
The Impact Of Computer Graphics And The Evolution Of Industrial Art Of Saddam Graphics

Sabiiti Pascal¹, Nkwasiibwe Kenneth²

1, 2 Metropolitan International University

Abstract

The aim of this project is to research about the impact of computer graphics and evolution of industrial Art. The research would further explore whether computer graphics can have a substantial effect on evolution of industrial Art in gaining customer loyalty, and strengthen Customer relationships. This concept has not been previously researched and the only related study i find is the correlation between impact of computer graphics and evolution of industrial art which indicates that computer graphics have a positive effect on evolution of industrial art.

The research used a qualitative research approach in which Saddam Graphics was interviewed using a semi-structured interview as the primary data collection method. The research also used secondary data collected through peer-reviewed articles, journals, and websites. It was observed that 42% of the student respondents use computer at least twice a week, 25% everyday, 17% once a week and the rest 16 % which shows that very few students use computer every day. The study concludes that computer graphics is recognized as a creative and efficient way of obtaining, sustaining, and establishing customer relationships. It also suggests that computer Graphics can develop substantially through evolution of industrial Art. However, most of the companies hesitate to implement computer Graphic at the beginning of the company establishment. Recommendations for further studies are a related but perhaps more detailed study on the impact of computer graphics together with a study in other areas other than Saddam graphics. The institution should put efforts to expand the information technology sector in order to improve on access of computer and provision of necessary skills for students.

Keywords: Computer Graphics, Evolution, Industrial Art and Saddam Graphics

Background to the Study

The development of computer graphics technology in the last few decades has had a profound impact on various industries, especially those dealing with visual communication and design (Yudaya & Aggrey, 2023). One such industry that has undergone a remarkable transformation due to advances in computer graphics is industrial art. Industrial art refers to practical and applied art that is created for commercial purposes rather than as fine art. Within the industrial arts, graphic design is a major area where computer graphics have significantly influenced both processes and products. Graphic design involves creating visual concepts using text and image content to communicate messages through various media such as print, digital display, packaging and more. Before the computer, graphic design relied heavily on traditional techniques such as hand drawing, typesetting, the use of physical layout tools and materials such as paper, films, etc. The design process used to be very laborious, time consuming and allowed for limited experimentation (Godfrey et al ., 2023). Computer graphics technology burst onto the scene in the 1980s and revolutionized industrial art, especially graphic design and visual communication. Some of the first personal computer systems with basic graphics capabilities allowed designers to create digital

Received: 14.04.2024

Accepted: 20.04.2024

Published on: 29.04.2024

illustrations and page layouts. However, the real acceleration came with the development of sophisticated graphics software and higher computing power. Pioneering programs such as Adobe Illustrator and Photoshop appeared in the late 1980s and provided designers with affordable digital tools that could efficiently handle vector and raster graphics. They could now create visual assets, manipulate images, and lay out pages on screen, as opposed to physical boards and scraps of paper (Yudaya & Aggrey, 2023). This transition to a digital medium brought flexibility, speed, convenience, and opportunities for extensive experimentation at every stage of design.

The introduction of desktop publishing software such as QuarkXPress and Adobe PageMaker in the mid-1980s further boosted the computer automation of graphic design. Designers could now seamlessly combine text and graphics on the computer screen itself and quickly mock up page designs. Several design ideas and iterations could be tested digitally before final production. Throughout the 1990s, graphics hardware and software continued to evolve at a breakneck pace. Powerful Macintosh computers with advanced graphics cards arrived (Babirye et al., 2023). The program's features became more robust as new versions were released regularly. All of these computer innovations have profoundly influenced graphic design practices. Design studios gradually moved their entire operations to digital platforms and workflows. Traditional tools have been replaced by mouse, monitor, graphic tablets and software. Designers could now conceptualize, create, edit, proofread and archive all work on computers. Physical printing and manufacturing also moved downwards in the process. Digital design files can easily be sent electronically to printers or publishers for output. Design cycles have become significantly shorter and creative experimentation has increased (Lucky et al., 2023).

The computer graphics revolution also fit into broader social and business trends. The demand for professionally designed visual content has increased across industries and media. The number of graphic designers grew to meet this need. New specialized job roles have emerged in web, multimedia and motion graphics. Graphic design has become a thriving creative profession supported by an ecosystem of powerful hardware and software tools created by tech giants. Around this digital transformation, burgeoning businesses offering a variety of design, prepress and printing services have blossomed. Currently, the intersection of computer graphics and design is more intense than ever (Winny et al., 2023). Graphics software is constantly developing new tools for digital drawing, photo editing, layout, and illustration with each release. Intelligent features, from automatic vectorization to content-aware editing, simplify routine tasks. The introduction of other computer technologies constantly improved and expanded the possibilities of graphic design. For example, 3D computer graphics have enabled industrial designers, architects and animators to create immersive virtual worlds and computer simulations. The Internet revolution has given rise to new media forms, such as websites and applications, where well-designed graphics and interaction are important (Murendo et al., 2018). Emerging technologies such as augmented and virtual reality open up innovative visualization possibilities for graphic designers. On the hardware front, large-format, high-resolution displays and

Received: 14.04.2024

Accepted: 20.04.2024

Published on: 29.04.2024

multi-touch screens now enable natural gesture control of digital screens. Graphics tablets resembling paper sketches exist alongside powerful mobile devices that facilitate creative work on the go. Cloud-based collaboration platforms allow globally distributed design teams to seamlessly work on shared projects in real time (Lai, 2017).

All these computational and technological advances have undoubtedly established graphic design as a digital profession. However, the core of the practice remains the basic creative skills of conceptualization, composition, sense of color and stylistic flair. The teaching of computer graphics must include the transmission of knowledge, ideas, values and norms of society across generations. The method of transfer must be based on willingness and voluntariness on the part of the students as well as ease of learning (Emmanuel et al., 2023). The place of learning in national development cannot be overemphasized. Its importance is stated in the National Policy on Education (NPE) (FRN, 2014) which states that “learning computer graphics in Uganda is the tool 'par excellence' for influencing national development”, in other words, learning is not just a medium of knowledge and acquisition ; it is also a tool for nation building Rieber (2000) stated that our sense of vision represents our richest source of information about the world. The role of computer graphics in education is unique and significant. Naturally, graphics have always found a way to attract attention (Victoria et al., 2023).

Statement of the Problem

Over the past few decades, the field of graphic design has evolved tremendously thanks to advances in computer graphics technology. While computerization has simplified processes and increased productivity, this rapid digital transformation has also brought certain challenges to design professionals and businesses (Faridah et al., 2023). This issue impacts organizations like Saddam Graphics, who have been in the visual communications industry for many years and have seen the transition from traditional to digital practices. One of the main challenges faced was updating skills to integrate new computer tools and workflows. Designers trained in conventional techniques struggled to learn digital media. They had to spend considerable time and effort mastering graphics software and adapting their conceptualization and production methods. This learning curve caused disruption, delays and additional learning costs for construction firms. For experienced designers of a certain age, it has been challenging to keep up with rapid technological changes. Younger professionals entering the industry already had digital skills, creating a skills gap between generations. Moreover, the very nature of graphic design has changed. Thanks to digital tools, different stages can now be seamlessly combined on screens instead of physical handoffs between teams. This blurred the definitions of roles and changed the scope of work. While some roles became redundant, emerging specializations required training of existing employees (Emmanuel et al., 2023). This organizational restructuring and skill change added temporary inefficiencies and transition problems for design businesses. Coordinating digital collaboration between departments also presented initial coordination challenges.

The transition to digital technologies introduced new structural costs for hardware acquisition, software licenses, system maintenance, network security, backup infrastructure and regular system upgrades. Compared to physical studio overhead, information technology spending has become a permanent item in the budget. In addition, constant cycles of technology obsolescence meant routine updates to hardware and software versions. This has forced design firms to continuously invest in modernization to keep pace with increasing digital client demands and quality standards (Akankwasa et al., 2022). The financial viability of older incumbents faced pressure from these evolving technological needs. On the client front, as corporate communication became technological, customer expectations underwent a paradigm shift. Designers could no longer just deliver finished print or multimedia content, but were also judged on their digital and workflow management skills. Meeting tight delivery deadlines for large-format digital files required reworking of production plans and implementation phases. Complex multi-format projects spanned web, mobile and interactive domains beyond traditional deliverables and changed client relationships and contractual dynamics (Christopher et al., 2022). This has raised the competitive bar for design studios to sustain businesses.

Another major impact came from the loss of physical archives and legacy files during digitization. When studios were rushed to switch completely to computers, important historical prints or prototypes were discarded or forgotten during the transition.

Specific objective

1. To find out the computer graphics used in Saddam Graphics.
2. To analyze the components of evolution of industrial Art in Saddam Graphics.
3. To examine the relationship between computer graphics and evolution of industrial art of Saddam Graphics.

Methodology

The study adopted a mixed-method research design, including both quantitative and qualitative approaches. This design allowed for a comprehensive exploration of the impact of computer graphics and evolution of industrial Art and their impact on achieving organizational objectives in Saddam Graphics (Nafiu & Ph, 2012). The quantitative component involved a structured questionnaire survey administered to a sample of respondents, providing numerical data for statistical analysis. The sample size was determined using the Krejcie and Morgan (1970) table for sample size determination in research. Considering the estimated population of 3,500, a representative sample was selected to ensure adequate coverage and representation of the study population (Nafiu & Ph, 2012). Based on the Krejcie and Morgan table below, an estimated sample size of 346 participants was used (Rasheed et al., 2022).

Krejcie and Morgan table.

Table 3.1									
<i>Table for Determining Sample Size of a Known Population</i>									
N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	100000	384
<i>Note: N is Population Size; S is Sample Size</i>					<i>Source: Krejcie & Morgan, 1970</i>				

A combination of purposive and random sampling techniques was employed. Purposive sampling was used to select key informants within Saddam Graphics Mbarara district, such as employees and local stakeholders. Random sampling was employed for the general population and clients to the company, ensuring a diverse and representative sample. A structured questionnaire was administered to collect quantitative data from respondents (Jallow et al., 2021). The questionnaire was designed to elicit information on demographics, awareness and perception of the impact of computer graphics and evolution of industrial art, and their impact on the productivity of a company in achieving its organizational objectives. The primary instrument for data collection was a structured questionnaire. This tool was carefully designed to efficiently gather relevant quantitative data regarding demographics, awareness,

Received: 14.04.2024

Accepted: 20.04.2024

Published on: 29.04.2024

perception of impact of computer graphics, and evolution of industrial art of company's objectives in Saddam Graphics Mbarara district development goals (Nafiu et al., 2017). Data was collected, coded, and entered into a secure electronic database including word, and excel in a computer. Cleaning and validation procedures was conducted to identify and rectify any inconsistencies or errors in the dataset. Thematic analysis was employed. After gathering data, common themes was studied from both the qualitative and quantitative data, then key patterns and insights was identified to address the research objectives effectively (Olanrewaju & Abiodun, 2021). This analytical process involves systematically organizing and interpreting the data, allowing for a clear understanding of the relationships between different variables. Data was analyzed in form of tables, frequencies and percentages using SPSS & STATA (Nelson et al., 2022).

RESULTS

Acquisition of Computer Skills by Students

Most students used computers for their first time in the period between 2000 and 2005 that's to say; 3 females and 4 males in the period between 1995 and 2000 registered the least and 2005-2010 registered respectively the least number of females as indicated in **Figure**

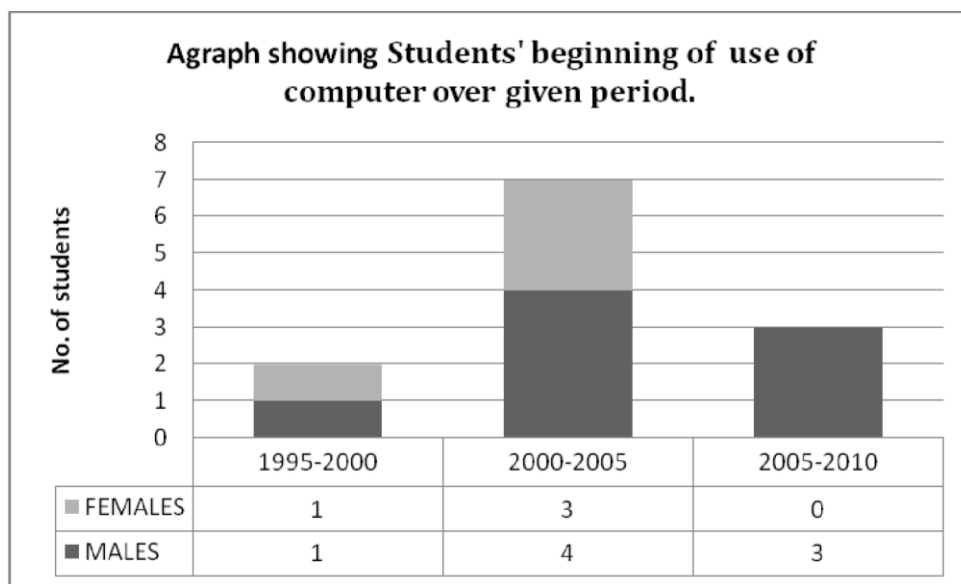


Figure1: Acquisition of computer skills by students in early period

The computer programs used at the first encounter with computers include; Microsoft word processing package, media player, and paint of which 1 respondent out of 14 used paint which is related to art and design. However, students were able to mention programs like CorelDraw, Adobe suite collection which are used in graphic design of which some were familiar with; though most of them had not acquired enough skills.

It was observed that 42% of the student respondents use computer at least twice a week, 25% everyday, 17% once a week and the rest 16 % which shows that very few students use computer every day. It was reported by the three

Received: 14.04.2024

Accepted: 20.04.2024

Published on: 29.04.2024

lecturers that; three quarters of the students doing Bachelor's degree in art and design students are not well conversant with computer design graphics applications. It was noted that students are not equally active in terms of hands on performance in computer graphics and most students join university with no computer skills.

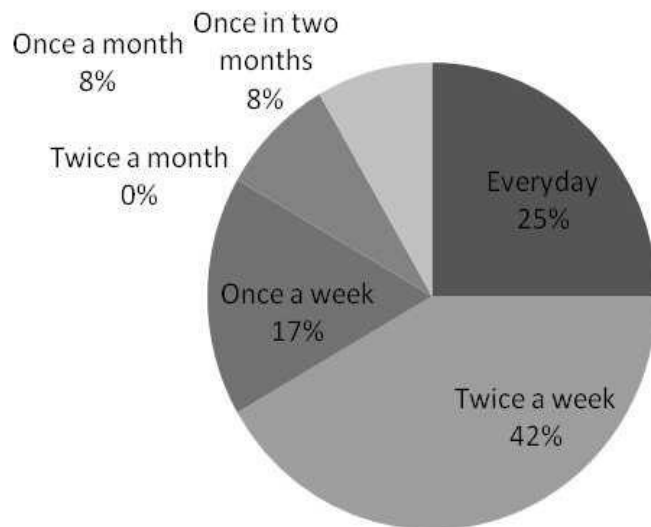


Figure2: Pie chart showing frequency of computer usage in particular intervals of time.

Therefore; there are very few students who had learnt the use of computer in graphic designs from early years of education or beginning of the course and the only the basics had been acquired by most students in final year at university.

Evaluation and Judgment of Students' Performance in Computer Graphics

Most students doing Bachelor of art and design in final year started learning computer in their second year of study; a time when the skills were required in execution of graphic design. The numbers of students owning computers out of 14 respondents are 6 and 8 don't own any computer, it is 33 by 67% as indicated in **Figure 3**.

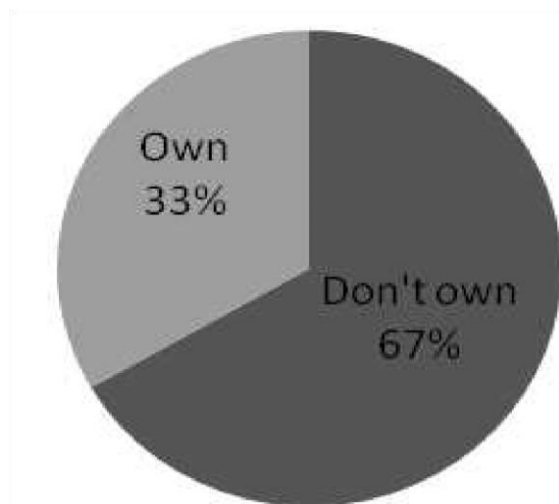


Figure 3: Pie chart showing computer ownership.

Majority of students did not own computers; it was noted that most students access computers by borrowing from friends and others from the department's small computer laboratory. The assistance in terms of guidance was provided by lecturers mostly, laboratory assistant and friends. However some of them had learnt through self-discoveries by use of program tutorials and books from the library for example Adobe Photoshop tutorial manual guide.

The graph and pie chart in **Figure** show ways how students obtain assistance in order to get skills in computer. The lecturers contribute 50% students' acquisition of computer skills, followed by friends; 29%, self-discovery 14%, books and tutorials 7%.

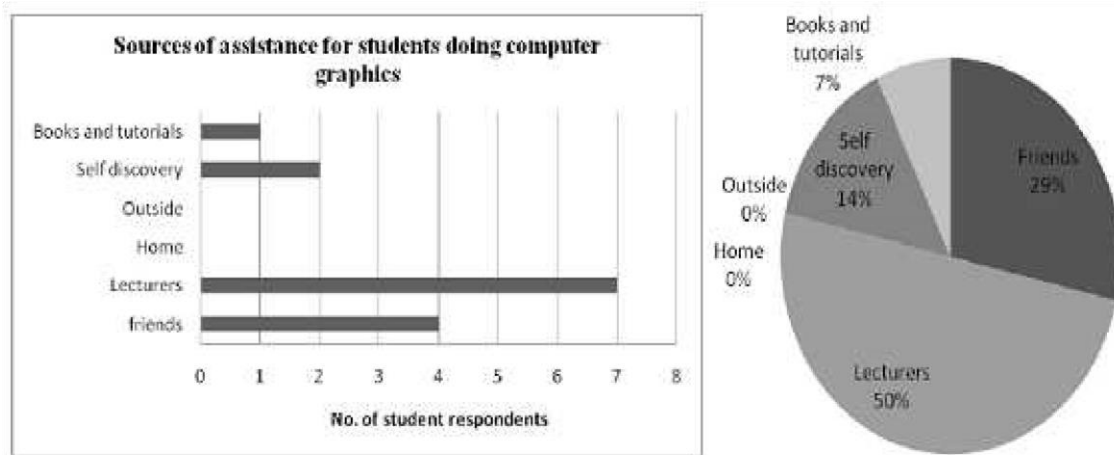


Figure 4: Pie chart showing sources assistance for acquisition of computer skills

The **Table** shows the general trend of performance in graphic design from first year to third year. **Table 2: General trend on performance of respondents in computer Design class.**

Received: 14.04.2024

Accepted: 20.04.2024

Published on: 29.04.2024

General Performance Trend	Number of respondents out of 14 Students
Rising	7
Lowering	5
Constantly high	1
Constantly low	1

From the information given in the **Figure**, the performance of students mainly characterized by majority having a rising trend of 50%, lowering trend of 36%, constantly low of 8% and constantly high of 8%. This showed that most students were still trying to improve on their performance which had not reached the expected level.

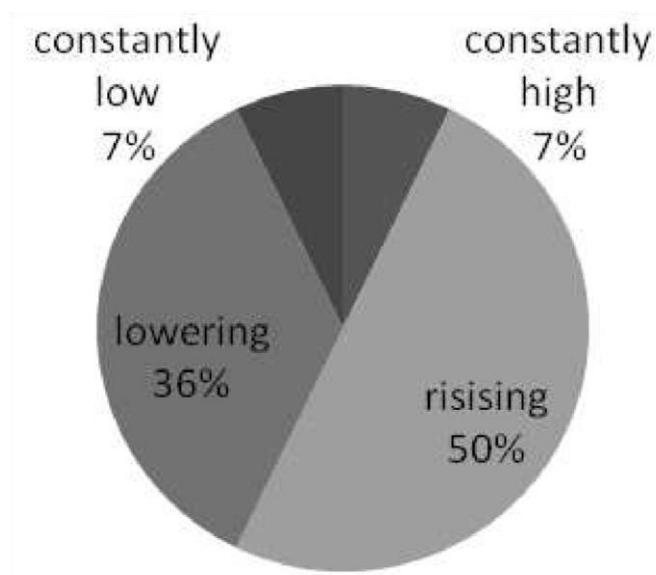


Figure 5: Pie chart showing student general performance in graphic design

It was observed in **Figure**, 54% of respondents scored between 60-69%, followed by 33% with 70-79%, 13% with 50-59%, with no one above 80% and below 50%.

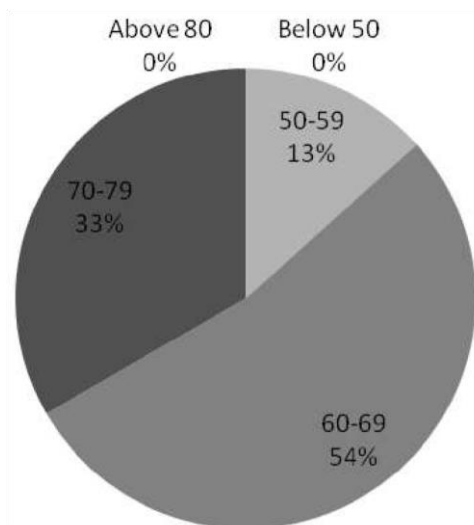


Figure6: Pie chart showing scores in percentages (%)

This shows that most students scored between 60-69% which registered the highest; this reflects the fair performance which indicates that more efforts are needed to improve on the performance. However, the lecturers said that the performance is generally good graphic design from first year to third year even though computer design affects the performance. They also added that most students in third year get between 60-70% mark scores.

Conclusion

It was discovered that most students join university without relevant computer skills that can help in execution of tasks in computer graphic design which results into relatively low performance. The university has no special training for art and design students in computer skills and students therefore have to learn on their own. The little training acquired comes at the time of executing tasks given to students in second year and third year. Most students score between 60 and 69 percent and others between 50 and 59 percent. Basing on the research conducted presentation, analysis and interpretation of findings drawn; it's evident that students' scores were low hence lack relevant computer skills right from the beginning of study at university which will continue to affect the students' performance not only in art and design study program but also in other areas of study where computer skills are required. This presents the recommendations to stake holders in universities, government and the ministry of education. The institution should put efforts to expand the information technology sector in order to improve on access of computer and provision of necessary skills for students.

Recommendations

The institution should put efforts to expand the information technology sector in order to improve on access of computer and provision of necessary skills for students. This will be achieved by installing more computers and employment of experts to provide professional knowledge and training. The institution should also provide adequate training to make student achieve appreciable level of performance in computer applications.

Received: 14.04.2024

Accepted: 20.04.2024

Published on: 29.04.2024

The Government should intervene and sensitize the public about the importance of computer skills. Provide schools with enough computers and build more laboratories to improve on the skills of learners before they join higher institutions.

References

- Akankwasa, A., Akakikunda, T., Ntirandekura, M., Murezi, C. M., & Christopher, F. (2022). *Effect of Capital Budgeting on Development of Organizations Empirical Studies of Kashinge Child Development Centre Kisoro District* . 6(9), 5–10.
- Babirye, N. J., Nelson, K., & Deus, T. (2023). *Production of Painting and Drawing Tools Using Emboobo (Cow Tail Fibre) For Painting Purpose at Metropolitan International* . 7(3), 22–27.
- Christopher, F., Muhindo, M. E., & Nakalema, F. (2022). *Decentralization and Social Service Delivery in Uganda : Acritical Analysis of the Decentralization and Social Service Delivery in Uganda : Acritical Analysis of the literature review*. November.
- Emmanuel, E., Rebecca, N., Kazaara, A. G., & Nicholas, K. (2023). *The Effects Of Job Training On Performance Of Local Government Employees In ganda : A Case Study Of Molo Sub- County , Tororo District* . 7(2), 65–73.
- Faridah, K., Kazaara, A. G., & Kazaara, A. I. (2023). *The Effect Of Supplier Selection On Product Quality Management In Organizations . A Case Study Of Uganda Wild Life* . 7(3), 307–317.
- Godfrey, W., Silvia, N., Kazaara, A. G., Nelson, K., Christopher, F., Deus, T., Micheal, T., & Catherine, M. (2023). *The Effect Of Teacher ' s Instructional Methods On The Learners Academic Performance In Mathematics Subject In Secondary Schools , A Case Study Of Buwesswa Secondary School In Manafwa District* . 7(2), 100–107.
- Jallow, M. A., Weke, P., Nafiu, L. A., & Ogutu, C. (2021). *APPLICATION OF A DISCRETE-TIME SEMI-MARKOV MODEL TO THE STOCHASTIC FORECASTING OF CAPITAL ASSETS AS STOCK* Department of Mathematics School of Mathematics University of Nairobi Department of Mathematics and Statistics. 63(1), 1–18.
- Lai, P. (2017). the Literature Review of Technology Adoption Models and Theories for the Novelty Technology. *Journal of Information Systems and Technology Management*, 14(1), 21–38. <https://doi.org/10.4301/s1807-17752017000100002>
- Lucky, A., Nelson, K., Kazaara, A. G., Christopher, F., Moses, N., Deus, T., Ismail, L., & Catherine, M. (2023). *Production of Painting to Sentize the Public on the Dangers of High Popultion Growth in Public Health Sector Gulu District (A Case Study Paicho Sub County)* . 7(2), 127–135.
- Murendo, C., Wollni, M., De Brauw, A., & Mugabi, N. (2018). Social Network Effects on Mobile Money Adoption in Uganda. *Journal of Development Studies*. <https://doi.org/10.1080/00220388.2017.1296569>
- Nafiu, L. A., & Ph, D. (2012). *Comparison of One-Stage , Two-Stage , and Three-Stage Estimators Using Finite*

Received: 14.04.2024

Accepted: 20.04.2024

Published on: 29.04.2024

Population . 13(2), 166–171.

Nafiu, L. A., Ph, D., Ibitayo, L. D., Ph, D., Muyombya, S. M., & Sc, M. (2017). *On Empirical Power of Univariate Normality Tests under Symmetric , Asymmetric , and Scaled Distributions* . 18(1), 90–96.

Nelson, K., Christopher, F., & Milton, N. (2022). *Teach Yourself Spss and Stata*. 6(7), 84–122.

Olanrewaju, R. O., & Abiodun, N. L. (2021). *Stochastic Modelling of the Dynamics of the SARS-CoV-2 Epidemic : An Africa Perspective*. 11(2), 41–48. <https://doi.org/10.5923/j.ajms.20211102.03>

Rasheed, Z., Khan, M., Abiodun, N. L., Anwar, S. M., Khalaf, G., & Abbasi, S. A. (2022). *Improved Nonparametric Control Chart Based on Ranked Set Sampling with Application of Chemical Data Modelling*. 2022.

Victoria, N., Nelson, K., Kazaara, A. G., & Kazaara, A. I. (2023). *The Impact Of Staff Development On The Pupils ' Academic Performance In Primary Schools In Kimaanya Sub-County , Masaka District A Case Study Of Kimaanya Sub-County , Masaka District*. 7(3), 179–186.

Winny, N. D., Kazaara, A. G., Kazaara, A. I., & Deus, T. (2023). *Effect Of Motivation On Employee Performance In Non- Government Organizations (NGOS) : A Case Of Mbale City*. 7(3), 67–71.

Yudaya, N., & Aggrey, W. (2023). *A Clear Graphics Representation on the Effects of Early Marriages in Teenagers . A Case Study of Namungoona Parish , Rubaga Division , Kampala District* . 7(4), 192–197.