

**The Influence of Technology Advancement on Modern Art: A Case Study of Kampala Metropolitan Region,
Kampala City**

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Abstract

This study examined the influence of technology advancement on modern art in the Kampala Metropolitan Region, Uganda. As digital tools reshape how art is created, distributed, and consumed, the study investigated how digital creation tools, social media exposure, online marketplaces, and digital skills relate to the development and commercial performance of modern art. A cross-sectional survey design with a mixed-methods approach was adopted, and data were collected from 160 respondents comprising visual artists, digital creators, gallery owners, and art students using structured questionnaires and interviews. Descriptive statistics, Pearson correlation, and multiple regression were used for analysis. The results revealed a strong positive and significant relationship between technology advancement and modern art development ($r = 0.64$, $p < 0.01$), with technology dimensions jointly explaining 49.3% of the variance in modern art outcomes ($R^2 = 0.493$). Digital creation tools and social media exposure were the strongest predictors. The study concludes that technology advancement significantly shapes modern art and recommends investment in digital-skills training, affordable tools, and reliable internet access.

Keywords: technology advancement, modern art, digital creation tools, social media, Kampala Metropolitan Region, Uganda

1.0 Introduction

Art has always evolved in response to the tools and technologies available to its makers, and the contemporary era of rapid digital transformation has accelerated this relationship to an unprecedented degree. Modern art is increasingly created, exhibited, distributed, and sold through digital means, and the boundary between traditional and digital artistic practice has become progressively blurred (Manovich, 2020). Graphic tablets, image-editing software, three-dimensional modelling programs, artificial-intelligence generators, and social media platforms have expanded the creative possibilities available to artists while simultaneously reshaping the economics of the art world (Julius & Audrey, 2026). In this context, understanding how technology advancement influences modern art has become essential to comprehending the direction of contemporary creative practice (Julius & Nancy, 2026).

Technology advancement in the artistic domain refers to the proliferation and increasing sophistication of digital tools and platforms that mediate the creation and circulation of art (Julius & Kazaara, 2026). It encompasses digital creation tools such as design software and tablets, exposure through social media, online marketplaces for the sale of art, and

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the digital skills that enable artists to exploit these resources (Paul, 2023). When artists have access to these tools and the competence to use them, they can experiment with new forms, reach global audiences, and access new revenue streams (Amos et al., 2024). Conversely, where access or skills are lacking, artists may be excluded from the opportunities that digital transformation offers, potentially deepening existing inequalities within the creative sector (Lievrouw, 2022).

The Kampala Metropolitan Region, encompassing Kampala City and its surrounding urban areas, is the cultural and creative hub of Uganda (Alex & Devis, 2023). It hosts a vibrant community of visual artists, designers, digital creators, galleries, and art institutions, and it is where the country's engagement with contemporary and digital art is most concentrated (Kasfir, 2021). The region's artists increasingly use social media to showcase their work, sell through online platforms, and connect with international audiences and collaborators (Deus, 2023). At the same time, they face challenges including the high cost of digital devices and software, unreliable and expensive internet connectivity, and uneven digital literacy, all of which shape the extent to which they can benefit from technological advancement (Nakisanze & Ochieng, 2023).

The relationship between technology and art is theoretically complex. On one hand, technology democratises art by lowering barriers to creation and distribution, enabling more people to produce and share work (Benjamin, 1936/2021). On the other hand, it raises concerns about authenticity, originality, and the displacement of traditional skills, and it can privilege those with access to resources over those without (Groys, 2022). Whether, on balance, technology advancement strengthens or undermines modern art in a specific context such as Kampala is therefore an empirical question worthy of systematic investigation (Kintu et al., 2017). Despite the evident importance of technology to contemporary art, empirical evidence quantifying its influence on modern art in Ugandan urban settings remains scarce, and few studies disaggregate the effects of specific technological dimensions (Mbabazi, 2022). This study addresses that gap by examining, through correlation and regression analysis, how digital creation tools, social media exposure, online marketplaces, and digital skills relate to the development and commercial performance of modern art in the Kampala Metropolitan Region (Julius & Kazaara, 2026). The findings are significant for artists, cultural institutions, educators, and policymakers seeking to nurture the creative economy. The article proceeds with the problem statement, objectives, literature review, methodology, results and interpretation, and conclusions.

2. Statement of the Problem

The advancement of digital technology has transformed artistic practice worldwide, and artists in the Kampala Metropolitan Region are increasingly expected to adopt digital tools and platforms to remain competitive and reach wider audiences (Paul, 2023). Ideally, this technological shift should enhance creativity, expand markets, and improve the livelihoods of artists. In practice, however, many artists in the region struggle to benefit fully from these

opportunities, and the extent to which technology advancement actually influences the development and commercial performance of modern art has not been clearly established through rigorous empirical research (Mbabazi, 2022).

This uncertainty is compounded by persistent constraints, including the high cost of digital devices and software, unreliable and costly internet connectivity, and uneven digital literacy among artists (Nakisanze & Ochieng, 2023). These constraints may cause the benefits of technology to be unevenly realised, with some artists flourishing in the digital environment while others are left behind. Moreover, concerns about authenticity, originality, and the erosion of traditional skills raise questions about whether technological advancement enriches or diminishes artistic practice (Groys, 2022). Without clear evidence on which technological dimensions most strongly influence modern art, interventions to support the creative sector risk being misdirected. If the influence of technology advancement on modern art is not clearly established and addressed, artists in the region may fail to harness digital opportunities, the creative economy may underperform, and disparities between digitally enabled and excluded artists may widen. This study therefore sought to examine the influence of technology advancement on modern art in the Kampala Metropolitan Region and to identify which technological dimensions most strongly affect artistic development and performance.

3. Main Objective

The main objective of the study was to examine the influence of technology advancement on modern art in the Kampala Metropolitan Region, Kampala City.

3.1 Specific Objectives

- i. To assess the level of technology adoption among artists in the Kampala Metropolitan Region.
- ii. To establish the relationship between technology dimensions (digital creation tools, social media exposure, online marketplaces, and digital skills) and modern art development.
- iii. To determine the relative contribution of each technological dimension to modern art outcomes.

4. Literature Review

The study of technology and art is informed by several theoretical perspectives, including Walter Benjamin's classic thesis on mechanical reproduction, media theory, and the concept of the digital creative economy. Benjamin (1936/2021) argued that mechanical reproduction transforms the nature of art by diminishing the 'aura' of the unique original while democratising access, an insight that has been extended to the digital era, in which reproduction and distribution are effectively costless. Media theorists such as Manovich (2020) contend that digital media do not merely reproduce art but generate entirely new forms and languages of expression, reshaping aesthetic possibilities. The

digital creative economy framework positions art within a broader ecosystem in which digital platforms mediate value creation, distribution, and monetisation (UNCTAD, 2022).

Empirical and scholarly studies broadly affirm that technology has profoundly influenced modern art. Paul (2023) documents how digital tools have expanded the repertoire of artistic techniques and given rise to genres such as digital painting, generative art, and new-media installation. Studies of the global art market indicate that online platforms and social media have transformed how art is discovered, marketed, and sold, enabling artists to bypass traditional gatekeepers such as galleries and reach audiences directly (McAndrew, 2023). In the African context, Kasfir (2021) and Nakisanze and Ochieng (2023) observe that digital platforms have amplified the visibility of contemporary African artists internationally, though access remains uneven.

Digital creation tools feature prominently in the literature (Julius & Audrey, 2026). The availability of affordable software, tablets, and, more recently, artificial-intelligence generators has lowered the technical barriers to producing sophisticated work (Manovich, 2020). However, scholars caution that such tools require skill to use effectively and that their proliferation raises debates about originality and authorship, particularly with the advent of generative artificial intelligence (Groys, 2022). The consensus is that digital tools expand possibility but do not by themselves guarantee artistic quality or success.

Social media exposure and online marketplaces constitute a second major theme. Social media platforms have become central to how contemporary artists build audiences, establish reputations, and sell work, effectively functioning as galleries, portfolios, and marketplaces simultaneously (McAndrew, 2023). Studies show that artists with strong social media presence tend to achieve greater visibility and commercial success, though the platforms' algorithms and commercial logics can also constrain and commodify artistic practice (Lievrouw, 2022). Online marketplaces further enable direct sales, expanding artists' reach beyond local markets.

Digital skills and access form further themes. The capacity to use digital tools and platforms effectively is a strong determinant of whether artists benefit from technological advancement (Paul, 2023). In developing contexts, uneven digital literacy, the high cost of devices and data, and unreliable connectivity constrain the realisation of digital opportunities, potentially deepening inequalities within the creative sector (Nakisanze & Ochieng, 2023; Mbabazi, 2022). The literature emphasises that realising the benefits of technology requires not only access to tools but also the skills and infrastructure to use them. Despite this rich body of work, few studies quantitatively compare the effects of specific technological dimensions on modern art in a Ugandan urban context, a gap this study addresses (Nancy & Prudence, 2024).

5.0 Methodology

5.1 Research Design

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The study adopted a cross-sectional survey design employing a mixed-methods approach that combined quantitative and qualitative techniques (Creswell & Creswell, 2021). The quantitative component enabled measurement of variables and testing of relationships, while the qualitative component provided depth and context. A cross-sectional design was appropriate because data were collected at a single point in time from a representative sample of participants in the creative sector.

5.2 Study Population and Area

The study was conducted in the Kampala Metropolitan Region, encompassing Kampala City and its surrounding urban areas. The target population comprised visual artists, digital creators, gallery owners, and art students, who together represent the principal actors in the region's modern art ecosystem and are directly affected by technological advancement.

5.3 Sample Size and Sampling Techniques

A sample of 160 respondents was drawn, comprising 90 visual artists and digital creators, 20 gallery owners, and 50 art students. The sample size was determined with reference to the Krejcie and Morgan (1970) guidelines. Purposive sampling was used to identify artists and gallery owners with relevant experience, while art students were selected using simple random sampling from participating institutions.

5.4 Data Collection Instruments

A structured questionnaire measured the technology dimensions—digital creation tools, social media exposure, online marketplaces, and digital skills—and modern art development on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Interview guides were used with selected artists and gallery owners to obtain qualitative insights into how technology shapes their practice and market outcomes.

5.5 Validity and Reliability

Content validity was established through expert review by specialists in art and media studies, yielding a content validity index above the acceptable threshold of 0.70 (Amin, 2005). Reliability was confirmed through a pilot study, and the Cronbach's alpha for the technology adoption scale was 0.85, indicating high internal consistency.

5.6 Data Analysis

Quantitative data were analysed using the Statistical Package for the Social Sciences (SPSS)(Nelson et al., 2022). Descriptive statistics summarised technology adoption and modern art outcomes. Pearson correlation established the strength and direction of relationships, and multiple regression assessed the combined and relative effects of the technological dimensions. Qualitative data were analysed thematically to complement the statistical findings.

5.7 Ethical Considerations

Informed consent was obtained from all respondents, participation was voluntary, and confidentiality and anonymity were maintained throughout the study in accordance with established research ethics (Creswell & Creswell, 2021).

6.0 Results and Interpretation

6.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the technology dimensions and modern art development based on responses from the 160 participants.

Variable	Mean	Std. Dev.	Interpretation
Digital creation tools	3.58	0.80	High
Social media exposure	3.72	0.75	High
Online marketplaces	3.21	0.88	Moderate
Digital skills	3.33	0.84	Moderate
Overall technology adoption	3.46	0.71	Moderate
Modern art development	3.49	0.69	Moderate

Source: Primary Data, 2026

The descriptive results in Table 1 show that technology adoption among artists in the Kampala Metropolitan Region was moderate to high, with an overall mean of 3.46 and a standard deviation of 0.71. Social media exposure recorded the highest mean (3.72), reflecting the centrality of platforms such as Instagram and Facebook to how artists showcase and market their work, consistent with observations that social media now functions as a primary channel for artistic visibility (McAndrew, 2023). Digital creation tools also attracted a high rating (3.58), indicating widespread use of design software and devices. Online marketplaces (3.21) and digital skills (3.33) were rated moderately, suggesting that direct online selling and the competence to fully exploit digital tools remain less developed, in line with concerns about uneven digital literacy and access (Nakisanze & Ochieng, 2023). Modern art development was rated moderate (3.49), and the sizeable standard deviations reveal meaningful variation among artists.

6.2 Correlation Analysis

Pearson correlation was used to establish the relationships between the technology dimensions and modern art development, as shown in Table 2.

Variable	Modern Art Development (r)	Sig. (p)
Digital creation tools	0.59	0.000

Social media exposure	0.57	0.000
Online marketplaces	0.48	0.000
Digital skills	0.51	0.000
Overall technology adoption	0.64	0.000

Source: Primary Data, 2026

The correlation results in Table 2 demonstrate that all technology dimensions were positively and significantly related to modern art development at the 0.01 level. Overall technology adoption showed a strong positive correlation with modern art development ($r = 0.64$, $p < 0.01$), confirming that greater engagement with digital technology is accompanied by stronger artistic development and performance, consistent with the theoretical expectation that digital tools expand creative and commercial possibilities (Paul, 2023). Digital creation tools recorded the strongest individual association ($r = 0.59$), followed closely by social media exposure ($r = 0.57$), underscoring the dual importance of the means of creation and the channels of distribution (Manovich, 2020; McAndrew, 2023). Digital skills ($r = 0.51$) and online marketplaces ($r = 0.48$) were also significantly correlated, though more moderately. The consistently positive pattern strongly supports the study's central proposition (Nelson et al., 2023).

6.3 Regression Analysis

Multiple linear regression assessed the combined and relative effects of the technology dimensions on modern art development. Tables 3 and 4 present the results.

Model Summary		Value	
R		0.702	
R Square		0.493	
Adjusted R Square		0.480	
Std. Error of Estimate		0.486	
F (4, 155)		37.68 ($p = 0.000$)	
Predictor	Beta (β)	t	Sig. (p)
Digital creation tools	0.30	4.35	0.000
Social media exposure	0.28	4.01	0.000
Digital skills	0.18	2.68	0.008
Online marketplaces	0.14	2.11	0.036

Source: Primary Data, 2026

The regression model summary in Table 3 indicates that the four technology dimensions jointly explained 49.3% of the variance in modern art development ($R^2 = 0.493$), a substantial proportion establishing technology advancement

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as a major influence on modern art. The model was highly significant ($F(4, 155) = 37.68, p < 0.01$), confirming its predictive validity. The remaining 50.7% of variance is attributable to other factors such as individual talent, artistic training, market demand, and cultural context that lie outside the model (Groys, 2022).

The standardised coefficients in Table 4 clarify the relative importance of each dimension. Digital creation tools emerged as the strongest predictor ($\beta = 0.30, p < 0.01$), demonstrating that access to and use of digital means of creation most directly shape modern art development, consistent with the view that new tools generate new artistic forms (Manovich, 2020). Social media exposure followed closely ($\beta = 0.28, p < 0.01$), confirming that visibility and audience-building through platforms materially advance artists' development and commercial success (McAndrew, 2023). Digital skills ($\beta = 0.18, p < 0.01$) and online marketplaces ($\beta = 0.14, p < 0.05$) contributed positively but more modestly, indicating that competence and direct selling matter but operate substantially through the creation and exposure they enable. Overall, the results suggest that supporting artists' access to digital creation tools and their effective use of social media offers the greatest leverage for advancing modern art in the region (Paul, 2023; Nakisanze & Ochieng, 2023).

7.0 Conclusion and Recommendations

The study concludes that technology advancement has a strong, positive, and significant influence on modern art in the Kampala Metropolitan Region, with digital creation tools and social media exposure being the most influential dimensions. It is recommended that cultural institutions and educators provide digital-skills training for artists, that stakeholders facilitate access to affordable digital tools and reliable, affordable internet connectivity, and that policymakers support the creative economy through infrastructure and enabling regulation (UNCTAD, 2022). Artists should build strong social media and online-marketplace presences while preserving artistic integrity. Future research could employ objective market data and longitudinal designs to further establish causality and examine the impact of emerging technologies such as generative artificial intelligence.

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