



BEHAVIOUR OF THE MOBILE PHONES OWNERS RELATING TO THE MANAGEMENT OF THEIR DEVICES

Anisoara CIOCAN

"Dunarea de Jos" University of Galati, 111, Domnească Street, 800201, Galați, Romania
e-mail: aciocan@ugal.ro

ABSTRACT

Today mobile phones have become apparently indispensable. They are the most used electronic devices in the world. The useful life of a mobile handset is decreasing; life cycle is diminished as a result of the speed of technological innovation. Unlike other appliances for personal use, mobile phones are often replaced due more technological moral wear than their malfunction. Another particularity in the evolution of mobile phones is the number of devices utilized. In the case of mobile phones, along the years, the total number of devices used increased extraordinary. As a result, the amount of wastes equipment is in constantly growing and is increasingly higher. This situation calls their environmentally sound management and economically advantageous for recovery of valuable materials. In this respect an important role has the equipment's consumers, this aspect being analysed in the paper. The paper presents the study based on responses of the people to a questionnaire regarding their behaviour and awareness relating to the management of own used or unusable mobile phones.

KEYWORDS: mobile phones wastes, recycling, consumers, behaviour

1. Introduction

Romania's alignment with EU legislation on waste management involves the organization of specific flows for ensuring the achievement of the accurate targets for collection and recycling imposed at Community level. Romania, like other countries from Central and Eastern Europe benefits from a transition period, translated by performing in the first stage (2016-2019) a collection rates between of 40 and 45% and by delaying the achievement of the collection rate of 65% (applicable in the EU in 2019) until a date decided by Romania, but no later than 2021 [1, 2]. The collection target for which our country is accountable to the European Commission can be achieved with optimum operating costs through a sound management of wastes [3-5]. In Romania the organizing of management system for mobile phones wastes is in early phase, the collection and recycling activities are conducted still slow [6-8]. The developing and implement of the sustainable waste management system (which also requires a long time) are hampered by a number of factors specific to our country. For the management system of mobile phones can be identified some weaknesses [6, 9, 10].

In collection phase the behaviour of mobile phones owners and the consumer's awareness represent some of them. These are a major barrier to reuse and recycling their used or inoperative equipment in a proper manner. This paper presents a survey focused on the following objectives: identify the behaviour of mobile phone owners to their old or damaged equipment; perceived motivations at the population level for sound management of equipment that reached at their end of life stage or that are not utilized by owners.

2. Experimental method

The research method used was the survey. Questions were formulated in accordance with the dimension, strengths and of WEEE management system in other states and in Romania [6, 9, 11]. Some of these have been utilised in other studies [7, 12].

The target population was represented by people from urban areas, women (70%) and men (30%). The lot interviewed was represented by people aged 18-65 years, the majority being young people aged between 18 and 30 years (65%), between 30 and 45 years (30%) and very few aged between 46 and 65 (5%). Most of those who were interviewed have university



degrees (50%) or middle school (45%), the rest having less school like professional studies, respectively ten classes (5%). The technique for data collection has consisted of face interviews. The sample size was 100 respondents. Data collection period was from 20.01.2015 to 01.04.2015.

3. Results and discussions

The particularity regarding the mobile phone utilization of people surveyed is the rate of penetration and possession shape of the population. All those questioned (*How many mobile phones are in your home?*) had responded that they had in use mobile phones: one device (70%) or more devices (20% two, 5% three and 5% four or more). As a result of constant desire to use high performance

equipment, a new technology more efficient, and also as a result of intensive marketing promoted by manufacturers these devices were often changed. Most respondents (65%) use the equipment between 1 and 2 years and after this time replacing it. Into equal percentage are those that changes less than 1 year (5% to 6 months, 15% between 7 and 12 months) and those using the equipment between 3 and 5 years (15%). Those who gave as response between 3 and 5 years probably use this equipment until it becomes inoperative. Unlike other appliances for personal use, mobile phones are most often replaced due to technological obsolescence. So 35% of respondents have motivated the phone change by the appearance of another model (*What are the reasons for that you have purchased another phone?*).

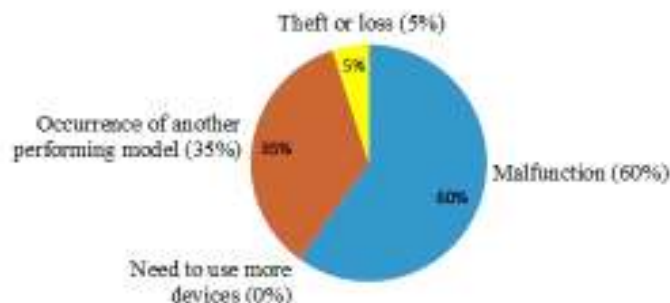


Fig. 1. Answers to the question: *What are the reasons for that you have purchased another phone?*

For recycling of mobile phones wastes under controlled conditions is essential the collection rate of used equipment. In the first step in the recycling process the consumer plays an important role. Its behaviour is crucial.

Regarding keeping, transmission or returning equipment that users cease to use them. Most people

surveyed have kept its old cell phone as functional device (45%) (the question was *What happens with your old mobile phones?*). A fairly large number of people have kept the old phone as spare equipment (10%). Others have given the old phone to your family members or friends (20%).

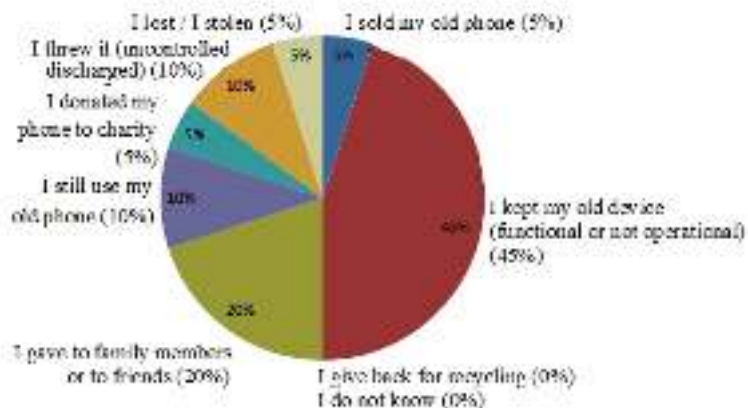


Fig. 2. Answers to the question: *What happens with your old mobile phone?*



The survey on the behaviour and attitude of consumers on recycling has revealed a very serious problem. Zero used phones were returned for recycling by owners after their not being utilised (0%). Moreover, many people have abandoned uncontrolled or discarded your devices (10%). Others were concerned to obtain a sum of money on their old phone, selling it to someone else (5%).

In many cases there is a tendency for users to temporarily store the equipment inoperable. These form so called the "hibernating equipment stocks" or "drawer equipment stocks" [9]. The answers to the question: *Currently you have broken phones at home?* show that 85% of target group members have responded positively. This behaviour represents a serious barrier in the functioning of recycling system to the extent possible that must achieve. The desire to keep the old mobile phones with the intention to repair or as spare parts is other weaknesses of wastes management system. A share of 25% from

respondents cited this option to motivate their indifference to the benefits of recycling (answers to the question: *Which of the following situations best describes the reason for keeping the inoperative phones?*). The convenience is another reason of people in the way of recycling: 25% of respondents said that they not have time to deal with it. Lack of information and absence of collection locations near are other obstacles for poor collection and recycling of used equipment. 20% of those questioned replied that they do not know what to do with they. Also 10% said that in the proximity not exist they are not points of take over for mobile phone wastes or disposal centres. The study showed that people surveyed do not encourage the return of inoperable phones at recycling centres. Many of old devices remain stored at home; even if their owners could get recompense when give back the old equipment. Some incentive is necessary to get people more involved to the recycling program.

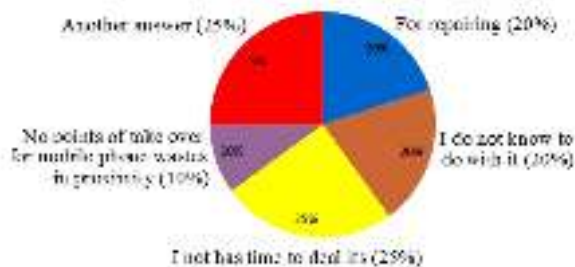


Fig. 3. Answers to the question: *What incentive would motivate you more to give back the old phone to collection centres?*

The answers to next question *What incentive would motivate you more to give back the old phone to collection centres?* showed what rewards they would like receive to promoting the device return and thereby the storage time of equipment unusable can be reduced. The interviewees said they prefer the

reductions when they purchase a new phone and also the providing of additional call minutes: 45% of respondents chosen to encourage the return by applying discounts at purchase another phone; 15% want to receive additional minutes; 30% would prefer to receive a voucher.

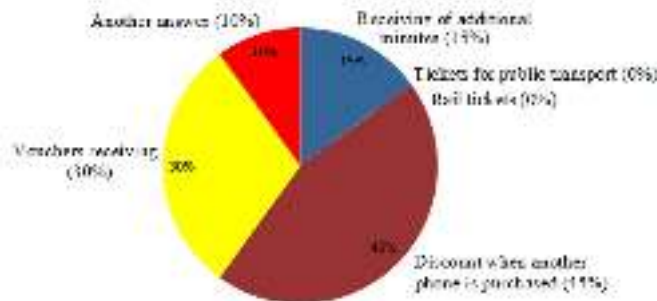


Fig. 4. Answers to the question: *What incentive would motivate you more to give back the old phone to collection centres?*

In Romania, the collection is performed by mobile phone service providers and retailers and this based on the return of old equipment when is buying a new one. These applying the return by discounts system (*buy-back* scheme) or free return (*take-back* scheme). To free return scheme has not made use any of the interviewed. The other was used by many of those who bought a new device from a retail centre.

More waste collection points must be organized as take back locations. This conclusion results from

answers to question: *How would more convenient for you to operate the collection of mobile phones wastes?* 50% of people surveyed prefer the direct return to specialized stores. In the same proportion (25%) they want to return directly to the collection points specialized for phones wastes or they have opted for special events designed to collect mobile phones in a certain day and with a certain periodicity.

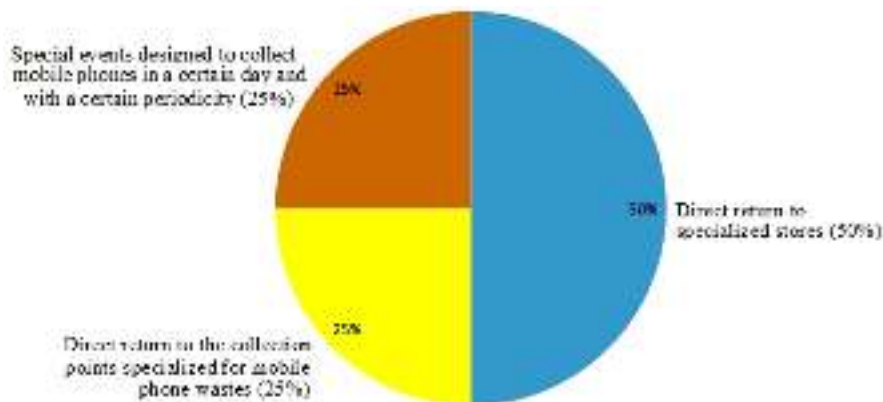


Fig. 5. Answers to the question: *How would more convenient for you to operate the collection of mobile phones wastes?*

For the majority of the consumers the positive effects of this wastes recycling on the environment are not clear. 40% of respondents have negatively responded to the following question *Did you know that the abandonment or uncontrolled discharging of mobile phones wastes have negative impact on the environment and human health?*

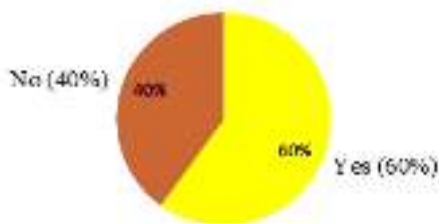


Fig. 6. Answers to the question: *Did you know that the abandonment or uncontrolled discharging of mobile phones wastes have negative impact on the environment and human health?*

Most respondents have not seen the special collection systems called "*green recycling machines*" even if they have heard of their existence (60% according to the answers to question *Have you seen or used the so-called "green recycling point"?*). Only

5% of them have used these locations in large shopping centres.

5. Conclusions

In the mobile phone management system from Romania are obviously a number of weaknesses. Most analysed in this work is linked to the development of recycling culture in the population of Romania.

The study revealed that most of the Romanian consumers do not have a responsible attitude and an appropriate behaviour towards the fate of the mobile phone. Lack of education and responsibility makes the collection of phones sold in Romania to carry out hard. These weaknesses can be rehabilitated by increasing of awareness and involvement regarding WEEE recycling activity.

The local authorities should be more responsible for collection activities. According to the legislation they must organize collection points, to equip them and to ensure their functionality. Currently, they can organise periodically the campaigns for collection used mobile phones (as example periodically a special day for collecting them). Also the collection centres organized by municipalities and other organizations are less specialised to take over direct from consumers the old mobile phones. In the



Romania, as in other European countries, this form of waste collection is typical only for different types of WEEE ("white goods" wastes as refrigerators, stoves, washers, televisions, etc.).

In Romania, the special collection locations for old phones began to be organized timidly. They could be placed in institutions, schools, universities or densely populated places (large shopping centres). The most suitable alternative for localization is in a shop (or mall). As mobile phones have a residual economic value special collection machines (so-called "green recycling machines") for public use can be an adequate method. In these anyone can deposit its old mobile phone or other electrical and electronic appliance.

The desire to be stimulated at give-back of old equipment was observed to all respondents: by additional minutes and by discounts at buying of new phone; by urban public transport tickets in compensation for returned old phone; by receiving a voucher for the purchase of other products.

The mobile phone owners are not aware of the importance of the collection and recycling benefits. Also do not know the effects of waste on the environment.

Acknowledgement

The author wishes to thank of the student Ionel Oprea who has contributed to the questioning of people.

References

- [1]. ***, *Gestionarea deșeurilor*, Ministerul mediului și schimbărilor climatice, <http://www.mmediu.ro/>.
- [2]. **Dumitru E., Chiriac N.**, *Condiții cadru pentru gestionarea deșeurilor în România*, Ministerul Mediului și Schimbărilor Climatice, București, 18 februarie 2013, http://rumaenien.ahk.de/uploads/media/2.Conditii_cadru_pentru_gestionarea_deșeurilor_in_Romania.pdf.
- [3]. ***, *Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE)*, <http://eur-lex.europa.eu/>.
- [4]. ***, *Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)*, <http://eur-lex.europa.eu/>.
- [5]. ***, *Mobile Phone Partnership Initiative (MPPI)*, Proiect 3.1 - Guideline on Material Recovery and Recycling of End-of-Life Mobile Phones, Revised and Approved Text March 25, 2009, <http://www.basel.int/industry/mppiwp/guid-info/guidmaterial.pdf>.
- [6]. **Ciocioiu N., Burcea S., Tartiu V.**, *The WEEE management system in Romania. Dimension, strengths and weaknesses, Theoretical and Empirical Researches in Urban Management*, Number 6(15), May 2010, p. 5-22.
- [7]. ***, *Mobile Phone Lifecycles. Use, Take-back, Reuse and Recycle, Report from the GSM Association*, www.gsmworld.com.
- [8]. **Podariu V., Filip G.**, *E-waste management in Romania, Recent Researches in Applied Economics and Management*, Vol. 2, p. 240-245.
- [9]. **Tanskanen P.**, *Electronics Waste: Recycling of Mobile Phones*, www.intechopen.com.
- [10]. **Popescu M. L., Colesca S. E., Ciocioiu C. N.**, *Waste electrical and electronic equipment management in two EU developing countries: Romania and Bulgaria*, Proceedings of The 8th International Days of Statistics and Economics, Prague, September 11-13, 2014, p.1218-1229.
- [11]. **Colesca S. E., Ciocioiu C. N., Popescu M. L.**, *Determinants of WEEE Recycling Behaviour in Romania: A fuzzy Approach*, Int. J. Environ. Res., 8(2), Spring 2014, p. 353-366.
- [12]. ***, *Echipamente electronice. Sondaj*, Daedalus MillwardBrown, Prepared for Ecotic, Octombrie, 2008.