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| **Keywords:** | Accessibility to Internet and ICT; Persons with vulnerabilities; Persons with disabilities (PwD) |
| **Abstract:** | The technical advances in communication technologies should maintain relationships with all segments of the population in each country. This is not only a point linked to some democratic intends but an interesting commercial objective added to an opportunity for improving the Quality of Service dogma. The views expressed here summarized the difficulties and worries of users related to some procedures or basic usages. It is hoped that some solutions could be proposed in order to increase the usages of ICT for all the citizens. |

**I - General**

The Internet is today a global communication network that has become indispensable to the global economy and to all citizens in the professional field as well as for culture and leisure applications. Information and communication technologies have put on the market professional and personal tools, using or not using the Internet, the use of which is appreciated by all, including in particular by the segment of the population that includes vulnerable people, that is, elderly people, people with disabilities (PwD) and adolescents aged from 7 to 16.

This paper examines the challenges faced by this vulnerable segment of population in terms of accessibility to Internet and ICT applications and services. The difficulties described here can be analyzed in relation to the main ICT applications and the controls required for accessibility to digital applications.

The practical examples cited in this paper serve to illustrate a much broader and much deeper aspect, with manufacturers and news designers favoring the most dynamic and profitable markets, reminding the needs of the indispensable social function of communications for the overall human society.

The analysis of the nature of the challenges discussed below should encourage industry, standardization experts and network operators to reduce the magnitude of these difficulties, which would have the benefit of increasing the utilization rate of services and terminals involved.

It is increasingly necessary to set up an independent authority whose role would be to encourage the world of technicians to complete the implementation of innovations with the simplest and least costly adaptations so as not to create a gap between users of different ages, circumstances or personal income.

**II - Orientation of ICT uses according to so-called vulnerable segments of the population**

According to recent informative surveys on group of people, the current usage rate of digital applications can be evaluated in the following table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Targeted Digital Applications** | **Adolescents** | **Elderly** | **PwD** | **Observ.** |
| Social networks | **+++** | **0** | **++** |  |
| Skype | **+** | **+** | **++** |  |
| E-Commerce | **0** | **0** | **+** |  |
| Banking sector | **0** | **+** | **++** |  |
| Cultural Streaming (TV Replay) | **+** | **0** | **+** |  |
| Online Digital Press | **0** | **+** | **+** |  |
| Connected objects (E-health) | **0** | **++** | **++** |  |
| SMS Messages  | **+++** | **+** | **+++** |  |
| Online Research | **+** | **++** | **+** |  |
| Photos, music | **+** | **+++** | **++** |  |
| Mobile computer connections | **+** | **0** | **+** |  |
| TV computer connections | **0** | **0** | **+** |  |
| E-Government (or similar) | **0** | **0** | **0** |  |
| ***0 means « no usage »,*** ***+ means few usage and******+++ a lot of usage*** |  |  |  |  |

In addition, the survey reveals that this diversity of usage patterns is often masked by commercial surveys that systematically exclude these three segments of the population, because they do not generate sufficient purchase volumes to be integrated into the Marketing studies. According to the opinions expressed, the various usage orientations observed should be maintained over time, due to the reduction in the range of activities of seniors and the constant evolution of the number of digital applications offered to the public.

**III - Major difficulties in the accessibility of ICTs**

**3.1 - Fears related to potential risks**

Users in the so-called "vulnerable" categories are aware that their connectivity can be risky, but they are often unable to know what these are and under what conditions these risks are maximized. They can either refuse any connection outside the scope of their first experiences, or accept to do so in a dangerous way, because of their inexperience or insufficient training or difficulties in memorization. This situation leads to a noticeable reduction in the volume of traffic and digital uses of vulnerable populations.

**3.2 -Complexity of access procedures**

It manifests itself due to frequent and unannounced changes to the OS, browsers available, unwanted addition of commercial offers. It is magnified because of the difficulties in memorizing the various steps of the access procedures necessary for the applications and services. This situation explains a significant reduction of digital uses by vulnerable populations.

**3.3 - Local interconnections between digital terminals**

Commercial offers sometimes offer to link digital terminals to each other, either for the purposes of graphic printing, or for the transfer of photographic images (portable terminal or tablet to computer), or for the use of a dual screen (computer to digital TV screen). Whether these maneuvers are simple or complex to perform, it must be recognized that most device manuals are written in an incomplete way and that it is often impossible to obtain the desired result, even with the help of a after-sale service. The following examples can be mentioned:

**3.3.1 - Printing an administrative form in double-sided A4 format**

Is there any single procedure (suitable for all printers and all administrative services that create forms in PDF format) to save paper of the printer (option of double-sided printing)?

**3.3.2 - Transfer of MMS images received on a 3G mobile terminal to a computer**

The procedure for the two proposed transfer modes (Bluetooth, specific two-way cable) is not fully described in the online notices by the manufacturers. It seems that a possible addition of text associated with the image (s) is likely to block the terminal. There is no criterion for the user related to an optimal setting of the parameters of his terminal for the desired result.

**3.3.3 - TS set as a second screen**

The use of the digital TV screen as a second screen is a good idea, as it allows families and vulnerable people in particular to benefit from an image of good quality, provided that both terminals are equipped with adapters and sockets ensuring perfect compatibility, which can only be verified after purchasing the equipment. Several successive purchases may therefore be necessary without a possible recovery of old equipment. In addition, the transformation or adaptation of a SCART plug into an HDMI plug does not seem feasible. On both levels, it is necessary to use new generation equipment, which disappoints low-budget families.

**3.3.4 - Traditional and new users**

 In general, manufacturers and resellers do not seem to understand the desires of users who are traditional users: they must buy new equipment at the risk of ending up with unusable accessories because of their limited compatibility. This is particularly the case for the two digital high-speed transfer systems in private space that are Wi-Fi repeaters and PLC repeaters. No prior testing manipulation is possible prior to sale, potential users are reluctant to engage in unnecessary purchases and users are penalized.

**3.4 - Television programs**

**3.4.1 - Subtitles**

A better understanding of television programs content is possible thanks to access to subtitle display (subtitle display, sign display, or audio descriptions). If the remote control of these functions should in principle lead to the implementation of one of the three standard technical processes, the maneuver must be reinitialized for each of the transmissions and, unfortunately, this access is often not available for all broadcasts. On the other hand, the maneuver must be reactivated after each voluntary interruption of the sound channel. These practical difficulties are likely to cause 80-90% of the potential hearing loss of the hearing impaired.

**3.4.2 - Towards a multi-function home TV**

It appears that the new lines of research and development carried out on the theme of the digital television will give it a central role in the domestic space in the next future. Voice commands from the TV itself and household accessories, connection to home automation systems, the TV turns into a central computer connectable to mobile devices of recent generations as well as to different generations of tablets.

This logical evolution of the home TV is, however, a concern for those interested in vulnerable populations, most of whom have only limited budget. If the technical evolution is to take this way, it would be useful to study if simple adapters can be proposed to avoid the creation of different market segments (\*).

**4 - In conclusion**

The interest of financial players is mainly focused on innovations related to OTT services (Over the Top) and is particularly stimulated by the wave of mergers and acquisitions of companies in the communications sector, driven by the convergence of services, media and content. In order for consumers and businesses to benefit from this renewal of communication products and services, in terms of choice, price, quality, ecology, investment and innovation, it is important to take into account the existing volume of population that will remain outside of this evolution if the adaptations technical data and accurate employment information are not taken into account by industry decision makers and regulators.

On the other hand, the establishment on the Web of a permanent 24-hour multilingual public information service on national uses and best practices seems essential to the management of digital services offered in a digital society open to all.

(\*) “In the last ten years, in France and the United Kingdom, the senior population has increased from a quarter of the television audience to about one third. However, television channels do not consider it necessary to target them specifically. In addition, the research institutes “Enders Analysis” and “NPA Conseil” state that elderly people are only a "small market" [www.lesechos.fr/]

Ref. 1 Rec. F. RCV-PWN: "Reducing Cyber Vulnerability for People with Disabilities or Needs" (New)

Ref 2 - [Doc 108 Draft F.RCV-PWN Qu. 26 updated work program for WP 2/16]