

The Impact of the 4IR Technologies in the Works of Emerging South African Artists

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How to cite this paper: Xaba, S. A., Fang, X., & Mthembu, S. P. (2021). The Impact of the 4IR Technologies in the Works of Emerging South African Artists. *Art and Design Review*, 9, 58-73.
<https://doi.org/10.4236/adr.2021.91005>

Received: January 13, 2021

Accepted: February 22, 2021

Published: February 25, 2021

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Abstract

The study seeks to investigate the impact of the Fourth Industrial Revolution (4IR) technologies. These technologies include Facebook, Instagram, and Online art gallery. We consider these technologies as part of 4IR because they are digital. In the *World Economic Forum*, also refers to 4IR as the digital revolution. Furthermore, these platforms use AI technology to function. We chose to select these platforms because of their potential in promoting the artworks of artists. Furthermore, no existing study in South Africa has looked into the impact of these online platforms in the works of emerging South African artists. The purpose of the study is to mitigate some of the challenges encountered by artists. We designed an online questionnaire through google drive and selected 209 participants for the study. We chose to select artists and designers as part of our sample. The selected participants were artists of different categories, both emerging and established artists. The questionnaire focused on investigating the impact of digital platforms to establish whether or not these platforms can mitigate the challenges faced by artists. We also looked at important key factors such as the internet and ICT tools. These factors are vital for the successful use of these 4IR technologies. Statistical tools were used to analyze the data. Pie charts and tables were used to present the data. The results illustrate that Instagram is the most useful platform for artists to use followed by Facebook. The online art gallery is the least useful. We conclude that all of these platforms must be utilized by emerging artists to mitigate the challenges that they encounter in their careers.

Keywords

4IR Technologies, Digital Platforms, Emerging Artists, South Africa

1. Introduction

To understand more about the Fourth Industrial Revolution, it is important to briefly look at the background of other industrial revolutions. The invention of the steam engine in 1760 signified the First Industrial Revolution (Xu et al., 2018). The invention of the internal combustion engine in 1900 signified the Second Industrial Revolution (Greenwood, 1999). This led to the period of rapid industrialization of oil and electricity, resulting in mass production. In 1960 the Third Industrial Revolution emerged and came with the implementation of electronics and information technology to mechanize production. The fourth industrial revolution involves computer-generated product design, three-dimensional printing (3D), Artificial Intelligence (AI), and the internet of things (IoT) (Schwab, 2015). The Fourth Industrial Revolution is building from the Third, the digital revolution has been occurring since the middle of the last century (Schwab, 2015). Schwab touches on one aspect of the Fourth Industrial Revolution and that is the digital part. Likewise, we see art becoming more digital than ever before. Online art galleries and museums have emerged coupled with various digital tools to produce art. Art has become more interactive with digital platforms such as Facebook, Instagram, and Online art gallery that have allowed artists the opportunity to interact with art lovers. In the paper titled *Art in the Digital Age*, (Avila & Bailey, 2016) gives us the background history of digital art, particularly the tools used for art creation and how these various digital tools are used in the 21st century. However, no research looks into the impact of these technologies in the works of emerging artists. Therefore, the study seeks to investigate the impact of 4IR technologies on the works of emerging South African artists and whether these technologies can mitigate the challenges faced by emerging artists.

2. Literature Review

2.1. Digital Platforms

According to (Martens, 2016) a marketplace where two or more separate types of users meet to exchange goods, services, and information is called a platform. Martens further states that the market may be an online digital market or offline physical market. In this paper, we look at online digital platforms. Online platforms range from minor websites with local reach to worldwide companies producing billions of profits (Oxera, 2015). Furthermore, services such as internet search engines (Google, Yahoo, Bing), online market places (eBay, Amazon) video-sharing platforms (Youtube), and social networks (Facebook, Twitter, Instagram) are offered by online art platforms (Oxera, 2015). Online art provides a platform for artists to reach millions of art lovers (Blanco, 2014). Artists tend to use art websites to display their works. Artists advertise their works in art website to attract buyers that can be potential art patrons. Online art galleries are currently a vehicle that artists use to display their works. StateoftheArt Gallery focuses on emerging and established artists across South Africa and can be a

great platform for artists to exhibit their works. VANSAs (Visual Arts Network of South Africa) operates as a support point and development agency for contemporary art practice in South Africa. VANSAs is a website that showcases events and available jobs for artists and art scholars to use for their benefit. It provides opportunities for artists and updates art lovers on the current art news. Social media is used by museums and cultural institutions to connect with visitors (Waller & Waller, 2018). In this study, we will turn our focus on Facebook, Instagram, and Online Art Gallery.

2.2. 4IR Platforms for Emerging Artists

In the *World Economic Forum*, (Schwab, 2015) refers to the 4IR as the digital revolution. We have chosen to investigate three digital platforms, Facebook, Instagram, Online art gallery. Although two of these platforms (Facebook and Instagram) are referred to as social media platforms, they rightfully fall under the category of digital platforms. These platforms operate in a digital sphere that consists of users of all professions. Each platform has its own unique way of operating. Facebook allows individuals to communicate and share information through the creation of a page and personalized profile (Duffet & Wakeham, 2016). Facebook is most perceived as a platform for business connections (Saprykin et al., 2016). The art world has moved to Facebook with galleries and museums having their own Facebook pages (Hovarth, 2014). In 2010, Instagram was launched as an online photo sharing and social network service (Jensen, 2013). Instagram is an important tool for art galleries in promotion, marketing, interaction, participation, and enhancing the visitor experience (Suess, 2018). It has generated much interest in the art gallery community (Budge & Burness, 2017). (Cavazza & Mead, 2001) give us an understanding of what an online/virtual art gallery is. Virtual art gallery aims at recreating the experience of a physical exhibition (ibid). Furthermore, a virtual art gallery comprises two aspects, the recreation of a spatial experience and the display of high-quality images within it (ibid).

2.3. Challenges That Emerging Artists Encounter

Starting an artistic career is coupled with several challenges. These challenges range from finding a space to work in, buying art-making materials, and finding a space to exhibit the works. In the paper titled *Why Are Artists Poor* (Abbing, 2002), identifies the key challenges that artists face. These are different market segments, gatekeepers, high rivalry, market inefficiency, low liquidity, high transaction costs, low income, asymmetric information, the tense economic situation for most commercial galleries, and winner-takes-all characteristics (ibid). Artists face challenges ranging from access to funding, high material costs, lack of art buyers, lack of industrial promotion from government, shortage of art exhibitions, high fees for staging an art exhibition (Hagg, 2010). According to (TBR, 2018), work opportunities advertised outside the artist's region require the

artist to temporarily relocate. In South Africa, most artists are situated in Johannesburg and Cape Town because these are the cities that are an artistic hub. In this study, we focused on tackling issues relating to the lack of opportunities to exhibit, lack of customer reach because of geographical restrictions.

3. Method

3.1. Study Design and Participants

We used a mixed-method approach for this research, using both qualitative and quantitative methods (Creswell, 2013). The research was conducted in South Africa, in the KwaZulu-Natal province. Purposive sampling was used in selecting the participants for the research (Dolores, 2007). We used an online questionnaire to conduct the research and randomly selected 209 participants for the research. The selected participants were artists of different categories, both emerging and established artists, and were open to anyone living in the focus area. The questionnaire focused on investigating the perceived impact of digital platforms to establish whether or not these platforms can mitigate the challenges faced by artists. We chose to select Facebook, Instagram, and Online art gallery because these are platforms that have the capacity of promoting the works of emerging artists. Furthermore, according to research, these platforms yield good results in promoting works. However, it still remains that no research has looked into the potential impact of these platforms on emerging artists in South Africa. The collected data were analyzed using statistical analysis, mainly, SPSS. The data was translated into tables.

3.2. Questionnaires for Qualitative Use

All artists fulfilling the inclusion criteria were invited to take part in an anonymized survey to help us understand the dynamics in the art industry. The use of online digital technology to acquire information has provided researchers like myself with many opportunities. Online surveys have allowed us to replicate many traditional focus group interviews with real-time online focus groups in the form of sending a link to respondents. Therefore, those who agreed to take part in this study were offered a link hosted by the Google survey site. The background and purpose of the survey and information regarding the purpose were provided explicitly. The link allowed respondents to complete the questionnaire in their own time and preferred location.

3.3. Procedures

The questionnaire (Appendix) consisted of self-administered questions covering domains such as socio-demographic characteristics, current use and frequency of digital communications, respondent's experiences of digital platforms, and suggestions/recommendations with regards to digital platforms. We did not collect information on basic demographic characteristics, such as gender, race, religion, etc.

4. Results and Discussion

Table 1 summarizes the key variables used to characterize the successful participants, which are mostly dummy and categorical variables. The summary is aimed at observing the central tendency and spread of the time spent by artists on using technological devices for artistic use in the sample. Out of those that participated in the study, only 209 were successful in completing the questionnaire, thus, making our sample size restricted to 209 artists. The majority of the respondents are full-time emerging artists between the ages of 20 to 30 years. The most single used device by respondents is smartphones (50%) as compared to a laptop (13%), desktop computer, and tablet at (4%). It is also important to note that only 1% of the sampled respondent uses a combination of all four devices (Desktop computer, Laptop, Smartphone, Tablet).

Descriptive statistics show that the deviations from the mean are 100 for those below the age of 20 and 67.46 for those between the age of 20 to 30. In the case of the place to access the internet, there are more than half of the respondents who access the internet from their homes, with less than 1% using cybercafés. The sample selected also shows more respondents who use smartphones to access the internet (82%), followed by laptops (13%), desktop computers (4%), and last tablets at 1%. The “time spent on the internet” categorical variable shows that most of those who are selected in the sample spend at least 88% of their time surfing the internet daily, with only 1% stating that they rarely spend time on the internet. The descriptive statistics also show that approximately 35% of those in the sample spent between 3% to 5% of their time checking emails, while only 2% do not spend time on their emails daily. We now turn our focus to individual justifications and discussions for our results. This is important to understand South Africa’s unique art industry that consists of diverse characteristics.

It is not surprising that our data in **Table 1** suggest that 67% are of the age group 20 - 30 years. This is because the majority of the respondents are emerging and upcoming artists. Having young people in the sample justifies that they are emerging. Secondly, social media is mostly used by young people and largely dominates the art industry. Although the research allowed all types of artists to participate in the study, it is not surprising that the majority are either young art students or/and emerging artists since the young emerging artists are the ones dominating the art industry, thus, our research primarily focuses on emerging artists. This is supported by (Duffett & Wakeham, 2016) in their paper that focuses on the use of social media among millennials in South Africa. It is therefore not expected that 22% of the respondents are between the ages of 30 - 40. This set of participants is those that are established and have made a name for themselves. The data as presented in the occupation section suggests that 47% of the respondents are full-time artists. Thus, 27% of the participants are part-time artists. This is a high number and suggests that these artists are not confident in depending on art as their source of income. They fear going full-time because of the nature of the current art industry, particularly as it does not guarantee a

Table 1. Key variables that characterizes successful participants.

Variables	Freq.	Percent	Mean	Std. Dev.
Age				
20 - 30	141	67.46		67.46
30 - 40	45	21.53	0.215311	89.00
40 and above	16	7.66	0.076555	96.65
Below 20	7	3.35	0.0334928	100.00
Occupation				
Art Student	25	11.96		11.96
Art lecturer	3	1.44	0.0143541	13.40
Full time artist	98	46.89	0.4688995	60.29
Other art related	27	12.92	0.1291866	73.21
Part time artist	56	26.79	0.2679426	100.00
Type of artist				
Art Student	28	13.46		13.46
Emerging artist	147	70.67	0.7067308	84.13
Established artist	33	15.87	0.1586538	100.00
Desktop computer	8	3.86		3.86
Desktop computer, Laptop	2	0.97	0.0096618	4.83
Desktop computer, Laptop, Smartphone	3	1.45	0.0144928	6.28
Desktop computer, Laptop, Smartphone, Tablet	2	0.97	0.0096618	7.25
Desktop computer, Smartphone	3	1.45	0.0144928	8.70
Desktop computer, Smartphone, Tablet (e.g. iPad)	2	0.97	0.0096618	9.66
Laptop	27	13.04	0.1304348	22.71
Laptop, Smartphone	44	21.26	0.2125604	43.96
Laptop, Smartphone, Tablet (e.g. iPad)	2	0.97	0.0096618	44.93
Laptop, Tablet (e.g. iPad)	1	0.48	0.0048309	45.41
Smartphone	103	49.76	0.4975845	95.17
Smartphone, Tablet (e.g. iPad)	2	0.97	0.0096618	96.14
Tablet (e.g. iPad)	8	3.86	0.0386473	100.00
Place to access internet				
Cybercafe	2	0.96		0.96
Do not access	7	3.35	0.0334928	4.31
Home	106	50.72	0.507177	55.02
Home, Cybercafe	1	0.48	0.0047847	55.50
Home, Work/Art studio	52	24.88	0.2488038	80.38
Home, Work/Art studio, Cybercafe	4	1.91	0.0191388	82.30
Work/Art studio	37	17.70	0.1770335	100.00

Continued

Device to access internet				
Desktop computer	8	3.83		24.40
Laptop	27	12.92	0.3492823	59.33
Smartphone	171	81.82	0.0813397	67.46
Tablet (e.g. iPad)	3	1.44	0.3014354	97.61
Time spent on internet				
Alternate days	11	5.26		5.26
Daily	184	88.04	0.8803828	93.30
Irregularly	6	2.87	0.0287081	96.17
Once a week	6	2.87	0.0287081	99.04
Rarely	2	0.96	0.0095694	100.00
Time spent on emails				
1 - 2 hours	51	24.40		24.40
3 - 5 hours	73	34.93	0.3492823	59.33
<1 hour	17	8.13	0.0813397	67.46
>5 hours	63	30.14	0.3014354	97.61
Do not use daily	5	2.39	0.0239234	100.00

monthly salary. This can be further explained by looking at South Africa's history as the current artist industry is a consequence of South Africa's past policy of segregation. The policy of segregation generally separated races to the benefit of those of European descent and the detriment of those of African descent (Cuxima-Zwa, 2016).

More than half of the participants use smartphones. They tend to mix it with other devices such as a desktop computer, laptop, and tablet. With only 4% using tablets, this fails to debunk myths that suggest that tablets are viewed as luxury devices. The advent of COVID-19 resulted in the government opting to give out tablet devices to young people in previously disadvantaged backgrounds and those staying in remote areas. This plan was initiated to try to bridge the gap of technology and is aimed at educational purposes. The results also suggest that participants prefer using the internet mostly at their homes and in art studios. Hence, fewer participants use cyber cafés. A typical and most plausible explanation for this would be the fact that cybercafes are still relatively expensive in South Africa, particularly in the KwaZulu-Natal province. On average, the fees for using cyber cafes can cost R30 (\$2) for 10 minutes during normal seasons and much more during peak season. Though KwaZulu-Natal mostly consists of rural people, there is still a relatively high demand for cyber cafes in constructing people's resume (Curriculum Vitae). With unemployment on the high and people actively looking for work, this ordinarily pushes up the demand for cyber cafes and thus pushes up the costs. The results also show that 51% of the res-

pondents use the internet at home. This is because people use data services and WIFI in the comfort of their homes, especially considering that 82% of the respondents use smartphones to access the internet. As shown in **Table 1**, more than half of the participants use smartphones. Smartphones are the most used devices and have the advantage of mobility hence, it is portable and is the easiest to use. Interestingly, 1% only use tablets to access the internet. As stated earlier, tablets are viewed as luxury devices which are why fewer respondents are using them in accessing the internet.

With 88% of the participants spending more time using the internet, this justifies that people in KwaZulu-Natal are actively trying to connect and stay up-to-date, especially as the data shows that the majority of people use the internet at least daily. The study notes that the 3% that irregularly use the internet could be explained by the socio-economic issues that they experience in KZN. Data bundles to access the internet is generally expensive thus becomes a blockage as they have to choose what is more important with the limited resources they have. If artists see themselves as emerging artists, they actively need some sort of communication, thus, there needs to be a formal way of communication such as email to make arrangements official. Our study was structured such that it is important to know whether artists use the internet productively because it is a proxy to see whether they take themselves seriously. The results, therefore, suggest that the respondents do use their devices and internet productively, this is seen in **Figure A1** in the appendix section, as they spend at least 3 - 5 hours on emails daily. This proves that both emerging and fully established artists are putting more effort into positioning themselves within the art industry. They are taking their work seriously by looking for opportunities. The study acknowledges the 30% of the respondents that spend less than 5 hours on emails due to the lack of resources and broader socio-economic issues highlighted above.

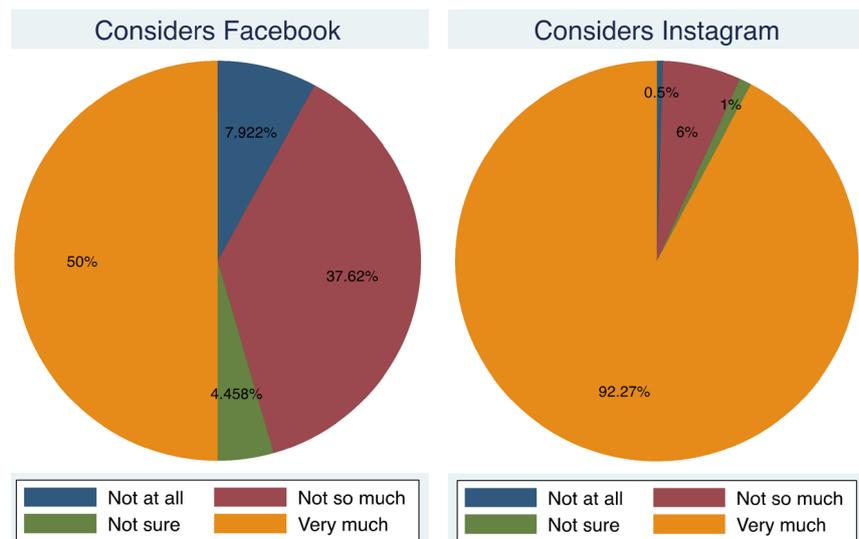


Figure 1. Consider using Facebook, Instagram, and online art gallery.

The study finds that 50% consider using Facebook as compared to the 38% that do not use Facebook (Figure 1). Though it is not clear whether it is their choice or it could be that the participants do not have the means to access Facebook or may not be well informed that Facebook can be used as a marketing tool to display their art. Facebook's competitor, Instagram, seems to enjoy the majority of the share as 90% consider using Instagram. This is justified by the mere fact that Instagram is an app for images and is easy to the eye. Artists tend to find it easy to associate themselves with Instagram as compared to Facebook. Instagram is imagery based and is easy to profile the work. Facebook was historically designed for communication purposes as well as to meet people and disseminate information whereas Instagram focused on images from the inception stage, thus easy to display work. The results also show that 59% consider using online art as depicted in Figure A2 in the appendix section. Physical art galleries are the biggest traditional way of displaying works and historically it is easy to operate an online art gallery. Though it is broad, it remains one of the vital sections for all types of artists. When the world moved to the 3rd industrial revolution, it was important for every artist to have websites, thus, making it easy for artists and reducing the costs of art galleries as it is cheaper to access online art galleries. Anyone from any part of the world can access them. Though a significantly less amount (6%) stated not to use online art galleries at all, one suspects that they need more information regarding using online art galleries. Therefore, there is still more education needed for an online art gallery, particularly on how to operate and use them.

The study shows that 41% of participants use Facebook several times, with only 5% do not use Facebook at all, and 26% choose not to use it very frequently (Figure 2). We have noted that 26% of participants that do not frequently use Facebook may be because they do not consider Facebook as a platform to display art. The study also observes that 58% of the respondents use Instagram several times a day whereas 11% do not very frequently use Instagram. The reasoning behind this can be extracted from (Mathur et al., 2015) and (Phokeer et al., 2016), which suggest that internet data costs are extremely high in South Africa, particularly for rural and townships

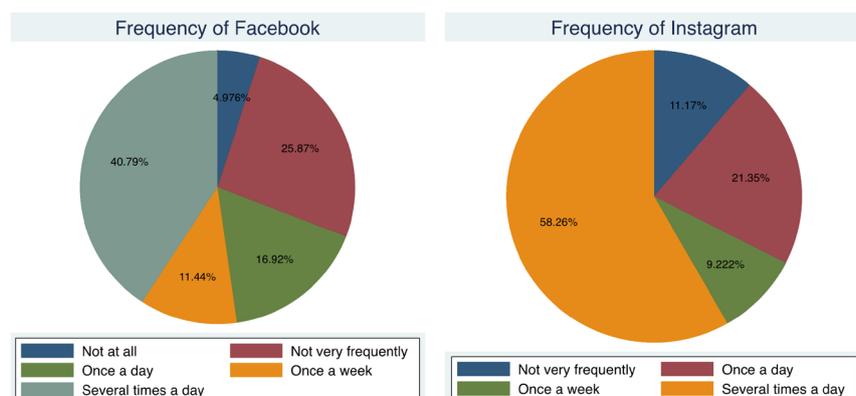


Figure 2. Frequency of Facebook, Instagram, and online art galleries.

people. Therefore, 11% percent could be as a result of expensive data and socio-economic issues. Unlike China where data is very much affordable, and WIFI is free to use, data is expensive in South Africa and many households do not have much access to it, particularly in KZN. In **Figure A3** of the appendix section, the study shows a staggering 43% of participants don't frequently use online art galleries whereas 32% do not use online art gallery platforms at all. This leads one to accept the empirical evidence which suggests that South African artists are not familiar with online art gallery platforms and therefore, there is a need for artists to be educated on how to utilize online art gallery platforms. It is important to note that there are few online art gallery platforms available and there is little awareness regarding the available online art gallery platforms in South Africa. As a result, this makes it difficult for artists to have access to or use these online art gallery platforms as compared to other developed countries.

With the 4th industrial revolution at the doorstep and fully entered, challenges posed by these tools remain eminent. Though our data suggests that 11% of the respondents very much encounter challenges in using Facebook, one could suspect that this is because of internet-data issues as well as the speed of internet-data or the type of internet-data (**Figure 3**). As stated in earlier sections, South Africa's expensive internet-data prices make it hard for artists coming from rural areas to have access to using Facebook. Due to these high prices, it is possible that the respondents can only afford a small amount of data bundles, making it difficult for them to fully operate Facebook. A typical example is in cases where an artist can only afford to use a small amount of internet-data bundle set, when the artist decides to upload a work of art, it may not fully be displayed, thus, the quality of the image may be affected. Given that 34% of the respondents understand how to operate Facebook, there is a relatively small portion that experiences challenges in using Facebook. Instagram on the other hand is designed to display pictures and does not involve many categories, thus, making it a straightforward tool as much focus is based on imagery rather than communication. It is for this reason that only 3% of the respondents' experience challenges in using

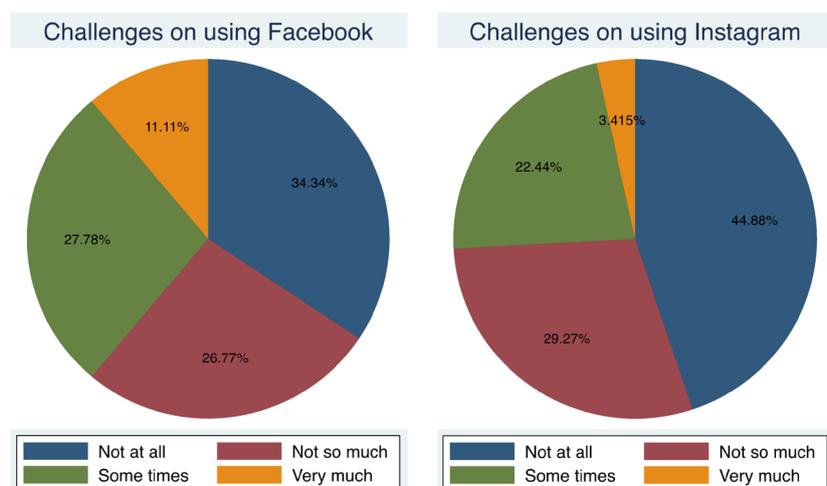


Figure 3. Challenges in using Facebook, Instagram, and online art galleries.

Instagram. It is important to note that Instagram generally consumes a lot of internet-data, making it expensive to operate compared to all the three tools stated in this study. There has also been some uncertainty in using it because there are some cases where account holders were hacked. As presented in **Figure A4** of the appendix section, the online art gallery is the least favorable one sitting at 36%. In its nature, one would expect it to be mostly used since it is directly designed for artists. The mere fact that there is a small number of participants that use it means that those few numbers understand it. The study shows that 22% of the respondents very much experience challenges in using online art galleries. This could also be as a result of the costs that are required in operating and accessing online art galleries.

The study finds that 55% of the respondents recommend Facebook to upcoming and emerging artists for displaying their work (**Figure 4**). However, there is still 5% who wouldn't recommend it at all. Facebook is not necessary a key instrument for using in displaying the work considering its inception of being designed as a form of communication. Furthermore, 27% stated that they would recommend Facebook but not so much. These are people who are still experimenting with it since they are still new in the art world. As expected, 91% recommend Instagram because it is easier for the eye. Instagram has high advanced statistical analytic tools as compared to other digital platforms and these tools have the potential to know more about your audience. The statistical tools can be generated automatically upon your request very easily which can provide key information ranging from the age group of your audience to gender, the time you engage your audience. Furthermore, Instagram not only gives you information about your audience but also gives the artists the average time they spend on these platforms. As presented in **Figure A5** of the appendix, we see that 61% of the respondents that use the online art gallery would recommend it to emerging artists. This can be rationalized in such a way that those who currently use it see the benefit of being visible and would like other artists to use it. The majority of those that use this platform

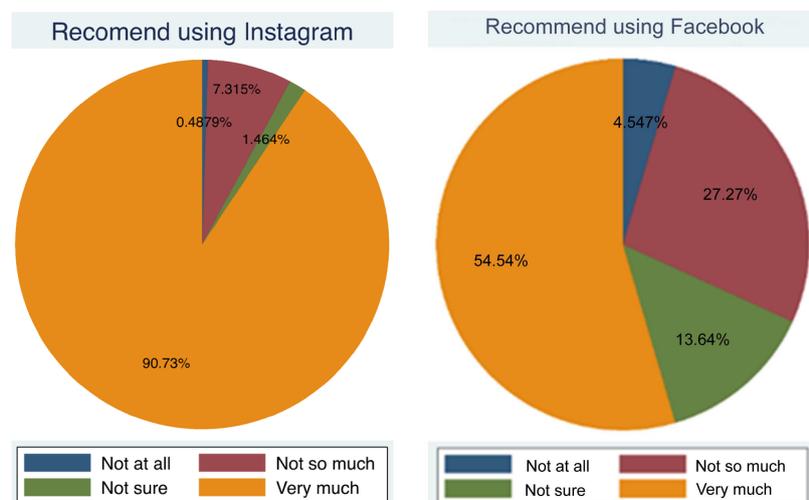


Figure 4. Recommend Facebook, Instagram, and online art galleries.

are established artists and therefore, they do not want the online art gallery space to dry out, thus they would then recommend emerging artists to use it rather than other digital platforms such as social media. Established artists can see the authentic value of online art gallery platforms, hence they would want young emerging artists to take up these spaces as compared to social media since there is no control over social media whereas online art gallery platforms would not experience such issues.

The study notes that online art galleries have been around for decades and will continue to be relevant if proper planning is placed. This is also the result of what is called the law of diminishing returns. The more an artist posts on these social media platforms, the more they are seen up until a certain point known as the “turning point”, where their value starts diminishing. One would rather use these social media platforms for advertising themselves as emerging artists, however, one needs to have it in mind that the ultimate goal is to direct the traffic to an online art gallery or their workspace. The value of the artist diminishes while the value of social media app increases because these social media platforms are still debatable on the extent to their exploitative on artists and may be toxic. This is well documented by Benjamin and Jennings (2010) in explaining how artists sometimes derail their focus from being valued to just being seen. Thus, online art galleries ultimately give value to artists.

5. Conclusion

Based on the findings, it is evident that these platforms are key instruments in displaying one’s work, especially for emerging artists who highly depend on being seen to display their artwork. Furthermore, the online art gallery seems to be the least favorable platform to display art as explained in the sections above. This would need to change if the ultimate goal is to grow and invest in artists in South Africa. The results also suggest that majority of artists have access to the internet in their homes using smartphone devices to connect. This means that artists are actively involved in the internet and therefore are capable of utilizing these platforms that require the internet to work. That being said, Instagram is the most favorable platform compared to Facebook because of its simplicity and “easy on the eye” type of tool for people who are also non-artists. Respondents stated that these platforms help boost their image and make them reach new audiences. Furthermore, some stated that these platforms have given them the opportunity of meeting gallerists as well as get commissions. Going forward, the study recommends every emerging artist, whether student or non-student to try by all means in utilizing these digital platforms to display their works. The study has shown the great benefit of using these platforms to reach out to markets that ordinarily an emerging artist or a student would not tap into.

Acknowledgements

I would like to express my sincere gratitude to my study supervisor, Professor Fang Xing for his guidance in the publication process as well as Senzo Peter

Mthembu for his assistance in statistical analysis.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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Appendix

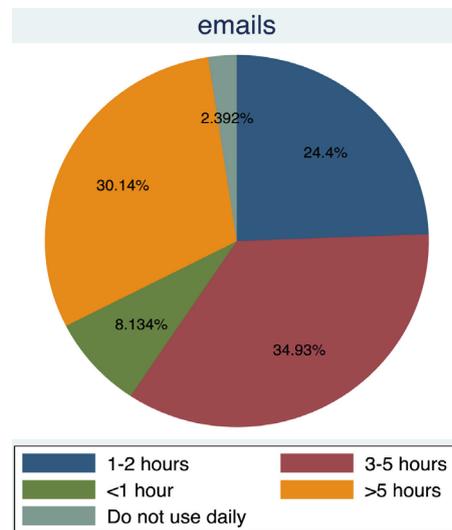


Figure A1. Emails.

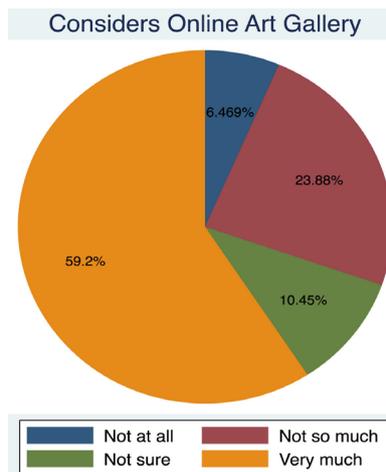


Figure A2. Considers online art gallery.

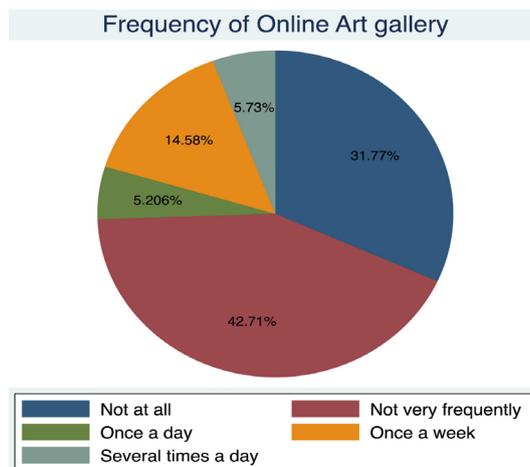


Figure A3. Frequency of online art.

Challenges on using Online Art galleries

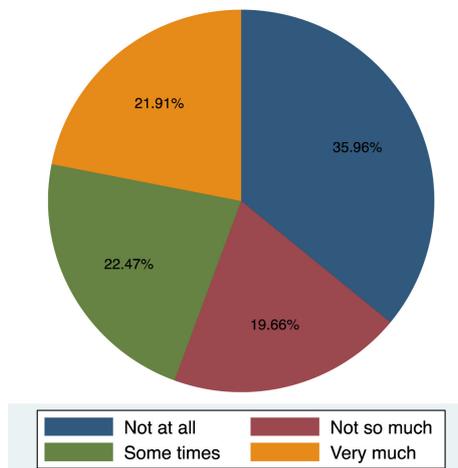


Figure A4. Challenges on using online art galleries.

Recommend using Online Art Gallery

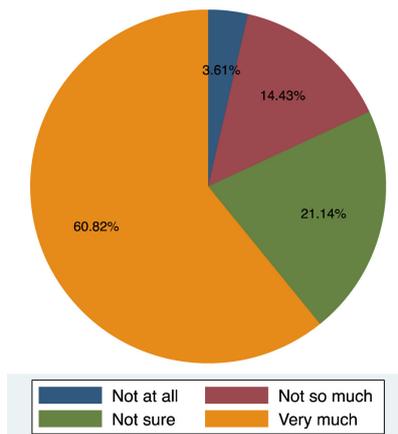


Figure A5. Recommend using online art galleries.