Journal of Wireless Communication and Simulation

Volume No. 12

Issue No. 1

January - April 2024

ENRICHED PUBLICATIONS PVT. LTD

S-9, IInd FLOOR, MLU POCKET,
MANISH ABHINAV PLAZA-II, ABOVE FEDERAL BANK,
PLOT NO-5, SECTOR-5, DWARKA, NEW DELHI, INDIA-110075,
PHONE: - + (91)-(11)-47026006

Journal of Wireless Communication and Simulation

Aims and Scope

Wireless communications has become very important with the ever increasing demands of the software development to serve the millions of applications across various disciplines. For large software projects, innovative software development approaches are of vital importance. In order to gain higher software standards and efficiency, software process adaptation must be derived from social behavior, planning, strategy, intelligent computing, etc., based on various factors. This Journal addresses the state of the art of all aspects of software engineering, highlighting the all tools and techniques for the software development process.

Journal of Wireless Communication and Simulation

Journal of Wireless Communication and Simulation

(Volume No. 12, Issue No. 1, January - April 2024)

Contents

Sr. No.	Title / Authors Name	Pg. No.
1	Low-Power Rail-to-Rail Operational Amplifier using CMOS – *Anand Kumar Singh*	01 - 11
2	Use of Mobile Technology to deliver Library and Information Services – *Kusum Lata Malik*	12 - 24
3	Performance of Voice Activity Detection Method Based on Zero Crossing Rate and Energy Level in Arabic Language *Abdel majid Farchi[1,2], Soufyane Mounir[3], Badia Mounir[4], Jamal Elabbadi[1]*	25- 32
4	Access, Awareness and Usage of Internet by Public Relations Professionals: Comparative Group Analysis of Haryana and Himachal Pradesh Governments *Krishan Yadav, O. P. Sheoran, Pardeep Kumar Chahal and R. S. Hudda*	33 - 39

Low-Power Rail-to-Rail Operational Amplifier using CMOS

Anand Kumar Singh
Department of Electronic and Communication Engineering,
Institute of Technology and Management,
Meerut UP (India)
Email: anand0325@gmail.com

A B S T R A C T

A low power CMOS rail to rail op-amp, we realize in SCNO180nm technology. Under 1.8 power supply voltage, a constant trans-conductance is ensured for the whole common-mode input range. The class AB output stage also has a full voltage swing. The circuit provides a gain bandwidth of 19.9-MHz and a DC gain of 86 dB. The input transistors operate in weak inversion, which have big g_m/I_d value, so the power consumption is reduced.

Keywords: DAC, ADC, Op-Amp, GBW

1. INTRODUCTION

Wireless communication from the second generation (2G) to 3G, many communication standards, such as GSM, TD-SCDMA, WCDMA and CDMA2000 will co-exist for a long time., the reconfigurable radio frequency integrated circuit (RFIC) and broadband data conversion circuit facing multi-standard and multimode wireless communication is very important. For the key part of this circuit, i.e. the RF front-end transceiver, the often taken structure is the zero-intermediate frequency scheme, as there is no image-rejection problem, and consumes less power. The operational amplifier (Op-amp) we proposed is suppose to be used between the down converter and the second stage ADC in the receiver end, and between DAC and the up-converter in the transmitting end. As the Op-amp has both input and output dynamic range rail-to-rail, we can lower requirement for ADC and DAC, thus to improve system performance. Also, battery powered device for communication such as cell phones drives IC to the low power. In this case, designing low-power That is, rail-to-rail. To ensure this, the minimum supply voltage should be Op-amp becomes the fundamental job of designing low-power analog and mixed signal systems. To reach the rail-to-rail amplitude, the input stage and the output stage should be designed respectively.

We can optimize the input stage constant-g_m operation by controlling of the total input current. In fact, as we know, in bipolar process and in MOS weak inversion, the g_m is proportional to the current, while in MOS strong inversion it is proportional to the square root of the current..For the high supply voltage, there are some ways to make g_m constant. One of the often used ways is 1:3 current mirror. Our main goal is to realize a constant g_m input stage and a rail-to-rail output stage for a low-power operational amplifier. This has been achieved by the current-switch transcondutance control circuit in the input stage and the improved class AB in the output one. The paper is organized as follows. The input and the output part will be introduced and analyzed results are verified.

2. PROPOSED METHOD

The basic equations and parameters are described below. These design main parameters are: , phase margin *(*M_Φ*)*, gain-bandwidth product *(*f_{GBW}*)*, load capacitance *(*C_L*)*, slew rate (*SR*), input common mode range (I*CMR*), In this circuit replacing the current source and uses PMOS active load.

Using formula in current and resister and accepted ratio

$$R = 1/K'S(V_{GS}-V_T) \qquad (1)$$

Where S=W/L

$K'=\mu_0 C_{OX}$

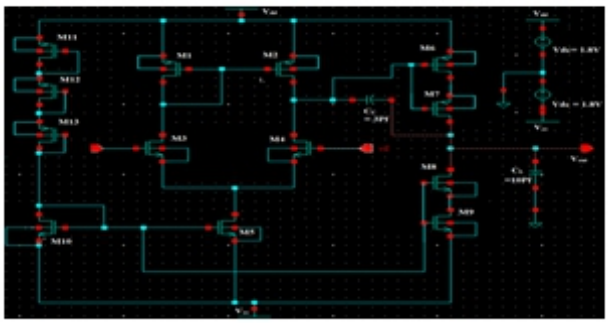

Figure1. The input range of complementary differential pair

The equations for determining the various Op-Amp characteristics can be shown as follows:

1. Gain and Bandwidth

According to the equivalent circuit shown in Figure 2 under typical conditions

The dc gain of op-amp is given by

$A=20 \log V_O/V_{IN}$ (2)

. By placing differential pair M1, M2, M3,M4. It is possible to obtain rail to rail input stage.

2. Common Mode range

If we define V_{CM} as the op-amp input common mode range i.e

$$V_{CM}^{+}= V_{DD}- V_{CM}(max) \quad (3)$$

and

$$V_{CM}^{-} = V_{CM}(min) - V_{SS} \quad (4)$$

3. Internal Slew Rate

The slew rate associated with C_C is found to be

$$SR=\frac{I_{D5}}{C_c} \quad (5)$$

4. External Slew Rate

The slew rate associated with C_L is found to be

$$SR=\frac{I_{D7}-I_{D5}}{C_L} \quad (6)$$

Combining both above equations we obtain

$$I_{D7}=SR(C_C+C_L) \quad (7)$$

$$\left(\frac{W}{L}\right)_{1,2}=\frac{\omega_u^2 C_C}{\mu_n C_{ox} SR} \quad (8)$$

Step-7 The value of $\left(\frac{W}{L}\right)_{5,B}$ is given by-

$$\left(\frac{W}{L}\right)_{5,B}=\frac{2SRC_C}{\mu_n C_{ox}\left(V_{HR}^{CM-}-V_{tn}-\frac{SR}{\omega_u}\right)^2} \quad (9)$$

Step-8 Calculate $(W/L)_7$ from the basic relation $(I_{D7}/I_{D5})=((W/L)_7/(W/L)_5)$ yields

$$\left(\frac{W}{L}\right)_7 = \left(\frac{C_C+C_L}{C_C}\right)\left(\frac{W}{L}\right)_{5,8} \qquad (10)$$

Step-9 $(W/L)_{3,4}$ is given by

$$\left(\frac{W}{L}\right)_{3,4} = \frac{\left(\frac{W}{L}\right)_6}{2\left(\frac{W}{L}\right)_7}\left(\frac{W}{L}\right)_{5,8} \quad (11)$$

Step-10 Using equation 3.22, 3.3, 3.14 and the triode equation we the find value of R_C as-

$$R_C = \frac{1}{\mu_p C_{ox}\left(\frac{W}{L}\right)_9 V_{eff9}} \quad (12)$$

Where $V_{eff9} = V_{DD} - V_{HR}^{out+} - 2|V_{tp}|$

So $(W/L)_9$ is given as-

$$(W/L)9 = \frac{2C_C SR}{\mu_p C_{ox} V_{HR}^{out+}\left(V_{DD} - V_{HR}^{out+} - 2|V_{tp}|\right)} \qquad (13)$$

By placing two complementary differential pairs in parallel as shown in Fig. 4, it is possible to obtain a rail-to-rail input stage. The NMOS pair is conduction for high input common-mode voltages, in particular

if V_{SS}+ V_{gsn}+ Vdsat<Vcommon (14)

While the pMOS pair is in conduction for low input common-mode voltages
Vcommon<V_{DD}− Vdsat− V_{sgp}(15)

When both pair are in parallel, the input dynamic range can be

V_{ss}<V_{Common}< V_{DD} (16)

That is, rail-to-rail. To ensure this, the minimum supply voltage should be

Vsupmin= Vsgp + Vgsn + Vdsatn + Vdsatp(17)

However, a main shortcoming of a rail-to-rail structure is that its total trans conductance will change. That is, when the input voltage can make both pairs on, its total trans conductance will be twice of that when only either pair is on. This will bring to the change of the loop gain and thus cause distortion. What's worse? It will decrease phase margin and make the Op-amp unstable

As the transistors in the proposed circuit work in weak inversion, their trans conductance are proportional to the currents in them

$g_{mi\ weak}=I_p/2n_pV_T+I_n/2n_nV_T$ (18)

Where, Ip and In are the current in the PMOS and NMOS pair, np and n_n are slope factors of the weak inversions. V_T is the thermal voltage. So, to make gm constant, we can tune the current within the input range

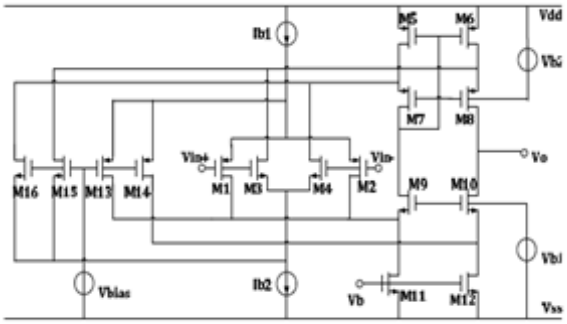

Figure.2.Current switch Trans Conductance Control Circuit,

As can be seen from Equation (18) and Fig. 2, we set V_{bias} voltage to be 0.9 V. When the input voltage is low enough, pMOS differential pair M1 and M2 are on while NMOS differential pair M3 and M4 are off. Then, I_{b1} will come through M1 and M2, I_{b2} will come through M15 and M16, and so the total *g*m will be

$g_{m=}g_{mp=}Ip/2n_pV_T$ (19)

When the input voltage is high enough, NMOS transistorsM3 and M4 are on while PMOS transistors M1 and M2 are off.Ib1 will pass through M13 and M14 while *I*b2 though M3 andM4, thus the total *g*m will be

$g_{m=}g_{mn=}I_n/2n_nV_T$ (20)

When the input voltage is in the middle range, both pairs are on, the current switch M13, M14, M15, M16 will take away some of the current from Ib1 and Ib2, thus the total gm will be

$g_{m\ =}g_{mp+}g_{mn}=\ I_p/2n_pV_T + I_n/2n_nV_T$ (21)

Suppose the input voltage is 0.9 V, here M1~M4 will take1/4 of the tail current, the expression will be

$g_m = I_p/4n_pV_T + I_n/4n_nV_T$ (22)

To have gm constant, we should modify transistor size to Make

$Ip/n_p = I_n/n_n$(23)

Here the input stage delivers a constant output current to the summing circuit, which consist a high-swing current mirror(M5-M8) and common-gate stage (M9,M10).Gain can be improved by raising the tail current, however, to make sure input transistors are in weak inversion, the width and length of input transistors should be improved which at the same time can lower the offset of the circuit

B- output stage-

In this work, output stage takes the improved feed-forward class AB circuit. For this circuit as shown in Fig. 3, M27 andM28 are the output part. M19 and M20 form a class AB control circuit. Points A and B have a small DC voltage, which can make sure that output transistors will not both be off thus to avoid cross-over distortion., we know

$$V_{gs19} + V_{gs27} = V_{gs22} + V_{gs23} \quad (24)$$

$$V_{gs20} + V_{gs28} = V_{gs25} + V_{gs26} \quad (25)$$

Let M19 and M22, M20 and M25 have the same size, then$Vgs27 = Vgs23, Vgs28 = Vgs26$.

The quiescent current can thus be expressed as

$$Iq = W/L_{27}/W/L_{23}\, I_{21} \quad (26)$$

Here we suppose the currents in M21 and M24 are the same, and the following equation is satisfied

$(W/L)_{27}/(W/L)_{28}=(W/L)_{23}/(W/L)_{26}=(W/L)_{22}/(W/L)_{25}$

$$=(W/L)_{19}/(W/L)_{20} \quad (27)$$

To make the quiescent current stable, M29 and M30 were added as floating current source, so as to bias the class AB control circuit. Here M29 and M30 has two parts to play, one is

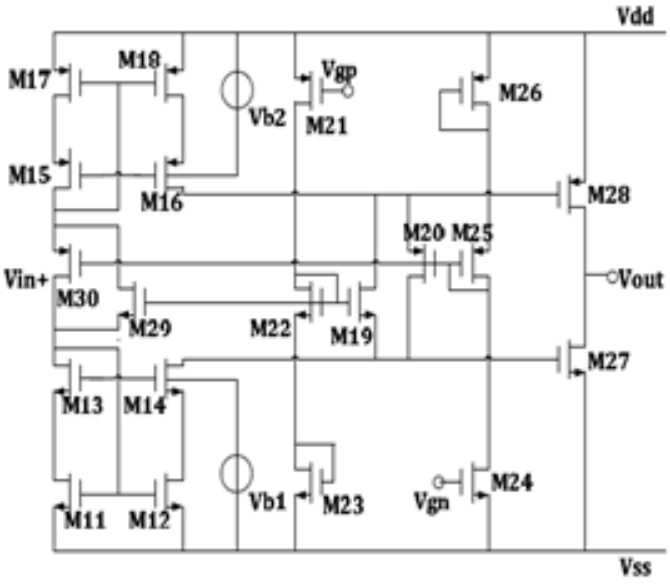

Figure.3The improved output structure with floating current source

to compensate the affect of voltage source, as they are the same structure of M19 and M20. In this way, PSRR of the circuit can be improved. The second is to make the quiescent current stable, less affected by the common mode input voltage

.The whole circuit can be seen in Fig. 4.

From Fig. 4, we see that the cascaded Miller frequency compensation method was used. Compared to the classical Miller compensation, this method shifts the non-dominant pole to higher frequency

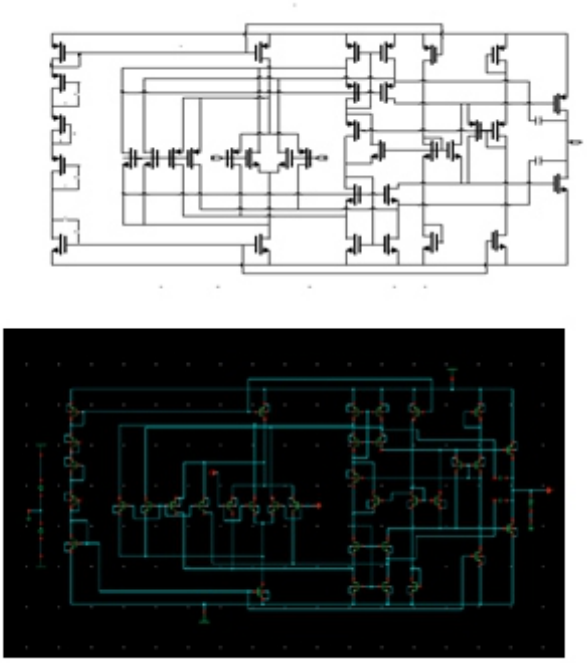

Fig-4 The proposed op-amp circuit

3. SIMULATION RESULT

Based on the proposed circuit in Figure.3 Op-Amp has been designed 180nm CMOS technology. The Op-amp is currently being fabricated in SCNO. So only the post simulation results will be presented here. Fig.4 presents the simulated results of for *V*dd=1.8V. The process parameter and the electrical specification of CMOS op-amp for 180 nm CMOS technology are tabulated in the Table I and Table II respectively. Fig. 6 shows the frequency response of the Op-amp for different Vi, cm values. The DC gain (Av0), gain band width product (GBW), and phase margin (PM) better than 99.2 dB, 16.6 MHz and 65.3° respectively has been achieved. Form Fig.6 we can also see that the GBW and PM of this Op-amp remain almost independent of Vi, cm.

Load capacitance: C_L (pF)	10
Miller compensation capacitances: C_C (pF)	3
Supply voltage	+1.8 V

Table 1- Electrical specification of cmos op-amp

μ C_{ox}/2: NMOS (A/V^2)	173.9
μ C_{ox}/2: PMOS (A/V^2)	35
Vthpmin(volt)	0.37
Vthmax(volt) NMOS	0.5
ICMR(Volt)	1.3
Vdd(volt)	1.8

1-AC RESPONSE

Through AC response we can simulate the schematic to find out the bode plot and phase plot.

In Figure 7, a bode plot and phase plot for 1.8 V, 27° C and C_L= 5pf is shown. As can be seen, the open loop gain is 62.05 dB, and a phase margin is -13.69°. The unity gain bandwidth is 17.15 MHz and f band width is 1.74 KHz

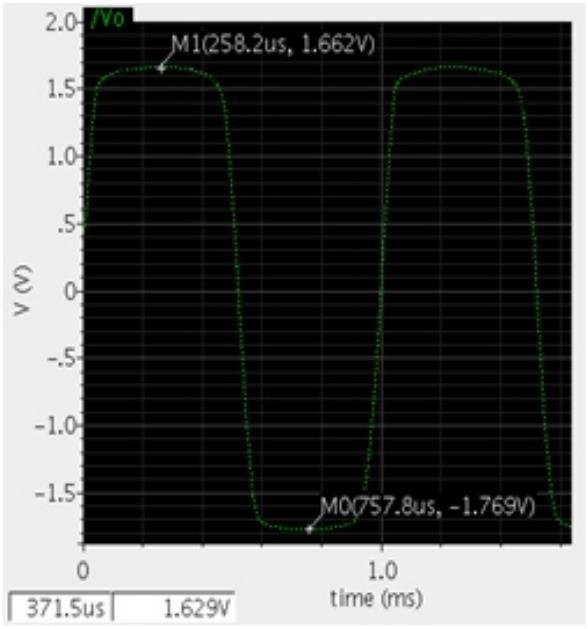

Figure 5.Frequency Response Plot with C_L=5pf

1-phase and gain margin of Op-Amp -phase and gain margin-fig 8 shows that phase margin is 41.6deg and gain margin is 75.6db after simulation in applied voltage 1.8 and gain 83.67db and phase 136.6deg.

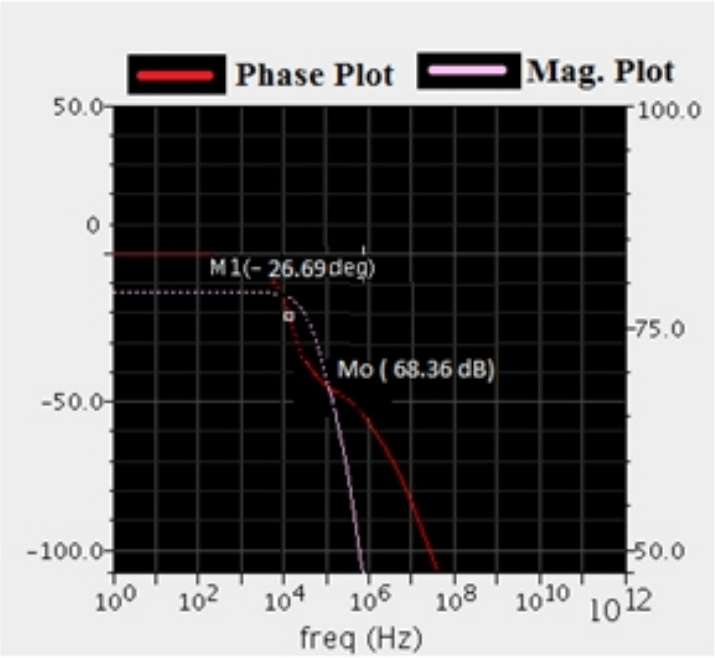

Figure6. phase and gain margin of Op-Amp

Table 2

Simulation Results rail to rail class AB control cmos Op-Amp (180nm Technology)

Specifications	Simulation results
DC gain (dB)	86
GB (MHz)	19.9
Phase margin	153.3
Gain margin	68.6
CMRR (dB)	180.8
ICMR (V)	0.9
Slew rate (V/μS)	11.2
Power dissipation(μW)	99.4
I_{D5}(μA)	11.8
I_{DL}(μA)	60.1
Load capacitance (pf)	5
Supply voltage (V)	1.8

4. TEST AND MEASUREMENT

To determine the dc gain improvement provide by the introduce structure. We have realized two stage Op-Amp in 180 nm CMOS technology. In the figures 5 we have simulate it to calculate the transient response, fig-6 shows DC gain, fig-7 phase and fig 8 shows gain margin and phase margin In table 3 we simulate the proposed Op-Amp at 180 nm and measure the performance. By the proposed structure we got excellent result of dc gain and Slew rate. If it is less than the simulated one (not totally realistic, because technology dispersion are not taken into account) dc gain and GBW shows increase DC gain decrease GBW frequency .then I say that yet increase bandwidth of op-amp then balance DC Gain , good being to amplifier. if increase frequency then these amplifier work at oscillator .so we have to balance condition in both. We do not have yet the simulation result for the Op-Amp realized at 180 nm with 1.8 V V_{DD}.

5. CONCULATION

We simulate the proposed Op-Amp at 180 nm using cadence virtuous and measure the performance. By the proposed structure we got excellent result of dc gain and Slew rate. If it is less than the simulated one (not totally realistic, because technology dispersion are not taken into account) dc gain and GBW shows increase DC gain decrease GBW frequency. Then I say that yet increase bandwidth of op-amp then balance DC Gain , good being to amplifier. if increase frequency then these amplifier work at oscillator .so we have to balance condition in both

6. REFERENCES

[1] Yi Zhang, Qiaomeng and Zhigong Wang "Constant-gm Low-Power Rail-to-Rail Operational Amplifier", 2009, IEEE.

[2]"A 4-μW 0.8-V Rail-to-Rail Input / Output CMOS Fully Differential OpAmp"2011 IEEE

[3]"Design a Low-Noise Operational Amplifier with Constant-gm" SICE Annual Conference 2010August 18-21, 2010,

[4]"Analysis of CMOS Differential Input to Increase ICMR of Folded C as code Operational Amplifier"2010 IEEE Symposium on Industrial Electronics and Applications (ISIEA 2010), October 3-5, 2010, Penang, Malaysia

[5]IEEE transactions on circuits and systems—ii: express briefs, VOL. 53, NO. 4, APRIL 2006 289"New Low-Voltage Class AB/AB CMOS Opamp With Rail-to-Rail Input/output Swing"

[6] "A 1.5-V, Constant-Gm, Rail-to-Rail Input Stage
Operational Amplifier "2006 IEEE.

[7]"Constant gm, rail-to-rail input trans condutance stage with output common mode current compensation " 2006 IEEE.

[8]Design of Low Voltage Low Power CMOS OP-AMPS with Rail-to-Rail Input/output Swing. Proceedings of the 17th International Conference on VLSI Design (VLSID'04) 2004 IEEE

[9] B. Razavi, Design of Analog CMOS Integrated Circuits. McGraw-Hill.

[10]Phillip E. Allen and Douglas R. Holberg, CMOS Analog Circuit Design. New York: Oxford University Press, 2002"

[11]J.M.Carrillo, J.F.Duque-Carillo, G.Torelli and J.L.Ausin, "1-V QuasiConstant-gmInput/Output Rail-to-Rail CMOS Op-amp",INTEGRATION, the VLSI Journal, vol.36, no. 4, pp.161-174, 2003

[12] K. Lasanen, E. Raisanen-Ruotsalainen and J. Kostamovaara, "A 1-V 5μW CMOS-Opamp with Bulk-Driven Input Transistors" Proc. 43rdIEEE Midwest Symp. on Circuits and Systems, vol. 2, pp. 1038-1041,Aug. 2000

[13] T. Lehmann and M. Cassia, "1-V Power Supply CMOS CascodeAmplifier", IEEE J. Solid-State Circuits, vol. 36, no. 7, pp. 1082-1086,July 2001.

[14] E. Raisanen-Ruotsalainen, K. Lasanen and J. Kostamovaara, "A 1.2 VMicropower CMOS Op Amp with Floating-Gate Input Transistors"Proc. 43rd IEEE Midwest Symp. Circuits and Systems, vol. 2, pp. 794-797, Aug. 2000

[15]Yamu Hu and Mohamdsawan "A Low –Power 900 mv rail to rail Class-AB Operation amplifier", 2003,IEEE

Use of Mobile Technology to deliver Library and Information Services

Kusum Lata Malik
Librarian, K.V.M.M (PG) College, S
waroopnagar, Kanpur (U.P.),
E-mail: latamalikkusum@gmail.com, Mobile. 9935311392

A B S T R A C T

The mobile technology has changed the way one connects and interacts with the world. The paper defines what the Mobile Technology (MT) is, how the traditional library services are now moving to mobile library information services. . A library may reach the remote users effectively by adopting of mobile technology in its services. Now users expecting, or preferring, to do things online that would previously have required a visit to the library in person. The objective of this paper is to shows the major library and information services provided by using mobile technology to satisfy the information needs of variant users. The paper discusses important mobile devices in library and information

services. What are the pros of using this technology in libraries? The paper highlights an introductory view about library and information services on mobile devices. It attempts to identify key issues including factors affecting implementation of mobile technologies. Mobile technology will bring about a paradigm shift from the traditional methods of information delivery and integrate ICT as an essential component in every days lives. This paper implied that academic libraries would find mobile technologies to be the ideal tools for bringing reluctant users to the library, mainly for their convenience and suggested the measures. The paper concluded that the mobile technology has become boon to libraries and information centers.

1. INTRODUCTION

Mobile technology is a wireless technology that work with radio waves and can be carried about and used anywhere. The wireless technology and mobile phones are becoming an integral part of everyday life and are changing the way one connects and interacts with the world. Telecommunication technology is developing at such a rapid speed with wireless communication standards and capabilities evolving rapidly across the spectrum. The first generation (1G) standard for voice was developed in 1979.

.This was followed by the second generation (2G) standard using global system for mobile communications in 1992. The most recent standard that followed is called 3 Generation (3G). 3rd Generation networks are fully operated in many countries across the world. We consider mobile technologies; the first device that comes to mind has to be the cell phone or the smart phone. Begining to the mobile technology in the library can want to have a mobile-based website or a mobile application 'app' that reads well on small screens. These sites or apps do not need too much web design knowledge because well-designed mobile sites do not have complicated code or scripting languages and can be designed in-house.

According to Kate Kosturski and Frank Skornia mobile technologies: “An opportunity for higher education to reachs its constituents in new and compelling ways.” 'Mobile Computing' as a major trend having the most significant impact on education. It has been identified as having the likelihood of entry into mainstream educational institutions within the next year. (Johnson et al. 2011). Growth in the mobile industry and in particular, the increasing trend for students to use mobile devices is greatly influenced by subscription and data plans becoming much more affordable. (Nielsen 2010).

Mobile phones have operating systems to run applications, access the internet, allow downloads, support multiple e-mail accounts, create and edit documents, create playlists and even provide location/direction via GPS. Mobile phones capable of accessing the internet to current day 'super phones' with capabilities equivalent to minicomputers and laptops. (Wikipedia 2011). Mobile technologies have made communication and information access very convenient and timely to users from the comfort of their own homes and offices, and from wherever they are while on the move with their cellular phone units or PDAs (personal digital assistants). The new ways of working afforded by mobile technologies are often characterized in terms of access to information and people anytime, anywhere. With advancements in technology and the rise in mobile phone use, people are taking advantage of being connected to data wherever they are. Mobile phones aren't just phones anymore: they can access e-mail, search the Web, video chat, and play games. Even mobile devices like iPad and iPod touch can bring social media, productivity tools, and entertainment literally into the palm of your hand.

Therefore, libraries should be exploring mobile devices as a way to connect with patrons. Creating a library application (“app”) or mobile Web site that allows patrons to access library hours, view their library account or even search databases is easier than most people think. Mobile technologies are becoming an increasingly important and popular in how we search, access, and interact with information. Libraries around the world are meeting this change head on by adapting our services and collections to the proliferation of mobile devices. Mobile technologies being used in libraries for Library

resources that are mobile access to library collections such as e-books, e-journals, and special collections, that are supporting or extending traditional library services like reference enquiries and circulation, using mobile technologies. Mobile devices can be used for specific purposes that are new functionality offered by mobile technologies such as geolocation.

Mobile technology has changed everyone's workflows, with many researchers and students now expecting, or preferring, to do things online that would previously have required a visit to the library in person. These activities could includes:

™ Searching OPACs for resources
™ Reading abstracts
™ Reading the full digital content, such as journal articles or eBooks, that they would normally read on their desktop
™ Finding and saving references for reading or citing, now or at a later date
™ Accessing their library account

Library professionals provide library services or other assistance via mobile devices through e-mail, chat, instant messaging, or SMS text. Instant messaging, chat, and text lend themselves to mobile access because they are designed for the relatively short exchange that people typically use when communicating with a handheld device. Offering reference services using SMS text and chat in particular are relatively easy for libraries to employ because there are many free services to support them.

Why Libraries and Information Centers Go with Mobile Technology

™ It is easier to access
™ It provides content ubiquitous
™ It makes able to access new services
™ It enables patron to connect via new medium
™ It diversifies audience
™ It three times more capable than personal computer

Objectives

The objective of this paper is to shows the major library and information services provided by using mobile technology to satisfy the information needs of variant users.

Mobile Devices in Library and Information services

Mobile Phones: The mobile phones are not only a phone portal to mobile outreach. Library and information professionals who used more traditional cell phones can consider text reference for their mobile outreach programs. With Google Voice and library-based options such as MyInfoQuest and Mosio's Text a Library and information professionals can set up a text reference service that can help in handle ready reference questions or even more complicated questions quickly and easily.

MP3 players: An iPod, iPhone or other MP3 player mobile devices can use in library for audio and/or video tours. With an iPod or MP3 player, users can explore the library at their convenience, concentrating on the parts of the collection most relevant to their needs.

E-readers: Due to the popularity of Amazon's Kindle and Barnes & Noble's Nook. The latest generation takes content delivery to new levels, allowing for wireless browsing, purchasing, and delivery of content through these devices.

Tablets: Tablets or Tablet PCs can be used in various activities for example searching databases, downloading articles, and perusing the catalog either through apps or tablet-formatted websites. The overall utility of tablets also makes them an ideal device for accessing a variety of documents, including ebooks, ejournals and e databases etc.Their ability to play audiovisual materials and their web connectivity could signal a new form of academic text that is both immersive and interactive. Tablets can also used on-the-spot reference services. The user can access the library's resources conviently through tablets while away from the reference desk. The design of the recent generation of tablets with Flash web technology can provide accessing some websites, especially video sites.

Electronic textbooks: E-readers and tablets have new features that allow students to highlight and add annotations to the text, just as they would with paper texts. They give students the capability to link to additional information.

Pros of Library and Information Services through Mobile Technology

™ User-friendly aid familiarity with their own devices and technology helps the users in accessing information quickly and does not require orientation and training.

™ Mobile users are using the facilities on mobile phones like SMS, instant messaging, web

browsing, e-mail effortlessly to communicate. Most of the features are pre-installed on mobile devices or option for data plan packages.

™ Personalised service helps users to interact with library staff to seek specific information or reference away from library

™ Ability to access information from anywhere at any time will be of great help for users who cannot visit library in person and provides a constant link to required information resources.

™ Users need not record information about resources while browsing and searching library resources or wait at library transaction counter to renew/reserve books and hence the time of the user is saved.

™ Libraries can enrich OPAC by allowing users to incorporate user created content like notes or images uploaded by users.

™ Mobile communication enables libraries to offer location-based services/content through global positioning system (GPS) capabilities. Libraries can guide the users to the location of specific document or service through maps and navigational tools

™ Limitless access all online resources accessible on their desktop also become accessible through mobiles.

™ Academic libraries can support distance learning, formal education, and research activities through mobile devices

™ The mobile devices can further appreciate the service with instant answers like definitions, meanings and other information from digital libraries and web.

™ Some publishers are already delivering e-books (both text and audio) that are accessible via mobile phones.

™ A large collection of audio books both free-and subscription based services are available for download and also transferable to mobile devices.

™ Libraries can make use of multimedia messaging service (MMS) on mobile devices to share photos, videos, and audio.

™ One can get todays' news on their mobiles either by accessing the web portals or SMS text messaging on their mobile phones.

™ Library Instructions and Virtual Tours

™ Mobile Optimized Library WebPages

™ Library tours, instruction/induction/orientation programs have been quite significant in bringing the nonusers to libraries and also help the remotely located or users located in different geographical locations.

™ Library users, who don't have time or inclination to attend an on-site workshop, can get access to library tours on their mobile devices. Online Library Catalogs on Mobile Phones.

™ To provide location-based services, libraries have to use mobile telecommunication system, the internet/web-based OPAC on intranet and geographic system like GPS.

™ QR Codes on Mobiles QR code6 stands for 'quick response', and basically two-dimensional bar codes that can contain any alphanumeric text and often used to store urls, text, etc., known as 'mobile tagging'.

™ Mobile phones make ILL/document delivery services faster and cut-down the time to request/visit different libraries and complement the geographically remote users.

Library and Information Services on Mobile Devices

Library mobile services included access to new titles, e-resources updates, catalogue searching, booking rooms and PCs, contacts, events and databases optimised for mobile use, enables users to search for library materials, see the cover image, read a summary, obtain item availability information, find out which bookshelf the item is on using floor maps, provide feedback on the item and save the item information for future reference. The Library's opening hours, news, floor plans and subject guides are also easily accessible on mobile phones. SMS service libraries became more interested in using this

service when it became possible to send SMS to an email service. This service expected by library users, their SMS reference service was predominantly managed by the library with little or no involvement from their IT department. The use of iPods, iPhones, Tablets, TabletsPc and MP3 players to provide an audio tour. In academic libraries, the commonly demanded services on mobile devices include: catalogue searching, SMS/text a librarian, locating spaces, booking computers and rooms, location based services, payments, mobile emails, instant messaging and videos. Mobile devices are fast becoming users' first choice of access. (Gartner 2011).

The libraries have been quick to concentrate library services through use of mobile devices as SMS service, service lending out eBook readers, the resources to develop its own apps unique to their users, catalogue searching, providing patron account and basic library information, to allowing users to scan a book anywhere, check for availability at their home library and then put a hold on the item.

Libraries and information centers can provide the following specific services on mobile devices

™ Academic affairs administration: provides the latest news and notices from a university. Users can select a menu and see results that are designed specifically for mobile viewing email notices of new books and journal articles, set up preferences for catalogue searching, etc.

™ E-Contents: offers access to a variety of databases and digital resources such as e-Books, e-Journals,Web databases, dissertations, and article databases. Users can get fast relevant answers whenever needed with e- Contents Search, search designed just for mobile user.

™ Library guide: gives users the best of library guide information such as library use guide, question answering service, and library statistics delivering rich content in a way that works best for users. If users have questions and want to contact the library professionals for help, they can get a fast response from the library via the mobile device and find the appropriate information needed.

™ Notice: provide the latest news, notices and reach users wherever they might be via SMS and MMS from libraries. Users can get notified instantly with notice alerts: alerts on overdue books, outstanding fines, reminders to return library items, library event information, etc.

™ In-house search: accesses a variety of library-owned resources and databases. Users can just enter search terms and see results that are designed specifically for mobile viewing. This service

includes OPAC (online public access catalogue), integrated search, and original document search.

™ SMS Alert Service: Existing e-mail alert services like bringing new books to the notice of users for suggestion, intimation of arrival of indented documents by users, informing availability of reserved documents for collection, appraising about which/when books are overdue, library circulars, e-journals subscribed, change in timings, information about important events, etc., can be upgraded by sending through

SMS alert services. SMS messages can be sent to group of users simultaneously through many free applications, and intermediary websites/clients. To send SMS to collect the requested books, Acknowledging the user about renewal of a book., OPAC service, Users may request the opening and closing hours of the library.

™ Bulk SMS have revolutionized the mass communication through mobile phones. Masses can be reached within 10 seconds with the bulk SMS. Bulk MMS software allows you to send pictures, sounds clips, video clips and around 5,000 characters of text.

™ Mobile-based Library Lending Service: Libraries can formulate regulations for using mobiles for circulation of reading materials and maintenance of users account. Mobile phones make ILL/document delivery services faster and cut-down the time to request/visit different libraries and complement the geographically remote users. provides the following services such as lending extension/inquiry, return information/inquiry, interlibrary loan requests, SDI service application, email service of academic journals, database use education application, etc. My library is a personal library space where users can find information and resources of their choosing. Users can read alerts, check records, renew resources, request items, track interlibrary loans and document delivery requests, set up future application and work in mobile library services.

™ Suggest a purchase: Library professionals can receive the suggestions from the users sent via mobile phones. In such cases users need not to visit the libraries and write the requirements in a register.

™ Location of the library: Users might be provided with virtual tours of the library sections and their services.

™ Audio Tour: Libraries even can provide audio tour of a library.

™ New Title Preview: Mobile gadgets can be used to disseminate the information about newly acquired documents which are of irrespective of forms.

™ Image Services: The Image Services in a library might offer a number of high quality, fee based photographic and document imaging services including digitized photographs, diagrams, maps, photos of places of national importance.

™ Research consultation and instruction: It is a kind of customer care service. Research scholars may have an interaction with the library staff to get the consultation and get suggestions via mobile phones.

™ Wi-fi - Internet Access: Mobile phones are available with 3G facility. Libraries can offer wi-fi facility to access electronic information sources.

™ Catalogue search: Libraries can provide their catalogue on the mobile devices.

™ Journal finder: Library Journal Finder provides access to full text journal, magazine, and newspaper content as well as links to titles held in print.

™ News and Events: Information on job openings, varieties of scholarly competition, library events such as orientations program, stock verification, book recall, lectures on special topic, news in relation to scholarly work, awards and so on can be given using mobile devices in order to update the user's knowledge short messages regarding the library events and news can be sent to the users personally.

™ Reference service: Library users can ask library professionals anything through the live chat and texting with mobiles. The reference services can be provided with the help of sending and receiving SMS. Immediate feedback is also possible from the user's side.

Issues

There are still limitations, such as monochrome screens, difficulty with various file formats, and restrictive content licensing. One area of digital content that academic libraries have already had a major

presence in has been electronic reserves. The primary challenge that exists in this area is that unless the electronic reserve content is in a layout that can easily be converted to an e-reader format, it can be difficult to make it clearly readable.. The greater challenge is to provide access to e-journals through mobile phones as the libraries and publishers prefer authentication limited to campus wide IP address. Libraries must convince the publishers to provide user id and password mode in addition to IP address based authentication to access e-journals on mobiles. While redesigning library must take into consideration the basic models of mobile phones to the tablets with greater capabilities and functionalities as some of the iPhones and tablets are compatible to access the web pages designed for larger screens. But the time taken to access is more and downloading is very slow and expensive. Users expect a high standard of digital content from a library, but traditional text layouts designed for printed or desktop material are difficult to read on a smaller screen. For a researcher, finding the desired academic content can be a complex process and sometimes necessitates prior knowledge of how to go about getting to it.

Users need to be able to search a huge database, effectively, and without it slowing down their connection. Access must be restricted to library users only and these users may now not be physically on site. A diligent design, born of extensive user journey research and accompanied by appropriate access permissions being put in place, is therefore of paramount importance in distilling often complex library websites and systems into a mobile-friendly format. However one cannot neglect the policies and standards of information security of the organisation. Since, the feature like 'always on' and continuous connectivity makes new devices more vulnerable to security threats, the same need to be addressed cautiously before setting up the library services for mobile devices.

Suggestions

™ In the libraries currently provide mobile access to resources, the library catalog is most commonly offered and databases and assistance from library professionals are next most frequently provided services. A few more interesting services as a library locker reservations, a virtual suggestion box, alerts about database trials, an app that lists new books, and using iPads, iphones, smartphones, tablets, tablet pcs or other mobile devices may be include for roving reference. Using the latest mobile technology in libraries will help to provide access to library materials for mobile users.

™ When library services provide through mobile devices, the set up should be such a type so that a systems administrator or IT expert can be help in navigation of chat and text services.

For instance, when a text message arrives during a time when no one is monitoring the service, a voicemail message automatically appears in library's e-mail account. Library professionals can find an enormous amount of advice on the web about how to begin offering mobile-friendly reference, how to expand the virtual reference services and how to choose among free and fee-based services for their library's needs and budget.

™ In light of trends toward more widespread use of mobile devices, it makes sense for libraries to provide access to their collections and services in ways that work well with mobile devices. Users are very interested in mobile access, even if they have not yet purchased a mobile devices or find data plans to be too expensive at this point. We have begun by implementing mobile applications that are available from vendors of our online catalog and databases because these require minimal effort and no additional cost. We present ideas for establishing an implementation team and advice for academic libraries who wish to "go mobile." We aim to have a concrete plan for the work that will be required to optimize the library's website for mobile access. A significant step is hiring a digital services librarian to work closely with the webmaster, electronic resources librarian, and others interested in promoting access to resources and services via mobile devices.

™ The website must be redesigned to have fewer graphic, so that the page loads much faster and with minimal keyboard operations, to ease the mobile user. In this context, text-only websites are easier and faster to navigate and fabricate into new applications.

™ Online Library Catalogs on Mobile Phones Libraries are required to interact with the software vendors to create mobile compatible WebOPACs4.

™ Library websites and the content contained within libraries' collections should render well on a variety of mobile devices in order to continue to meet the needs of users. Library professionals must be decided whether the content to be available purely online, via a mobile site, or whether to create an interface that users can download to their handheld device, from which to access content either online or offline.

™ To overcome the downloading and expensive difficulties, it is necessary to make mobile-friendly websites by using (cascading style sheets) CSS or auto-detect and reformat (ADR) software, which allows a website to rearrange its content and navigation to suit the size of the screen it is being viewed on. Libraries should be aware of mobile web browsers, screen resolutions and size, etc., while creating WebPages.

™ If the organization has its own secure and private enterprise IM network, libraries may as well make use of these as they are more reliable and secure; or else use web-based free instant messaging services from Google, America Online, Way2SMS, etc.

™ Audio/ virtual library tours can be produced fairly quickly, inexpensively, and could reduce the amount of staff time spent helping new users to orient themselves in the library and explaining the facilities available. It can easily be provided both as downloads from the library website and on mobile devices.

™ Libraries can formulate regulations for using mobiles for circulation of reading materials and maintenance of users account. This wireless solution enables staff to assist patrons in the stacks, checkout materials while off site, such as at community or campus events, and update inventory items while walking around the library.

Conclusion

Already mobile phones are no longer a luxury, but a necessity not only for simple voice or text communication, but also for accessing the internet. Such connectivity seems to be the wave of the future. Mobile technology has become boon to the libraries. A library may reach the remote users effectively by adopting of mobile technology in its services. Mobile phones are inevitable tools for information communication. Human beings in a society use mobile phone to communicate thoughts, facts, conversations, in general, information. The dissemination of processed information is a common factor in a civilized society. Mobile technology is fast becoming the preferred method for connecting to the Internet, especially for people on the go. Library professionals must keep pace with this trend and integrate themselves into the mobile realm if they wish to deliver enhanced user services. With the increased use of Internet through mobile, libraries are required to redesign their web pages as mobile optimized interactive and participative library web pages to provide dynamic information services to users on a 24X7 basis via mobile devices. The task of libraries is to exploit new technology in a more effective way to promote and integrate them into the design of future library services in a cost efficient manner.

References

Bala,A. (2010).Use of mobile technology in enhancing library services. International Journal of Library Science, (10), 56-63. Retrieved from http://www.ceser.com/cpjour/index.php?journal=ijls=article&op=view&path%5B%5D=18

Barile, L. (2011). Mobile technologies for libraries: A list of mobile applications and resources for development. College & Research Libraries News, 72 (4), 222-228. Retrieved from http://crln.acrl.org/content/72/4/222.full

Choi, W. (2007). Current status of mobile library service. Industrial information programs in Korea: An overview. Inter Lending & Document Supply, 35 (2), 60–65. Retrieved from www.researchgate.net/.../235318748_Industrial_information_programs_in...

Choi, W. (2009). Development and application of mobile technology in South Korean libraries . Libri, 59, 14 –22.

Dresselhaus, A. & Shrode, F. (2012). Mobile technologies & academics: Do students use mobile technologies in their academic lives and are librarians ready to meet this challenge? Information Technology and Libraries, 31, (2). Retrieved from http://ejournals.bc.edu/ojs/index.php/ital/article/view/2166/pdf_1#

Johnson, L. et.al. (2011). The new media consortium: The 2011 Horizon Report. Retrieved from http://net.educause.edu/ir/library/pdf/HR2011.pdf

Kosturski, K. & Skornia, F. (2011). Using mobile technologies in the academic library: All the knowledge of the world in my hand: Mobile technologies mobile phones. Computers in Libraries. Retrieved from http://www.infotoday.com/cilmag/jul11/Kosturski_Skornia.shtml

Kumar, B.T. S., Kumar, V. D. & Prithviraj, K.R. (2013). Application of mobile technology in Library services. Retrieved from www.inflibnet.ac.in/caliber2013/ppt/1_7.pptx

Malathy S. and Kantha P. (2013). Application of mobile technologies to libraries . DESIDOC Journal of Library & Information Technology, 33 (5), 361-366. Retrieved from http://publications.drdo.gov.in/ojs/index.php/djlit/article/view/5098/2935

Mobile technology for academic libraries - why optimize? (swet blog). 20 Jan. 2014Retrieved from http://www.swets.com/blog/mobile-technology-for-academic-libraries-why-optimize#.Uu8uzj2SzxA

Murphy, J. (2012). Mobile technologies in libraries. Retrieved from http://www.slaagc2012.org/index.php/workshops/mobile-technologies-in-libraries

Spectrum Mobile Learning, Libraries and Technology. (2011). M-Libraries: Library Success: A Best Practices Wiki.http:// www.libsuccess.org/index.php?title=M-Libraries

The library in your pocket: Practical applications of Mobile technology. Retrieved from http://librarylinknj.org/content/library-your-pocket-practical-applications-mobile-technologies

Performance of Voice Activity Detection Method Based on Zero Crossing Rate and Energy Level in Arabic Language

Abdelmajid Farchi[1,2], Soufyane Mounir[3], Badia Mounir[4], Jamal Elabbadi[1]

[1]Laboratory of electronics and communication, School Mohammadia of Engineers of Rabat / University Mohamed V, Morocco

[2]Laboratory of mechanical engineering, industrial management and innovation, science and technical faculty of Settat / University Hassan 1er, Morocco

[3]Laboratory of mechanical engineering, industrial management and innovation, National School of Applied Sciences of Khouribga / University Hassan 1er, Morocco

[4]Laboratory of mechanical engineering, industrial management and innovation, graduate school of technology of Safi / University Cadi Ayyad, Morocco

A B S T R A C T

This work investigates the detection of voice activity of /CVCVCV/ word for /b, d, k/ introducing vowel /a, u, i/ in Modern Standard Arabic (MSA) using the Zero Crossing Rate (ZCR) and Energy Level algorithm. This algorithm has allowed us to identify with good accuracy the beginning and end of words studied.

KEYWORDS - *Modern Arabic Standard, Voice Activity Detection, Zero Crossing Rate, Energy Level, Performance Rate.*

1. INTRODUCTION

The Voice Activity Detection allows us to distinguish between segments of an audio signal that include the human voice (period of activity) and non-voice signals (period of non- activity) in the environment of noise, then determine the start and end points of the operation. [1], [2]. Generally, the feature parameters used for endpoint detection are highly sensitive to the environment. Figure.1 represents an example of activity and no activity.

Research has shown the existence of more than half of the errors in the speech recognition caused by inaccurate detection of the end point even in the ideal conditions.[3]. For this, researchers have devoted their work on the determination of the beginning and the end of the word with exactly offering different algorithms.

J. Li & al., adopted a method based on TEO in a noisy environment. It uses three-state transitions, and a

judgment mechanism based on double thresholds and the results obtained by performing a comparison with two other endpoint detection algorithms showed the robustness of this algorithm. [2]. J. Wu & X. Zhang presented an algorithm based on statistical models and empirical rules based on an energy detection algorithm through two steps: detection of the parameters characterizing the speech by using the algorithm Detection energy, and offering a Gaussian mixture model to align the endings of their optimal positions. The results obtained show better performance in various noisy scenarios [4]. As the formant structure occurs on the spectrogram, this is called the voice print, Wu & al, used the band spectral entropy (BSE) to trace these characteristics [5]. Another method of adaptive band selection (RABS) is combined with BSE to generate a new parameter called (ABSE). The results show that this parameter is very reliable in various noisy conditions [5]. In this article, we proposed a voice activity detection algorithm based on the Zero Crossing Rate (ZCR) and Energy Level to distinguish the active part of the non-active part of the speech signal in the case of standard Arabic for three places of articulation: bilabial, alveolar and velar. Our study is to make a comparison between these three places by calculating the reliability rate.

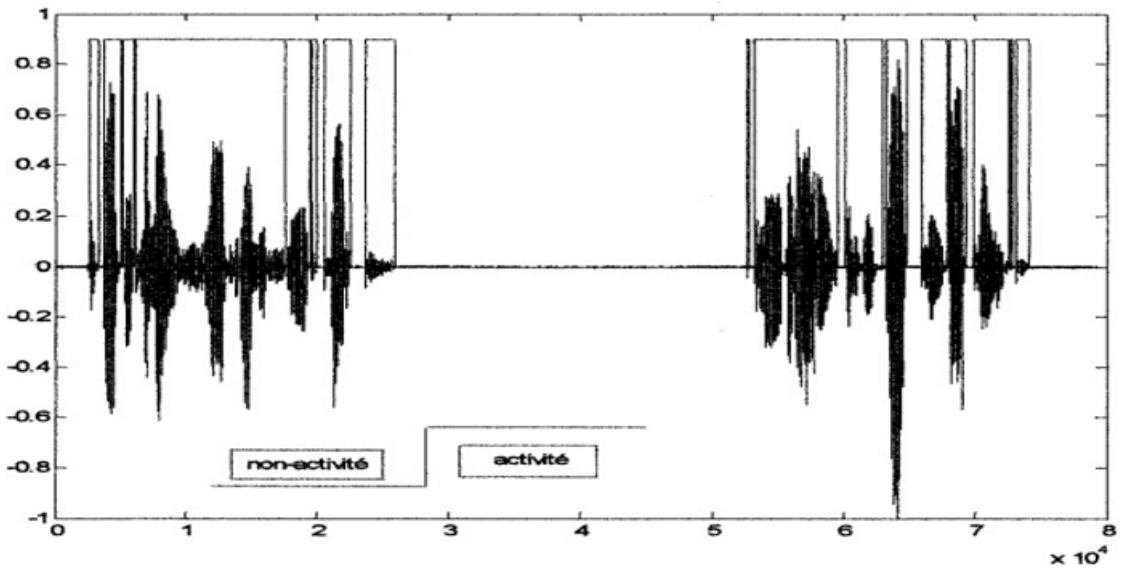

Fig. 1: Example of activity and non-activity [1]

2. ZERO CROSSING RATE AND ENERGY LEVEL

ZERO CROSSING RATE

For a sampled signal, there is zero crossing when two successive samples have opposite signs [6]. The short-term zero-crossing rate is estimated by the formula:

$$Z_n = \sum_{i=1}^{N} sgn[x(i)].sgn[x(i+1)]$$

With:

$$sgn[x(m)] = \begin{cases} 1, & if\ x(m) \geq 0 \\ 0, & if\ x(m) < 0 \end{cases}$$

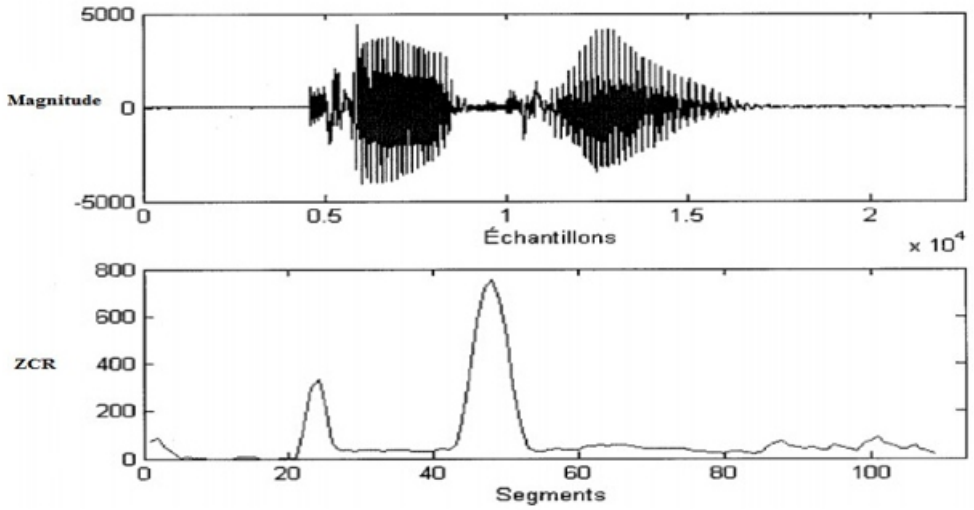

Fig. 2: Zero Crossing Rate of a speech signal

A characteristic for zero crossing rate is that it is high for the unvoiced sound and low for the voiced sound. The zero crossing rate is an important tool to classify voiced / unvoiced and to detect the beginning and end of the word in a speech signal (figure.3).

ENERGY LEVEL

One of the tools to provide a faithful representation of changes in the amplitude of the voice signal x (n) over time is energy short term [6]. In general, the energy of the frame of a signal is given by:

$$E_n = \frac{1}{N}\sum_{i=1}^{N}[x(i)]^2, 1 \leq i \leq N$$

$w(n)$: Hamming window

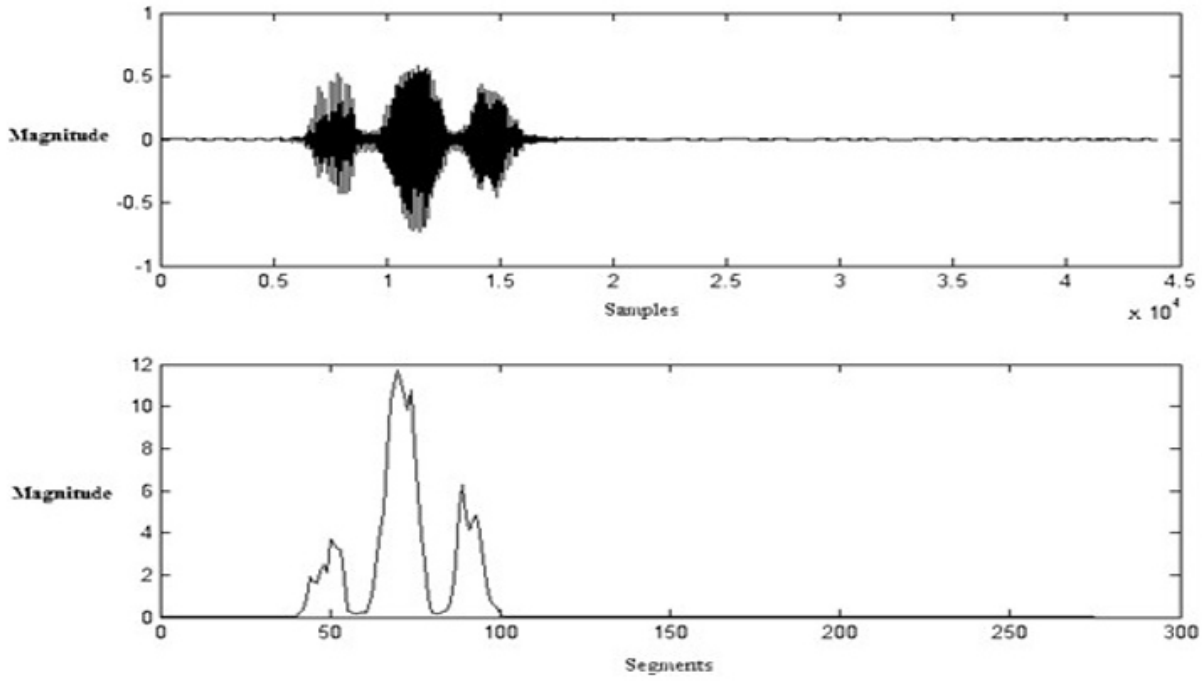

Fig. 3: Short term energy of a speech signal

3. METHODOLOGY

CORPUS

Four Moroccan adult speakers (men) speaking Modern Standard Arabic has been invited to pronounce a series of words CVCVCV (C: consonant V vowel) four times to three different places of articulation (/ b /: Bilabial; / d /: Alveolar, / k /: velar) with three short vowels (/ a, i, u /). The recording was made using a microphone (AM-232 Labtec; Sensitivity:

-35dB, Impedance: 2.2 kOhm, bandwidth: 20-8500 Hz) at a distance of 20 cm in an isolated and quiet room via the software "Praat". The sound is digitized directly to a PC with a sampling frequency of 22050 Hz because the maximum possible frequency is 11025 Hz beyond this frequency, the signal is extremely poorly sampled and the resulting sound is unusable. The quantization used is a 16-bit linear quantization to reduce the quantization error. The recording time is 2 seconds for each syllable. The results are obtained by applying the recordings to a program made by us in matlab.

ALGORITHM

In this study, we proposed a voice activity detection algorithm based on the zero crossing rate and energy shown in Figure 3 by using high and low thresholds of zero crossing rate and energy level.

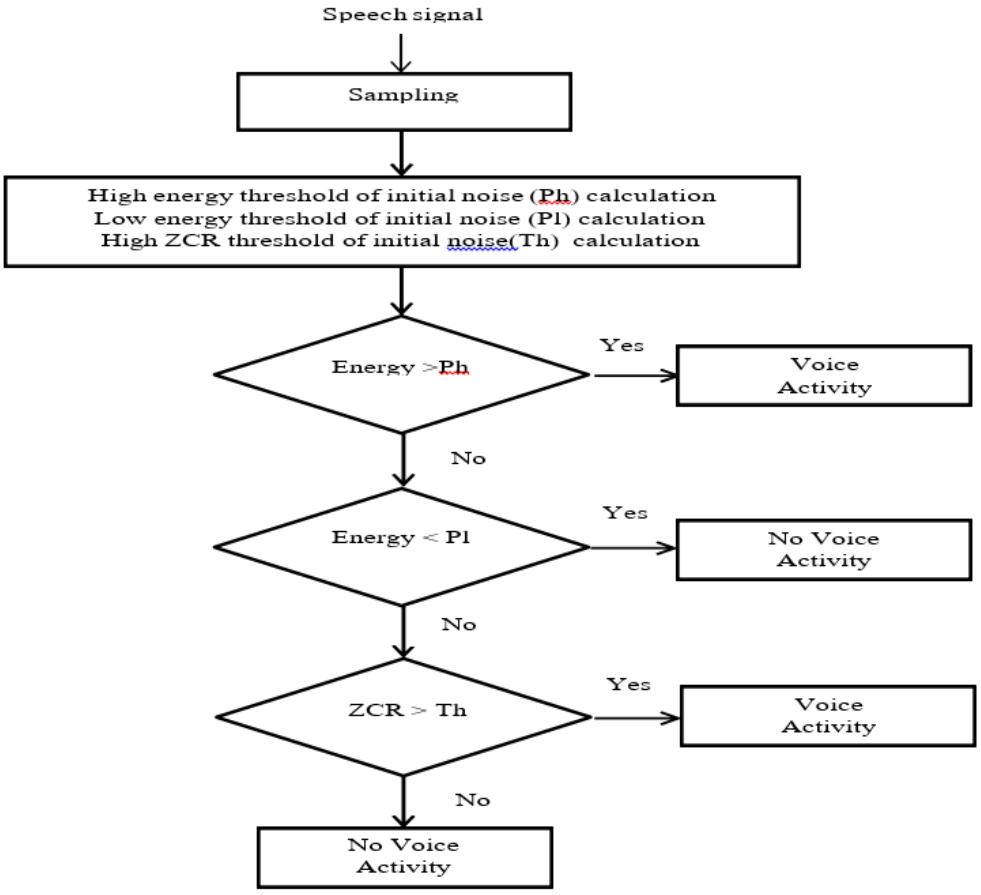

Figure 4 : VAD algorithm based ZCR

4. RESULTS AND DISCUSSIONS

We realized a program in Matlab code based on this algorithm. The results obtained showed that the performance rate for the alveolar (90%) is larger than bilabial (76%) than velar (59%) (Figure 5).

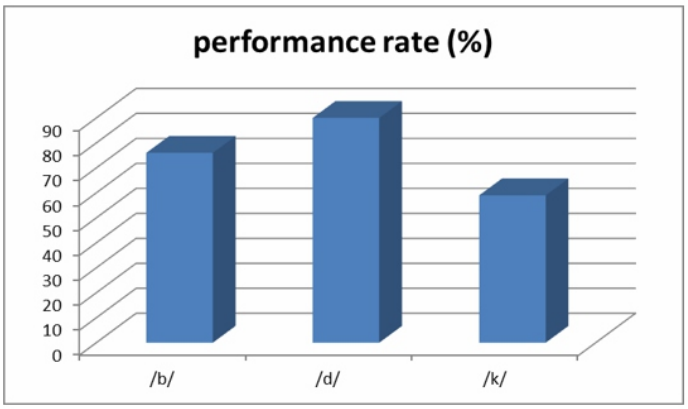

Figure 5: Performance rate of the algorithm ZCR/energy level for / b /, / d / and / k /

Figure.6 indicates the result of our algorithm, it shows accurately the beginning and the end of the speech signal in the case of /bababa/.

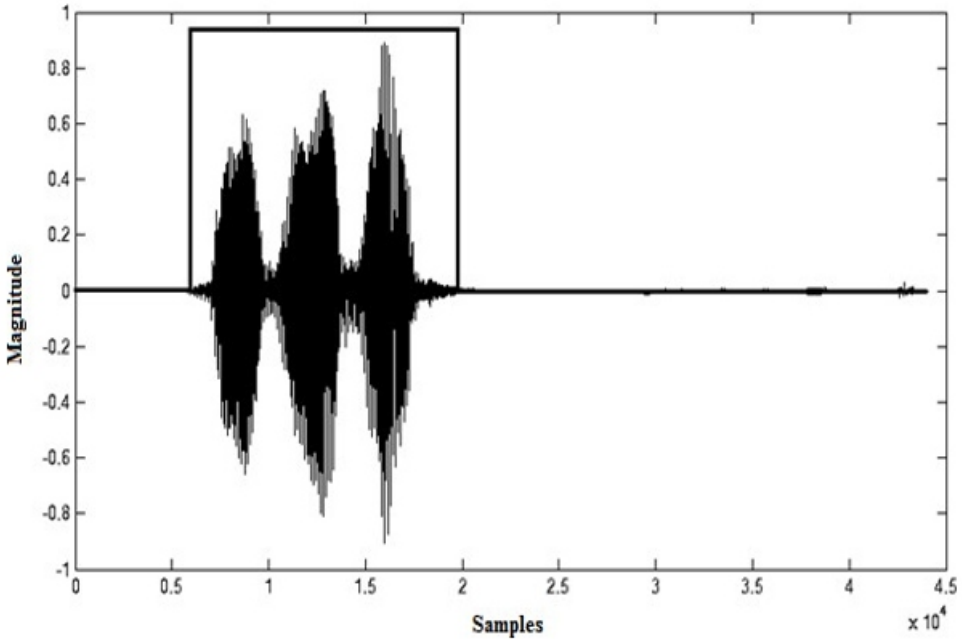

Figure 6: Voice Activity for /bababa/

Figure 7 shows the results of VAD / kakaka /. It is clear that there is difficulty in determining the vocal part of speech and this is due to the energy of the consonant / k / which is very low and confused noise.

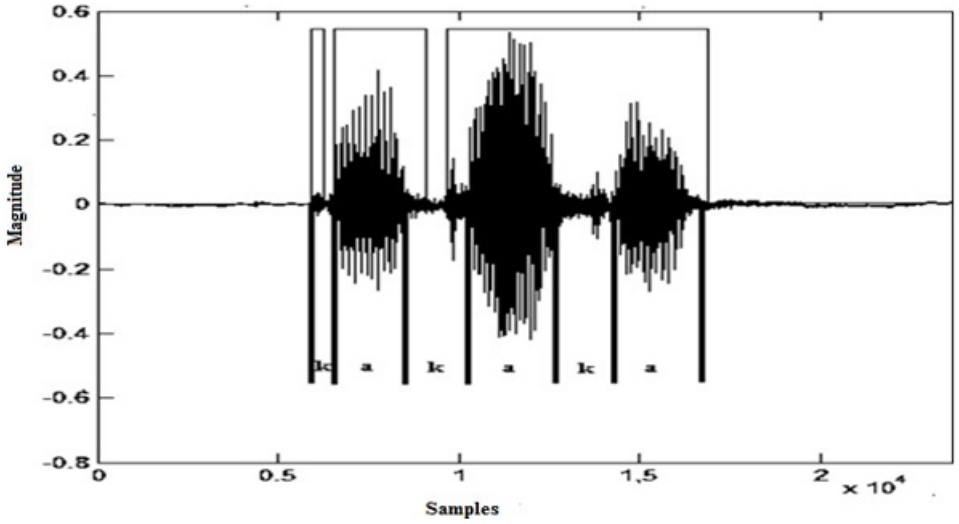

Figure 7: Voice Activity for /kakaka/

According spectrograms words / dadada / and / kakaka /, we note that the energy level of the consonant / d / is higher than / k /: the gray level of the consonant / d / is dense than / k / (Figure 8 and Figure 9).

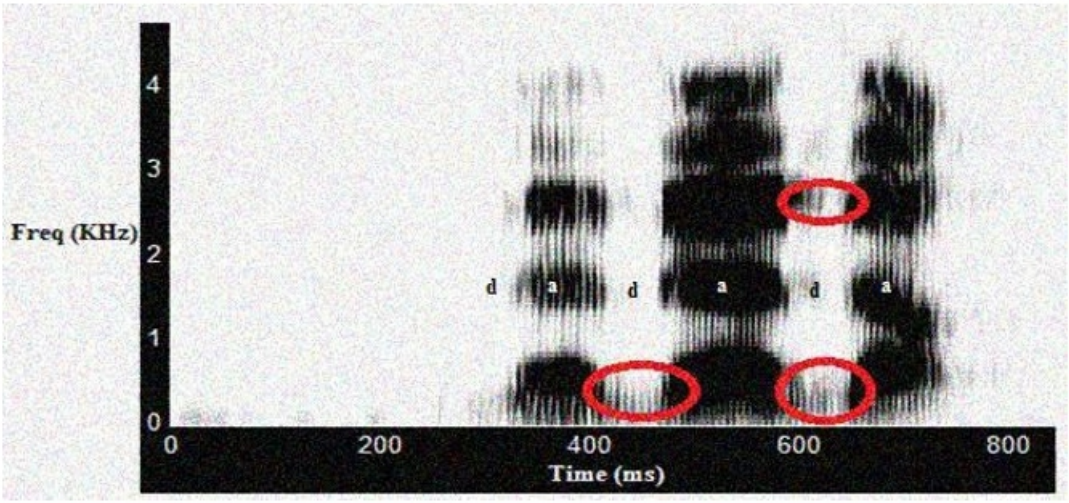

Figure 8: Spectrogram of /dadada/

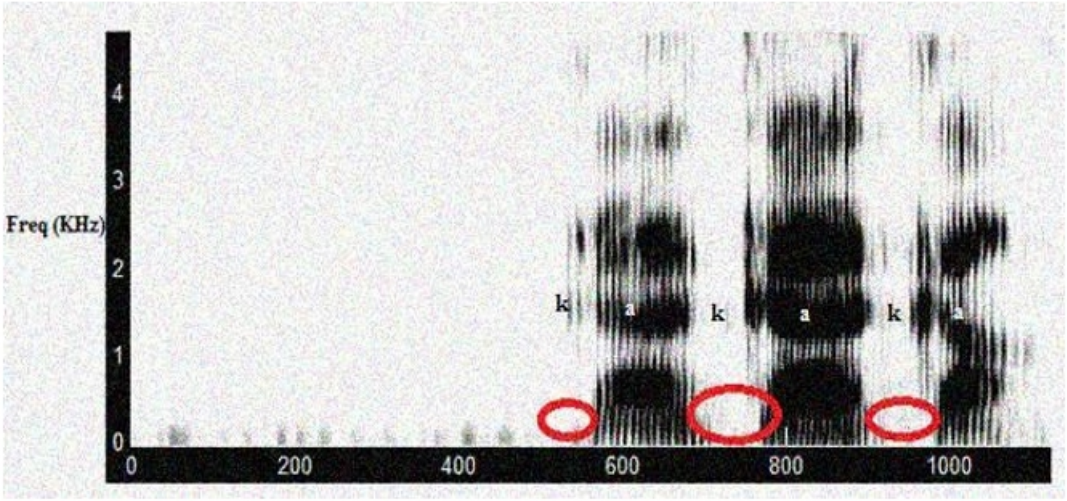

Figure 9: Spectrogram of /kakaka/

These results are consistent with those obtained in the work of Mounir & al [7], where this is explained by the phenomenon of coarticulation in the work of Munir et al, where they showed that the application of the equation of the locus CV context allowed on the one hand, to identify the place of articulation of the consonants according to their virtual locus (bilabials ≈ 1200 ≈ 1800 and velar alveolar ≈ 2600). On the other hand, the locus equation indicates that the slopes of velar have the largest degree of coarticulation and alveolar have the smaller. This result indicates that the intervention of the language in the production of the consonant is inversely proportional to the degree of coarticulation, and therefore the energy of the consonant / k / is less important compared to other consonants / b, d /.This means the energy level is nearer to that of the noise, and it is considered by the algorithm as no voice activity.

5. CONCLUSION

In this work, the results obtained showed a good performance of the algorithm ZCR / energy level for the alveolar, but less performance for velar where we noticed that this algorithm considers that there is no voice activity during the pronunciation of the consonant / k / for most recordings. This is explained by the fact that the energy level of the velar close to that of the noise. This low power is shown in the work of Mounir & al [7].

6. REFERENCES

[1] S. Robidas, Comparaison de methods pour la détection d'activité vocale à bande large sous différents bruits, doctoral diss., School of Engineering and Information Technology, Ottawa, Canada, 2006.

[2] L. Jie, Z. Ping, J. Xinxing, D. Zhiran, Speech Endpoint Detection Method Based on TEO in Noisy Environment, Procedia Engineering, 29, 2012, 2655-2660.

[3] J. Zhang, F. Jiang, H. LIU, Study on endpoint detection based on multi-characteristic jointed in noisy environment, Computer Engineering and Application, 45, 2009, 114-116.

[4] J. Wu, X. Zhang, An efficient voice activity detection algorithm by combining statistical model and energy detection, EURASIP Journal on Advances in Signal Processing, 2011.

[5] B.F. Wu, K.C. Wang, Robust endpoint detection algorithm based on the adaptive band- partitioning spectral entropy in adverse environments, IEEE Trans. Speech Audio Process, 13, 2005, 762-775.

[6] L.R. Rabiner, M.R. Sambur, An algorithm for determining the endpoints of isolated utterances, Bell System Technical Journal, 54, 1975, 297-315.

[7] S. Mounir, I.Mounir, B. Mounir, A. Farchi, Z. Hachkar, Anticipatory and carry-over effects of vowel to vowel coarticulation in Arabic language, International Journal of Research in Computer Engineering and Electronics, 1(3), 1975, 1-4.

Access, Awareness and Usage of Internet by Public Relations Professionals: Comparative Group Analysis of Haryana and Himachal Pradesh Governments

Krishan Yadav, O. P. Sheoran, Pardeep Kumar Chahal and R. S. Hudda
Directorate of Extension Education
CCS Haryana Agricultural University, Hisar – 125 004 (India) Computer

ABSTRACT

Public Relation not works in vacuum or in any direction. It works in well-defined phases; listing and prioritizing of information to be disseminated, ascertaining existing knowledge or understanding public perceptions, communication objectives and priorities, message and media, implementation of message and media impact assessment and message redesign. Digital developments have shaken the world of the media. For 'Public Relations, Social Media is understood as a renaissance of relationship building'. So, E-PR (On-line PR) is not just a series of techniques; it provides a whole new perspective to Public Relations. Thinking from an E-PR perspective will therefore help in maximize the chance of e-business success. Having E-PR perspective' involves learning three new 'R's; Relations, Reputation & Relevance.

To find out that in such an IT based global era of Public Relations, does our departments of Public Relations and their manpower have knowledge, facts, awareness, comprehension, and most important adoption of this new digital/social media in their armory as a tool of crisis communication? The general objective of current study is to know the "Access, awareness, current situation and frequency of use of E-PR (On-Line PR) in government Public Relations department. In the present Study, Directors (Additional, Joint & Deputy Directors), District Public Relation officers (DPROs) and Assistant Public Relation officers (APROs) serving the Department of Information, Public Relations & Cultural Affairs, Haryana and Department of Information & Public Relations, Himachal Pradesh are taken as the sample. The total 96 Public Relation officers were available from the Haryana and, 80 from Himachal Pradesh. The sample size is (176) is very small and specific, so Census Method is adopted in selection of sample.

The findings shows that the PR Professionals of HP have better access of Internet at their work place as compared to Haryana. They are more aware of Internet usage as a PR tool. Their frequency of usage and current situation is far ahead of their counterpart in Haryana. Overall the Public Relation Officers in the Department of Information & Public Relations, Himachal Pradesh are more advanced, progressive and tech-savvy as compared to the Public Relation Officers of the Department of Information, Public Relations & Cultural Affairs, Haryana and have better E-PR (On-Line PR) perspective.

KEY WORDS: Public Relations, E-PR, On-Line PR, DPROs, APROs

INTRODUCTION

Public Relations is the planned effort to influence opinion through good character and responsible performance, based upon mutually satisfactory two-way communications. Public Relation not works in vacuum or in any direction. It works in well defined phases; listing and prioritizing of information to be disseminated, ascertaining existing knowledge or understanding public perceptions, communication objectives and priorities, message and media, implementation of message and media impact assessment and message redesign. According to the Public Relations Society of America, the components of Public Relations include the :counseling, research, media relations, publicity, employee/member relations, community relations, public affairs, governmental affairs, issues management, financial relations, industry relations, development/fund-raising, multicultural relations/ workplace diversity, special events and marketing communications.

Digital developments have shaken the world of the media. For 'Public Relations, Social Media is understood as a renaissance of relationship building'. Social media refers to writing and broadcasting carried out by 'the people formally known as the audience'. When anyone can publish their opinions in real time to mass audiences via social media, we can talk of 'digital mass self-communication networks'. E-PR (On-Line PR) references to Public Relations on the internet. But what exactly does that mean? Let's spell it out; *E* for 'Electronic', *P* for 'Public' & *R* for 'Relationship'. So E-PR can be defined as, "Electronic Public Relations is the communication with the media and distribution of material (Press release, articles, house journals, newsletters etc.) Via electronic format by utilizing internet based tools and industry leading techniques, it is now possible to publish, syndicate, submit and analyze PR-activities like never before" or "Electronic Public Relations (e-PR) leverages the power of the internet to deliver your message industry leading technologies such as RSS (really simple syndication), blogs, podcasting and press release optimization enhances the publishing process, syndicate messages and enable measurable results"

The fact that Internet is a media that narrow-casts message to diverse audience means that you need to direct your E-PR efforts carefully. To conduct effective E-PR (On-Line PR) you must have clarity about your objectives, construct a strategy, identify your audience, conducting E-PR (On-Line PR) research and selecting E-PR tools(On-Line PR Tolls). So, E- PR is not just a series of techniques; it provides a whole new perspective to Public Relations. Thinking from an E-PR perspective will therefore help in maximize the chance of e-business success. Having E-PR perspective' involves learning three new 'R's; Relations, Reputation & Relevance.

RESEARCH METHODOLOGY

I. Objective:

The general objective of current study is to know the "Access, awareness, current situation and frequency of use of E-PR (On-Line PR) in government Public Relations department."

II. Hypothesis

The study intended to test the following null hypothesis; "There will be no significant mean difference between the Public Relation Officers (PROs) of Department of Information & Public Relations, Himachal Pradesh and Department of Information, Public Relations & Cultural Affairs, Haryana in context of Knowledge, awareness, current situation and frequency of usage of Internet as PR tool".

III. Statement of the problem

To find out that in such an IT based global era of Public Relations, does our departments of Public Relations and their manpower have knowledge, facts, awareness, comprehension, and most important adoption of this new digital/social media in their armory as a tool of crisis communication?

IV. Model of Research

The researcher has followed the *Festinger* and *Ketz*' Model of research process that involves eight steps as: Formulation of a research problem, Conceptualizing a research design, Constructing the instrument for data collection, Writing the Research Proposal, Data Collection, Processing the Data, Sampling & Writing a Research report.

V. The Sample at a glance

In the present Study, Directors (Additional, Joint & Deputy Directors), District Public Relation officers (DPROs) and Assistant Public Relation officers (APROs) serving the Department of Information, Public Relations & Cultural Affairs, Haryana and Department of Information & Public Relations, Himachal Pradesh are taken as the sample. The total 96 Public Relation officers were available from the Haryana and, 80 from Himachal Pradesh. The sample size is (176) is very small and specific, so Census Method is adopted in selection of sample.

VI. Analysis of data

Descriptive Group Statistics (Means and Standard Deviations) and dependent "t" statistics of all the occupational groups i.e. Directors, District Public Relation Officers' (DPROs), Assistant Public Relation Officers(APROs) were computed through SPSS-17 software. In it all the instructional/ operational instructions and commands of Prof. Andy Field (2005) were followed to find out the significant mean

difference between the above mentioned three groups of Public Relations Officers in context of Knowledge, awareness, current situation and frequency of use of E-PR (On-Line PR).

COMPARATIVE GROUPANALYSIS

A. Internet access in the office/department

Out of total respondent 85.22 % of the respondents from both the states have Internet connection in their office and remaining 14.77 % Officers do not have it. Across the states,90.00 % respondents of Himachal Pradesh have Internet access on their work places. In case of Haryana, 81.25 % of the respondents have Internet connection at their work place. This statistics is statistically not significant (P-0.654). The aforementioned statistics are represented below in table -1.

Table-1: Internet access in the office/department

Response	states				Combined (N= 176)		Chi-square	P- Value
	Haryana (N= 96)		H.P. (N= 80)					
	No.	%	No.	%	No.	%		
Yes	78	81.25	72	90	150	85.22	2.654	0.654
No	18	18.75	8	10	26	14.77		

#Frequency in one or more column/row is less than five (< 5), so Yates' chi-square and Yates' P- values have been taken into consideration

B. Start using the 'Internet' as PR tool

When asked about the start of using Internet as PR tool, 30.00 % of the total respondents started using it, 'the day it was installed in their office'. Whereas 21.33 % started using between '1-6 months' of its installation, 14.66 % started using between '1-2 years' of its installation, 12.66 % started using between '7-12 months' of its installation, 08.66 % started using between '2-4 years' of its installation, and 06.00 % do not use it even today. Across the states, in case of H.P 34.72 % started using the Internet, 'the day it was installed in their office'.16.66 % started using between '1-6 months' of its installation, whereas, 13.88 % started using between '1-2 years' of its installation, 11.11 % started using between '2-4 years' of its installation, 09.72 % start using after a period of 'four years or more', 08.33 % started using between '7-12 months' of its installation, and 06.41 % 'do not use it even today' . The figures for Haryana in same order are 25.64 %, 25.64 %, 15.38, 06.41, 03.84, 16.66 and 06.41 %. The statistics are statistically insignificant (P-0.559) across the states. The aforementioned statistics are represented below in table -2.

Table-2: Start using the 'Internet' as PR tool

Response	States				Combined (n= 150)		Yates' Chi-square#	Yates' P-Value#
	Haryana PR Office with Internet access (n= 78)		H.P. PR Office with Internet access (n= 72)					
	No.	%	No.	%	No.	%		
The day it was installed	20	25.64	25	34.72	45	30		
After 1 to 6 months	20	25.64	12	16.66	32	21.33		
After 7 to 12 months	13	16.66	6	8.33	19	12.66		
After 1 to 2 years	12	15.38	10	13.88	22	14.66	4.883	0.559
After 2 to 4 years	5	6.41	8	11.11	13	8.66		
After more than 4 years	3	3.84	7	9.72	10	6.66		
I don't use it	5	6.41	4	5.55	9	6		

#Frequency in one or more column/row is less than five (< 5), so Yates' chi-square and Yates' P- values have been taken into consideration.

C. Frequency of Internet use

When asked about the frequency of Internet usage, 48.29 % of the total respondents use the Internet 'frequently'. Whereas 21.02 % use it 'occasionally', 14.77 % 'never' use it and 07.95 % use it 'rarely' or 'not in a position to respond'. Across the states, 56.25 % respondents of H.P use it 'frequently', 22.50 % use it 'occasionally' and 10.00 % 'never use it'. In case of Haryana, 41.66 % respondents use it 'frequently', 19.79 % use it 'occasionally' and 18.75 % 'never use it'. The statistics are statistically insignificant (P-0.166) across the states.

When asked about the Internet user at their work place (frequent, occasional or rare users) 47.50 % of the total respondents devote 'less than one hour', 29.42 % devote '1-2 hours', 13.23 % devote '3-4 hours', 06.62 % devote '5-6 hours' and 03.68% devote 'more than 6 hours' daily on the Internet. When come across the states, the almost same pattern has been observed and the statistics are statistically insignificant (Yates'P-0.912). The aforementioned statistics are represented below in table -3.

Table-3: Frequency of Internet use

Response	States				Combined (N= 176)		Chi- square	P- Value
	Haryana (N= 96)		H.P. (N= 80)					
	No.	%	No.	%	No.	%		
Regularly	40	41.66	45	56.25	85	48.29	6.481	0.166
Occasionally	19	19.79	18	22.5	37	21.02		
Rarely	10	10.41	4	5	14	7.95		
Never	18	18.75	8	10	26	14.77		
Can't say	9	9.37	5	6.25	14	7.95		
If regular, occasional or rare user, time devoted to Internet per day (n=136)								
Response	Haryana (n= 69)		H.P. (n= 67)		Combined (n= 136)		Yates' Chi-square#	Yates' P-Value#
	No.	%	No.	%	No.	%		
< than 1 hour	36	52.17	28	41.79	64	47.05	0.988	0.912
1to 2 hours	18	26.08	22	32.83	40	29.42		
3 to 4 hours	8	11.59	10	14.92	18	13.23		
5 to 6 hours	5	7.24	4	5.97	9	6.62		
> than 6 hours	2	2.92	3	4.47	5	3.68		

Frequency in one or more column/row is less than five (< 5), so Yates' chi-square and Yates' P- values have been taken into consideration.

D. Purpose of use of Internet at office/department: Regarding purpose of usage, 59.09 % out of total use the Internet 'for official and personal work', 15.90 % use Internet for 'official work only' and 02.27 % for 'personal work only'. Interestingly, 22.74 % of the totalrespondents don't use computer at all in their office. Across the states, out of total respondents of Haryana 15.62 %use Internet 'only for official work', 04.16 % for 'personal work', 52.09 % for 'official and personal work' and 28.13 % 'don't use at all'. The figures for Himachal Pradesh are 16.25 %, 0 %, 67.50 % and 16.25 % respectively. The respondents from H.P. are so dedicated to their official assignments that 'no one uses the Internet for personal work during office time'. The above statistics are statistically not significant (Yates'P-0.140) across the states. The aforementioned statistics are represented below in table -4.

Table-4: Purpose of use of Internet at office/department

Response	States				Combined (N= 176)		Yates' Chi-square#	Yates' P-Value#
	Haryana (N= 96)		H.P. (N= 80)					
	No.	%	No.	%	No.	%		
Official work only	15	15.62	13	16.25	28	15.9	5.474	0.14
Personal work only	4	4.16	0	0	4	2.27		
For both	50	52.09	54	67.5	104	59.09		
Don't use at all	27	28.13	13	16.25	40	22.74		

Frequency in one or more column/row is less than five (< 5), so Yates' chi-square and Yates' P- values have been taken into consideration.

CONCLUSION

The PR Professionals of HP have better access of Internet at their work place as compared to Haryana. They are more aware of Internet usage as a PR tool. Their frequency of usage and current situation is far ahead of their counterpart in Haryana. Overall the Public Relation Officers in the Department of Information & Public Relations, Himachal Pradesh are more advanced, progressive and tech-savvy as compared to the Public Relation Officers of the Department of Information, Public Relations & Cultural Affairs, Haryana and have better E-PR (On-Line PR) perspective.

REFERENCES

Coombs, W. T., and Holladay, S. J. (1996). Communication and attributions in a crisis: An experimental study in crisis communication. Journal of Public Relations Research, 8(4), 279-295.Dean, M. (1990). The Japanese legal system: A step into the unknown. New Law Journal, 140 (6444), 246-248.

Earle, K. A.; Tipikin, D. S. and J. H. Freed (1996), 'Far–infrared electron– paramagnetic– resonance spectrometer using a quasioptical reflection bridge', Rev. Sci. Instrum. 67(7), 2502–2513.

Earle, K. A.; Moscicki J. K.; Ge, M.; Budil, D. E. and Freed, J. H. (1994). '250–GHz Electron Spin Resonance Studies of Polarity Gradients Along the Aliphatic Chains in Phospholipid Membranes', Biophys. J. 66, 1213–1221.

Hubbell, W. L. and Altenbach, C. (1994), 'Investigation of structure and dynamics in membrane proteins using site–directed spin labeling', Curr. Opin. Struct. Biol. 4, 566–573.

Katie Delahaye Paine, (2011). Measure What Matters: Online Tools For Understanding Customers, Social Media, Engagement, and Key Relationships. Publisher: John Wiley and Sons Ltd, United Kingdom.

Robert L. D. (2010). The AMA Handbook of Public Relations.

Robert L. H and Dan O'Hair (2008). Handbook of Risk and Crisis Communication.
Publisher: Taylor & Francis Inc, United States.

Robert L. H. (2010). The Sage Handbook of Public Relations. SAGE Publications Inc, United States.

Instructions for Authors

Essentials for Publishing in this Journal

1 Submitted articles should not have been previously published or be currently under consideration for publication elsewhere.

2 Conference papers may only be submitted if the paper has been completely re-written (taken to mean more than 50%) and the author has cleared any necessary permission with the copyright owner if it has been previously copyrighted.

3 All our articles are refereed through a double-blind process.

4 All authors must declare they have read and agreed to the content of the submitted article and must sign a declaration correspond to the originality of the article.

Submission Process

All articles for this journal must be submitted using our online submissions system. http://enrichedpub.com/ . Please use the Submit Your Article link in the Author Service area.

Manuscript Guidelines

The instructions to authors about the article preparation for publication in the Manuscripts are submitted online, through the e-Ur (Electronic editing) system, developed by **Enriched Publications Pvt. Ltd**. The article should contain the abstract with keywords, introduction, body, conclusion, references and the summary in English language (without heading and subheading enumeration). The article length should not exceed 16 pages of A4 paper format.

Title

The title should be informative. It is in both Journal's and author's best interest to use terms suitable. For indexing and word search. If there are no such terms in the title, the author is strongly advised to add a subtitle. The title should be given in English as well. The titles precede the abstract and the summary in an appropriate language.

Letterhead Title

The letterhead title is given at a top of each page for easier identification of article copies in an Electronic form in particular. It contains the author's surname and first name initial .article title, journal title and collation (year, volume, and issue, first and last page). The journal and article titles can be given in a shortened form.

Author's Name

Full name(s) of author(s) should be used. It is advisable to give the middle initial. Names are given in their original form.

Contact Details

The postal address or the e-mail address of the author (usually of the first one if there are more Authors) is given in the footnote at the bottom of the first page.

Type of Articles

Classification of articles is a duty of the editorial staff and is of special importance. Referees and the members of the editorial staff, or section editors, can propose a category, but the editor-in-chief has the sole responsibility for their classification. Journal articles are classified as follows:

Scientific articles:

1. Original scientific paper (giving the previously unpublished results of the author's own research based on management methods).

2. Survey paper (giving an original, detailed and critical view of a research problem or an area to which the author has made a contribution visible through his self-citation);

3. Short or preliminary communication (original management paper of full format but of a smaller extent or of a preliminary character);

4. Scientific critique or forum (discussion on a particular scientific topic, based exclusively on management argumentation) and commentaries. Exceptionally, in particular areas, a scientific paper in the Journal can be in a form of a monograph or a critical edition of scientific data (historical, archival, lexicographic, bibliographic, data survey, etc.) which were unknown or hardly accessible for scientific research.

Professional articles:

1. Professional paper (contribution offering experience useful for improvement of professional practice but not necessarily based on scientific methods);
2. Informative contribution (editorial, commentary, etc.);
3. Review (of a book, software, case study, scientific event, etc.)

Language

The article should be in English. The grammar and style of the article should be of good quality. The systematized text should be without abbreviations (except standard ones). All measurements must be in SI units. The sequence of formulae is denoted in Arabic numerals in parentheses on the right-hand side.

Abstract and Summary

An abstract is a concise informative presentation of the article content for fast and accurate Evaluation of its relevance. It is both in the Editorial Office's and the author's best interest for an abstract to contain terms often used for indexing and article search. The abstract describes the purpose of the study and the methods, outlines the findings and state the conclusions. A 100- to 250- Word abstract should be placed between the title and the keywords with the body text to follow. Besides an abstract are advised to have a summary in English, at the end of the article, after the Reference list. The summary should be structured and long up to 1/10 of the article length (it is more extensive than the abstract).

Keywords

Keywords are terms or phrases showing adequately the article content for indexing and search purposes. They should be allocated heaving in mind widely accepted international sources (index, dictionary or thesaurus), such as the Web of Science keyword list for science in general. The higher their usage frequency is the better. Up to 10 keywords immediately follow the abstract and the summary, in respective languages.

Acknowledgements

The name and the number of the project or programmed within which the article was realized is given in a separate note at the bottom of the first page together with the name of the institution which financially supported the project or programmed.

Tables and Illustrations

All the captions should be in the original language as well as in English, together with the texts in illustrations if possible. Tables are typed in the same style as the text and are denoted by numerals at the top. Photographs and drawings, placed appropriately in the text, should be clear, precise and suitable for reproduction. Drawings should be created in Word or Corel.

Citation in the Text

Citation in the text must be uniform. When citing references in the text, use the reference number set in square brackets from the Reference list at the end of the article.

Footnotes

Footnotes are given at the bottom of the page with the text they refer to. They can contain less relevant details, additional explanations or used sources (e.g. scientific material, manuals). They cannot replace the cited literature.
The article should be accompanied with a cover letter with the information about the author(s): surname, middle initial, first name, and citizen personal number, rank, title, e-mail address, and affiliation address, home address including municipality, phone number in the office and at home (or a mobile phone number). The cover letter should state the type of the article and tell which illustrations are original and which are not.

Address of the Editorial Office:

Enriched Publications Pvt. Ltd.
S-9,IInd FLOOR, MLU POCKET,
MANISH ABHINAV PLAZA-II, ABOVE FEDERAL BANK,
PLOT NO-5, SECTOR -5, DWARKA, NEW DELHI, INDIA-110075,
PHONE: - + (91)-(11)-45525005