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## Developing Database for Indigenous Knowledge: Prospects and Challenges

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### **Abstract**

*The study adopted a survey research design to determine Developing Database for Indigenous Knowledge: Prospect and Challenges. The study covered five higher institutions with ten Departments. The population was 3, 500 with a sample size 346. The instrument used was tagged: “ Developing Database for Indigenous Knowledge: Prospect and Challenges (DDIKPC)”, with a four point scale of Very High Level of Prospect (4 points), High Level of Prospect (3 points), Low Level of Prospect (2 points) and Very Low Level of Prospect (1 point). The instrument was validated by three experts and a field trial of test retest was done to know the internal consistency which yielded 0.86 co-efficient. 346 copies of questionnaire items were face-to-face administered to the respondents and 300 successfully retrieved. Mean was used to analyse the research questions, and Standard Deviation used to find out the extent in which scores in the distribution clustered around the means. T-test was adopted to test the two hypotheses. From the findings of the study it is concluded that there are high level of prospects for indigenous knowledge and high level of challenges in developing database for indigenous knowledge. Among other things the study recommended that governments of the indigenous people should work together to develop database for indigenous knowledge and there should be inclusion of indigenous knowledge in the schools` curriculum.*

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**Keywords:** *Developing Database, Indigenous Knowledge, Prospects, Challenges*

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### **Introduction**

Indigenous Knowledge is local knowledge that is unique to every culture or society. Indigenous knowledge (IK) deals with profound detailed and shared knowledge, beliefs and rules with regards to the physical resources, social norms, health, ecosystem, culture, livelihood of the people who interact with environment both in rural and urban settings ( Singh, 2016). Indigenous Knowledge is the basis for local-level decision making in the areas of agriculture, health care, food preparation, education, natural-resource management, and a host of other activities in communities. IK provides problem solving strategies for communities. IK is commonly held by communities rather than individuals. IK is a tacit knowledge and therefore difficult to codify, it is embedded in community practices, institutions, relationships and rituals, often shunned by modern scientific knowledge (Singh, 2016). Indigenous knowledge is the local knowledge that is unique to a culture or society. Other names for it include: ‘local knowledge’, ‘folk knowledge’, ‘people’s knowledge’, ‘traditional wisdom’ or ‘traditional science’. This knowledge is passed from generation to generation, usually by word of mouth and cultural rituals, and has been the basis for agriculture, food preparation, health care, education, conservation and the wide range of other activities that sustain societies in many parts of the world (UNESCO, 2010)

According to Masango (2010), indigenous knowledge (IK) is that knowledge that is held and used by a people who identify themselves as indigenous of a place based on a combination of cultural distinctiveness and prior territorial occupancy relative to a more recently-arrived population with its own distinct and subsequently dominant culture. Traditional knowledge (TK) is the totality of all knowledge and practices, whether explicit or implicit. This knowledge is established on past experiences and observations (Mugabe, 2009).

Following the definitions of indigenous knowledge and traditional knowledge, one can state that indigenous traditional knowledge is the totality of all knowledge and practices established on past experiences and observations that are held and used by a people.

According to Von Lewinski (2004), indigenous knowledge encompasses indigenous names and designations, and folklore. Indigenous knowledge includes intangible African heritage that are natural resources and cultural practices. Some of these cultural practices are folklore that encompasses myths, beliefs, superstitions, oral history, totem, taboos and rituals related to species; but without database for easy access and usage. Indigenous knowledge has a high prospect in which international communities are interested but problem of where and how to access it. Fien (2006) also noted that indigenous knowledge (IK) is the local knowledge that is unique to a culture or society. This knowledge is passed from generation to generation, usually by word of mouth and cultural rituals, and has been the basis for agriculture, food preparation, health care, education, conservation and the wide range of other activities that sustain societies in many parts of the world yet lack database.

In the view of Singh (2016), the vast majority of databases and database records are produced in developed countries. The contents of these databases consist, therefore of data that are geared to the demand of users in developed countries, which are not necessarily always the same as that of users in developing countries and that of indigenous peoples and their knowledge. It is felt that if Indigenous Knowledge databases are available in developing countries they will provide a valuable source of information to the people and beyond. The convergence of humanitarian and scientific interests is leading to a scramble to document this knowledge in electronic databases so that it can be preserved, shared and utilized. Developing database through the use of ICT enables capturing, storing and sharing of indigenous knowledge.

It will also support the incorporation of indigenous knowledge with modern scientific and technical knowledge to create easily accessible indigenous knowledge information systems as well as provide a platform for advocating for improved benefit of the poor from their intellectual property rights and indigenous creators.

## **Review of Related Literature**

### **Reasons to Create Database for Indigenous Knowledge**

Bannister and Smith (2010) noted that the original idea behind creating an Indigenous Traditional Knowledge (ITK) resource database was to systematically identify, compile, and make more accessible information on the application of ITK to sustainable forest management. Much relevant information is found outside of “forestry”, e.g., land use and occupancy studies, ethno-biology, land use planning, natural resource management, co-management, parks and protected areas (especially tribal parks). Information is housed in diverse collections or locations making it difficult to know where to look, let alone what to look for. The “grey literature” (e.g., government, community and contract reports, strategic or stewardship plans, discussion papers, newsletters, websites, and other publications that are generally not peer-reviewed and not controlled by commercial publishing interests) is a particularly diverse and underutilized source of information on Indigenous Traditional Knowledge implementation in forest management, especially for community-based initiatives and other issues. However,

grey literature is difficult to access because it is not routinely catalogued and no systematic way exists to access the information. A database on the application of ITK in forest management and indigenous knowledge would substantially increase efficiency in accessing and applying relevant information to policy and practice.

The form envisioned for the ITK database was a simple, searchable online database that contains articles (academic and non-academic) on ITK implementation or applications that communities, practitioners, academics and others want to share. Basic components envisioned included: complete citations (i.e., title, authors/editors, date, other reference details), abstracts or annotations, and links to full text or information on how to access full text (e.g., some articles will be open access, some will be accessible through interlibrary loan services, while others will require a subscription or purchase of hard copy). Key features include: a multi-category search function (e.g., subject, author, title, key words), a “retrieve” function for those articles accessible online, and an electronic option to submit additional articles for inclusion in the database. The database would be open access and without cost to individual users. Interactivity among users could be encouraged through the use of a blog or web chat function.

### **UN Declaration on the Rights of Indigenous Peoples/Knowledge**

As described by the president of the UN General Assembly as “a major step forward”, the United Nations Declaration on the Rights of Indigenous Peoples was adopted by the United Nations General Assembly during its 62nd session at UN Headquarters in New York City on 13 September 2007. The Declaration is the result of nearly 25 years of contentious negotiations over the rights of native people to protect their lands and resources, and to maintain their unique cultures and traditions. Countries voted overwhelmingly in favour of the Declaration, with 143 in favour and only 4 against (11 countries abstained from the vote) (UNESCO, 2010).

### **Women’s Knowledge: Traditional Medicine and Nature**

The Islands of Reunión, Mauritius and Rodrigues have their own unique medical traditions that have emerged from multiple origins through a process of realisations. This book brings to our attention the knowledge of medicinal plants and medical practices of the women of these islands, with special focus on childbirth. It also considers the place of medicinal knowledge within these evolving societies which are actively confronting the threats and opportunities that globalization poses to local identities. Burger (1990) identified the following and explained as reasons for creating database for indigenous knowledge:

**A Spiritual Relationship with the Land:** For indigenous people, the land is the source of life, a gift from the creator that nourishes, supports and teaches. Although indigenous peoples vary widely in their customs, culture, and impact on the land, all consider the Earth like a parent and revere it accordingly. ‘Mother Earth’ is the centre of the universe, the core of their culture, the origin of their identity as a people. She connects them with their past (as the home of ancestors) with the present (as provider of their material needs) and with the future (as the legacy they hold in trust for their children and grandchildren).

**Natural Remedies and Medicines:** In many parts of the world, indigenous societies classify soils, climate, plant and animal species and recognise their special characteristics. Indigenous people have words for plants and insects that have not yet been identified by the world’s botanists and entomologists. The Hanunoo people of the Philippines, for example, distinguish 1600 plant species in their forest, 400 more than scientists working in the same area. Of the estimated 250,000 to 500,000 plant species in the world, more than 85% are in environments that are the traditional homes of indigenous people. Nearly 75% of 121 plant-

derived prescription drugs used worldwide were discovered following leads from indigenous medicine. Globally, indigenous peoples use 3000 different species of plant to control fertility alone.

**Sustainable Resource Management:** The industrial world is facing an ecological crisis, yet few industrial economists would admit they could learn from indigenous people. Their economies are often called ‘primitive’, their technology dismissed as ‘Stone Age’, and most governed the key to success of sustainability. Indigenous people today use the resources available without depleting them. They use their intimate knowledge of plants, soils, animals, climate, and seasons, not to exploit nature but to co-exist alongside with it. This involves careful management, control of population, the use of small quantities but a wide diversity of plants and animals, small surpluses, and minimum wastage.

**Sustainable Social Relationships:** Social cohesion has been the key to survival for many indigenous cultures. Food gathering and hunting depend on mutual support and co-operation, and disharmony within a part of the group is dangerous to the whole. In many cultures men and women have developed complementary, if not equal roles; political decisions are arrived at by consensus in many cultures, and other social arrangements that benefit the entire community have often been incorporated into indigenous cultural traditions.

### **Prospects of Indigenous Knowledge**

Adam (1998) stated that Information Communication Technology (ICT) can be used to develop a database by:

- Capture, store and disseminate indigenous knowledge so that traditional knowledge is preserved for the future generation.
- Promote cost-effective dissemination of indigenous knowledge.
- Create easily accessible indigenous knowledge information systems.
- Promote integration of indigenous knowledge into formal and non-formal training and education.
- Provide a platform for advocating for improved benefit from IK systems of the poor
- UN Declaration on the Rights of Indigenous Peoples/Knowledge
- Inclusion of indigenous knowledge in the curriculum of some universities
- Indigenous knowledge offering solutions to world problems
- The global interest in indigenous knowledge

### **Challenges of Indigenous Knowledge**

The application of information and communication technologies for managing knowledge is not without problems. Not all aspects of living traditions of indigenous knowledge can be captured as ‘artefacts’ using digital technology. The collection of information from diverse indigenous sources is often a laborious, time-consuming and costly process. Those with knowledge may not be willing to share their actual knowledge.

Efforts to capture indigenous knowledge by ICTs and setting up databases were not successful as hoped due to inadequate frameworks for capturing and making the knowledge available in usable formats to the people who need them and who often do not have access to ICTs (Bannister & Smith, 2010). Intellectual property right issues are other challenges, particularly if indigenous knowledge leads to profit for transnational corporations. Documenting and publicizing IK could immediately lead to their appropriation by others without return to innovators. The intellectual property rights of the individuals and communities have to be protected and benefits have to be generated for the innovators as well as local communities. Community structures such as tele-centers are increasingly becoming the most important

platforms for capturing, transferring and exchanging of indigenous knowledge. The systemic and complete inclusion of Indigenous knowledge throughout educational practices and curriculum is a recommendation that appears continuously in the literature and policy statements, unfortunately, like in other African institutions of higher learning this recommendation has been difficult to implement.

### **Statement of the Problem**

Over the centuries, the indigenous people and their knowledge have been overlooked and seem not useful despite the immeasurable roles they are playing. The worse scenerio is the indigenous knowledge without organized area of information known as database. The UN declaration for indigenous peoples` right is a wakeup call for the people concerned. There is now need more than ever before for a developed database concerning indigenous knowledge as a subject in Library and Information Science (LIS) programme. Therefore, the reason for this timely topic “Developing Database for Indigenous Knowledge: Prospect and Challenges”

### **Purpose of the Study**

The purpose of this study concerns Developing Database for Indigenous Knowledge: Prospect and Challenges. The study specifically sought to:

1. Determine the level of prospect for indigenous knowledge with a developed database
2. Determine the levels of challenges of indigenous knowledge with a developed database

### **Research Questions**

The under stated research questions were posed to guide this study;

1. What is the level of prospect for indigenous knowledge with a developed database?
2. What are the levels of challenges of indigenous knowledge with a developed database?

### **Hypotheses**

Two null hypotheses were formulated and tested at 0.05 level of significance:

1. There is no level of prospect for indigenous knowledge with a developed database
2. There are no levels of challenges of indigenous knowledge with a developed database

### **Methodology**

The study adopted a survey research design to determine Developing Database for Indigenous Knowledge: Prospect and Challenges. The study covered Rivers State University (RSU) with Departments of (Business Education and Mass Communication), Ignatius Ajuru University of Education (IAUE) with Departments of (Political Science and Biology), University of Port Harcourt (UNIPORT) with Departments of (Computer Science and Sociology) , Captain Elechi Amadi Polytechnic (CEAPOLY) with Departments of (Science Laboratory and Office Technology and Management) and Ken Sarowiwa Polytechnic (KENPOLY) with the Departments of (Business Management and Mechanical Engineering). Ten Departments from the five higher institutions were carefully selected to form the population of 3, 500 ranging from National Diploma I, National Diploma II, Higher National Diploma I and II, Years 1, 2, 3 and 4. A random sampling technique was adopted and Krejcie and Morgan (1970) method was used to determine the sample size of 346. The instrument used was tagged: “ Developing Database for Indigenous Knowledge: Prospect and Challenges (DDIKPC)”, with a four point scale of Very High Level of Prospect (4 points), High Level of Prospect (3 points), Low Level of Prospect (2 points) and Very Low Level of Prospect (1 point). The instrument was validated by three experts and a field trial of test retest was done to know the internal consistency which yielded 0.86 co-efficient. 346 copies of questionnaire items were face-to-face administered to the respondents and 300 successfully retrieved. Mean score was used to analyse the research

questions, and Standard Deviation used to find out the extent in which scores in the distribution clustered around the means. T-test was adopted to test the two hypotheses. The decision point was that any calculated grand mean from 2.5 and above was accepted and any grand mean below 2.5 was rejected. Also, any calculated value of T-test that is greater than > the critical table value of 1.96 at 0.05 significant level such null hypothesis (H<sub>0</sub>) will be rejected, but if the critical table value is greater than > the computed value such null hypothesis will be accepted.

**Research Question 1:** What is the level of prospect for indigenous knowledge with a developed database?

**Table 1: Computation of Mean and Standard Deviation of the Level of Prospect for Indigenous Knowledge with a Developed Database**

**N = 300, TNR = Total Number of Response**

SN	Item statement	VHLP 4	HLP 3	LLP 2	VLLP 1	TRN	X	SD	Remark
1	Capture, store and disseminate indigenous knowledge so that traditional knowledge is preserved for the future generation	250(1000)	50(150)	0(0)	0(0)	1150	3.8	0.9	HLP
2	Promote cost-effective dissemination of indigenous knowledge	260(1040)	40(120)	0(0)	0(0)	1160	3.9	0.9	HLP
3	Create easily accessible indigenous knowledge information systems	220(880)	40(120)	40(80)	0(0)	1080	3.6	0.9	HLP
4	Promote integration of indigenous knowledge into formal and non-formal training and education	230(920)	30(90)	40(80)	0(0)	1090	3.6	0.9	HLP
5	Provide a platform for advocating for improved benefit from IK systems of the poor	260(1040)	40(120)	0(0)	0(0)	1160	3.9	0.9	HLP
6	UN Declaration on The Rights of Indigenous Peoples/Knowledge	240(960)	50(150)	10(20)	0(0)	1130	3.8	0.9	HLP
7	Inclusion of indigenous knowledge in the curriculum of some universities	265(1060)	35(105)	0(0)	0(0)	1165	3.9	0.9	HLP
8	Indigenous knowledge offering solutions to world problems	255(1020)	45(135)	0(0)	0(0)	1155	3.9	0.9	HLP
9	The global interest in indigenous knowledge	240(960)	40(120)	20(40)	0(0)	1120	3.7	0.9	HLP
<b>Grand mean</b>							<b>3.8</b>		<b>HLP</b>

**Researcher's Field Survey, 2018**

Table 1 showed a grand mean of 3.8; representing high level of prospect for indigenous knowledge with developed database and SD of 0.9, representing closeness in the views of the respondents. This means that developing database for indigenous knowledge will lead to high level of prospect

**Research Question 2:** What are the levels of challenges of indigenous knowledge with a developed database?

**Table 2: Computation of Mean and Standard Deviation of the Level of Challenges of Indigenous Knowledge with a Developed Database**

N = 300, TNR = Total Number of Response									
SN	Item statement	VHLC 4	HLC 3	LLC 2	VLLC 1	TRN	X	SD	Remark
1	Not all aspects of living traditions of indigenous knowledge can be captured as 'artefacts' using digital technology	220(880)	40(120)	40(80)	0(0)	1080	3.6	0.9	HLC
2	The collection of information from diverse indigenous sources is often a laborious	230(920)	30(90)	40(80)	0(0)	1090	3.6	0.9	HLC
3	Data gathering is time-consuming and costly process	250(1000)	40(120)	10(20)	0(0)	1140	3.8	0.9	HLC
4	Those with knowledge may not be willing to share their actual knowledge	240(960)	50(150)	10(20)	0(0)	1130	3.8	0.9	HLC
5	Inadequate frameworks for capturing and making the knowledge available in usable formats to the people who need them and who often do not have access to ICTs.	240(960)	40(120)	20(40)	0(0)	1120	3.7	0.9	HLC
6	Intellectual property right, if indigenous knowledge leads to profit, sharing methods	260(1040)	40(120)	0(0)	0(0)	1600	3.9	1.0	HLC
7	Documenting and publicizing IK could immediately lead to their appropriation by others without return to innovators	240(960)	50(150)	10(20)	0(0)	1130	3.8	0.9	HLC
8	The problem of systemic and holistic inclusion of Indigenous knowledge in educational curriculum	250(1000)	50(150)	0(0)	0(0)	1150	3.8	0.9	HLC
9	Problem of implementations indigenous knowledge	260(1040)	30(90)	10(20)	0(0)	1150	3.8	0.9	HLC
							<b>3.8</b>		
<b>Grand mean</b>									

**Researcher's Field Survey, 2018**

Table 2 showed a grand mean of 3.8, representing high level of challenges of developing indigenous knowledge database, with SD of 0.9 as the highest showing closeness in the views of the respondents. This means that there will be high level of challenges in developing database for indigenous knowledge.

**Hypothesis1:** There is no level of prospect for indigenous knowledge with a developed database

**Table 3: Summary Table of Calculated T-test of the Level of Prospect for Indigenous Knowledge with Developed Database**

SN	Variables	Mean	SD	N	DF	SE	T-CAL.	T-TAB	DECISION
1	Level of Prospect of Indigenous Knowledge	3.8	0.9	300		0.08			
					298		3.95	1.96	Rejected
2	Developed Database	3.6	0.9	300		0.08			

**Researcher's Field Survey, 2018**

The calculated t-test 3.95 is greater than (>) the critical table value of 1.96 at 0.05 significant levels. Since the calculated value of t-test 3.95 is greater than (>) the critical table value of 1.96, there is no level of prospect for indigenous knowledge with a developed database is rejected. This means that there is level of prospect for indigenous knowledge with a developed database

**Hypothesis 2:** There are no levels of challenges of indigenous knowledge with a developed database

**Table 4: Summary Table of Calculated T-test of the Level of Challenges of Indigenous Knowledge with Developed Database**

SN	Variables	Mean	SD	N	DF	SE	T-CAL.	T-TAB	DECISION
1	The Level of Challenges of Indigenous Knowledge	3.8	0.9	300		0.07			
					298		3.79	1.96	Rejected
2	Developed Database	3.3	0.9	300		0.07			

**Researcher's Field Survey, 2018**

The calculated t-test 3.79 is greater than (>) the critical table value of 1.96 at 0.05 significant levels. Since the calculated value of t-test 3.79 is greater than (>) the critical table value of 1.96, the null hypothesis which stated that there are no levels of challenges of indigenous knowledge with a developed database is rejected. This means that there are levels of challenges of indigenous knowledge with a developed database

**Discussion of Findings**

From the analysis of research question one and table one, the grand mean showed 3.8, representing high level of prospect for indigenous knowledge with developed database. The



views of the respondents is in agreement with Adam (1998) who identified Capture, store and disseminate indigenous knowledge so that traditional knowledge is preserved for the future generation, Promote cost-effective dissemination of indigenous knowledge, Create easily accessible indigenous knowledge information systems, Promote integration of indigenous knowledge into formal and non-formal training and education, Provide a platform for advocating for improved benefit from IK systems of the poor,

UN Declaration on the rights of indigenous peoples/knowledge, inclusion of indigenous knowledge in the curriculum of some universities, Indigenous knowledge offering solutions to world problems and The global interest in indigenous knowledge as some of the prospect of developing database for indigenous knowledge

Table 2 showed a grand mean of 3.8, representing high level of challenges of developing indigenous knowledge database. the opinions of the respondents is in agreement with the view of Bannister and Smith, (2010 ) who noted that not all aspects of living traditions of indigenous knowledge can be captured as ‘artefacts’ using digital technology. The collection of information from diverse indigenous sources is often a laborious, time-consuming and costly process. Those with knowledge may not be willing to share their actual knowledge. Efforts to capture indigenous knowledge by ICTs and setting up databases were not successful as hoped due to inadequate frameworks for capturing and making the knowledge available in usable formats to the people who need them and who often do not have access to ICTs. Intellectual property right issues are other challenges, particularly if indigenous knowledge leads to profit for transnational corporations. Documenting and publicizing IK could immediately lead to their appropriation by others without return to innovators.

### **Conclusion**

From the findings of the study it is concluded that there are high level of prospects for indigenous knowledge and high level of challenges in developing database for indigenous knowledge

### **Recommendations**

1. Governments of the indigenous people should work together to develop database for indigenous knowledge
2. There should be inclusion of indigenous knowledge in the schools` curriculum.
3. Proper and adequate implementation of the indigenous knowledge should be carried out at the different level of institutions

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