

The Importance of Accessible Re-commerce Applications and Websites in Implementing the Circular Economy

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Abstract

The aim of the poster is to explore consumer behaviour in the use of modern technologies in the context of the implementation of the principles of a circular economy. The study adopts a hypothesis: the development of a circular economy is supported by the availability of digital e-commerce platforms. The article presents the results of two original surveys conducted between 2020 and 2023 using the CAWI method on nationally representative samples: N= 1115 (2020), 1147 (2023). Respondents were asked whether they use apps, online auctions and classifieds websites when getting rid of unnecessary products. Both in 2020 and 2023, the group of users selling on classifieds websites was around 80%, with online auctions falling in popularity by 11% and using mobile apps by 7%. However, these are the three most popular ways of selling. Traditional ways of selling are also seeing declines in interest and are chosen by far fewer sellers. Traditional sales at a consignment or pawn shop are chosen by around 10% of those surveyed (down 4%), at fairs by 6% (down 2%) and at a stock exchange by around 4% (down 1%).

Keywords: circular economy, e-commerce platform, online marketplace.

1. Introduction

A central tenet of the circular economy is to minimise waste, extend the life cycle of products and reduce the need for new resources. Second-hand trade is a practical implementation of these principles, as it allows the useful life of items to be extended so that they can be used until they are physically worn out [4]. C2C (consumer-to-consumer) trade is the sale of products between individual consumers. This business model is supported by the development of platforms such as Vinted and eBay [10]. Vinted is the largest European operator in this sector, with a community of over 65 million members. The availability of these platforms is changing traditional consumption patterns [1, 2] and playing an important role in promoting circular economy principles.

The re-commerce market, i.e. the sale of second-hand products, is growing rapidly. It is estimated that re-commerce marketplaces are growing 20 times faster than the broader retail market. Looking at the entire European market in 2021, this will be worth around €75 billion, with an average annual growth rate of 10%. Globally, the recommerce market is estimated to be worth US \$174 billion in 2022 [5], [8].

Users of online sales portals are facilitated by the intuitiveness of adding advertisements and the integration of these platforms with courier companies. In this way, these platforms help to spread the principles of circular economy and sustainable consumption [3]. A key role in their dissemination is played by well-designed company policies, in particular buyer rating systems that minimise the risk of fraud. Buyer protection programmes, which protect buyers' interests in the event of seller dishonesty, are also a great asset [2]. Thanks to these solutions, confidence and the volume of trade in second-hand goods are increasing.

The aim of this article is to show that the availability of e-commerce platforms contributes to the circulation of second-hand goods. The study is based on the following hypothesis: the development of a circular economy is supported by the availability of digital e-commerce platforms.

2. Research method

The author's original research on consumer behaviour regarding the 2020-2023 circular economy was carried out using the CAWI method on representative samples: in 2020 N=1115, in 2023 N=1147 adult inhabitants of Poland by consumer panels ankieto.pl and swpanel.pl. The research companies conducting the research (Danae sp. z o.o. and Go Global Group) were responsible for selecting and controlling the sample for the research. The research was funded by the Ministry of Science as part of grants under the 'Initiatives for Regional Excellence' programme (RID/IGPiGSE/2020/1/32 and RID/IGPiGSE/2022/4/16). The surveyed population consisted of people aged 18 and over living in Poland. According to the Central Statistical Office, more than 31 million people over the age of 18 lived in Poland in 2021. The sample size with the surveyed population of 31,035.5 thousand people, with a maximum error of 3% and a confidence level of 0.95, is 1,067. In order to match the general population, the literature weighting method (RIM) was applied to the following characteristics: gender, age, voivodeship and place of residence of the respondent. Statistical analyses were performed using the IBM SPSS Statistics 26 package to test the significance of the differences in the responses of the different groups of respondents. The significance level was $\alpha=0.05$. To increase the accuracy of the analysis of the quantitative data, the level of statistical significance of the relationship between the variables was tested. For this purpose, the chi-square test (chi2), Pearson's and Spearman's correlation coefficient (rho) were used. For variables measured on quantitative scales, the Kolmogorov-Smirnov (KS) test was done to verify that the distribution of the results does not deviate from normal. The sampling method used in the study allows the results to be generalised to the entire population with an estimation error of $\pm 3.0\%$ (95% confidence level). The data collection method used also has limitations - only people using the Internet can take part in the survey. The aim of the 2020 and 2023 survey was to collect information on consumer attitudes and behaviour regarding the circular economy.

3. The results of the own survey

3.1. Frequency of disposal of working items

The results obtained in both surveys are very similar - differences at the level of statistical error. Respondents dispose of functioning items from their households most often 1-2 times a year (about 40% of indications), or once a quarter (23% of indications), while about 15% of respondents said they do such cleaning once every few years. Those who do not dispose of functional items were almost 10% in 2023. According to the survey, 90% of those surveyed dispose of operable items from their households. From the point of view of the circular economy, what consumers will do with these items is important.

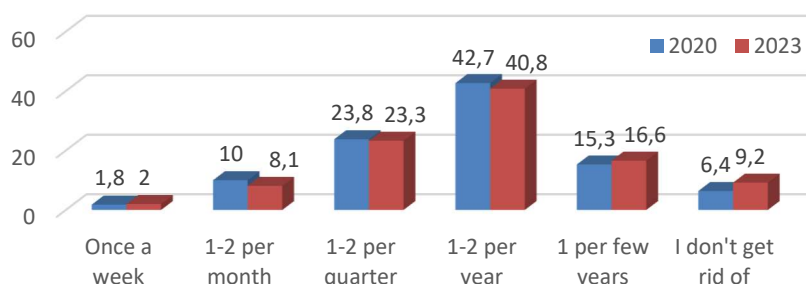


Fig. 1. Frequency of disposal of working items.
Source: Own research, 2020-2023.

3.2. Popularity of selling unnecessary products

Selling a second-hand item in the traditional way requires a lot of effort on the part of the consumer. Finding a customer means meeting them face to face, whether at flea markets or swap meets. Such sales can be difficult for many people. Commissions or pawn shops can be used, but this involves paying the middleman's margin. For this reason, some people choose to donate the item for free to people in their community or to charities. However, many consumers

find it most convenient to dispose of unwanted items in a bin. This results in a waste of raw materials and a typical linear take-use-throw-away approach to the product. Online platforms, mobile sales applications or online auctions, which have been developing for several years, make it easier to sell an unwanted product. This is in line with the idea of a circular economy.

The two surveys gave very similar results (differences within the statistical error). In both surveys, the percentage of people who did not sell unnecessary products remained stable in both years. This means that only four out of ten respondents have not sold unnecessary items to them within 3 years. The same percentage had sold items 1-5 times. This means that almost 60% of respondents sell items they do not need. There was a slight decrease in the number of those declaring that they had sold between 6-10 times in a three-year period (down 5%). A slight increase can be observed in the number of people who sold more than 10 times (increase of 2.5%). It was also found that selling unnecessary items is negatively correlated with age, with older people being less likely to do so (correlation values of age with selling are -0.279 [Pearson] and -0.267 [Spearman]). Respondents with tertiary education were more likely to report having sold items more than 10 times (15.1%).

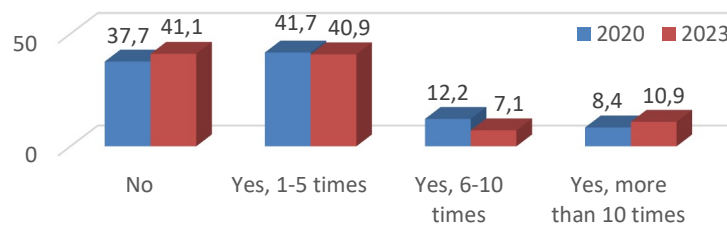


Fig. 2. Frequency of sale of unnecessary items.
Source: Own research, 2020-2023.

3.3. Places of sale unnecessary products

When analysing where consumers can sell unwanted products, it can be observed that in both 2020 and 2023, the most common way to sell unwanted items was to list them on an online classifieds portal. The second most popular method was to use an online auction. In 2023, one in three respondents sold items via an online auction, e.g. Allegro (32.8%), but this form of sale recorded a decline of almost 12% compared to 2020. Another form of selling, an app on the phone, also recorded a decline of 7%. The other forms of non-online commerce do not show significant changes (they are close to statistical error). However, as the graph shows, their popularity among sellers is low. The study also shows that women are more likely than men to sell unwanted items using an app on their mobile phone (27.9%) (Spearman's correlation coefficient -0.216; Pearson's coefficient -0.216), while men are more likely to use an exchange (6%), a commission or pawn shop (15.1%) or an online auction (38.7%). The youngest respondents are also more likely than older respondents to sell items using a mobile phone application (29.1%).

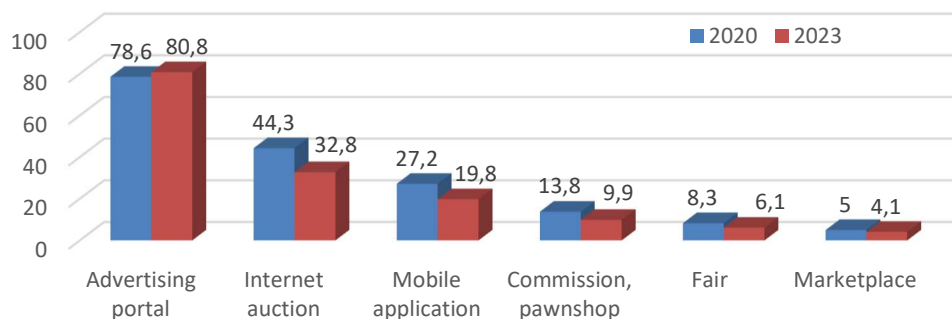


Fig. 3. Indicated places of sale of unnecessary items.
Source: Own research, 2020-2023.

4. Conclusions

The development of C2C trade in used goods online is important for the development of a circular economy, and its growth is stimulated by the available re-commerce platforms. Currently, the growth rate of re-commerce is higher than that of traditional retail. Based on the author's research conducted in 2020 and 2023, it can be concluded that consumers are overwhelmingly using their digital skills and taking advantage of the opportunity to sell products online. The results of the author's research presented are similar to the results presented by Autio, Heinonen [1], Ahn, J. [2], Li&Sundararajan [5]. It was confirmed that young, educated people use modern technology to a greater extent.

The research findings presented here may be useful to companies that operate sales platforms aimed at individual users. The knowledge that a large group of respondents are already using modern sales solutions, and that the number remains high, provides a basis for improving such solutions. A limitation of the survey is the digital exclusion of some potential respondents and the nature of quantitative surveys, which are structured. In the future, it is worth conducting further research to explore the issue in more depth and detail in order to understand the preferences of users of these sales platforms and the changes they expect to see. It is also worth paying attention to identifying the reasons why some consumers do not use these sales platforms and developing scenarios to overcome the identified barriers. Combined with the idea of a circular economy, this model promotes sustainable consumption while offering economic benefits.

The next step and revolution in this area is the use of artificial intelligence (AI), which these sales platforms are already starting to use. Generating the content of ads based on a photo or searching for other offers available online to determine the selling price can definitely speed up the process of creating an offer by the user.

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