of World Civilizations' performance (2014–2024) in terms of publication activity over the first 10 years. It details the evolution of the subject matter of the lab's research and reports the figures for its publication activity across the years. It also reviews the lab's research outputs published in reputable journals indexed by the international databases Web of Science and Scopus. The analysis is split into two sections. The first section covers the subject matter of the lab's published research. The second section looks at the lab's publication activity in terms of figures. The study materials included works by the lab's research team published between 2014 and 2024. The study's findings highlighted the success of the Laboratory of World Civilizations in terms of its publication activity. This success is attested to by both its publication activity figures and its breadth of subject matter, which perfectly aligns with its dedicated focus on research.

Keywords: Academic Life, Cherkas Global University, Historical Analysis, Historical/Comparative Research, Intellectual Capital, Laboratory of World Civilizations, Performance, Publication Activity, Research Team.

1. Introduction

Cherkas Global University is a private research institution engaged in research on a wide range of issues across various subject areas. Over the course of its 33-year history, the organization has undergone several changes to its makeup. Established in 1992 as a military and historical society, it transitioned in 2014 to the International Network Centre for Fundamental and Applied Research. Finally, in 2021, it was reorganized as Cherkas Global University.

The present work represents an analysis of the publication activity of researchers at Cherkas Global University's Laboratory of World Civilizations (est. July 27, 2014). It summarizes the performance results for the first 10 years of the lab's operation and provides a review of its published research output produced over that period.

2. Materials and methods

The materials for the study included works by researchers at the Laboratory of World Civilizations published over a 10-year period in academic journals indexed by Web of Science and Scopus.

---

*Corresponding author
E-mail address: rudolf.diesel.bmw@gmail.com (S.N. Gonta)
Received: 12 February 2025 Revised: 13 February 2025, 17 March 2025 Accepted: 27 March 2025
Published: 30 April 2025

In terms of methodology, I incorporated a sets of general and special research methods. The general methods used were analysis, synthesis, induction, and deduction. The special methods were content analysis, the bibliographical method, and the narrative method.

3. Literature review

Cherkas Global University is a private research university. It administers an academic publishing house that produces 25 academic journals representing a variety of subject areas. Its research work is conducted at the two labs it currently has.

Fig. 1. Emblem of Cherkas Global University

The activities of Cherkas Global University have been researched on multiple occasions and featured in various academic publications. Of particular note are the ones by A.A. Cherkasova and G. Rajović, which explore various aspects of the university's history in the period from 1992 to 1997 (Cherkasova, 2022; Rajović, 2021), the one by K.V. Taran, which covers the period of its history from 1992 to 2014 (Taran, 2021), and the two works by I.Yu. Cherkasova, the first analyzing the university's 30-year evolution (Cherkasova, 2022a) and the second detailing its international activity over 1992–2023 (Cherkasova, 2023), the one by V.V. Tarakanov and M.A. Ponomareva, which examines the performance of the International Network Center for Fundamental and Applied Research over 5 years (2014–2019) (Tarakanov, Ponomareva, 2019), and the one by A.Yu. Peretyatko, which analyzes the university's publication activity over 10 years (Peretyatko, 2024). It is also worth mentioning the two works by A.A. Cherkasova, the first covering the university's sporting life (Cherkasova, 2023a) and the second discussing its leisure life (Cherkasova, 2022b).

This work will complement the existing research with its detailed coverage of the publication activity of the research team at Cherkas Global University's Laboratory of World Civilizations from 2014 to 2024.

4. Results

Subject areas

Currently, the lab's research team is represented by a diverse array of research publications spanning various subject areas within historical science. The scope of this paper does not permit an analysis of each of the works, so the discussion will be limited to reviewing, in chronological order, the key subject areas in which the lab has specialized and touching upon only the most substantial of its published research outputs.

The first subject areas embraced by the Laboratory of World Civilizations were the Caucasian War (1801–1864) (Cherkasov et al., 2015; Cherkasov et al., 2015a; Cherkasov et al., 2017), the history of Circassia (Cherkasov et al., 2014; Cherkasov et al., 2016; Cherkasov et al., 2018), and the history of slavery and slave trading (Smigel, Cherkasov, 2016; Peretyatko, 2018; Cherkasov, 2019; Taran, 2020a). Later on (in 2023–2024), the range of subject matter was expanded to include research covering slavery in the Central-Asian region of the Russian Empire (Peretyatko, 2023; Peretyatko, 2023a; Peretyatko, 2024a; Peretyatko, 2024b; Peretyatko, 2024e).

Next, the Laboratory of World Civilizations expanded its subject area to include public education in the Russian Empire and abroad, with the development of periodical press activity across the Russian Empire as a subarea. The topics covered include the history of pedagogy in foreign countries (Mamadaliev et al., 2019; Mamadaliev et al., 2019a; Mamadaliev et al., 2019b;

Mamadaliev et al., 2019c; Cherkasov et al., 2021), various aspects of education in the Russian Empire (Cherkasov et al., 2020; Natolochnaya et al., 2021; Cherkasov, 2023; Cherkasov, 2023a), education in districts and governorates across the Russian Empire (Cherkasov et al., 2020a; Cherkasov et al., 2020b; Peretyatko, Zulfugarzade, 2017; Mamadaliev et al., 2022; Cherkasov et al., 2021a), periodical press activity in educational districts and governorates across the Russian Empire (Mamadaliev et al., 2022a; Mamadaliev et al., 2022b; Cherkasova et al., 2023; Cherkasova et al., 2023a), and biographies of scholars (Cherkasova, 2023b).

Worthy of separate mention is the body of research devoted to military history – more specifically, the history of military propaganda. Most of that research was produced between 2014 and 2021. The topics covered within this subject area most notably include military propaganda by the conflicting parties during the 2020 Nagorno-Karabakh conflict (Mamadaliev, 2020; Mamadaliev, 2021; Mamadaliev, 2021a), government propaganda in the Russian Empire's Don region (Peretyatko, 2020; Peretyatko, 2021; Peretyatko, 2021a), military propaganda during World War I and World War II (Mamadaliev, 2016; Taran, 2018; Taran, 2021a), and certain aspects of the history of the two World Wars of the 20th century (Taran, 2020; Mamadaliev, Taran, 2021; Taran, 2021b).

In 2024, the lab's research was likewise diverse in subject matter. The subject matter included biographical material (Cherkasov, 2024; Cherkasov, 2024a; Ter-Oganov, 2024), maritime history (Mitiukov, Cherkasova, 2024; Mitiukov et al., 2024), local Ukrainian history (Degtyarev, Osadchyi, 2024; Degtyarev, 2024; Degtyarev, 2024a; Trygub et al., 2024; Peretyatko, 2024d; Degtyarev et al., 2024), slavery and slave trading (Peretyatko, 2024a; Peretyatko, 2024b), pedagogical periodical press activity (Cherkasova et al., 2024; Cherkasova et al., 2024a; Cherkasova et al., 2024b; Cherkasova et al., 2024c), Don Cossack history (Peretyatko, 2024c), historical research projects (Cherkasova, 2024), and contemporary education (Slavko et al., 2024). A separate category is the lab's research devoted to the history of the American Knights Templar (Cherkas, 2024; Cherkas, 2024a; Cherkas, 2024b; Cherkas, 2024c). This body of research examines the activities of specific members of the Masonic organization. It includes descriptions of various items from the collection of the Museum of the History of the American Knights Templar at Cherkas Global University.

Below is a numerical characterization of the publication activity of the Laboratory of World Civilizations over the stated 10-year period.

Figures

The data characterizing the lab's publication activity are provided in Table 1. It is to be noted that the information for the period 2014–2019 is provided here in shortened form. The full version is available in the work by V.V. Tarakanov and M.A. Ponomareva (Tarakanov, Ponomareva, 2019, p. 988). Thus, the table displays aggregated publication activity data – the combined statistics for the period 2014–2019, based on data from Tarakanov and Ponomareva (2019), and the data for the period 2020–2024, with a breakdown by year.

Table 1. Data characterizing the publication activity of researchers at the Laboratory of World Civilizations, Cherkas Global University, over the period 2014–2024

No.	Number of publications in academic journals across years	Web of Science (WoS)	Scopus	Chemical Abstracts Service (CAS)
1	2024	22	14	–
2	2023	30	30	1
3	2022	28	30	–
4	2021	43	46	–
5	2020	41	41	–
6	2014–2019	234	174	–
7	**Total**	**398**	**335**	**1**

As shown in Table 1, the publication activity of researchers at the Laboratory of World Civilizations in the second half of the decade peaked in 2020–2021, followed by a gradual decline in published research output. Between 2020 and 2024, the lab prepared and published 169 works in reputable academic journals indexed by Web of Science and Scopus, as well as one work in a journal indexed by Chemical Abstracts Service.

5. Conclusion

This paper focuses on the publication activity of the Laboratory of World Civilizations at the Cherkas Global University over the first 10 years of its operation (from 2014 to 2024). Based on the study's findings, the lab's performance over that period can be considered fairly impressive. Between 2014 and 2019, the lab's research team published over 230 research works, with 234 being published in journals indexed by the Web of Science and 174 being published in journals indexed by Scopus. During the second 5-year period, the lab's research team published 170 works, with 164 being published in journals indexed by the Web of Science, 161 in journals indexed by Scopus, and one in a journal indexed by the Chemical Abstracts Service. The breadth of the subject matter investigated by the lab's research team over the stated period is impressive, with the topics including the history of the Caucasus, the history of Circassia, the history of the Caucasian War (1801–1864), the history of slavery and slavery trading, the history of education in the Russian Empire, and the history of education in foreign countries. Notable is the team's research work in the field of military history, particularly its studies on the history of propaganda during wartime. In addition, in 2024, the lab launched research into a new subject area – the history of the American Knights Templar. It is currently working on the project 'American Statehood and the Knights Templar: Together for 250 Years', which will be implemented at Cherkas Global University from 2024 to 2026.

Thus, the work carried out by the research team at the Laboratory of World Civilisations over the stated 10-year period aligns perfectly with the lab's principal areas of focus: research on sustainable development worldwide, historical analysis of civilizations, research on security and peace, and historical and comparative research.

6. Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

Availability of data and materials

Available upon request.

Conflict of interest statement

The author reports no conflicts of interest.

Funding

This research received no external funding. However, the authors sincerely thank the Centre for Behaviour and Wellness Advocacy, Ghana, for providing financial support through the Institutional Open Access Publication Fund.

Author's contribution

The author (SNG) conceptualised the study, designed the methodology, wrote the original draft, reviewed and edited it, and approved the final version of the manuscript for publication.

Author's ORCID

Semyon N. Gonta https://orcid.org/0009-0000-3777-3232

References

Cherkas, 2024 – *Cherkas, A.* (2024). Sir Frederick S. Rogers (1847–1908) in the Museum Collection of Cherkas Global University. *Bylye Gody*. 19(4): 1674-1682. DOI: 10.13187/bg.2024.4.1674

Cherkas, 2024a – *Cherkas, A.* (2024). A Few Fresh Strokes to the Biographical Portrait of Sir Albert A. Marden (1824–1919): Commemorating the 200th Anniversary of His Birth. *History and Historians in the Context of the Time*. 33(1): 3-9. DOI: 10.13187/hhct.2024.1.3

Cherkas, 2024b – *Cherkas, A.* (2024). Sir George Stodart Blackie (1834–1881) in the Museum Collection of Cherkas Global University: Commemorating the 190th Anniversary of His Birth. *European Researcher. Series A*. 15(2): 32-37. DOI: 10.13187/er.2024.2.32

Cherkas, 2024c – *Cherkas, A.* (2024). Sir Albert E. Worthington (1849–1915) in the Museum Collection of Cherkas Global University: Commemorating the 175th Anniversary of His Birth. *European Journal of Contemporary Education*. 13(4): 742-746. DOI: 10.13187/ejced.2024.4.742

Cherkasov et al., 2014 – *Cherkasov, A.A., Šmigeľ, M., Ivantsov, V.G., Ryabtsev, A.A., Molchanova, V.S.* (2014). Hillmen of the Black Sea Province (early XIX century): Geography, demography, antropology. *Bylye Gody*. 32 (2): 150-154.

Cherkasov et al., 2015 – *Cherkasov, A.A., Shmigel, M., Bratanovskii, S.N., Molchanova, V.S.* (2015). Jikis and Jiketi in Conditions of War and Peace (1840–1860 years). *Bylye Gody*. 38(4): 888-893.

Cherkasov et al., 2015a – *Cherkasov, A.A., Ivantsov, V.G., Ustinovich, E.S., Kryukova, N.I., Molchanova, V.S.* (2015). The Moving of the Ubykhs to the Russian Service as a Result of the Peace Initiatives in the First Half of the 1840s years. *Bylye Gody*. (3), 37: 541-548.

Cherkasov et al., 2016 – *Cherkasov, A.A., Ivantsov, V.G., Smigel, M., Molchanova, V.S.* (2016). The Demographic Characteristics of the Tribes of the Black Sea Region in the first half of the XIX century. *Bylye Gody*. (2), 40: 382-391.

Cherkasov et al., 2017 – *Cherkasov, A.A., Ivantsov, V.G., Smigel, M., Molchanova, V.S.* (2017). The Losses of the Russian army during the Caucasian war (1801-1864): Historical and statistical research. *Bylye Gody*. 43(1): 68-85. DOI: 10.13187/bg.2017.1.68

Cherkasov et al., 2018 – *Cherkasov, A.A., Smigel, M., Bratanovskii, S., Valleau, A.* (2018). The Circassian aristocracy in the late XVIII – the first half of XIX centuries: The social structure of society. *Bylye Gody*. 47(1): 88-96. DOI: 10.13187/bg.2018.1.88

Cherkasov et al., 2020 – *Cherkasov, A.A., Bratanovskii, S.N., Ponomareva, M.A., Zimovets, L.G.* (2020). Educational Institutions under the Ecclesiastical Department in the Russian Empire (1860–1917): A Historical-Statistical Study. *European Journal of Contemporary Education*. 9(3): 657-665. DOI: 10.13187/ejced.2020.3.657

Cherkasov et al., 2020a – *Cherkasov, A.A., Bratanovskii, S.N., Koroleva, L.A.* (2020). The Public Education System in Voronezh Governorate in the Period 1703–1917. Part 1. *European Journal of Contemporary Education*. 9(1): 202-211. DOI: 10.13187/ejced.2020.1.202

Cherkasov et al., 2020b – *Cherkasov, A.A., Bratanovskii, S.N., Koroleva, L.A., Zimovets, L.G.* (2020). The Public Education System in Voronezh Governorate in the Period 1703–1917. Part 2. *Bylye Gody*. 56(2): 428-436. DOI: 10.13187/bg.2020.2.428

Cherkasov et al., 2021 – *Cherkasov, A.A., Bratanovskii, S.N., Ponomareva, M.A., Zimovets, L.G.* (2021). The System of Popular Education in Denmark in the 19th and Early 20th centuries: Some Specific Aspects. *European Journal of Contemporary Education*. 10(2): 509-516. DOI: 10.13187/ejced.2021.2.509

Cherkasov et al., 2021a – *Cherkasov, A.A., Bratanovskii, S.N., Zimovets, L.G., Koroleva, L.A.* (2021). The System of Public Education in Volyn Governorate in the Period 1796–1917. Part 1. *European Journal of Contemporary Education*. 10(3): 790-798. DOI: 10.13187/ejced.2021.3.790

Cherkasov, 2019 – *Cherkasov, A.A.* (2019).On the Sale of Women in Soviet Concentration Camps during the Russian Civil War. *Slavery: Theory and Practice*. 4(1): 42-44. DOI: 10.13187/slave.2019.1.42

Cherkasov, 2023 – *Cherkasov, A.A.* (2023). Educational Districts of the Russian Empire, Their Demographic and Scientific Potential (late XIX – early XX centuries). *Bylye Gody*. 18(4): 1683-1694. DOI: 10.13187/bg.2023.4.1683

Cherkasov, 2023a – *Cherkasov, A.A.* (2023). Revisiting the Evolution of the System of Higher Education in the Russian Empire in 1830–1916. *European Journal of Contemporary Education*. 12(4): 1502-1507. DOI: 10.13187/ejced.2023.4.1502

Cherkasov, 2024 – *Cherkasov, A.A.* (2024). Cherkasovs (Keretskys): During the Period of the Muscovite Kingdom (to the 450th Anniversary of the Cherkasov Family). *Bylye Gody*. 19(1): 15-28. DOI: 10.13187/bg.2024.1.15

Cherkasov, 2024a – *Cherkasov, A.A.* (2024). The Head of the Russian Imperial House of Romanov, Grand Duchess Maria Vladimirovna: Touches to a Biographical Portrait (on the 70th Anniversary of Her Birth). *Bylye Gody*. 19(1): 472-479. DOI: 10.13187/bg.2024.1.472

Cherkasova et al., 2023 – *Cherkasova, I.Yu., Mamadaliev, A.M., Nikitina, V.S., Svechnikova, N.V.* (2023). Revisiting the Pedagogical Periodical Press in the Odessa Educational

District (1864–1917). *European Journal of Contemporary Education*. 12(4): 1508-1513. DOI: 10.13187/ejced.2023.4.1508

Cherkasova et al., 2023a – *Cherkasova, I.Yu., Mamadaliev, A.M., Nikitina, V.S., Svechnikova, N.V.* (2023). Pre-Revolutionary Pedagogical Periodical Press: the Reference Publications on Public Education (1862–1916). *Bylye Gody*. 18(3): 1283-1289. DOI: 10.13187/bg.2023.3.1283

Cherkasova et al., 2024 – *Cherkasova, I.Yu., Koroleva, L.A., Nikitina, V.S., Svechnikova, N.V.* (2024). Revisiting the Pedagogical Periodical Press in the Vilna Educational District (1862–1915). *European Journal of Contemporary Education*. 13(1): 347-351. DOI: 10.13187/ejced.2024.1.347

Cherkasova et al., 2024a – *Cherkasova, I.Yu., Koroleva, L.A., Nikitina, V.S., Svechnikova, N.V.* (2024). To the Issue of the Pedagogical Periodical Press of the Moscow Educational District (1804–1917). *Bylye Gody*. 19(2): 632-639. DOI: 10.13187/bg.2024.2.632

Cherkasova et al., 2024b – *Cherkasova, I.Yu., Koroleva, L.A., Nikitina, V.S., Svechnikova, N.V.* (2024). To the Issue of the Pedagogical Periodical Press of the Warsaw School District (1867–1916). *Bylye Gody*. 19(1): 232-237. DOI: 10.13187/bg.2024.1.232

Cherkasova et al., 2024c – *Cherkasova, I.Yu., Koroleva, L.A., Nikitina, V.S., Svechnikova, N.V.* (2024). To the Issue of the Pedagogical Periodical Press of the St. Petersburg Educational District (1803–1917). *Bylye Gody*. 19(3): 1107-1114. DOI: 10.13187/bg.2024.3.1107

Cherkasova, 2022 – *Cherkasova, A.A.* (2022). A History of Cherkas Global University Press: The Vestnik Leib-Gvardii Newspaper (1992–1997). *European Journal of Contemporary Education*. 11(4): 1394-1402. DOI: 10.13187/ejced.2022.4.1394

Cherkasova, 2022a – *Cherkasova, I.Yu.* (2022). Cherkas Global University (1992–2022): Yesterday, Today, and Tomorrow. *European Journal of Contemporary Education*. 11(3): 1039-1047. DOI: 10.13187/ejced.2022.3.1039

Cherkasova, 2022b – *Cherkasova, A.A.* (2022). From the History of Rifle Association in the Cherkas Global University (1992–2022). *European Journal of Contemporary Education*. 11(3): 1048-1061. DOI: 10.13187/ejced.2022.3.1048

Cherkasova, 2023 – *Cherkasova, I.Yu.* (2023). International Activity of Cherkas Global University (1992–2023). *European Journal of Contemporary Education*. 12(1): 319-326. DOI: 10.13187/ejced.2023.1.319

Cherkasova, 2023a – *Cherkasova, A.A.* (2023). Cherkas Global University Hiking Club (1996–2022). *European Journal of Contemporary Education*. 12(1): 309-318. DOI: 10.13187/ejced.2023.1.309

Cherkasova, 2023b – *Cherkasova, I.Yu.* (2023). Lev Aleksandrovich Chugaev – Founder of the Russian School of Chemistry of Complex Compounds (to the 150th Anniversary of His Birth). *European Reviews of Chemical Research*. 10(1): 8-14. DOI: 10.13187/ercr.2023.1.8

Cherkasova, 2024 – *Cherkasova, A.A.* (2024). The Organizational Activity of Cherkas Global University: the Annual International Contest Slavery in the Past and Present. *European Journal of Contemporary Education*. 13(1): 384-387. DOI: 10.13187/ejced.2024.1.384

Degtyarev et al., 2024 – *Degtyarev, S.I., Vasylevych, A.V., Parkhomenko, V.A., Fedorenko, M.O.* (2024). Material Support of Maritime Educational Institutions in Kherson Gubernia (19th – early 20th centuries). *European Journal of Contemporary Education*. 13(4): 747-756. DOI: 10.13187/ejced.2024.4.747

Degtyarev, 2024 – *Degtyarev, S.I.* (2024). The Project of the Baturinsky University of Hetman Kirill Razumovsky. *Bylye Gody*. 19(2): 564-571. DOI: 10.13187/bg.2024.2.564

Degtyarev, 2024a – *Degtyarev, S.I.* (2024). The Socio-Political and Cultural Life of the Ukrainian-Ruthenian Population of the Austro-Hungarian Empire on the Pages of the Journal "Kievskaya Starina". *Bylye Gody*. 19(3): 1394-1406. DOI: 10.13187/bg.2024.3.1394

Degtyarev, Osadchyi, 2024 – Degtyarev S.I., Osadchyi E.M. The Liubech Town Plan in 1651 by Abraham van Westerveld // Bylye Gody. 2024. 19(1): 40-47. DOI: 10.13187/bg.2024.1.40

Mamadaliev et al., 2019 – *Mamadaliev, A.M., Gordeev, I., Miku, N.V., Médico, A.* (2019). Teacher training for the system of primary education in Switzerland in the mid-nineteenth century. *European Journal of Contemporary Education*. 8(1): 222-228. DOI: 10.13187/ejced.2019.1.222

Mamadaliev et al., 2019a – *Mamadaliev, A.M., Svechnikova, N.V., Miku, N.V., Médico, A.* The German System of Public Education in the Period between the 15th and Early 20th Centuries. Part 1. *European Journal of Contemporary Education*. 8(2): 445-453. DOI: 10.13187/ejced.2019.2.445

Mamadaliev et al., 2019b – *Mamadaliev, A.M., Svechnikova, N.V., Miku, N.V., Médico, A.* (2019). The German System of Public Education in the Period between the 15th and Early 20th Centuries. Part 2. *European Journal of Contemporary Education*. 8(3): 646-654. DOI: 10.13187/ejced.2019.3.646

Mamadaliev et al., 2019c – *Mamadaliev, A.M., Svechnikova, N.V., Ermachkov, I.A., Médico, A.* (2019). The German System of Public Education in the Period between the 15th and Early 20th Centuries. Part 3. *European Journal of Contemporary Education*. 8(4): 943-950. DOI: 10.13187/ejced.2019.4.943

Mamadaliev et al., 2022 – *Mamadaliev, A.M., Nikitina, V.S., Svechnikova, N.V., Cherkasova, I.Yu.* (2022). The System of Public Education in Penza Governorate in the second half of the 19th and early 20th centuries. Part 1. *European Journal of Contemporary Education*. 11(1): 275-285. DOI: 10.13187/ejced.2022.1.275

Mamadaliev et al., 2022a – *Mamadaliev, A.M., Nikitina, V.S., Svechnikova, N.V., Cherkasova, I.Yu.* (2022). To the Issue of the Pedagogical Periodical Press of the Church Department of the Russian Empire of the late XIX – early XX centuries. *Bylye Gody*. 17(4): 1877-1884. DOI: 10.13187/bg.2022.4.1877

Mamadaliev et al., 2022b – *Mamadaliev, A.M., Nikitina, V.S., Svechnikova, N.V., Cherkasova, I.Yu.* (2022). To the Issue of the Pedagogical Periodicals on the Territory of the Caucasian Educational District in 1867–1916. *Bylye Gody*. 17(3): 1207-1213. DOI: 10.13187/bg.2022.3.1207

Mamadaliev, 2016 – *Mamadaliev, A.M.* (2016). Documents reveal: German war propaganda and the Vlasov Campaign during World War II. *Propaganda in the World and Local Conflicts*. 1: 44-48. DOI: 10.13187/pwlc.2016.5.44

Mamadaliev, 2020 – *Mamadaliev, A.M.* (2020). Military Propaganda around the 2020 Nagorno-Karabakh War: Official Materials of Armenia and Azerbaijan Defense Ministries (as illustrated by the first day of the conflict – September 27, 2020). *Propaganda in the World and Local Conflicts*. 7(2): 29-40. DOI: 10.13187/pwlc.2020.2.29

Mamadaliev, 2021 – *Mamadaliev, A.M.* (2021). Military Propaganda at the First Stage of the 2020 Nagorno-Karabakh War (September 27 – October 11): Official Materials of Armenia and Azerbaijan Defense Ministries. *Propaganda in the World and Local Conflicts*. 8(1): 42-51. DOI: 10.13187/pwlc.2021.1.42

Mamadaliev, 2021a – *Mamadaliev, A.M.* (2021). Military Propaganda at the Second Stage of the 2020 Nagorno-Karabakh War (October 12 – November 10): Official Materials of Armenia and Azerbaijan Defense Ministries. *Propaganda in the World and Local Conflicts*. 8(2): 99-114. DOI: 10.13187/pwlc.2021.2.99

Mamadaliev, Taran, 2021 – *Mamadaliev, A.M., Taran, K.V.* (2021). The Activities of the Sochi Defense Committee during the Occupation of the Krasnodar Krai (August 1942 – October 1943). *Voennyi Sbornik*. 9(1): 32-50. DOI: 10.13187/vs.2021.1.32

Mitiukov et al., 2024 – *Mitiukov, N.W., Loshkarev, A.N., Cherkasova, I.Yu.* (2024). Sailing Barges built in Votkinsk as Part of the Caspian Flotilla in the 1850s and 1860s. *Bylye Gody*. 19(4): 1694-1705. DOI: 10.13187/bg.2024.4.1694

Mitiukov, Cherkasova, 2024 – *Mitiukov, N.W., Cherkasova, I.Yu.* (2024). Reconstruction of Ship Biographies Using "Ship Lists". *Bylye Gody*. 19(1): 210-218. DOI: 10.13187/bg.2024.1.210

Natolochnaya et al., 2021 – *Natolochnaya, O.V., Allalyev, R.M., Svechnikov, V.A., Petrova, S.V.* (2021). Emergence of the Russian Public Education System in the Patriarchal Era (1593–1721). *European Journal of Contemporary Education*. 10(1): 246-251. DOI: 10.13187/ejced.2021.1.246

Peretyatko, 2018 – *Peretyatko, A.Yu.* (2018). «Enslavement» of the Bon Cossacks in 1880–1890: Myth or Reality? *Slavery: Theory and Practice*. 3(1): 68-80. DOI: 10.13187/slave.2018.1.68

Peretyatko, 2020 – *Peretyatko, A.Yu.* (2020). The Birth of the Military Government Propaganda in the Don Host Oblast (1880-1890): Several Observations. *Propaganda in the World and Local Conflicts*. 7(2): 3-13. DOI: 10.13187/pwlc.2020.2.3

Peretyatko, 2021 – *Peretyatko, A.Yu.* (2021). At the Origins of the Don Military Propaganda: the Creative Work of M.Kh. Senyutkin. *Propaganda in the World and Local Conflicts*. 8(1): 3-15. DOI: 10.13187/pwlc.2021.1.3

Peretyatko, 2021a – *Peretyatko, A.Yu.* (2021). Elements of Propaganda in "Essays on the Geography of the Almighty Don Host" by V.V. Bogachev (1919). *Propaganda in the World and Local Conflicts*. 8(2): 59-69. DOI: 10.13187/pwlc.2021.2.59

Peretyatko, 2023 – *Peretyatko, A.Yu.* (2023). Captives, Slaves, Freemen: Some Aspects of the 19th century Central Asia Former Russian Slaves' Testimonies as a Historical Source. *Bylye Gody*. 18(2): 619-632. DOI: 10.13187/bg.2023.2.619

Peretyatko, 2023a – *Peretyatko, A.Yu.* (2023). The Arrest of Khivan Subjects in the Russian Empire in 1836 and Russian Struggle Against Slave Trade in Middle Asia. Part I. *Bylye Gody*. 18(4): 1766-1779. DOI: 10.13187/bg.2023.4.1766

Peretyatko, 2024 – *Peretyatko, A.Yu.* (2024). Some Features of Cherkas Global University's Publication Activity: A Response to the Challenges of the "Soviet Division of Scientific Labour". *European Journal of Contemporary Education*. 13(1): 374-383. DOI: 10.13187/ejced.2024.1.374

Peretyatko, 2024a – *Peretyatko, A.Yu.* (2024). The Arrest of Khivan Subjects in the Russian Empire in 1836 and Russian Struggle Against Slave Trade in Middle Asia. Part II. *Bylye Gody*. 19(1): 115-128. DOI: 10.13187/bg.2024.1.115

Peretyatko, 2024b – *Peretyatko, A.Yu.* (2024). Foreign Fugitive Slaves from Central Asia Who Were Coming into the Borders of the Russian Empire in the first half of the 19th century: to the Statement of the Problem. *Bylye Gody*. 19(4): 1586-1597. DOI: 10.13187/bg.2024.4.1586

Peretyatko, 2024c – *Peretyatko, A.Yu.* (2024). Self-Identification and Identification of the late 18th – early 19th centuries Don Cossacks by Outsider Authors. *Bylye Gody*. 19(2): 599-612. DOI: 10.13187/bg.2024.2.599

Peretyatko, 2024d – *Peretyatko, A.Yu.* (2024). Public Statements on Mathematics Teaching Practices in the Kharkov Educational District in the Russian Empire in 1863. *European Journal of Contemporary Education*. 13(2): 479-488. DOI: 10.13187/ejced.2024.2.479

Peretyatko, 2024e – *Peretyatko, A.Yu.* (2024). Russian Empire Subjects in the Emirate of Bukhara and the Failed Visit of Sultan Seit-Ali Nur-Aliev for the Purpose of Their Returning (1813). *Slavery: Theory and Practice*. 9(1): 3-22. DOI: 10.13187/slave.2024.1.3

Peretyatko, Zulfugarzade, 2017 – *Peretyatko, A.Y., Zulfugarzade, T.E.* (2017). Project of reforms proposed for the don public education in the first half of 1860: A.M. Dondukov-Korsakov, Kh.I. Popov, N.I. Krasnov. *European Journal of Contemporary Education*. 6(4): 817-829. DOI: 10.13187/ejced.2017.4.817

Rajović, 2021 – *Rajović, G.* (2021). The Newspaper "Vestnik Leib-Gvardii" (1992–1997) as a Historical Source. *Propaganda in the World and Local Conflicts*. 8(2): 93-98. DOI: 10.13187/pwlc.2021.2.93

Slavko et al., 2024 – *Slavko, A.S., Zavhorodnia, V.M., Degtyarev, S.I.* (2024). Academic Freedom: Searching an Optimal Model in the Face of Contemporary Challenges. *European Journal of Contemporary Education*. 13(3): 598-606. DOI: 10.13187/ejced.2024.3.598

Smigel, Cherkasov, 2016 – Smigel, M., Cherkasov, A.A. (2016). The Slavery in Circassia and the United States (1850–1860-ies years): General and Special. *Bylye Gody*. 42(4): 1182-1197.

Tarakanov, Ponomareva, 2019 – Tarakanov, V.V., Ponomareva, M.A. (2019). INCFAR: Characteristics and Challenges (A Fifth Anniversary Tribute). *European Journal of Contemporary Education*. 8(4): 984-992. DOI: 10.13187/ejced.2019.4.984

Taran, 2018 – *Taran, K.V.* (2018). Agitation in Extermination Battalions during the Great Patriotic War as a Means of Political Training (as Illustrated by the Example of Sochi City). *Propaganda in the World and Local Conflicts*. 5(1): 9-16. DOI: 10.13187/pwlc.2018.1.9

Taran, 2020 – *Taran, K.V.* (2020). The Military Operations on the Sochi and Lazarev Directions (August 1942). *Voennyi Sbornik*. 8(2): 65-75. DOI: 10.13187/vs.2020.2.65

Taran, 2020a – *Taran, K.V.* (2020). The Fight against the Slave Trade in the North-Western Caucasus in the first half of the XIX century. *Slavery: Theory and Practice*. 5(1): 74-86. DOI: 10.13187/slave.2020.1.74

Taran, 2021 – *Taran, K.V.* (2021). A History of Cherkas Global University: Its Making (1992-2014). *European Journal of Contemporary Education*. 10(4): 1077-1082. DOI: 10.13187/ejced.2021.4.1077

Taran, 2021a – *Taran, K.V.* (2021). Influence of German Propaganda on the Combat Effectiveness of Soviet Units in 1942 (as illustrated by the 408th Rifle Division). *Propaganda in the World and Local Conflicts*. 8(1): 23-31. DOI: 10.13187/pwlc.2021.1.23

Taran, 2021b – *Taran, K.V.* (2021). Creation and Combat Operations of Fighter-Sabotage Detachments of the Black Sea Group of Troops during the Second World War. *Voennyi Sbornik*. 9(2): 76-99. DOI: 10.13187/vs.2021.2.76

Ter-Oganov, 2024 – *Ter-Oganov, N.* (2024). John Amos Comenius (1592–1670): A Biographical Sketch. *European Journal of Contemporary Education*. 13(1): 326-331. DOI: 10.13187/ejced.2024.1.326

Trygub et al., 2024 – *Trygub, O.P., Degtyarev, S.I., Parkhomenko, V.A., Sonechko, O.S.* (2024). Vocational Education in the Kherson Governorate of the Russian Empire (the XVIII century end – the XX century beginning). *European Journal of Contemporary Education*. 13(1): 337-346. DOI: 10.13187/ejced.2024.1.337