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The Role of Teachers, Students and Experts in Proposing and Evaluating Urdu Terms

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ABSTRACT

This study was concerned with proposing the framework for establishing and formulating terminologies in the Urdu language. The framework was based upon proposing terms from the roots and existing resources of the Urdu language and then its evaluations were carried out as per Cooper (1989) model. There are many factors influencing the term formation process among those the term variation is the significant one. The influence of foreign languages particularly English seems quite significant. The local languages and the hegemony of foreign languages are deemed to influence the term formation procedure and its use. In order to coin new terms to meet the communicative needs of Urdu language, the study addresses the term formation in general and ICT (Information and Communication Technology) terms in particular. This is accompanied by the term formation rules in the Urdu language for different domains of knowledge. It includes many methods like derivation, affixation, borrowing; this investigation also involves the historical term coining methods, especially from the root languages (Persian, Arabic, and Turkish). The data were collected from 162 students, 83 teachers and 72 IT (Information and Technology) experts to evaluate the proposed terms. The framework has also been discussed in detail in order to check the acceptance of the proposed terms in a specialized subject field. The acceptance of the terms and availability of the rules supported the stance that the Urdu language has the capacity to meet the communicative needs in Pakistan.

Keywords: *terms, terminology, equivalents, Urdu Language*

Introduction

Twenty-first century is called the age of scientific developments as a lot of achievements in different domains has been accomplished. In this upsurge the English language has presented a very dominating role besides all other social and political matters (Kamwangamalu & Tovares, 2016). If the English language is given the status of "the language of modern science" then it would not look odd (Foyewa, 2015). This supremacy of English has led to third world countries to opt the English language as the language of science and use it in their post-graduate level of studying but there are few exceptions as well like Iran, Japan, France and China. These countries have developed modus operandi to translate the foreign terms in their national languages so it may enrich the language sources as well as increase the comprehension level of a particular language. Terminology, the discipline concerned with the formation, description and naming of concepts in the specialized fields of knowledge is a consistently growing research area of the modern information and era. It is considered as an instrument to explicate any language in terms of vocabulary and play a vital role in preserving the purity of the language. There are various academies, societies, departments, and commissions around the globe such as Academy of Persian Language and Literature (APLL), Hellenic Society for Terminology (ELETO), National Language Promotion Department (NLPD), and Commission of Scientific & Technical Terminology (CSTT) which are working to preserve their

national languages (Sibtain & Suleman, 2017). Every language has its own methods and techniques for expanding its vocabulary. Durrani (1993) has discussed that the Urdu language evolved mainly from Persian, Turkish and Arabic so the terms can equally be borrowed from these language as per the communicative needs. The language has been expanding itself through accepting words from different languages with which its users come into contact with. As far as Urdu terminology is concerned, a high percentage of the term is transferred into Urdu from another language such as Persian, Arabic and Turkish due to the fact that Urdu today is a receptor rather than a transmitter language (Durrani, 1999). Finding Urdu equivalents for scientific terms related to the domain of ICT is the primary objective of this study. We examined the applicability of numerous methods that researcher presented in the literature to create and introduce Urdu scientific terms. This research introduces a method for evaluation of Urdu equivalents of scientific terms and additionally communicates the state of some of these equivalents between user populations. The important point is that term selection for scientific terms including (ICT) terms; is not a compelling rule, but is a proposal for meeting the researchers' need to strength the Urdu language as a scientific language (Durrani, 1999).

Review of Related Literature

Information and technology sector is leading the developments and these are not just confined to the discipline of computers but also to humanities and many other disciplines of social sciences. These all are led by the computers. This sudden triggering of ICT has prepared the ground for linguists to make their languages adaptable to the communicative pace. This global revolution also paved the way for the Urdu to be studied and used for electronic communication and to be adjustable for the softwares. As Urdu is the national language of Pakistan, so it is of equal importance to make it suitable for the acceptability of global communication. Hussain (1997), Lodhi (2004) and Rizvi, (2007) are the three Ph.D scholars whose research is aimed at the Urdu. Hussain (1997) remained instrumental to study the stress and phonetic vowel as well as the consonants of the Urdu. Lodhi's work in computationally oriented work aimed at developing a system of a pattern of recognizing Urdu characters capable of distribution patterns even in less than optimal conditions. Ahmad (1994) explains that terminology is actually the documentation and creation of the terms. Thus, this is an area of the special subject field. Campo (2012) mentions Wuster (1979)who elaborated that terminology has been existing since the existence of knowledge and remained a human need over the history. It also emerged out of human needs which rely on labelling and naming things since the beginning. According to Sageder, (2010) the technological development not only needs naming of the concepts but also an agreement to the terms to be used , which lead towards the organization of terminological works in specialized fields. Terminology and its work emerged from the needs of scientists and technicians to name the new concepts which are emerging on the daily basis in the fields of science and technology. In ISO(2000) some important aspects of term formation and terminology are elucidated as transparency, consistency, appropriateness, linguistic economy, drivability, linguistic correctness and preference for native language. These

principles are also discussed in a manual of UNESCO(2005) as well as a presentation to term formation techniques. It discusses the importance of these rules in the following words, "basically applicable to 'all' languages" and "focus on the systematic nature of terminologies with their underlying conceptual networks, including the cognitive dimension, aspects of brief description of each method with examples from Urdu terminology is given below:

knowledge representation". Traditional Urdu term formulation employs lexical borrowing, semantic/pragmatic modification of existing Urdu terms, derivation, compounding, and composition in varying degrees. These methods and techniques involve expansion of existing linguistic stock and borrowing from other languages (Durrani, 1993). A

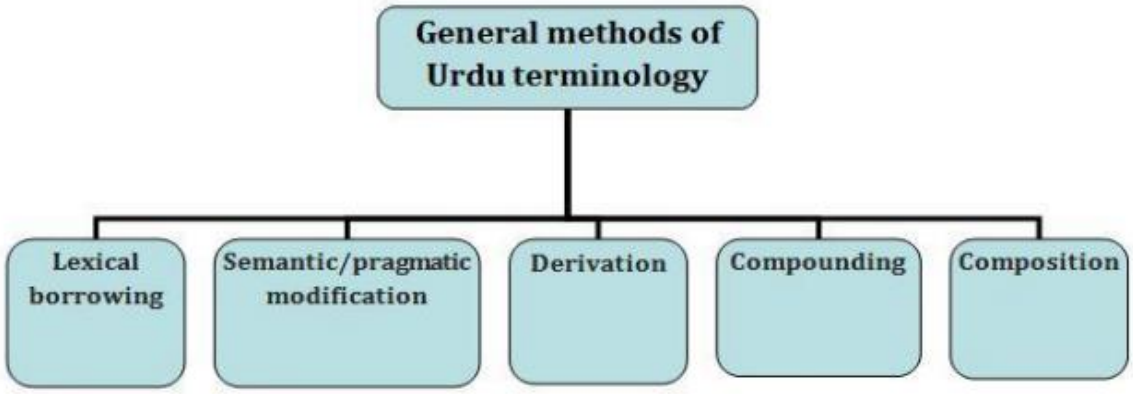

Figure 1: Classification of Methods for Formulation of Urdu Terminology (Durani, 1991)

Lexical Borrowing

Lexical borrowing typically is the adoption of individual words or even large sets of vocabulary items from another language or dialect. It can also include roots and affixes, sounds, collocations, and grammatical processe ،مکتب (The Encyclopedia of Wiley Online Library).

Semantic/Pragmatic modification of existing Urdu terms

This technique consists of a translation of foreign term using Urdu equivalents. Old Urdu terms are given new lexical meanings through translation. However, this technique has its pitfalls; literal translation does not always succeed in rendering the terms contextually correct, e.g. chronology is given a substitute in Urdu"علمِ زمان"", "House of Lords" is replaced with امیروں کی کچہری etc.

Derivation

The derivation is one of the oldest methods of terminology formulation. It is based on standard Urdu patterns. Its use is more obvious when and where Urdu language has a substitute for English term like for " Sulphur" Urdu substitute گندھک is most appropriate rather than surfing energies in coining terms.

Affixation- It is the formation of a new word by adding prefixes and/or suffixes to an existing word, e.g. for "ics" the word ***یات*** *has been recommended and for Physics it will be* ***طبیعات***

Compounding-- Compounding is the formation of a new word by blending two or more words to denote their meaning. There

are three types of compounding: blending, merging.

Blending- Blending is the formation of one word by adding one word to another without either of the two losing its structure, for example,

وزیرِ قانون.

Merging-- Merging is the formation of a new word by compressing two or more words (and sometimes an entire sentence) into one unit, for example, ***مقنا بر قیا ت*** *is composed of two different complete words like* ***مقنا طیسی*** + ***بر قیات*** .

Composition

The composition is the technique of combining Urdu words with foreign affixes and suffixes or of Urdu prefixes and suffixes with foreign words. This technique has been used by Urdu translators and authors throughout Urdu contact with other cultures and civilization. For "automobile" the parts are given names in Urdu like خود روان، telephone has a substitution of دور گو.

The comprehensibility of the terms amongst the users is of significant importance so it is also checked against the proposed terms. The users may reject certain terms on social, ethical and gender biased ground these terms are graded as not emotionally charged. As per, Gilreath, (1993:91) this acceptability highlights the job of terminologists that those terms which may be offensive, morbid or informal, must not be a part of a terminology database.

Method and Material

The following method has been used to propose the equivalents and afterwards its evaluation was made possible from the end users of the relevant domain. Spellings of new terms is of hallmark importance in any particular language, regardless of the fact that terms are formed by internal sources, compounding or semantic transfer or any other external language process has opted, it must be in alienation with the spelling rules of the language. If the spellings are not clear, consistent and linguistically and phonologically sound it would put the terminologists in trouble. Model for Evaluating the Proposed Equivalents We employed Cooper, (1989) for evaluating the new terms. He defines a framework for analyzing each person's attitude the new equivalent so each person's way of looking could be categorized in a five grade ranking including:

Not Comprehensible this is the lowest rank of acceptance; here the asked person doesn't know anything about the selected equivalent and even doesn't hear of that.

Little bit Comprehensible: the asked person knows the selected equivalent and is aware of its selecting but does not agree with it.

Comprehensible to Some extent: the asked person knows the selected equivalent and is aware of its selecting and agrees with it, but for some reasons he is not using it in his works.

Comprehensible: the asked person knows the selected equivalent and agrees with it, he even uses it in scientific applications, but does not recommend it to his students and coworkers.

Fully Comprehensible: this is the highest rank of acceptance, here the asked person knows the selected equivalent and agrees with it, and he even uses it in scientific applications, and recommends it to his students and coworkers. In order to analyze the responses t-test was used to compare the mean Score among the three groups of participants. Three levels were used to compare the results which exist between teachers and experts, experts and students, teachers and students. In the comparisons of the mean value .05 is taken as the

standard value to evaluate the significant and not significant differences among the respondents to check the acceptability of the proposed Urdu terms.

Research Methodology

The following steps were followed to propose the terms in the Urdu language for the ICT domain.

1.The availability of the rules and their implementation is carried out upon the selected set of English terms.

2.The comparative acceptability of the proposed terms is also measured among the potential stakeholders applying t- test and the due acceptance of each term was also checked to measure the effectiveness of the rules.

To begin with the researcher conducted an empirical research and collected the most frequently used terms (analogue computer, font, font size, horizontal application) among the ICT users. The selected terms were then given the definitions from the sources https://www.computerhope.com/jargon/a/airmode.htm

https://pc.net/glossary/browse/m)and were shared with the ICT students to propose Urdu equivalents (Raam Lal's 1917, method of proposing equivalents) from the existing resources of the Urdu language. The consent of experts (IT,Urdu) was sought on each term and then after applying Cooper(1989) model was disseminated among ICT users comprising of teachers, IT experts and students to check the comprehensibility of each proposed term. The comprehensibility score was compared with all the respondents and t-test was applied to check the mean difference values of responses. As all the proposed terms were given via questionnaires so close ended questions are analyzed quantitatively.

3. The research design for the current study is chosen from the secondary term formation approach of terminological research. An overview of the previous studies manifests this fact that root languages are the primary sources in the term formation process in Urdu as well as the English language (Durrani, 1993).

Data Collection

The data collection was completed in two ways. Firstly, the questionnaire reliability statistics of .957 with the framework of Cooper (1989) was uploaded to Google forms after compiling the e-mail id's of the ICT professionals, teachers and students and then it was forwarded to all the potential stakeholders. Moreover, the respondents were asked to forward it to their circles for the possible feedback. In all these cities, I had my contact persons in the ICT field and three persons were chosen from each field to collect the data from the three categories such as 162 students, 83 teachers and 72 IT experts. I followed up all the contact persons via the phone calls and emails in order to remind them of the possible responses. These follow up procedures made the process quick and efficient.

Proposed Equivalents from the Students

The following terms were proposed by the students of ICT after looking at the definitions and compiled the important terms which came as a feedback.

Table 1: Proposed Equivalents

Terms	Op 1	Op2	Op 3	Op 4	Op 5
Analogue Computer	تغیر پذیر کمپیوٹر	مواد کی مستقل پیمائش	برقی مستقل کمپیو	مستقل تغیرپ ذیر	مراس لہ نگار

Font Size	حرف کا قد	لفظی جسامت	حجم عدد	پیمائش کرنا	حروف کا وزن
Font	عدد	الفاظ	حروف	حرف	اعداد
Horizontal Application	افقی درخوست	متوازی التجا	افقی مصر وفیت	زیادہ استعمال ہونے والا مواد	افقی اطلاق

As mentioned in the table 1 equivalent are proposed by the Urdu speaking students against each defined term of ICT.

Data Analysis

The data presented in the table demonstrated the fact that after necessary circumspection of the subject experts these terms can be well formed and appropriate. The standardization of these terms will be in the best interest of language development.

From the possible lists of students 'responses and the data of the root languages after applying the term formation rules of the Urdu language the experts finalized the terms. The suitability of the finalized terms is also checked from the existing resources of the Urdu language.

Table 2: Finalized Terms Term Formation Techniques

Sr.No	Primary Term	Secondary Term	Term Formation Rule
1	Analogue Computer	تماثلی کمپیوٹر	Borrowed from Arabic Sources
2	Font Size	حجمِ خط	Compounding
3	Font	خط	Semantic Modification
4	Horizontal Application	اُفقی برنامہ	Semantic Modification

The objective of the study was to check the availability of the rules which is evident from the above table that the Urdu language has the available options to propose the terms to meet the communicative needs in Pakistan.

TaTable 3: General Characteristics of Term Font

English Term	Font
POS Tagging	Noun
Description/ Definition	The complete assortment and type of one style and size.
Proposed Equivalent Urdu Term	خط
Phonetics	| Khat|
Formation Rules	It has been borrowed from the Persian language from the root languages. The term is also used in the Urdu language.

The proposed terms to which the users are very familiar are expected to gain the fame as it is easy, precise and appropriate. The task of the terminologists in the Urdu language is to form order into disorder for communicating effectively. Here the perceptions and notions of the possible stakeholders are also brought into focus to grasp the clarity of meaning among the end users. The proposed terminology exhibits the characteristics at two levels; one at language and the other at its substance.

Table No:*Acceptance Score of Term Font*

Term	Respondents	0	1	2	3	4	Comprehensibility Score	Term Formation Rule
Font	Students	27	51	33	11	40	310	Semantic Modification
	Teachers	9	17	24	8	25	189	
	IT Experts	18	11	16	5	22	146	

The term font has a comprehensibility score of 310 among students, 189 among teachers and 146 among IT experts as the term is proposed by the users themselves so it falls under the category of semantic modification. The proposed term is fully comprehensible for 40 students, 25 teachers and 22 experts so the users are familiar with the term as it is being proposed from the possible equivalents as provided by the students. The terminologist task is not to bring new expressions rather bring the formations to be used as terms. Those terms which are derived from the standard language do have reckoning power among the users. The researchers also brought into focus the considerations as discussed in Valeontis & Mantzari (2006) where the practice was to either use the existing the resources of the Urdu language or borrowings. The table 4 depicts the acceptance core of the proposed term among the students, teachers and IT experts respectively. The highest acceptance score is seen among the students as a term is quite frequently used in Urdu.

Table 5: *Teachers and IT Experts t Statistics for the Difference between Two Means*

	Mean Difference	Std.Error Difference	df	T	P-Value
Equal Variance Assumed	0.499	0.237	153	2.108	0.037

As shown, table 5 depicts the results for the teachers and IT experts t statistics for the difference of two means. As the mean value .037 is lesser than .05 which is taken as standard so it is concluded that there is a significant difference in the acceptance of the term خط among the teachers and IT experts.

Table 6: Teachers and Students t Statistics for the Difference of Two Means

Mean Diff	Std.Err Diff	df	t	P-Value
0.364	0.19	243	1.909	0.057

As presented table 6 depicts the results for the teachers and students' t statistics for the difference of two means among teachers and students. As the P- value .057 is equal to .05 which is taken as standard so it is concluded that teachers and students have same response level and same acceptance tendency towards the acceptance of the term خط.

Table 7: IT Experts and Students t Statistics for the Difference of Two Means

Mean Diff	Std. Eror Diff	df	T	P-Value
-0.136	0.209	232	-0.65	0.517

As shown above table 7 shows that there is no significant difference for the term خط in the responses of the difference of two means for t-test as the mean value .517 is above the standard value of .05 which is .517. So there is no difference in the acceptance of the term خط among IT experts and students.

Table 8: *General Characteristics of Term Font Size*

English Term	Font Size
POS Tagging	Noun
Description/Definition	'The font size or text size is the overall size (generally height) of a font shown on a screen or printed on a page. A font is typically measured in a point (pt) size, which is the vertical measurement of the lettering' (reference.com)
Proposed Equivalent Urdu Term	حجم خط
Phonetics	| hudʒ͡m e khɑt |
Formation Rules	It's a compound term and borrowed from the Persian language.

As presented in table 8, here an analogy has been applied as once the term. The font has been given equivalent so the same sequence needs to be followed in the translation of similar terms. This practice makes the terms unambiguous and comprehensible and further strengthens its application in the various domains.

Table 9: Acceptance score of Term Font Size

Term	Respondents	0	1	2	3	4	Comprehensibility Score	Term Formation Rule
Font Size	Students	13	33	33	20	63	411	
	Teachers	5	10	19	12	37	232	Composition
	Experts	19	13	10	8	22	145	

The comprehensibility score for the term حجم خطis 411 among students, 232 among teachers and 145 among IT experts. 63 students, 37 teachers and 22 experts have fully comprehended the term. The term Font is already translated as خطand size have been given an equivalent of حجم. 37 teachers have fully comprehended the term and only 5 teachers are of the view that they have not comprehended the term. 63 students have comprehended the term fully. The rule of composition has been applied to propose the term. The students' responses were also phenomenal since experts focused on easy to use terms during the finalization of terms.

Table 10: Teachers and IT Experts t Statistics for the Difference of Two Means

Mean Diff	Std.Error Diff	df	t	P-Val
0.809	0.234	153	3.46	0.001

As presented, table 10 depicts the results for the teachers and IT experts t statistics for the difference of two means.

As the mean value is .001 which is less than .05 taken as standard so it is concluded that there is no significant difference in the acceptance of the term حجمِ خطamong the teachers and IT experts.

Table 11: Teachers and Students t Statistics for the Difference between Two Means

Mean Diff	Sd.Error Diff	df	T	P-Val
0.258	0.183	243	1.409	0.16

Table 11 demonstrates the results of t statistics for the difference of two means among teachers and students. As the value is .160 which is above .05 a standard value so it is concluded that there is no significant difference among the acceptance of term for both the stakeholders.

Table 12:IT Experts and Students t Statistics for the Difference between Two Means

Mean Diff	Std. Error Diff	Df	T	P-Value
-0.551	0.207	32	2.662	0.008

Table 12 depicts the results among IT experts and students for the difference of two means. The mean value is .008 which is lesser than .05 taken as standard. So, there is a significant difference among the two mean values of the responses of IT experts and students.

Table 13: Characteristics of Term Horizontal Application

English Term	Horizontal Application
POS Tagging	Noun
Description/Definition	An application program common to different business processes, e.g. office automation.
Proposed Equivalent Urdu Term	فقی بر نا مہ
Phonetics	| ʊfki:barnama |
Formation Rules	Composition= Urdu &Persian

The application is translated as بر نا مہ and horizontal is already having the equivalent of افقی (also proposed by the users)which has formed a new term following the rule of composition. Here equivalents are given word for word.

Table 14: Acceptance Score for the term Horizontal Application

Term	Respondents	0	1	2	3	4	Comprehensibility Score	Term Formation Rule
Horizontal Application	Students	11	43	19	36	53	401	Composition
	Teachers	5	15	13	24	26	217	
	IT Experts	17	16	10	15	14	137	

Table 15: Teachers and IT Experts t Statistics for the Difference of Two Means

Mean Diff	Std.Error Diff	df	T	P-Val
0.684	0.222	153	3.083	0.002

The above table 15 depicts the results for the teachers and IT experts t statistics for the difference of two means. As the P value .002 is lesser than .05 which is taken as standard so it is concluded that there is a significant difference in the acceptance of the term ا فقی بر نا مہ among the teachers and IT experts.

Table 16: Teachers and Students t Statistics for the Difference of Two Means

Mean Diff	Std.Error Diff	df	t	P-Value
0.139	0.18	243	0.775	0.439

There is no significant difference among the responses of teachers and students for the difference of two means for the term اُفقی بر نا مہ as the mean value is .439 which is greater than the standard value of .05. Teachers and students have demonstrated the same acceptance towards the term اُفقی بر نا مہ. The comprehensibility score for the term is 401 among students, 217 for teachers and 137 among IT experts. While, 53 students have fully comprehended the term, 26 teachers and 14 IT experts have fully comprehended the term.

Table 17:IT Experts and Students t Statistics for the Difference of Two Means

Mean Diff	Std.Error Diff	df	T	P-Value
-0.545	0.199	232	-2.74	0.007

There is a significant difference in the IT experts and students' responses for the difference of two mean for the term اُفقی بر نا مہ.As the mean value is .007 which is lesser than the standard value of .05. It can be inferred that IT experts and students have reacted differently to the proposed term.

Table 18: General Characteristics of Term Analogue Computer

English Term	Analogue Computer
POS Tagging	Noun
Description/Definition	'A machine or electronic circuit designed to work on numerical datarepresented by some physical quantity (e.g. rotation or displacement) orelectrical quantity (e.g. voltage or charge) which varies continuously, incontrast to digital signals which are either 0 or 1'.

Proposed Equivalent Urdu Term	تما ٹلی کمپیو ٹر
Phonetics	|ʈɑmɧɑlï kʌmpötə|
Formation Rules	Picking of the famous English terms in the form of transliteration. English +Arabic

As discussed earlier the most popular terms should be accepted as it is so the computer has been given no equivalent as the users are more comfortable with the term computer and the equivalent for analogue is borrowed from the Arabic language and the proposed term is also having exceptionally a good score among the respondents.

Table 19: Acceptance Score of Term Analogue Computer

Term	Respondents	0	1	2	3	4	Comprehensibility Score	Term Formation Rule
Analogue Computer	Students	44	23	33	24	38	313	Borrowed from Arabic Language
	Teachers	13	11	19	18	22	191	
	Experts	20	10	8	13	21	149	

The proposed equivalent is a combination of two languages. Here the computer is just transliterated in the Urdu language as it is widely accepted among the users while the equivalent for the analogue is proposed from the Arabic language. 313 is the acceptance score among students,191 among teachers and 149 among IT experts for the proposed term تما ٹلی کمپیوٹر .

Table 20: Teachers and IT Experts t Statistics for the Difference between Two Means

Mean Diff	Std.Error Diff	df	T	P-Value
0.718	0.24	153	2.995	0.003

The above table 20 depicts the results for the teachers and IT experts' t statistics for the difference of two means. As the mean value.003 is lesser than .05 which is taken as standard so it is concluded that there is a significant difference in the acceptance of the termتما ٹلی کمپیوٹرamong the teachers and IT experts.

Table 21: Teachers and Students t Statistics for the Difference between Two Means

Mean Diff	Std.Err Diff	df	t	P-Value
0.369	0.2	243	1.842	0.067

The above table 21 depicts the results for the teachers and students t Statistics for the difference of two means. As the mean value of .067 is above .05 which is taken as standard so it is concluded that there is no significant difference in the acceptance of the termتما ٹلی کمپیوٹرamong the teachers and IT experts.

Table 22:IT Experts and Students t Statistics for the Difference between Two Means

Mean Diff	Std. Error Diff	df	T	P-Val
-0.349	0.218	232	-1.597	0.112

The above table 22 depicts the results for the IT experts and students' t statistics for the difference of two means. As the mean value of .112 is above .05 which is taken as standard so it is concluded that there is no significant difference in the acceptance of the termتما ثلی کمپیوٹرamong the students and IT experts. Moreover, these methods cannot be regarded as written in the tablets of stone rather as per the needs of time probing can be done to adopt any new rule from root languages or history etc. the need for this suggestion goes with the concept that language is not only an emblem of heritage rather a sociological organism whose growth and evolution go in line with the growth and evolution of people and nations.

Conclusion

The role of the students in proposing the terms for the field of ICT is of dynamic importance as it has paved the ways for the terminologists to collect the maximum possible equivalents. From that maximum data the possible equivalents may be proposed by the experts and then evaluated by the students, experts and the teachers for the due acceptance. The investigation has also confirmed the fact that there is in place a proper structure of standardization for terms in Urdu, but unfortunately it is not functioning properly as per the modern needs. Consequently, it is impeding the terminology development of the Urdu language. The languages need a revitalization in order to empower the Urdu language to use in science as an effective tool of communication. Many linguists in Pakistan go in conferment with this a revitalization as worth exercise in order to equip languages as per modern needs. The study has drawn a conclusion that there is the existence of methods like compounding, composition, semantic modification and derivation in the Urdu language but the need arises to check its suitability in handling the problem of addressing the Urdu equivalents of foreign terms. The results also go in hand with the propositions that each method of term coining could play its role in coining of terms to hinder the inevitable penetration of foreign terms into the Urdu language. These rules are equally beneficial in providing the most appropriate Urdu equivalents to the never ending influx of foreign terms.

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