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## **Corona virus Pandemic and Future of Higher Education: A Study on the Private University Students of Bangladesh**

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### **Abstract**

This study intends to analyze the detrimental effects of COVID-19 (coronavirus) pandemic on income sources as well as on the income levels of the financiers of private university students in Bangladesh and thus the ultimate effect of COVID-19 pandemic on private university higher education will be assessed. Primary data have been collected from 5745 private university students regarding the relevant issues by using a structured online questionnaire. Data were analyzed in SPSS software and afterwards presented in statistical tables. The study concluded that higher education expenditures of private university students are funded by the parents in most of the cases although some times their other family members and relatives also contribute while the students themselves rarely contribute for their educational expenses. The study resulted that professions of most of the financiers of higher education of private university students include business, private job and job in abroad and during the COVID-19 pandemic all the professions have been affected although business, private job and job in abroad have been affected much and effect on government services is not mentionable. The study concluded that the effects of coronavirus pandemic has decreased the income and might further decrease that which will eventually have adverse impact on the higher education of private university students of Bangladesh. The study suggested the respective authorities and stakeholders to initiate measures to provide safeguard during and after the coronavirus pandemic to the higher education. The study concluded that online learning should be facilitated where the regulatory authorities, government, private universities and related departments have roles to play.

**Keywords:** COVID-19 pandemic, Coronavirus, Higher education, Financiers of Higher Education, Safeguard.

### **Background of the study**

Who should bear the cost of higher education- is a unique question with different answers all over the world. The answer varies from country to country. Mode of higher study financing is not same in all the parts of the world. Goksu & Goksu (2015) studied that different countries of the world use different funding model for higher studies of the citizens. In some countries, this financing model is mainly private



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sector based while some others follow public financing-based model. In developed countries, the higher education financing is mostly borne by the students. They work during the weekends or vacations for paying the education expenses. But in developing countries like Bangladesh higher education is financed by either the public sector or by their family- mostly by the parents. Bray (1996) mentioned that in the countries where governments do not ensure quality education to all, the parents want to finance the education of their children.

The higher education in public universities in Bangladesh are government funded that are budgeted from the government revenues. Their own earnings are not mentionable. But the public universities can ensure higher education for a very small percentage of the students due to the seat-capacity limitation. Rashid (2015) reported that only 05% of HSC and equivalent passed students in Bangladesh are able to get enroll into public university and the rest 95% have to look for admission either in colleges under national university or in private universities.

Private universities are mostly run by the students' fees and other payments in different names to the university. In the culture of Bangladesh, the academic expenses are borne by the family. In the other hand, besides the academic expenditure, the living expenditure in big city like capital city of the country is very high. These huge expenses come from the parental sources. During the COVID-19 pandemic, the income sources of the parents have been greatly affected which is assumed to hamper the educational expenditure of their children studying in different private universities. In such a situation, the higher education is passing through different challenges which are aimed to be studied in this article to display the reality and to bring out useful recommendation.

### **Literature Review**

Higher education has been defined differently in different country based on their location and own policy. The places like Botswana & Egypt, all education after school or high school are referred to as higher study while in South Africa, higher study includes the university education only (Pillay, 2010).



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In many countries, students have to pay some other expenditure in different names other than tuition fees (Bray, 1996). These expenditures may include development fees, semester fees, extra and co-curricular fees etc.

In Nepal, the state policy regarding funding of higher study includes to shift the burden to private sector. The public sector budget for higher education in Nepal is good enough compared to developed countries but actual government expenditure on it is poor compared to other developed & developing countries (Baral, 2007). Study is evident that Zimbabwe used to allocate large portion of GNP for education. During the 1980's, approximately 8-9 percent of the annual budget was reserved for education purposes (Lewin & Caillods, 2001).

The several lockdowns due to coronavirus pandemic, manufacturing activities have become highly affected in China. Many business houses are postponing their operations everyday resulting an increase in unemployment rate. The lockdowns taking effect are resulting in a cut to family budgets and may result in a budget cut towards educational purposes (Fernandes, N., 2020).

The sustainable development goal of the UN to eliminate poverty by 2030 seems to be impossible due to the corona virus outbreak, which has caused poverty to increase after 1990 for the first time (Summer et al., 2020). This increase in poverty may also affect the ability of the parents financing the expenditure of the students in higher study especially in a developing country like Bangladesh.

Since the beginning of the COVID-19 outbreak, business operations in China have been interrupted irrespective of size of the firms and small and medium enterprises have faced many barriers during this pandemic, Dai, Hu & Zhang (2020).

Economically, India has been listed as one of the fifteen most affected countries during this coronavirus pandemic, causing an estimated loss of around 348 million dollars, which has caused drastic effects in business, tourism, as well as aviation industries (Koshle, et al., 2020).

Chaganti et al., (2020) depicted that gradually the uncertainties are becoming certain in New England. Due to the COVID-19 pandemic, service workers in New England are now facing a lot of uncertainty,



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ranging from loss of work to being compelled to work under unbearable pressure, including but not limited to heavy mental stress.

Many of us are facing big catastrophes in our lives now due to this corona virus pandemic. With time, COVID-19 will come and go, but the changes made to all working environments will continue to take place for the foreseeable future. Both corporate and state policies made during this pandemic will dominate the universe in the future (Harari, 2020).

### **Objectives of the study**

The main objective of the Study focuses on the investigation of the estimated effects that the corona virus pandemic causes on the higher education in Bangladesh. To accomplish this objective the study further analyzes the effect of the COVID-19 pandemic on the income sources of the parents or guardians who are financing for the higher education of their children. The study further recommends some suggestions for the sustainability of higher education during and post corona virus pandemic days.

### **Methodology and data collection**

This is a descriptive study using primary data collected through structured questionnaire. In collecting the data, random sampling technique was adopted. An online questionnaire was distributed among the private university students of Bangladesh and total 5,745 students responded to the survey. Through the survey, the respondents provided the relevant information about the financiers of their study and the way COVID-19 pandemic has affected their family income. The data were analyzed in SPSS software. Different statistical tables were used to display and interpret the results of the study. Relevant local and global literatures have also been reviewed to increase the validity of this study.

### **Data analysis and Result**

#### **Who bears the higher education expenditures and what is their profession:**

The study found that in Bangladesh, the higher education expenditures of the private university students are borne by their parents, mainly the father while in some cases mothers also contribute. The study found



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that the other family members like brother, sister or the blood related relatives contribute in very few cases for the educational expenses.

Table-01 shows the financier pattern of private university students in Bangladesh. The study showed that fathers pay for the higher study expenditures of 79.08% students of the private universities followed by 4.66% by the mothers of the students. It is also noticed that 3.53% students pays their study expenditures jointly with their parents. Students earn some and rest amounts are paid by their parents. 5.73% students replied that their family members jointly contribute for their university expenses while 6.5% students replied that their university expenses are borne by their relatives.

Table 01: Who pays for the higher study of private university students in Bangladesh?

Financier	Frequency	Percentage	Cumulative %
Father	4543	79.08	79.08
Mother	268	4.66	83.74
Self (by student)	29	0.50	84.24
Joint contribution (Student & Parents)	203	3.53	87.77
Joint Contribution (by family members)	329	5.73	93.5
Relatives	373	6.50	100
Total	5745		

Source: Author's compilation from survey data

### Occupation of the financiers of the higher studies in Bangladesh:

From the survey data table-02 displays that profession of 28% financiers of private university students is business which is highest in percentage followed by 15.9% which accounts for the agriculture-farmer. On the other hand, professions of 14.9% financiers are private job holder. The table also displays that 7.5%, 5.4% and 6.8% represents the government service, job in abroad and teaching respectively as the profession of the financiers. At the same time 8.3% financiers are retired service holders and 12% financiers are engaged in other professions not included in the list above.



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Table 02: Profession of the financier of higher study of private university students in Bangladesh

	Frequency	Percent	Cumulative Percent
Business	1611	28.0	28.0
Bank job	51	.9	28.9
Doctor	18	.3	29.2
Govt Service	433	7.5	36.8
Job in Abroad	308	5.4	42.1
Private job	856	14.9	57.0
Agriculture-Farmer	913	15.9	72.9
Retired Person	476	8.3	81.2
Teaching	390	6.8	88.0
Other	689	12.0	100.0
Total	5745	100.0	

Source: Author's compilation from survey data

### Annual Income level of the financier of private university students in Bangladesh

Table 03: Income level of the financier of private university higher education students

Range of annual income	Frequency	Percent	Cumulative Percent
Less than 200000	499	8.7	8.7
200000-below 350000	1050	18.3	27.0
350000- below 500000	1307	22.7	49.7
500000- below 650000	1117	19.4	69.2
650000 and above	1771	30.8	100.0
Total	5745		

Source: Author's compilation from survey data

Table-03 summarizes that 30.8% financiers of the private university students belong to the annual income range of BDT 6,50,000 and above which is highest in percentage followed by 22.7% financiers having annual income range of BDT 3,50,000 to below BDT 5,00,000 and 19.4% financiers' income of BDT 5,00,000 to below BDT 6,50,000. Only 8.7% financiers have annual income below BDT 2,00,000 who might be poor from the view point of annual income and 18.3% financiers belong to the annual income level of BDT 2,00,000 to below BDT 3,50,000.

**Detrimental effect of coronavirus pandemic on the income of the private university students:**

Table 04: Degree of COVID-19 effect on the financiers of private university students in Bangladesh

Degree of effects	Frequency	Percent	Cumulative Percent
Much affected	3478	60.5	60.5
Moderately affected	1128	19.6	80.2
Minor affected	360	6.3	86.4
Not affected	779	13.6	100.0
Total	5745	100.0	

Source: Author's compilation from survey data

Coronavirus (COVID-19) pandemic has affected the professions of the financiers of private university students which surely will affect the affordability of them to pay for higher studies. Table-04 shows that income of 60.5% financiers have become much affected due to the coronavirus pandemic and 19.6% respondents said that income of their financiers have become moderately affected while 6.3% financiers income level have got minor affected but other 13.6% respondents responded that income of their financiers have not been affected due to the COVID-19 pandemic. It can be mentioned that income of 86.4% financiers of the private university students have been affected at different degrees.

**Comparing the effect of Coronavirus (COVID-19) pandemic of different professions:**

Table-05 makes it clear that all the professions have become affected due to the coronavirus pandemic. 89.26% of the financiers with business as their profession has become much affected while 8.07% and 2.67% have become moderately affected and minor affected respectively. If we notice to the financiers employed in abroad, 93.18% have become much affected and 6.82% have become moderately affected. On the other hand, 99.3% of the private job holders have become much affected and rest 0.7% of them have not become affected. Scenario of teaching professionals says that 60.51% of the teachers' income have been affected much and 17.95% have become moderately affected while 11.79% have become minor affected and 9.75% have not been affected due to the coronavirus pandemic.





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The financiers who are farmer as their profession or engaged in other agriculture-based professions have also become affected. 54.22% and 34.72% of them have become highly and moderately respectively while 2.3% and 8.76% of them have become minor affected and not affected at all. Rest of the professions is not affected much to be mentioned due to COVID-19 pandemic.

Table 05: Cross tabulation showing degree of COVID-19 effect in different professions

Professions	Degree of COVID-19 effect				Total
	Much affected	Moderately affected	Minor affected	Not affected	
Business	1438 (89.26%)	130 (8.07%)	43 (2.67%)	0	1611(100%)
Bank job	0	9 (17.65%)	16 (31.37%)	26 (50.98%)	51 (100%)
Doctor	4 (22.22%)	8 (44.44%)	6 (33.34%)	0	18 (100%)
Govt Service	0	0	37 (8.54%)	396 (91.46%)	433 (100%)
Job Abroad	287 (93.18%)	0	21 (6.82%)	0	308 (100%)
Private job	850 (99.3%)	0	0	6 (0.7%)	856 (100%)
Agriculture-Farmer	495 (54.22%)	317 (34.72%)	21 (2.3%)	80 (8.76%)	913 (100%)
Retired Person	58 (12.18%)	174 (36.55%)	11 (2.32%)	233 (48.95%)	476 (100%)
Teaching	236 (60.51%)	70 (17.95%)	46 (11.79%)	38 (9.75%)	390 (100%)
Other	110 (15.96%)	420 (60.96%)	159 (23.08%)	0	689 (100%)
	3478 (60.5%)	1128 (19.6%)	360 (6.3%)	779 (13.6%)	5745 (100%)

Source: Author's compilation from survey data

### Comparing the effect of Coronavirus (COVID-19) pandemic among the financiers of different level of annual income:

Table-06 featured the data showing the degree of COVID-19 effects on the financiers of different income levels and it has been found that 69.62% of the financiers having annual income of BDT 6, 50,000 and above have become much affected, 19.08% and 5.81% of this income level have become moderately affected and minor affected respectively while 5.49% have not been affected by the coronavirus pandemic. In the cases of financiers ranging the annual income level of BDT 5,00,000 to less than BDT 6,50,000 showed in the study that 60.61% and 19.87% of them have become much and moderately affected respectively due to the COVID-19 pandemic while 7.07% and 12.45% respectively have



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become minor affected and not affected due to this pandemic. On the other hand, 57.76% of the financiers with the annual income level of BDT 3, 50,000 to below BDT 5, 00,000 have been much affected while 26.1% and 3.44% of them have become moderately and minor affected in the pandemic although 12.7% are safe still. Financiers with less than BDT 2, 00,000 per year income are also greatly affected due to coronavirus pandemic. Among this group, 63.2%, 5.21%, 16.83% and 14.64% of them have been much affected, moderately affected, minor affected and not affected respectively due to the ongoing COVID-19 pandemic.

Table 06: Cross tabulation showing COVID-19 effect among financiers of different income level

Range of income	Degree of COVID-19 effect				Total
	Much affected	Moderately affected	Minor affected	Not affected	
Less than 200000	316 (63.32%)	26 (5.21%)	84 (16.83%)	72 (14.64%)	499 (100%)
200000-below 350000	495 (47.14%)	201 (19.14%)	48 (4.57%)	306 (29.15%)	1050 (100%)
350000- below 500000	755 (57.76%)	341 (26.1%)	45 (3.44%)	165 (12.7%)	1307 (100%)
500000- below 650000	677 (60.61%)	222 (19.87%)	79 (7.07%)	139 (12.45%)	1117 (100%)
650000 and above	1233 (69.62%)	338 (19.08%)	103 (5.81%)	96 (5.49%)	1771 (100%)
Total	3478 (60.5%)	1128 (19.6%)	360 (6.3%)	779 (13.6%)	5745 (100%)

Source: Author's compilation from survey data

### Conclusion & Suggestion:

Summarizing the analysis of the study data, the research found that in Bangladesh, cost of higher studies in the private universities are mainly borne by the parents of the students specifically by the fathers. In some cases, other family members of the joint families such as uncles and aunts also contribute and in few cases the higher study expenses come from students' relatives. The study also concludes that very few students contribute to their educational expenses thyselves as their family income are not that much sound always. It can be further concluded that, although all the professions have been affected jobs such



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as business, private job, job in abroad and agriculture-based professions (farmer) have been mainly affected while government service holders in Bangladesh are not affected due to the COVID-19 pandemic. From the perspective of annual income level, people from all levels of income became affected in the coronavirus pandemic. The findings stated above hint that the private university students may face financial challenges in the coming days during and after the coronavirus pandemic.

However, the study suggests that the concerned authorities including university management, regulatory bodies, government and related stakeholders should initiate drives to tackle the challenges of higher education otherwise in the long run the effect will spread among the societies. Private universities may come forward with stimulus packages for the students, while governmental departments may facilitate online teaching by ensuring the related supports like low cost and uninterrupted internet and electricity. The researchers further suggest that financial stimulus packages should also come from the concerned authority to mitigate the adverse impact of coronavirus on the income of the people who fund for the higher education students of private universities.

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### **Audiovisual Documentation of Yoruba Indigenous Knowledge Systems for Sustainable Preservation and Economic Development**

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#### **Abstract**

African indigenous knowledge systems are suffering from the threats of extinction due to poor preservation and documentation initiatives. Worse still, inadequate awareness to the available documented resources has not helped the situation. Thus, the need for proper documentation and archiving of indigenous knowledge in audio-visual formats for teaching, research, innovation and sustainable development cannot be overemphasized. This paper, therefore, assessed audiovisual documentation of Yoruba indigenous knowledge in South-West Nigeria. Case study method and purposive sampling technique were used to gather information from the respondents on the documentation of Yoruba indigenous knowledge systems of economic importance. Data was also sourced from audio-visual recordings and published resources in the Kenneth Dike Library, Institute of African Studies Library, and the University Media Resource Centre, all in the University of Ibadan, Nigeria. Findings revealed that elements of Yoruba indigenous knowledge system that relate to economic/income generating activities include skills such as blacksmithing, carving, crafting, molding, construction, building, medicine, cooking, pottery, tie and dye, fishing, palm processing, calabash designing, music, iron pot making, drum making, and others were documented and preserved in the library and information centres of the University of Ibadan. Challenges such as cultural barriers, funding, inadequate documentation centres hinder the documentation of Yoruba Indigenous Knowledge Systems. Formulation of policies which will help in documenting and preserving indigenous knowledge for sustainable economic development was recommended.

**Keywords:** Indigenous Knowledge Systems, Preservation, Economic Development, Audiovisual, Information and Communications Technology (ICT)

#### **1.0 Introduction**

The value of knowledge to the sustenance and advancement of human societies cannot be overemphasized. Knowledge refers to ideas, information and understanding which have been internalized by people and use on several occasions and in different sociocultural settings. Indigenous knowledge is peculiar to specific communities and is often used to sustain the livelihood of the people. It is their main asset to invest in the struggle for survival, to produce food, to provide for



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shelter and to achieve control of their own lives (Senanayake, 2006). Due to its importance, indigenous knowledge serves as the basis for agriculture, food preparation, healthcare, education and training, environmental conservation, and a host of other activities (Noyoo, 2007). Interestingly, most of African indigenous knowledge is domiciled in the minds of the people and are usually transferred to different generations orally. The ongoing practice of using such knowledge for beneficial purpose necessitates the development of an indigenous knowledge system for the effective management of local knowledge in communities.

### 1.1 The Concept of Indigenous Knowledge Systems

The increasing attention which indigenous knowledge is receiving by the academia and developmental institutions has not yet led to a unanimous perception of the concept of indigenous knowledge. None of the definitions of indigenous knowledge are essentially contradictory; they overlap in many aspects. Indigenous knowledge is an area of study that focuses on the ways of knowing, seeing, and thinking that are passed down orally from one generation to another. These ways of understanding reflect thousands of years of experimentation and innovation in areas like agriculture, animal husbandry, child-rearing practices, education systems, medicine, and natural resource management—among many others.

Rajasekaran (1992) defined indigenous knowledge as a systematic body of knowledge acquired by local people through the accumulation of experiences, informal experiments, and intimate understanding of the environment in each culture. To Nakata and Langton (2005), indigenous knowledge is collectively owned and exists as agricultural and medicinal practices, stories, songs, folklore, proverbs, cultural values, taboos, norms, languages, and rituals. Indigenous knowledge contrasts with the international knowledge system generated by universities, research institutions and private firms. Melchias (2001) cited in Eyong (2007) viewed, indigenous knowledge as what indigenous people know and do, and what they have known and done for generations – practices that evolved through trial and error and proved flexible enough to cope with change. Indigenous knowledge represents the information base of a society, which facilitates effective decision-making and developmental activities.



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Unlike other forms of knowledge, indigenous knowledge is unique to a given culture or society as it serves as the basis for local level decision making in agriculture, health care, food preparation, education, natural resource management, and a host of other activities in rural communities. Sithole (2007) expressed that indigenous knowledge is predominantly tacit, embedded in the practices and experiences of its holders commonly exchanged through personal communication and demonstrations from the teacher to the apprentice, from parents to children, from neighbour to neighbour. Indigenous knowledge remains as knowledge held by local people, outside the formal scientific domain and therefore, deserves to be preserved (Mhache, 2017). Since the basic component of any country's knowledge system is its indigenous knowledge, the knowledge system which encompasses the skills, experiences, ideas and insights of the people needs to be preserved from going to extinction. Thus, the quest for proper documentation and archiving of indigenous knowledge in electronic formats for continuous improvement of people's livelihood becomes expedient.

### 1.2 The Yoruba Indigenous Knowledge System

The Yoruba is an ethnic group that inhabits Western Africa region, majorly in Nigeria, Benin, Togo and part of Ghana in West Africa, as well as in Cuba and some Caribbean countries. Oral history of the Yoruba recounts Odùduwà to be the Progenitor of the Yoruba and the reigning ancestor of their crowned kings (Oti and Ayeni, 2013). Ile-Ife was regarded as the (*Orisun - source*) and the Cradle of Civilization of the Yoruba people, followed by the Oyo and Benin Kingdoms. The Yoruba people constitute a major part of Nigeria population with significant contributions in the political, economic, educational and social spheres of the country, and beyond. Like other African ethnic groups, the Yorubas are rich in terms of culture and tradition (Akintoye 2010). The rich culture of the Yoruba people is evident in their religion, arts, crafts, food, attire, clothing and others.

Due to the nature of the indigenous Yoruba society which depends largely on oral history and tradition, the bulk of knowledge about the Yoruba cultural systems are domiciled in the minds of the people and transferred verbally across generations. Yoruba Indigenous knowledge system of economic importance such as local blacksmithing, carving, crafting, molding, construction, building, medicine, cooking, pottery, tie and dye, fishing, palm processing, calabash designing, music, iron pot



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making, drum making, and others are domiciled in individuals who transfer the knowledge to other people. The Yoruba Indigenous Knowledge system which encompasses their cultural practices, experiences, rituals and others encourage people to be diligent and to participate in economic activities. The Yoruba adage “*Ise Logun Ise*” which could be translated as “*diligence is the antidote to poverty*” is one of the several proverbs which emphasize the active participation of Yoruba people in different economic activities. Some economic activities which are unique to the indigenous Yoruba community engage include the following:

***Ose Dudu*** - Yoruba indigenous black soap is produced locally with ingredients such as palm oil, coconut oil, palm kernel oil, ash from various plants (including shea tree bark, cocoa pods, banana husk, and plantain leaves), and water. This indigenous soap is used to prevent and/or treat skin diseases and health-related issues (Ahmed et al., 2005) (Ajaiyeoba et al. (2003). Due its medicinal use and other purposes, it generates employment opportunities for people in the local communities (Adewusi and Akanle 2020) thus enhancing their means of livelihood.

***Adire*** – (Tie and Dye) is a product of Yoruba indigenous craft which is inextricably connected to the economic and social fabrics of the Yoruba people (Solomon and Ezra, 2015). *Adire* is a local cloth made by dyeing clothes in indigo plants with the addition of other ingredients. This cloth is produced majorly in Abeokuta, Ibadan and Osogbo areas of South-Western Nigeria. *Adire* serves as an important clothing material for the Yoruba people on different occasions and it also generates income for the farmers who cultivate the cotton and the indigo plants used as raw materials as well as the producers of the cloth.

***Aso ofi*** or ***Aso oke hunhun*** - (Cloth Weaving) is another element of the Yoruba indigenous knowledge, which is largely domiciled in Iseyin, approximately, 100 kilometres north of Ibadan, Oyo State, Nigeria. Aso Ofi or Aso Oke, is a popular traditional fabric worn on special occasions by the Yoruba usually for coronation, chieftaincy, wedding engagement, festivals, naming ceremony and other important events. The cloth serves as a major source of income for the local communities.





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Local blacksmithing, carving, building, medicine, pottery, palm processing, calabash designing, iron pot making, drum-making and others are products of Yoruba Indigenous Knowledge System which contribute to the economic activities of the people. These activities serve as sources of income for people and could also help achieve sustainable development in Yoruba communities. However, the long-standing traditions of the Yoruba people in spreading indigenous knowledge from their ancestral generations verbally, faces a major threat as valuable cultural knowledge could be lost due to death of some people who are regarded as the custodians of these knowledge. Based on this, we ask the following questions: what are the local initiatives in documenting and preserving the Yoruba Indigenous Knowledge Systems? What are the challenges facing the preservation of this knowledge?

### 1.3 Preservation of Indigenous Knowledge

Despite the tacit nature of indigenous knowledge, Information and Communication Technologies (ICTs) play major roles in improving the accessibility to indigenous knowledge and enhancing their blending with the modern scientific and technical knowledge. Thus, the digital preservation of indigenous knowledge of the Yoruba people in Southwest Nigeria is the thrust of this paper while emphasis will be placed on initiatives aimed at ensuring the documentation of this knowledge by libraries and information Centres in the University of Ibadan, Nigeria.

Preservation entails all activities that are geared towards maintaining valuable knowledge, information or object in a format that ensures the continued use and accessibility of the information provided. According to the Online Encyclopedia (2019),

“Preservation involves criteria for selecting materials that have cultural or historical importance and assessing their preservation needs; halting the deterioration of materials by providing a stable environment and proper supplies and equipment for storage; developing and implementing policies for the safe use of materials; and providing the resources necessary to engage in an ongoing preservation program committed to the continued existence of valued materials”.

Nowadays, preservation of indigenous knowledge is implemented by leveraging the benefits of ICT in form of digital preservation. Russel (1999) cited in Sawant (2014) viewed digital preservation as the process by which digital data is preserved in digital form in order to ensure the usability, durability and intellectual integrity of the information contained in them. Through digital preservation, the



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information contained in a digital medium is protected from agents of deterioration and the longevity of such materials are ensured.

### 2.0 Methodology

The study adopted a case study method while purposive sampling technique was used to select the Kenneth Dike Library, University of Ibadan; Institute of African Studies Library, University of Ibadan; and the University Media Resource Centre, Ibadan. Semi-structured interview and participant observation method were employed in gathering data for the study. The staff handling the digital preservation project were interviewed and their responses were documented. One of the researchers was permitted to assist in some of the digital processing of indigenous knowledge for a short while (one day in each case). Thereafter, recordings were done using video, of some indigenous activities of the Yoruba people, to fill some gaps in audiovisual documentation of indigenous knowledge. The collection of data for this study took place between June and August 2015.

### 3.0 Findings and discussion

This section presents the responses from the interview sessions held with key staff of the selected libraries and information Centres. The different initiatives aimed at documenting and preserving the indigenous knowledge of the Yoruba people in the Centres were also discussed.

#### 3.1 Preservation of Indigenous Knowledge: Premier efforts of the University of Ibadan

A summary of the discussions with the respondents on digital preservation activities of the libraries and information centres at the University of Ibadan are as follows:

- Dialectology and ethnolinguistics (Cultural linguistics), ethnomusicology, and greater parts of anthropology, notably rituals and dance, but also the documentation of traditional technologies and working skills are of utmost importance. Consequently, it was the Nigerian Premier University, University of Ibadan (UI) that started audiovisual archiving by systematically establishing sound archives. The foundation of the phonogram archives in the University of Ibadan started in 1947 till early 1990 and this was accompanied by many other sound collections set up as part of the research institutions. They all dealt systematically with the rich various traditional African knowledge.



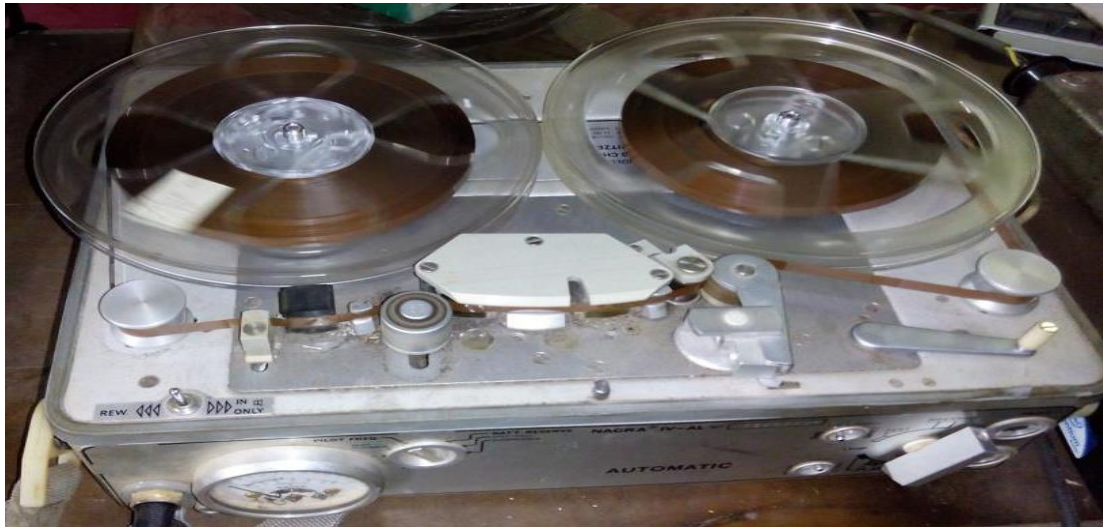
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- Sound recording and archiving were demanding and expensive. In those early days, there was a natural tendency to accumulate recordings in dedicated collections, some of which also supported the production of audio recordings, mainly in the field. Presently, documentation of traditional handicrafts and pre-industrial technology greatly profited from professional video recordings by the University Media Centre (UMC), Ibadan. It should be emphasized that present day knowledge of the linguistic and cultural diversity is mainly based on audiovisual documents, in their greatest part accumulated over past years. In a world of accelerated globalization, the significance of these documents reaches far beyond the mere academic world (Schuller 2008).
- However, over the past ten years, the situation has changed dramatically. Digital technology has conquered audiovisual production, post-processing, and archiving of Yoruba indigenous knowledge. Audio has totally become part of the IT world, and video has followed the same way. All dedicated audio formats acquired are not dead, as serious conversion and cloud storage of the media are in progress.
- Over the past years, the number of over fifty thousand hours audio and one hundred thousand hours of video were frequently quoted from various sides by scholars. This is a rough and unofficial estimate based on a first calculation when assessing the Sound Room of the Institute of African Studies and the University Media Resource Centre, University of Ibadan, Nigeria. These numbers were often estimated to keep growing over the years as relentless efforts are being made to process these resources by the professional, coordinated and dedicated staff of the Centres. Processed materials are classified and put on closed shelves. Access to the resources are restricted and can only be used for research consultation on site.



***Figure 1: A Library Shelf at the Institute of African Studies Library, University of Ibadan displaying processed Yoruba Indigenous Knowledge in Reel-to-Reel format. (Photo credit: Mustapha Adebayo)***

- In the Kenneth Dike Library, University of Ibadan, Nigeria, conservation of Yoruba indigenous knowledge entails the careful movement, proper handling of materials, dusting of shelves and other preservation and conservation measures. Audio Visual resources were moved to the Institute of African Studies Library (which is a Departmental library under the Kenneth Dike Library) in 2006. There was an orderly movement with all volumes of a given title held together in batches.
- In all, over two thousand various indigenous knowledge resources documented by the University with audio technology from 1947 till 1990 are presently undergoing conversion process into digital mp3 format while the University Media Resource Centre engages in the acquisition, processing and cloud storage of Yoruba indigenous knowledge and other university activities. Prominent among the indigenous knowledge in the databases are *Aso ofi hunhun (Cloth Weaving)*, *music*, *Odu Ifa (Indigenous Counseling system)* and *Traditional Hairdressing* amongst several databases of documented knowledge.



**Figure 2: An Automatic Reel-to-Reel player**



**Figure 3: Reel-to-Reel**



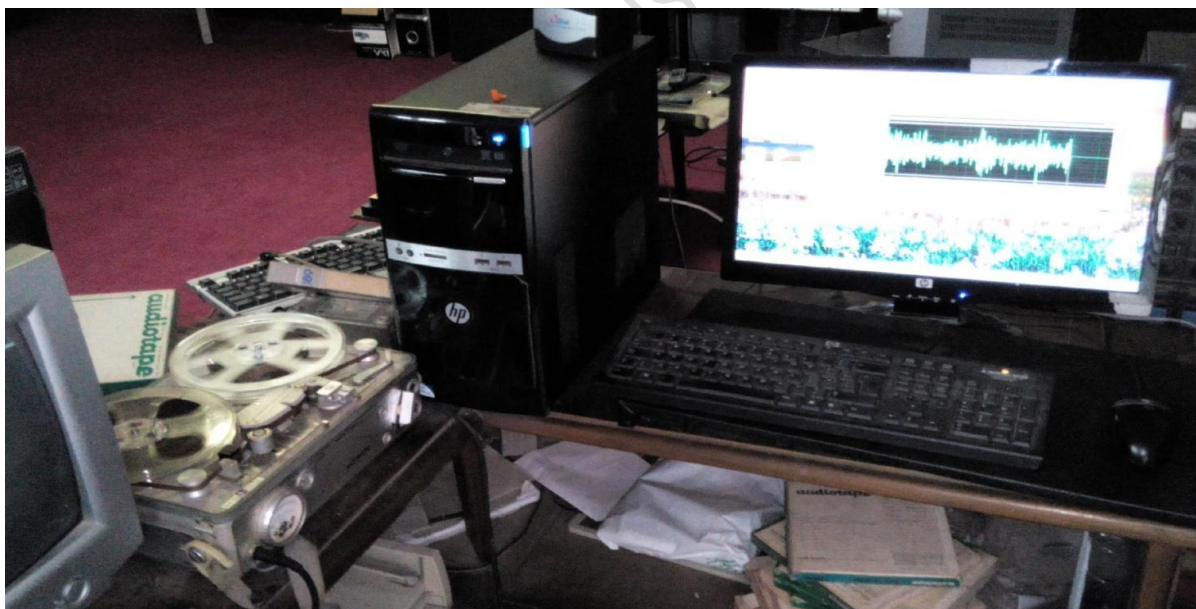
### **3.2 Preservation of Indigenous Knowledge: Institute of African Studies Library**

From the interview sessions conducted with the respondents, it was gathered that the preservation procedures for audiovisual documents in the Institute of African Studies Library are as follows:

1. The volumes of documents are placed flat or spine down to provide support. Documents are transported by trolley with great care to ensure that they do not catch on the sides of the trolley or on the sides of the doors, walls or storage racks. Before information resources are moved, either manually or by trolley, adequate planning is made – clearing of the route, doors are opened while other obstructions are usually removed.
2. Records are stored in such a way that they are accessible and safeguarded against environmental damage. Vital information resources are stored in a disaster safe or vault to protect against fire, flood, earthquakes, and other conflict situations.
3. Great care is exercised when retrieving and or handling the document. For instance, a Reel-to-Reel object must be handled with an utmost care because of its fragility. They are placed in acid-free cases as this will reduce the likelihood of it getting damaged or deteriorated.
4. The computer used in the conversion is protected with up-to-date antivirus while limited access is allowed into the sound room, to control sound mutilation and other factors that can lead to the loss of the resources.
5. Adobe movie maker software is used for the conversion process. This helps provide quality and perfect sound conversion.
6. Finally, records at the Institute of African Studies' library are being stored in such a way that they are accessible and safeguard against environmental damage. Typical documents are stored in a file cabinet in the library. Vital documents are stored in a disaster-resistant safe or vault to protect against fire, flood, earthquakes and conflict situations.



*Figure 4. Mixed tape materials of different sizes on the shelves, Institute of African Studies Library (Photo credit: Adebayo Mustapha).*



*Figure 5: Conversion of Reel-to-Reel material into a digital format.*

**NB:** *The Reel-to-Reel automatic player is connected to the Central Processing Unit, while Adobe media software is used to run the conversion.*



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### **3.3 Information Communication Technology: Sustainable tools of University Media Resource Centre, University of Ibadan, Nigeria.**

The University Media Centre (UMC) Ibadan, is responsible for professional digital acquisition and documentation of all the University of Ibadan activities, including inaugural lectures, lecture series, memorial activities, and other university activities. Also, the Centre engages in systematic recordings of Indigenous knowledge in Ibadan and the environs. It is the citadel of documentation, saving the Yoruba culture and African races digitally.

The media Centre over the years has documented over three thousand various indigenous knowledge on economic skills, using latest digital technologies. The media Centre uses ICTs to:

1. Capture, store and disseminate indigenous knowledge so that traditional knowledge is preserved for the future generation.
2. Promote cost-effective dissemination of indigenous knowledge.
3. Create easily accessible indigenous knowledge information systems.
4. Promote integration of indigenous knowledge into formal and non-formal training and education, and;
5. Provide a platform for advocating for improved benefits from Indigenous Knowledge systems of the poor.





*Figure 6: An ios Apple computer used in processing of indigenous knowledge records. Attached are external storage devices for adequate backup.*



*Figure 7: Recording of a live event at the Media Resource Centre, ICT equipment used includes; (i) Digital Camcorder, (ii) DVD Player and (iii) Television. Mobile phones are used to communicate with the recording staff at the event location.*



## **4.0 Conclusion**

While some people remain skeptical about the direct contributions of ICTs to indigenous knowledge transfer and preservation, the libraries and information centres show to the global communities that ICTs can contribute to sustenance of indigenous knowledge and attainment of sustainable development goals. Proper application of ICTs is essential to stimulate the flow of indigenous knowledge and incorporation of modern scientific and technological understandings to traditional knowledge. This requires adequate understanding of the ICT devices, their capacities and different contexts which they can be put to effective use. Proper application of ICTs also requires an understanding of the main characteristics of indigenous knowledge and defining tools, applications and services that meet those characteristics. However, there are challenges which will need to be overcome to ensure that the utilisation of ICT for indigenous knowledge documentation deliver maximum benefits to both the indigenous communities who own the knowledge and the wider community at large.

Challenges such as cultural practices hinder the effective communication of indigenous knowledge in Yoruba communities. Some people who are regarded as custodians of valuable indigenous knowledge are often reluctant to share the knowledge to outsiders. This lack of cooperation from local communities in sharing their indigenous knowledge limits the capturing and documentation of some indigenous knowledge in Yoruba community. Similarly, the existence of some copyright laws prevents researchers and knowledge professionals from accessing Yoruba indigenous knowledge. Finally, the conversion, documentation and preservation of Yoruba indigenous knowledge requires adequate funding which most libraries and information centres in this community do not have. This challenge is worsened by the lukewarm attitude of government agencies in supporting the documentation and preservation of the Yoruba Indigenous Knowledge Systems.

## **5.0 Recommendations**

To ensure effective acquisition, documentation and preservation of indigenous knowledge for sustainable development in South-West Nigeria and Africa in general, the following recommendations were made:



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**Policy and strategies:** appropriate policies should be formulated by concerned authorities on the best way which researchers, staff of cultural institutions and academic communities can collaborate with indigenous people to record their knowledge. This will help these professionals to support the communities in documenting and preserving their indigenous knowledge and subsequently, promoting sustainable development. This will stimulate the flow of indigenous knowledge and increase awareness on Yoruba indigenous knowledge.

**Staff Development:** Staff of libraries and information centres should be properly trained in the aspect of professional documentary filming and cinematography. Workshops and seminars should be organized for this staff on audiovisual documentation, digitization and digital archiving practices of indigenous knowledge.

**Equipment Upgrade:** There is a need for an upgrade of the equipment used in the documentation and conversion activities of the centres. State-of-the-art gadgets such as digital cameras, ios Apple computers, updated antivirus, and others should be put in place to enhance the activities of these libraries and information centres.

**Research:** Further research is required to identify and resolve social and cultural barriers to the free flow of indigenous knowledge. The Yoruba and indeed all indigenous communities need to collaborate to put develop mechanisms for identifying, collecting, documenting, characterizing, recognizing and sharing of indigenous knowledge at national levels. The need to establish the necessary organizational incentives and support systems to enhance these activities is also important.



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