A Comparative Study of the Numerals and Counting System of Urhobo and Igbo

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Abstract
The numeral system of a language reflects its culture, history, and cognition. Despite Urhobo and Igbo coexisting as neighbors and utilizing the base-10 numerosity, significant differences exist in the operationalization of these systems, often leading to ambiguity. This research objectifies the elucidation of the similarities and disparities between the two numeral systems employing the descriptive analytical approach. The conceptual framework underlying this research is the numeral segmentation principle, whose core assumption is that numerals deviate from their base form. Data was collected through oral interviews, documention, and online sources. The findings reveal that higher complex numerals are formed through both morphological and arithmetic methods. Morphological methods involve compounding (for cardinal numerals), while arithmetic methods entail addition or multiplication of numerals in both Igbo and Urhobo. In Igbo, multiplication involves juxtaposition of elements in an incremental relationship. For instance, 'eleven,' *iri na otu*, is '10+1' (addition) in Igbo, while 'forty,' *iri anọ*, (multiplication), involves compounding. Addition of numerals in Igbo is indicated by *'na'* (and), while in Urhobo, it's *'gbe'* (and). Igbo has four weekdays: *Eke, Orie, Afor, Nkwo*, while Urhobo also has four weekdays too: *Edewo, Ediruo, Eduhre, Edebi*. However, only *Edewo* is considered a major market day in Urhobo, while in Igbo, all weekdays are market days categorized into major and minor or small market days. While Urhobo adaptes names for the Gregorian seven weekdays, Igbo does not. Both languages use 'which' ('*ǹké*' in Igbo and *'ọrẹ'* in Urhobo) along with numerals to express ordinal numerals. The research further reveals that Urhobo's days of the week differ from its market days, unlike Igbo, where weekdays are the same as market days. conclusively, both Urhobo and Igbo employ the base-10 numeral system intricately, yet distinctly, to cognitively assess and represent both concrete and abstract events.
Keywords: arithmetic, juxtaposition of elements, numeral system, ambiguity, numeral segmentation principle, base -10 numerosity

Background to the Study

Africa is a continent renowned for its linguistic richness and cultural diversity. Within this linguistic landscape, African languages exhibit a fascinating array of numeral systems that reflect the unique perspectives and cultural traditions of their speakers.

The numeral system is a structured method for naming or symbolically representing numbers. Unlike other quantifiers, numerals specifically denote particular numbers, providing a consistent pattern for abstractly expressing quantity.

A comparative study analyzes a phenomenon by comparing it with others to find points of differentiation and similarities (Mokhtarian, 2016). This approach can be applied to the study of numeral systems across different languages and cultures.

Languages worldwide exhibit diverse methods of expressing numerals. Some languages approximate numerals, while others express exact quantities, typically within a limited range of small numbers. However, many languages feature recursive counting systems, allowing for precise enumeration across a wide range of quantities (Liu, et al., 2023). Numeral systems across languages can be classified typologically as either restricted or non-restricted. Restricted systems typically consist of a limited set of elements, often numbering no more than five, and sometimes only three or four numerals (see Comrie, 2005).

A simple counting system was used to account objects, animals, or people in the village. Traces of these simple physical counters have been found in many parts of the world. Counting became much easier when the names of the numbers to be counted were developed in the spoken language. With words, it was possible to count large numbers of objects without cumbersome counters (Olusanmi & Obikudo, 2012).
According to Huddleston et al (2002, 2005), The English numeral system comprises cardinal numbers,

representing quantity, and ordinal numbers, indicating position or order. Cardinal numbers are employed in counting and measurements, with a decimal system base of ten. Basic numerals from one to ten are utilized, while numbers beyond ten are formed through combinations of these basic numerals. Ordinal numbers are formed by adding the suffix "-th" to cardinal numbers, except for "first," "second," and "third," which have irregular forms. Irregularities in the formation of certain numbers, such as eleven, twelve, thirteen, fifteen, and eighteen, deviate from typical patterns based on the cardinal number root. (see Huddleston, & Pullum & 2002 & 2005)

For Obikudo (2012), the English numeral system has several idiosyncrasies and quirks that make it unique. For instance, the number twelve has a special significance, giving rise to terms such as "dozen" and "twelve months in a year." This association with twelve can be traced back to ancient civilizations that used a duodecimal (base-12) system for counting.12 was eventually turned to 13 in Europe by bakers to avoid sanctions for supplying 12 rolls that may weigh below the standard measures to customers.

One remarkable aspect of African numeral systems is the wide range of numerical bases utilized across different languages. While decimal systems (base-10) are common worldwide, many African languages employ other numerical bases

Ahamefula, et el (2015) opine that the study and preservation of African numeral systems are crucial for safeguarding cultural heritage and linguistic diversity in the face of globalization. There is a risk of erosion of indigenous numeral systems with the spread of dominant languages. Scholars, linguists, and communities leaders are actively documenting, studying, and revitalizing African numeral systems to ensure their continued existence and appreciation. According to Ahamefula et al. (2015), African numeral systems showcase the continent's linguistic and cultural diversity, reflecting varied numerical bases, counting systems, and lexical flexibility. Understanding these systems contributes to linguistic research and offers insight into the unique perspectives, traditions, and cultural heritage of African communities. Moreover, beyond preservation, deploying indigenous numeral systems like those of Igbo and Urhobo can enhance cognitive development. Therefore, comparative investigation into the numeral and counting systems of Urhobo and Igbo are warranted.

Literature review

Numericalization can be considered a morphological process because it often involves compounding and reduplication. Morphology is the study of the forms of word or word structure. Akimajian, et el (2008) define it as a subfield of linguistics which studies the internal structure of word and the relationship among words. For Imu & Cookey (2022), morphology incorporates different ways of creating nominal and compound verbs through inflection and derivation. For Bauer (1988), it is the study of the ways in which lexemes and word-forms are built up from smaller elements, and the changes that are made to those smaller elements in the process of building lexemes and word forms. Napoli (1996) simply define it as the study of word formation processes. An important area of study in linguistics is word formation processes, which according to Ndimele (1999), are as old as language itself.

Throughout history, man has continued to create new outcomes, word derivation processes have attracted much research interest and attention from language scholars. Amidst its many other aspects like compounding, clipping and back formation, affixation stands out as the most productive in the derivation of new words. Affixation is a process of generating new words from existing ones through the addition of another morpheme or element. For Imu and Ejobee (2021), it is a morphological process of attaching an affix to the root or base of a word. Number systems are significantly morphological in operationalization and outlook.

Affixes are classified into two based on the position where they occur relative to the root of the word or the function which they perform when attached to the beginning or initial position of a word. An affix which occurs in this position is called a prefix. The process of inserting a prefix is called prefixation. The English word *dispossess*, for instance, is made up of two morphemes: *dis* + *possess*. Prefixation is the opposite of suffixation. The English learners' web describes it as the mirror image of suffixation. The first part 'dis-' is a prefix which is added to the base, 'possess'. Prefixes, following Ndimele (1999), can be classified into negative prefixes: 'a-' as in asexual, asymmetry, 'de-' as in demerit, demystify; reversative prefixes which he said reverses an action like 'de-' in defrost, deforestation, 'un-' as in untie, undress, prefixation is less widespread than suffixation. Some languages like Khmer only have prefixation. However, when it is attached to the back, the end or final position of a word, it is called a suffix, while the process is called suffixation.

The suffix is sometimes also referred to as a postfix or ending in linguistics. In the following examples, the *ise* is a suffix attached at the end of the words; *modernise*, *equalise*, and "centralise. Akmajian, et el (2008) remarks that the morpheme to which an affix is attached is known as the base (or stem) morpheme. Suffixes carry

grammatical information like changing a word from singular to plural or present to past tense. In this case, the basic meaning of the word is not altered. This type of suffixation is called inflectional suffixes. Suffixes on the other hand, convey lexical information as in derivational suffixes whereby the new word has a new meaning derived from the original word. As regards function, an affix is used in extending the meaning of a word (i.e. derivational or changing the grammatical category of a word (inflectional). Nevertheless, numericalization involves little of affixations rather, it is clear that it involves a great deal of compounding.

Imu and Ejobee (2021) opine that compounding is the process where two or more words combined to form a new word. Most compounding verbs in Urhobo are derived from a combination of noun and a gerund and denote specific activities. Imu (2015) is of the view that these components join together in the compounds to give a single meaning.

Ahamefula & Ayegbe (2015) study the Igbo and Igala numeral system using a contrastive analysis approach. The work shows that Igbo and Igala have areas of similarities between their numerals and counting systems. For instance, word used to describe numerals 1-19 in both languages are similar. Both languages also use two words to describe the numeral 40*:"iri anọ"* (10,4) for Igbo, and "ógwú méjì" (20,2) for Igala. Furthermore, Igbo and Igala have four cyclic market days representing a four-day week traditionally.

Agbedo (2015) note that in morphology, the concepts of word and morphemes are considered as the basic units of analysis, they require theoretical and practical explanations from the beginning.

Methodology

Descriptive analytical approach is adopted. A descriptive research design involves gathering of data which is piecemeal represented systematically in words. Descriptive research design is an appropriate research plan that will effectively analyze the data collected for this article.

Primary and secondary data collection methods are employed. The primary data is elicited from 6 native speakers of Urhobo and Igbo (2 males and 1 female from each socioculture). The age bracket of the respondent falls between 50 and 80 years. Our targets are farmers, teachers, students, pastors, mothers and fathers. The essence is to capture the actual form of the language, and for the young ones, it helps us to explain changes the language has undergone. Secondary sources include textbooks and internet.

The conceptual framework that undergirds this research is the numericalization segmentation principle this derives partly from the segmentation principle which suggest that morphological contrasts consist of segment able materials correlating on one -to -one basis.
It is important to say that tone has little or no effect in this work hence glossing is employed to take care of tone marking.

Numerals and Counting System in Urhobo and Igbo

Urhobo Cardinal numerals system

The Urhobo numeral system is based on a decimal system, similar to many other numeral systems worldwide. The basic numerals in Urhobo are shown in (1a)

(1a)

Arabic numbers	Urhobo Numbers	English Numbers
1	*ovo*	one
2	*ivẹ*	two
3	*erha*	three
4	*ene*	four
5	*iyorin*	five
6	*esan*	six
7	*ighwrẹ*	Seven
8	*erenre*	Eight
9	*Irhirin*	Nine
10	*Ihwe*	Ten

These numerals form the foundation for constructing larger numbers in the Urhobo language.

Derivation of cardinal numerals in Urhobo

Numerals typically inflect from their base forms to form complex numerals through various morphological and arithmetic processes. In many languages, including Urhobo and Igbo, this involves compounding, addition, and multiplication

Urhobo cardinal numerals can be formed in three ways. These include by compounding, multiplication and addition.

a) Derivation of Urhobo cardinal numerals by compounding

The Urhobo numeral system displays a unique characteristic after the number ten, demonstrating co-ordinate compounds. Through the introduction of link words during numeracy, copulative or coordinating compounds emerge. Compounding in Urhobo cardinal numerals often entails combining *'ihwe'* (ten) with other numerals to represent numbers from 10 to 19, effectively adding 10 to another numeral. This compounding process persists and evolves from the base form of numerals above 10 as shown in (2a) below.

(2a)

i. ihwe + ovo → ihweovo → ihwovo
'ten' 'one' 'eleven'

ii. ihwe + ive → ihweive → ihwive
'ten' 'two' 'twelve'

iii. ihwe + iyòrin → ihweiyorin → ihwiorin → ihwjõrìn
'ten' 'five' 'fifteen'

iii. uje + gbe + ovo → ujegbeovo → ujegbovo
'twenty' 'one' 'twenty-one'

iv. uje + gbe + ive → ujegbeive → ujegbive
'twenty' 'two' 'twenty-two'

v. uje + gbe + esan → ujegbeesan → ùjègbesan
'twenty' 'six' 'twenty-six'

From the data above, Numerals typically inflect from their base forms to form complex numerals. This process involves combining basic numerals with other elements to create compound numerals for example;

ihwe + ovo → ihweovo → ihwovo
'ten' 'one' 'eleven'

This is repeated in in 2a(ii-v)

b) **Derivation of Urhobo cardinal numerals by multiplication:**

Another method of forming numerals in Urhobo is through multiplication, which entails multiplying *'uje'* (twenty) by another numeral. Numerals such as 40, 60, 80, and 100 are derived through this process as shown in (2b) below

(2b)

i. *uje* x *ivẹ* 20x2 *ujuve*
twenty two 'forty'

ii. *uje* x *erha* 20x3 ujora 'sixty'
twenty three

iii. *uje* x *ene* 20x4 ujone
twenty four 'eighty'

iv. *uje* x *iyorin* 20x5 ujuorin
twenty five 'hundred'

Multiplication involves repeating or multiplying basic numerals to form larger numbers. In Urhobo, multiplication is used to express tens and multiples of ten which entails multiplying *'uje'* (twenty) by the basic numerals to form higher complex numerals. This is demonstrated in 2b (i-iv).

c) Derivation of Urhobo cardinal numerals by addition:

Apart from the characteristics of co-ordinate compounds, '*gbe'* 'and' can also be used as a conjunction to derive other complex numerals. Example include numerals such as 51-59, 71-79 etc as shown in (2c) below.

(2c)

i.	*ujuvegbẹ*	*ihwe*	*gbe*	*ovo*		'40+10+1'	→ 51
	fourty	and	ten	and	one		
ii.	*ujuve*	*gbẹ*	*ihwe*	*gbe*	*ive*	'40+10+2'	→ 52
	forty and	ten	and	two			
iii.	*ujorha*	*gbẹ*	*ihwe*	*gbe*	*ovo*	'60+10+1'	→ 71
	thirty	and	ten	and	one		
iv.	*ujorha*	*gbẹ*	*ihwe*	*gbe*	*ive*	'60+10+2'	→ 72
	thirty	and	ten	and	two		
v.	*ujorha*	*gbẹ*	*ihwe*	*gbe*	*erha*	'60+10+3'	→ 73
	thirty	and	ten	and	three		

Addition is employed to create complex numerals by adding basic numerals together. The basic numerals, inflect from the base forms to form complex numerals. To derive higher complex numerals in Urhobo, *'gbe'* is deployed to operate as mathematical addition symbol, '+'. In 2c i, 40 is added to 10 with the aid of *'gbe'* to yield 50, which in turn is added to 1 using *'gbe'* again to give 51.

Similar processes are repeated in 2cii, iii, iv and v.

. For example;

ujuvegbẹ	*ihwe*	*gbe*	*ovo*	'40+10+1'	→	51
fourty	and	ten	and	one		

This process is repeated in 2c (ii-v)

Igbo Cardinal Numerals System

The Igbo numeral system comprises cardinal numbers, which represent quantity and are utilized for counting and measurements. These basic cardinal numbers in Igbo are structured according to a decimal system (base-10). The first ten numerals are shown in (3a) below.

(3a)

Arabic Numbers	**Igbo Numbers**	**English Numbers**
1	*otu* or *ofu*	one
2	*abụọ* or *ibua*	two
3	*atọ* or *ito*	three
4	*anọ*	four
5	*Ise*	five
6	*Isii*	six
7	*Asaa*	seven
8	*asatọ*	eight
9	*itoolu*	nine
10	*Iri*	ten

a) Derivation of Igbo cardinal numerals by compounding/multiplication

Compounding in Igbo numeral may involve a combination of *iri* 'ten' and another numeral. The addition of 10 to another numeral, though without an overt connective. Numerals 40,60,80, etc fall in this category as shown in (3c) below.

(3c)

I.	*iri*	+	*anọ*	_	*iriano*
	ten		four		forty
II.	*iri*	+	*isii*	_	*iriisii*
	ten		six		*sixty*
III.	*iri*		*asatọ*	_	*iriasato*
	ten		eight		eighty

From the data above, typically numerals inflect from their base forms to form complex numerals. This process involves combining basic numerals with other elements to create compound numerals. For example, *iriano*, which is forty, is *iri+anọ* as shown in in 3c(i) this is repeated in (ii-iii)

Igbo also uses multiplication process in deriving numerals. In Igbo, multiplication is used to express tens and multiples of ten. For example, "iri abuo" signifies "twenty" (10 × 2). Multiplication involves repeating or multiplying basic numerals to form larger numbers.

Note: The example that stands for compounding in Igbo can also stand for multiplication. Cf. 3c.

b) Derivation of Igbo cardinal numerals by addition:

Igbo also derive numerals through addition. The basic numeral 1-9 is added to the base 10 '*iri'* and conjunction *na*. 'and' can be used to derive other numerals. Such numerals include 11-19, etc. as shown in (3e) below.

(3e)

I.	*iri*	*na*	*otu*	'10+1'	eleven
	ten	and	one		
II.	*iri*	*na*	*abụọ*	'10+2'	twelve
	ten	and	two		
III.	*iri*	*na*	*atọ*	'10+3'	thirteen
	ten	and	three		
IV.	*iri*	*na*	*anọ*	10+4'	fourteen
	ten	and	four		
V.	*iri*	*na*	*ise*	'10+5'	fifteen
	ten	and	five		
VI.	*iri*	*na*	*isii*	'10+6'	sixteen
	ten	and	six		

Addition is employed to create complex numerals by adding basic numerals together. In Igbo, "iri na abụọ" (10 + 2) represents "twelve. Through addition, numerals begin to inflect from the base form to form complex numerals this is demonstrated in 3d (i-iv).

Comparing the Urhobo and Igbo Cardinal numeral system

In Igbo, numbers beyond ten are constructed using either compounding or arithmetic methods. Compounding is employed for cardinal numerals, while addition or multiplication is utilized for arithmetic operations. Addition is indicated by *'na'* ('and'), while multiplication is denoted by juxtaposition. For instance, numbers 11 to 19 are formed by adding the base *'iri'* ('ten') to other bases, such as *'iri na otu'* (10 + 1) for 'eleven'. Multiples of ten or twenty are formed through multiplication, like *'iri abuo'* for 'twenty'. In contrast, Urhobo forms numbers above ten through compounding or arithmetic. Compounding involves combining *'ihwe'* ('ten') with another numeral, while arithmetic employs addition or multiplication indicated by *'gbe'* ('and') or juxtaposition, respectively. For example, *'ihwe gbẹ esan'* represents '10 + 6', 'sixteen' and *'uju-ivẹ'* signifies '20x2' for 'forty'. Hundred and thousand are formed through multiplication by juxtaposition, such as *'ujorin ive'* for '200' and *'uriorin ive'* for '2000'.

In igbo numericalization, compounding is tantamount to multiplication. For example

iri	*abuo*	_	*iriabuo*
ten	two		twenty

Urhobo and Igbo Ordinal Numerals

Igbo	**Urhobo**	**English**
ǹké m̄bū	*Orẹsosuọ*	1st
ǹke àbúǭ	*Orivẹ*	2nd
ǹké ātǭ	*Orẹrha*	3rd
ǹké ānǭ	*orẹne*	4th
ǹké īsē	*Oriyorin*	5th
ǹké ìsíì	*Orẹsan*	6th
ǹké àsáà	*Orighwre*	7th

ǹké àsátọ̄	*Orẹrẹnrẹn*	8th
ǹké ìtóólū	*Orirhirin*	9th
ǹké ìrí	*Orihwe*	10th
ǹké ìrí àbṵ́ọ̄	*Oruje*	20th
ǹké ìrí ̀sé	*orujuve gbe ihwe*	50th
ǹké nàrị̀	*Orijuorin*	100th

In Igbo, ordinal numbers are formed using a specific morpheme, *'nke'* 'that', in conjunction with cardinal numbers. The ordinal number 'one' has a distinct form, *'mbu*'. For example, *'ǹké mbṵ̄'* represents 'first', while *'ǹké àbúọ̄'* signifies 'second'.

In Urhobo, ordinal numbers are formed using the morpheme 'orẹ', which precedes cardinal numbers to denote ordinality. The first ordinal number uses a unique form instead of the cardinal form combined with the morpheme 'orẹ'.

Months of the Year in Urhobo and Igbo

Urhobo	**Igbo**		**Representation**	**Gregorian Equivalent**
Ovoikpe	*Ọnwa* moon	*mbụ* first	first month	'January'
Ava	*Ọnwa* moon	*nke abụọ* second	second month	'February'
Arha	*Ọnwa* moon	*nke atọ* third	third month	'March'
Anẹ	*Ọnwa* moon	*nke anọ* forth	fourth month	April
Ayorin	*Ọnwa* moon	*nke ise* fifth	firth month	May
Asan	*Ọnwa* moon	*nke isii* sixth	sixth month	'June'
Aghwrẹ	*Ọnwa* moon	*nke asaa* seventh	seven month	'July
Orianre	*Ọnwa* moon	*nke asatọ* eighth	eight month	'August'
Urhiorin	*Ọnwa* moon	*nke itoolu* ninth	nine month	'September'
Ahwe	*Ọnwa* moon	*nke iri* tenth	tenth month	'October'
Ushọvo	*Ọnwa* moon	*nke iri na ọtu* eleventh	eleventh month	'November'
Ururuvwẹ	*Ọnwa* moon	*nke iri na abụọ* twelfth	twelfth month	December

From the information provided above, Igbo employs ordinal numbers to denote the sequence of months in a year. These ordinal numbers are conceptualized from the appearance and disappearance of the moon in sequential time, serving to mark significant events like birthdays, age, deaths and historical occurrences such as the Nigerian civil war.

Urhobo forms the names of the months of the year through a word formation process based on ordinal numerals ranging from 1 to 12. For instance, *'ovoikpe' is* derived from the first ordinal numeral *'ovo'* (one), *'Ava'* from *'ive' (*two), *'arha'* from *'erha'* (three), *'ane'* from *'ene'* (four), and so forth.

Days of the week in Igbo and Urhobo

Igbo days of the week

eké	first market day
erìè	second market day
afọ̀	third market day
nkwọ́	fourth market day

The Igbo calendar incorporates four week days that also serve as market days: *èké, óriè, àfọ̀*, and *nkwọ*, collectively forming the Igbo week known as *izu*. This calendar is distinct from the Gregorian Calendar and is uniquely tailored to *Odinala na Omenala* – the cultural beliefs and spirituality of the Igbo people. Additionally, the market days are not limited to just four, as variations such as *eke ukwu* and *eke nta* ('Big Eke' and 'Small Eke') exist, resulting in each market day appearing twice, creating an 8-day cycle for the big week (izu).

- *èké ukwu*

- *óriè ukwu*
- *àfọ ukwu*
- *nkwọ ukwu*

Which also signifies major markets in Igbo
The small week (izu) or market days are in the following order:

- *èké nta*
- *óriè nta*
- *àfọ nta*
- *nkwọ nta*

Urhobo days of the week

edewo Market/worship day	first day
ediruo Work day	second day
eduhre Worship day	third day
edebi Odd day	fourth day

Urhobo culture designates four major week days, with *edewo* being the primary market day and a day of religious observance. Despite markets operating on other days, *edewo* holds significance as the main trading and worship day due to Urhobo's farming practices. Certain communities hold *edewo* every four days, while others observe it every eight days. On non-*edewo* days, smaller markets called *ekiotor* are active. The major week days include *edewo, ediruo, eduhre,* and *edebi,* each with its unique cultural and ceremonial significance.

1. ***Edewo***-This is the first day in which all big (major) markets holds. It is a day of worship. There are certain dedicated farm lands and forest that people don't enter on an *edewo*. Only men can be buried on this day.
2. ***Ediruo***: This is the second day of the week, a working day. Small village market holds on this day. it's a good day for traditional marriage to hold. Women can be buried on this day.
3. ***Eduhre***: This is the third day, some small markets that do not observe the *edewo* holds on this day, it is a day of worship, it is the acceptable day to make sacrifices to *esemo* (male ancestors) and the day for burying the male.
4. ***Edebi***: This is the 4th day. Small markets hold on this day, it is a good day for traditional marriage, sacrifice to *miemo* (female ancestors) and for burying women.

Additionally, Urhobo follows a seven-day week based on the English calendar, which has become increasingly prominent. Below is the seven week days in Urhobo.

Urhobo Seven Week Days

ẹdiru workday first	*órẹ́sòsuọ́*	Monday
ẹdiru workday second	*ó rive*	Tuesday
ẹdiru workday third	*órẹ́rha*	Wednesday
ẹdiru workday fourth	*órẹ́rene*	Thursday
ẹdiru workday five	*órẹ́riyorin*	Friday
Edijanaotete weekend		Saturday
Ẹdijanarode small weekend		Sunday.

Differences and similarities in numerals of Urhobo and Igbo

i. Similarities

a. Urhobo and Igbo show simple numerals from 1to 10.
b. Higher complex numerals are formed by means of compounding and through arithmetic methods in both languages. In both Igbo and Urhobo, multiplication is done by means of juxtaposition of the elements in multiplication relationships. Addition is done by means of *na* in Igbo, while in Urhobo it is by means of *gbe.*
c. Igbo and Urhobo use special forms for the first ordinal numbers.
d. Both languages have four week days

II. Differences

a. Urhobo only has one market day *edewo* out of its four week days, while Igbo operates four market days which are *eke*, *orie*, *afor*, *nkwọ.* Three out of the four Urhobo days of the week are workings days, while Igbo days of the week are market days
b. Whereas Urhobo has adapted names of the Gregorian 7 week days in Urhobo: ediruo esosuo (first working day), ediruo rive (2nd working day etc), edijana rotate (sixth day), and Edijana rode (7th day, Sunday), Igbo does not.
c. Igbo has small market days (Izu okwe), i.e *óriè nta*, *àfọ̀ nta, nkwọ nta, èké nta*, which come in alternate cycle giving a longer eight day cycle which Urhobo does not have.
d. Urhobo uses ordinal numerals to represent the months of the year why Igbo uses the appearance and disappearance of the moon to represent months of the year, which can be lexically realized in both ordinal and cardinal forms, e.g, *onwa mbu* beginning month or onwa nke mbu, first month (January); onwa abuo month two or onwa nke abuo, second month (February).

The Role of Mathematics in The Cognitive Development on Numerals

Numeralization plays a central role in the cognitive development for it provides a structured framework for understanding, reasoning, and problem-solving related to numerical concepts. Through numerical computations and experiences, individuals develop a wide range of cognitive skills that are essential for academic achievement and success in various domains of life. For instance counting which is an everyday activity relates to mathematics, particularly arithmetic, provides the foundational concepts and techniques for numerical data evaluation. Counting involves assigning numbers to objects in a sequence, which is essential for developing numeral recognition and understanding the concept of quantity.

Numericalization gives room to different forms of numerical representation. Mathematics offers various systems for representing numbers, such as Arabic numerals, Roman numerals, and tally marks which have all been adopted in both Igbo and Urhobo literarures. Exposure to different numerical representations enhances cognitive flexibility and understanding of numerical concepts.

Through mathematical activities and exercises, individuals develop a deeper conceptual understanding of numerals, including their properties, relationships, and operations. This understanding facilitates problem-solving and critical thinking skills. Mathematics often involves spatial reasoning, which is essential for comprehending numerical patterns, spatial arrangements of numbers, and geometric shapes. Spatial reasoning skills contribute to the ability to mentally manipulate and visualize numerical concepts. Mathematics involves its own language and symbols for expressing numerical concepts. Learning mathematical language and notation enhances communication skills and facilitates the exchange of mathematical ideas and strategies.

Mathematics fosters logical reasoning skills by requiring individuals to follow logical sequences, identify patterns, make deductions, and draw conclusions based on evidence. These reasoning skills are fundamental for understanding numerical relationships and solving mathematical problems. Mathematics provides opportunities for individuals to engage in problem-solving activities that require them to apply numerical concepts and strategies to real-world situations. Problem-solving enhances cognitive skills such as critical thinking, decision-making, and creativity. Learning mathematical concepts and procedures involves memory and attention processes. Practicing numerals and mathematical operations improves memory retention and strengthens attentional control, leading to enhanced cognitive abilities.

Findings

This study provides a comparative analysis of the numeral systems of Urhobo and Igbo cultures. It examines simple numerals from 1 to 10 and reveals that both languages form higher complex numerals through compounding and arithmetic methods such as addition and multiplication. Multiplication is achieved through

juxtaposition of elements, while addition involves specific terms like *"gbe"* in Urhobo and *"na"* in Igbo. The study highlights the usage of special forms for the first ordinal numbers in both languages.

Furthermore, it contrasts the organization of market days and week days in Urhobo and Igbo cultures. While Urhobo designates specific market days, only one, *edewo,* is considered a major market day. Igbo, on the other hand, integrates market days with the days of the week, with a unique eight-day cycle. The research emphasizes the cultural significance of numerals in both societies, particularly in naming ceremonies, rituals, and proverbs, reflecting the importance of numerology and symbolism.

Additionally, the study proposes the Numeral Segmentation Principle to explain the inflection and expansion of numerals in both languages.

Summary/Conclusion

This study provides a detailed analysis of the numeral systems of Urhobo and Igbo language, examining their cardinal, ordinal, and temporal numerals. It highlights the use of both morphological processes, such as compounding, and arithmetic methods, including multiplication and addition, in deriving numerals in both languages. The study emphasizes the importance of understanding diverse numeral systems across languages, as they reflect unique cultural and linguistic perspectives. Documenting and preserving traditional numeral systems, particularly those of endangered languages like Urhobo, is crucial to safeguarding linguistic diversity and cultural heritage.

The work reveals that numerals begin to inflect from the base form to form complex numerals which we refer to as the numericalization segmentation principle this is partly derived from the segmentation principle which suggest that morphological contrasts consist of segmentable materials correlating on one -to -one basis.

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