

Digital Transformation of Information and its Impact on Libraries

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Abstract— The world has practically gone digital as almost everything has moved from analogue to digital. There is also an increasing appetite for digital data among people. Academic libraries of the 21st century operate in such a digital environment. However, studies examining the impact of digital transformations on libraries have remained largely scarce. In this study, the researcher examined the impact of digital transformation on libraries. The survey research design was used for the study. A total of 240 library users and 240 library professionals took part in the study. The questionnaire was used as the instrument for data collection. The results showed that all the five assumptions tested in the study were supported. In particular, the researcher found that digital transformation of information have significantly impacted libraries in the areas of service delivery, service utilization, library management, library materials format and library patronage. Based on these results, the researcher recommends, among others, that libraries should continue to monitor and respond to changes that digital transformation trigger.

Index Terms- digital transformation, libraries, information, new media, technologies

I. INTRODUCTION

Digitization currently defines the direction of the society. This is largely because improvements in technologies have substantially affected almost every aspect of the society. Information is now processed, stored and retrieved in digital format. Service delivery, access and utilization have all changed. New technologies continue to emerge to define the acquisition and utilization of information. There is also increasing awareness regarding the prevalence of digital technologies (see also Agarwal, & Lucas 2005; Ahmed, & Sundaram, 2011; Alexander & Lyytinen, 2017; Andersen & Ross 2016). Digital media platforms now serve the dual purpose of making information readily available to users and also as a sign of a person's level of skills. This is because with digital transformation of information, access to information has been made easier and perhaps, cheaper than ever before. Therefore, ability to process, access, and utilize digital information is as regarded important skills in the 21st century society.

The implication from the above is that there now exists digital transformation of information. The world is now in a digital phase. Information has been liberalized and monopoly has been broken down completely. Services providers also have equally changed their mode of operations. They have also changed their range of service and scope of operation. Different sectors of the society such as the economy, politics, marketing, journalism, health, agriculture, security, education, among others have all made changes in their

operations to accommodate the irresistible force of digital transformation (see also Baskerville, 2008; Bharadwaj, Sawy, Pavlou, & Venkatraman 2013; Bhattacharya & Seddon 2009; Braun, Wortmann, Hafner & Winter 2005; Bucher, & Winter 2008; Collins, 2001). Digital transformations are currently changing many aspects of the society. New technologies are coming up almost on a daily basis such that it is difficult for anyone to predict what will happen in the world of technology the next minute. Tasks executions are becoming technology-driven faster that anyone could have ever predicted even as recent as ten years ago.

Digital transformation can also be called digitization. The concept describes service delivery model that is chiefly driven by changes in new technologies. Stolterman and Fors, (2004) corroborate that digitization or digital transformation is used in reference to alterations that are linked to utilization of digital technology in all aspects of human society. Gimpel and Röglinger (2015) aver that digital transformation is typically implemented with the application digitization procedures by converting existing services and products into digital versions (see also Hauge, Ayala & Conradi; 2010; Kohli & Johnson 2011; Liu, 2012; Medina & Prario 2013). The library is one of the sectors that has been impacted by the digital transformation.

Libraries of the current millennium are not the same as libraries of yesteryears. This is because libraries now operate in a digitally sensitive environment. Their users are also digital friendly. Library patrons have strong preference for digital contents. They also want to have access to library services under a very flexible arrangement whereby they may not necessarily need to be physically present in a library. Bradley, (2010) avers that in contemporary library services, ICTs-supported libraries to provide dynamic and flexible services than before. In the views of Bradley, modern libraries have recognized the place of digital transformation in the range of services that they render to their users. To that extent, libraries have incorporated digital features into the range of services they render.

Pryor (2009) conducted a study to examine how libraries have responded to digital transformation. Particularly, the researcher looked at changes in working dynamics as well as working tools. His result showed that libraries have been significantly impacted in areas like skills requirements for management, for working in libraries and for acquiring information from libraries. Karim, Darus and Hussin (2006) cited in Singh (2018) examined the perceptions and use of wireless services in library and information services and reported that library users have positive disposition to wireless services and that they make use of it. According to the results, library users regard wireless services of libraries as very important to them. Singh (2018a) cited in Singh (2018b) did a study with the

objective to ascertain the use of digital services in libraries in India and found that there is high use of such services. The result of the study showed that as much as 72.3% of the sample, studied offer digital services. That is to say that digital transformation significantly influences service delivery. Gulcin (2017) studied libraries in Turkey to ascertain their utilization of digital technologies and found that libraries have changed in the scope and nature of service delivery as a result of digital technologies. Gimpel and Röglinger (2015) carried out a study to ascertain the impact of digital transformation and found that they have substantially impacted service delivery, data of service providers, management, value proposition, operations as well as transformation. The cardinal point to note from the above is that libraries of the 21st century have changed from what it used to be years ago. In today's libraries, digital transformation are playing key roles. To guide this study, the researcher posed the below hypotheses:

H1: There is a significance difference in the mean scores of library users and professionals on impact of digital transformation on delivery of library services

H2: There is a significance difference in the mean scores of library users and professionals on the impact of digital transformation on utilization of library services

H3: There is a significance difference in the mean scores of library users and professionals on impact of digital transformation on library management.

H4: There is a significance difference in the mean scores of library users and professionals on the impact of digital transformation on library materials format.

H5: There is a significance difference in the mean scores of library users and professionals on impact of digital transformation on library patronage.

II. MATERIALS AND METHODS

The design of this study was descriptive survey. Typically, descriptive survey research design allows a researcher to gather primary data for the purposes of describing, explaining or exploring a phenomenon. Therefore, the researcher used the descriptive survey design to describe and explain the digital transformation of information and how this has impacted on the society. In particular, the researcher examined the impact of digital transformation of information on delivery of library services, utilization of library services and evaluating the quality of library services. The sample size for the study was made up of 240 library users and 240 library professionals. It was decided that both library users and professionals will be appropriate for the study to enable the researcher get a balanced perspective of the impact of digital transformation on the libraries of the 21st century. The sample technique for the study was purposive sampling technique. The choice of this sampling technique was to ensure that only respondents who had the competence to understand the impact of digital transformation of information on the library were sampled. The researcher carried out the study in Nigeria. In particular, the study was conducted in Enugu State. The library users and the professionals were from three institutions namely University of Nigeria, Nsukka, Enugu State University of Science and Technology and Institute of management Technology, Enugu. The researcher used the questionnaire the instrument

for data collection. The choice of the questionnaire was because it has the potential to generate large volume of information. Face validity of the questionnaire instrument was determined with the use of three experts from University of Nigeria, Nsukka. The experts who were from measurement and evaluation assessed the clarity of the items, their logical arrangement as well as how appropriate they were in generating the data needed for the study. At the end, the comments of the experts guided the researcher in preparing the final version of the instrument. The researcher used the test-retest approach to ascertain the reliability of the instrument. To achieve this, the researcher administered 30 copies of the questionnaire selected respondents (15 library users and 15 library professionals). After a time frame of two weeks, the same respondents were again contacted and the same instrument was administered to them. Using the SPSS version 22, the researcher ascertained the reliability figure using correlation coefficient and this yielded a value of .86. This suggests that the instrument was reliable. To analyse the results of this study, the researcher used a combination descriptive statistics like simple percentages, mean and standard deviation while inferential statistics like t-test was used to test the hypotheses at 0.05 level of significance. The results were presented in tables.

III. RESULTS

There was 100% return rate for both library users and professionals. The sample for library users was 62% male and 38% female. For library professionals, it was 59% male and 41% female. The mean age of library users was 20 years (range 18 and 22 years). For the library professionals, the mean age was 35 years (range 28 and 42 years). All the library users were unemployed. This is expected because they were all undergraduates. They were also single. On the other hand, 88% of the library professionals were married. 2% of them were divorcees, 3% were windowed while 7% of them were single. In terms of years of practice with the library, the mean age of practice was found to be 15 years (range 6 and 24 years). To test the hypotheses raised in the study, the following tables were computed:

Table 1: t-test analysis of library users and professionals on the impact of digital transformation on delivery of library services

| Grouping | Mean | std | t | Df | decision |
|---------------|------|-----|-------|-----|----------|
| Users | 3.1 | .91 | | | |
| Professionals | 3.2 | .64 | 9.561 | 673 | NS |

The essence of the table above was to ascertain the views of library users and professionals concerning the impact of digital transformation on the delivery of library services. The results showed that $p=0.60$ was more than the level of significance. This means that the first assumption was not supported and the researcher concludes that both library users and professionals are of the view that digital transformation have significantly impact on the manner through which library services are provided. The researcher then concludes with 95% confidence that both library users and professionals are of the view that digital transformation have changed the ways library services are delivered to users.

Table 2: t-test analysis of library users and professionals on the impact of digital transformation on utilization of library services

| Grouping | Mean | Std | t | Df | decision |
|---------------|------|-----|-------|-----|----------|
| Users | 3.4 | .77 | | | |
| Professionals | 3.3 | .81 | 9.063 | 654 | NS |

The result in table two above sought to ascertain the impact of digital transformation on the utilization of library services. The result showed that the p-value was more than the level of significance ($p > 0.05$). Therefore, the second assumption was unsupported and we conclude that there is no significant difference in the mean scores of library users and professionals on regarding the impact of digital transformation on the utilization of library services.

Table 3: t: t-test analysis of library users and professionals on the impact of digital transformation on library management.

| Grouping | Mean | Std | T | Df | decision |
|---------------|------|-----|-------|-----|----------|
| Users | 3.1 | .82 | | | |
| Professionals | 3.1 | .90 | 6.562 | 601 | NS |

The essence of the above table was to ascertain the mean scores of both library users and library professionals on the impact of digital transformation on library management. The result showed that the p-value was more than the level of significance ($p > 0.05$). Consequently, the third assumption was equally unsupported and the researcher concludes that here is no significant difference in the mean scores of library users and professionals on the impact of digital transformation on library management.

Table 4: t-test analysis of the mean scores of users and library professionals on the impact of digital transformation on library materials format

| Grouping | Mean | Std | t | df | decision |
|---------------|------|-----|-------|-------|----------|
| Users | 3.3 | .73 | | | |
| Professionals | 3.3 | .61 | 8.513 | 8.542 | NS |

The essence of table four above was to ascertain library users and professionals views on the impact of digital transformation library materials format. The result showed that the p-value was more than the level of significance ($p > 0.05$). Therefore, the fourth assumption was also not supported and the researcher concludes that there is no significant difference in the mean scores of library users and professionals on the impact of digital transformation on the format of library material contents.

Table 5: t-test analysis of the mean scores of users and library professionals on the impact of digital transformation on library patronage

| Grouping | Mean | Std | t | df | decision |
|---------------|------|-----|-------|-------|----------|
| Users | 3.0 | .39 | | | |
| Professionals | 3.0 | .54 | 9.910 | 6.541 | NS |

The results in table five above presents the mean scores of both library users and professionals regarding the impact of digital transformation on library patronage. The result showed that the p-value was more than the level of

significance ($p > 0.05$). Therefore, the fifth and last hypothesis was unsupported and the researcher concludes that there is no significant difference in the mean scores of library users and professionals on the impact of digital transformation on library patronage.

Discussion of Findings

Digital transformations have significantly impacted on almost every facet of the human society. In this study, the researcher examined the impact on libraries using a sample of both library users and professionals. The researcher achieved this by testing five alternate hypotheses. In the first hypothesis, it was assumed that there is a significance difference in the mean scores of library users and professionals on the impact of digital transformation on delivery of library services. That assumption was not supported. On the contrary, the result showed that both the library users and professionals agreed that the digital transformation of information has highly impacted on the delivery of library services in the 21st century. This result points to the fact that libraries have also responded to the changing 21st century environment. They have changed how they delivery their services to the users.

In the second assumption, it was assumed there is a significance difference in the mean scores of library users and professionals on the impact of digital transformation on utilization of library services. Contrary to that assumption, it was found that both library users and professionals agreed digital transformation have significantly impacted utilization of library services. That is to say both users and professionals agreed that digital transformation of information have significantly affected the utilization of library services. Also, contrary to the third assumption, the results of the study showed that there is no significance difference in the mean scores of library users and professionals on impact of digital transformation on library management. That is to say that both library users and professionals agreed that digital transformation have significantly impacted on the management of libraries. In contemporary society, the management of libraries have also changed to accommodate the demands of the 21st century.

In the fourth assumption, the researcher assumed that there is a significance difference in the mean scores of library users and professionals on the impact of digital transformation on library materials format. This result means that libraries in the 21st are also changing in the format of the materials. In contemporary library services, contents are delivered to users in format like videos, pictures, texts among others.

In the last assumption, it was hypothesized that there is a significance difference in the mean scores of library users and professionals on impact of digital transformation on library patronage. That assumption was also not supported as the results showed that both library users and professionals are of the views digital transformation have significantly impacted on the patronage of libraries. The results of this study regarding the impact of digital transformation on libraries is

consistent with that of Singh (2018), Gulcin(2017) and Pryor (2009) all of whom have documented that digital transformations have changed the face of libraries in the 21st century.

IV. CONCLUSION/RECOMMENDATIONS

Based on the results of this study, the researcher concludes that digital transformations have significantly affected the libraries. The impact of digital transformation in libraries have been felt in areas like service delivery, utilization of library services, management of libraries, patronage of library services as well as the content format of libraries. Libraries of the 21st century have responded to the demands of the moment. The quest for digital content among the public is high and library users are no exception. This has put libraries on their feet because they need to respond proactively to attract and sustain the attention of the users. This is important because library users of the digital media age have many media contents competing for their attention. Most of these media are packed in contents format that endear them to the users. This reality even makes the job of libraries more challenging because the competition is stiffer that they may imagine. This study recommend that libraries should continue to present contents in formats that could attract the attention of library users. It is also suggested that library management should monitor trends in the digital transformation closely and make adjustments where there is need. Finally, further studies should be conducted in other parts of Nigeria for better comparison.

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