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TRENDS IN THE CONSUMPTION OF HOUSEHOLD DURABLES

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Abstract: The aim of the paper is the analysis of the household use of durables in Poland and other European countries. Relatively, the highest amount of money for household furnishing with durables was spent by the Bulgarians and the Italians (more than 7% of the total household expenses). In Poland, the highest expenditure occurred for the wealthiest households and those where the head of the household had a university degree while the least money was spent in numerous-family households. The best equipped households (quantity wise) were such that had one or two children and those where the household head had a university degree. The cluster analysis allowed distinguishing household groups of similar durables ownership level. These groups may be treated as consumer segments. The presented analyses also indicate the trends of the Polish consumers regarding the possession of durables.

Keywords: electronic equipment, electronic goods, mobile durables, types of households, Poland, cluster analysis.

1 Introduction

An apartment is a space filled with a variety of objects that facilitate the process of consumption. The number and the quality of the owned equipment indicate the level of fulfilment of the owners' needs and boost housing satisfaction. The equipment in the households are objects and devices satisfying the basic needs (household appliances), entertainment needs (electronic equipment, Hi-Fi, video), recreational needs (sports equipment) and other.

It is indicated [23, p. 334] that the more durables in a household, the higher the ease of management of the household finances, hence higher average evaluation of the level of life. It happens that consumers from certain socio-economic groups emphasize their status in order to come closer to a certain pattern created by the mass media, fashion, customs, social ranks, preferences, etc. Such behavior is a determinant changing the consumption behavior of the society, modernizing the structure of consumption and the structure of household equipment with durables [21, p. 90].

The aim of this paper is to present the household level of equipment with durables in Poland and indicate the expenses for these goods and their share in the total expenses in Poland and other European countries.

In light of the formulated aims, the research problems are:

- indicating the share of the expenses for household furnishings in European households;
- indicating the level of expenses for durables in various types of Polish households;
- indicating the variability of the possession of durables in Polish households in the years 2000 – 2012;
- dividing Polish households into groups of similar level of household equipment.

The solution to the fundamental research problems will enable business to systematize knowledge on the consumers and facilitate the creation of appropriate marketing strategies in the design and implementation of durables on the market. The distinguishing of the groups (segments) of households of similar equipment level with durables should constitute a helpful tip for the marketing departments. The information on the structure of consumers may be disseminated in Internet databases [17].

The paper is composed of the following parts: after the introduction and presentation of the objective, the authors present the research methodology. Next, an analysis of the expenses for durables in different types of households in Poland is conducted. In the latter part of the paper, an attempt is made to distinguish clusters of households of similar household equipment level.

The households are classified with regard to socio-demographic and economic features. In the next section, the share of expenses for household equipment is presented for selected European countries and then the accessibility of these households to the Internet. The paper ends with a summary and conclusions.

2 Literature analysis

The standard of living of the European nations is increasing steadily. The difference between the Western and Eastern Europe is still visible [14]. Companies from the western part of Europe, following the saturation of their markets, export their goods and services to the East. The information on the structure and size of the consumption of households is important for the entrepreneurs. This information enables development of company operating strategies and their proper management. The information on the consumption is also used by the central government and non-government organizations.

According to Eurostat [7], the conditions of living are different for Eastern and Western Europe. In 2010, 115.5 million people lived on the verge of poverty and were threatened with social exclusion, which constitutes approximately one-fourth of the population of the European Union (EU). Unfortunately, the problem pertained mainly to the East European member states that also included Poland, Bulgaria, Slovakia, Latvia, Lithuania and Estonia. In Poland, 30% of the population lived below the social minimum; in Hungary and Latvia, this value reached 40% and in Romania and Bulgaria, over 50%. For comparison, in Luxembourg, the richest state of the EU, this value was 3%. People threatened with poverty usually live in apartments without basic amenities, such as utility water, sewage systems and electricity. In Eastern Europe, the number of such apartments reached approximately 15% in Poland and up to 30% in Romania.

However, as the society gets wealthier, the households of the poorer countries strive to reach the level of consumption of the richer states [16].

We are observing the societies getting wealthier, particularly in the Western Europe. The consumption structure is thus changing. Larger apartments are purchased and there is more space for the household equipment. A single television set is not sufficient anymore. Television sets are now installed in other rooms

as well (kitchens or children rooms). The inhabitants of larger cities devote more time to traveling. They spend less time at home and eat more processed and ready-to-eat unhealthy meals. The expenses for entertainment, education and transportation are increasing [6, p. 34]. The companies, in light of the increasing budgets of the people, generate demand for their products that are beyond fundamental human needs. Excessive consumption is particularly visible in the middle class. Additional EU support schemes aim at boosting the revenues of the citizens of the new EU member states. This will lead to an elevated demand for goods that have not yet been regularly purchased. The construction of roads in Eastern Europe will indirectly lead to an increased demand for vehicles and the motivation to drive one's own vehicles rather than the public transit [4].

Ben-Shabat and others [1] have analyzed the structure of consumption in 86 countries for 70 categories of products. It is forecasted that the revenues of the consumers in 2010 compared to 2020 will grow by 12 trillion dollars, 3% per annum, on average. The expenses for the household furnishings, fixed assets and related services will constitute 18% of this value. The authors claim that the consumption expenses do not only depend on the country of living but also on the people's revenues, social status, education, and dynamics of the changes of the population. The expenses will be different in different countries. The authors of the report divided the consumers into wealth levels: basic, emerging, escalating, and established. The consumers from the first group constitute 75% of the society, purchasing only the basic commodities and food. Their share in the market will drop from 10% in 2010 to 2% in 2020. The most dynamically developing group of consumers is the emerging group living in the suburbs of large agglomerations aspiring for the middle class identification, spending most of their income on basic products, food, education, and transport. These consumers also buy home equipment and electronics. To this group, the authors of the study ascribe Polish consumers. The consumers from the escalating and established groups are a small part of the society and their expenses are over 75% of all expenditure in the economy.

Another trend influencing the consumption is migration of people to the cities. In Europe, 75% of the population live in the cities [6, p. 10]. It is forecasted that by 2020, this number will grow to 80%.

Large cities will develop faster than the small ones. The cities will become multinational. The number of immigrants coming to large cities for jobs will increase. City centres will depopulate while the population in the suburbs will grow. The singles will mostly populate city centers. Families will move to the suburbs. The development of cities will be uneven. In the cities in the Mediterranean climate, the number of elderly people will grow. The cities of Western Europe will advance faster than the cities of the Eastern Europe. Aside from the native population of the cities, wealthy retired people will move there. In Eastern Europe, there will be more young people, which is related to the demographic boom of the 1980s. The trends in the size of homes are changing. In general, the houses are getting smaller but their number will grow. The smallest homes are located in Northern Europe, the greater ones are in the Central and Eastern Europe, while the largest ones are in the south. People do not want to give up their living space. The size of the housing space per person will grow. The reduction of the home size is related to the high costs of heating. The increasing living space per citizen is related to greater demand for durables. Due to the development of cities, the demand for utility water, electricity, and consumer goods will increase [3].

Due to the reduction of the size of households, the use of energy, utilities and other resources will increase per capita. Due to high road congestion, the citizens will be forced to use public transit, bikes or simply walk. Small towns will depopulate. Public transit, schools, hospitals, shops will become unprofitable. The need to heat unoccupied apartments will increase the energy consumption by 30%. The use of water supply and sewage systems at a reduced rate will lead to health issues [6].

The structure of the consumption is greatly influenced by the age of the society [13]. In general, the population is ageing. By 2065, the number of citizens of age 65 and over will exceed one-third of the society. The number of young people in the society will decrease. Older people tend to travel for extended periods of time. Their demand for food and transit grows and house equipment decreases. Due to the growing life expectancy of humans and the increase in the number of the elderly citizens, the adaptation of durables is necessary to the reduced agility of the latter. Luehmann [12] emphasizes the change in the consumption structure after retiring. Income reduced by one-third and increased expenses for drugs and health-related

services prevent the retired people from the freedom of choice regarding the consumer goods. The expenses for household equipment and services are reduced by approximately 15%. Retired people devote approximately 90 minutes per day (more than before the retirement) to making necessary goods and services themselves. An increased number of immigrants also lead to changes in the consumption structure. Usually, immigrants do not assimilate with the society, trying to preserve their own traditions. The needs of the immigrants are different than those of the local society. This also applies to the patterns of purchased products.

The consumer demand depends on the location of the cities. In the more developed regions, particularly in Western Europe and Scandinavia, the city authorities, observing the environment pollution and increased production of waste, promote intelligent development. The distance of bike paths is growing, so is the extent of the pedestrian zones and recreational areas, public transport is improving, saving energy and renewable energy sources are promoted. Making incoherent decisions advantageous only for individual entrepreneurs is impossible. The authorities attempt to centrally optimize the development of cities and styles of consumption [8].

Another trend in the consumption is, as we call it, cooing of the consumption. The consumers bored with changes prefer to stay at home. Part of the activities in the public space is transferred to the home, for example, instead of going to the movie theater, we invest in home theaters; instead of going to the gym, we build gyms at home. This phenomenon is referred to as decentralization of consumption.

The problem of free time also appears in modern societies. Despite the fact that research shows that people now have more free time than they used to have in the past, it is more frequently filled with more tasks. Free time becomes a privilege.

An invaluable role in the consumption is played by access to the Internet. Books, movies, newspapers and magazines can be uploaded to a computer, tablet or other media. The power of the Internet is growing with every passing year. Figure 1 presents the level of availability of the Internet in Poland and the EU. Within the last 10 years, the Internet became generally available. The breakthrough came in 2009 when half of the EU population gained access to the Internet.

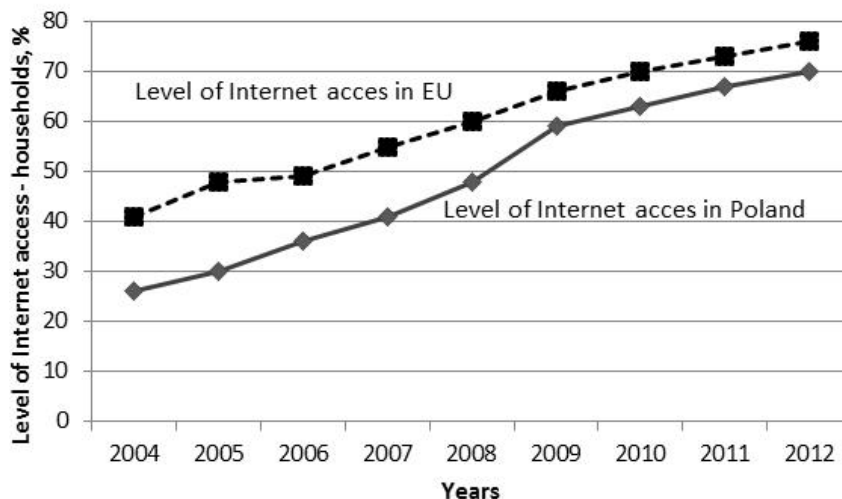


Figure 1. Level of Internet access in Poland and in European Union
(source: own work based on data from Eurostat)

The number of people using the Internet is growing continuously but unfortunately is not even throughout the EU. In Holland, the access to the Internet is at a level of 90% while in Bulgaria, it is only 30% (Figure 1). Every third citizen of the EU purchases products over the Internet 40%, which are durables 40% computers, more than 35% computer accessories and almost 20% computer parts.

It is also indicated that [23, p. 128] the advancement of the mobile technology leads to a situation that phones, aside from their fundamental function, serve a variety of purposes: cameras, mobile Internet, tour guides, etc. A phone may also be used for shop payments.

The growing financial disparity among the members of societies should be a starter for the variation of the market offer of products in terms of their price level. Disproportions in material wealth are particularly conspicuous in the developing countries. Companies operating in the household equipment sector must carefully monitor the trends in the consumption and adapt their products to the changing situation.

Schuh [19] thinks that the 2008 economic crisis has spared Eastern Europe. This results from the direct foreign investments made here 20 years ago. Since 2008, the countries of Western Europe have been recording a drop in the National Gross Product, while Poland's situation, in particular, was compared to that of the rapidly developing Ireland (referred to as the Green Island on the European map). Despite a higher development than in Western Europe, a drop in the

economic growth was recorded. This was particularly conspicuous in the Baltic States and Ukraine. Foreign investors must face the challenge of collapsing and shrinking markets, poorer consumers or their local partners going bankrupt. The stream of foreign investments flowing to Eastern Europe has shrunk since 2008 from 35 to 85% depending on the country. Despite such significant changes, Schuh maintains that direct investments in the countries of Eastern Europe are still a good solution. These are 20 states populated by 330 million people. Such a large market cannot be neglected by the international concerns complaining about a reduced demand in Western Europe. Until 2008, direct investments in Eastern Europe were made because of low labor costs, access to cheap sources of natural resources, particularly in the automotive industry, durables, machine construction materials and paper, friendly policies of the government, long-lasting tax incentives, low energy costs or the possibility of penetrating a large market. The process of formation of a competitive economy using intelligent electro-energetic networks is presented by Ludynia [11]. These investments carried a risk of bad infrastructure in Eastern Europe and incompatible legislation. It was believed that this risk was justified by the need to adapt to the European requirements and principles. Direct investments in Eastern Europe until 2008 returned much higher profits. Currently, at the time of crisis, the reality in Eastern Europe changed, yet it is still worth investing here.

The crisis did not cause reduction in qualified personnel and additionally, the employees' salaries got reduced, along with the prices of purchase or rental of real estate, the costs of supplies, exchange rates, and the costs of bank operations—all these making attractive grounds for investments.

Today the investment strategies changed from fast expansion and market penetration to selective and optimized actions. Schuh [19] maintains that countries with the greatest potential are: Poland, The Czech Republic, Slovakia, Slovenia and Estonia. These are countries where the largest economic transformations have been carried out and they are the EU member states. Russia and Ukraine are very large markets, yet their consumers still have a limited purchasing capacity. The economy of these states is heavily dependent on the export of energy carriers and unprocessed goods. Omnipresent bureaucracy and corruption and small progress in the transformation of the economy are not an incentive to invest in these countries. Romania and Bulgaria are still behind compared to Poland, Czech Republic and Slovakia, and have a poorly developed infrastructure, undeveloped markets and bad legislation. Corruption is commonplace. The Eastern European states are no longer perceived as a homogenous Eastern Bloc. They are grouped according to the level of advancement, risk or conditions for economic operations. Currently, investing in Eastern Europe is facilitated by the proximity to the West, access to high-level specialists accepting lower salaries than their western counterparts, industry advancement faster than in Western Europe, large market, acceptance of copyright laws or strong cultural bonds with Western Europe. In Eastern Europe, more than half of the citizens are poor people with an income of not more than US\$ 10,000 per annum. Hence, their expenses for durables are reduced and the basic commodities are most frequently bought at discount prices from private brands of supermarket chains. In the market of fast-moving consumer goods, the manufacturers have already gotten used to this situation and they offer products for poorer customers. The manufacturers of durables will have to give up costly brand products and modify their strategy, which will have to be preceded by a detailed analysis of their areas of operations and financial abilities of the consumers. Krupa and Ostrowska [10] presented the principles of defining the strategies of companies that can be used when creating investment strategies. Rzeszutek [18] presents an example of modification of a company structure in response to the changing

market and customer requirements. Seretny and Seretny [20] proposed, in these difficult times, a change of the approach to marketing - sustainable marketing, rebranding and open and honest communication with the customer. Crossley and others [5] analyzed the consumer expenses during the crisis in the UK. In the crisis, the expenses for durables and other consumer goods decrease. Large furniture and other household appliances are purchased for the lowest amount. It turned out, however, that when the prices of these goods were reduced (for example, the products were offered at prices less VAT), the purchase level of these products increased. Durables are thus characterized by high price-related flexibility of demand. The authors compared the purchasing trends of durables in the crises from the 1980s, 1990, and 2008. After the crisis began, the sale of durables dropped in the UK and after 2 years, it began to grow. In the last crisis, after a 2-year period of sales drop, the trend changed for 18 months and until 2011, the sales decreased. Only recently, has a small increase been observed. The authors conclude that the purchasing of durables depends on the type of household, location of residence, income, education and age.

Based on the performed literature analysis, we can observe that the equipment of households with durables is influenced by many variables of different nature. In the paper, the authors particularly emphasize the analysis of the household equipment depending on the social, demographic and economic characteristics.

3 Material and research methodology

The commonly used attributes of satisfaction in the area of durables are: the level and structure of expenses for durables and the possession of these assets. The data related to the expenses for durables in Polish households and the households of other European countries and the level of equipment with these goods have been provided by the databases of the National Office for Statistics and Eurostat.

Various types of households were the objects of interest of the authors. Among the characteristics of the households that were included in the analysis, there were: wealth, presence of children in the family, location of the household, education level of the head of the household and the size of the household measured with the family members.

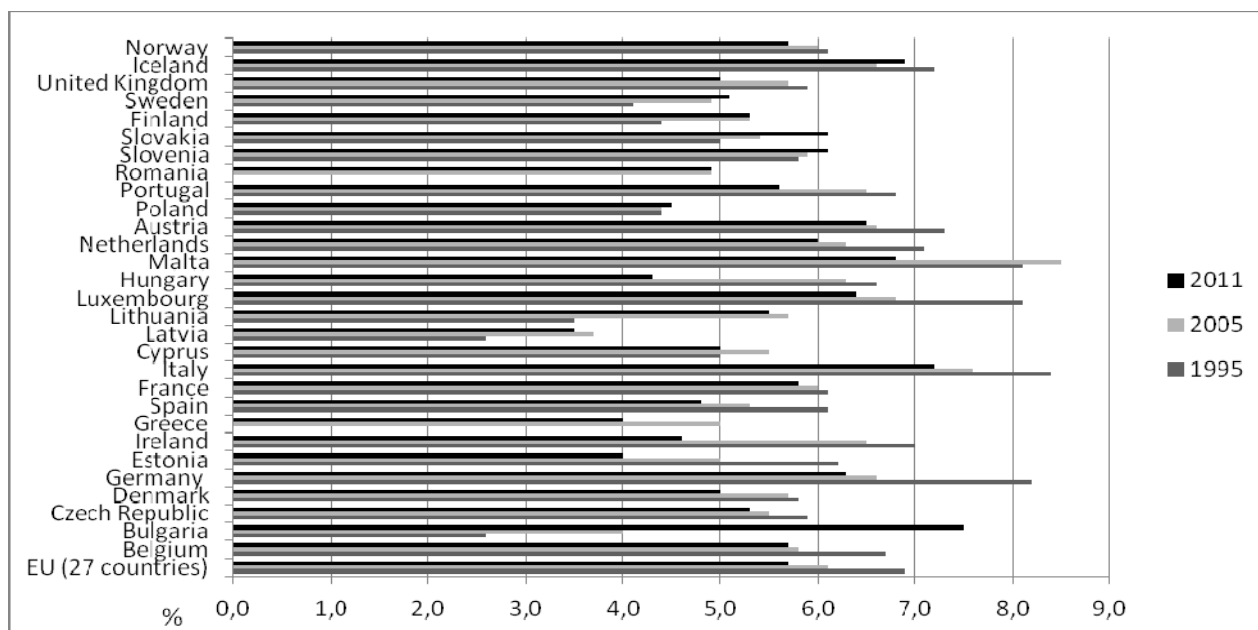


Figure 2. The share of expenses for household furnishings in the total household expenses in selected European countries in the years 1995, 2005 and 2011
(source: own work based on data from Eurostat)

To give a better picture of the dynamics of the household equipment consisting of durables, the average rate of changes was applied. This measure determines the increment or a drop in the investigated phenomenon in the investigated period against the extent of this phenomenon in the basic period. Chain indexes were calculated first (1) and then from the obtained indices, the averages were calculated for the period under analysis (2).

$$i = y_n / y_{n-1} \quad (1)$$

where:

i - chain index.

y_n - period under analysis, given year for which the index is determined.

y_{n-1} - base year, the year preceding the given year.

$$\bar{i}_G = \sqrt[n]{i_{n/n-1} \cdot i_{n-1/n-2} \cdot \dots \cdot i_{2/1}} = \sqrt[n]{i_{n/1}} - 1 \quad (2)$$

\bar{i}_G - average rate of changes for the period under analysis (2004–2011). To create the groups of households and to picture the similarities and differences in the equipment with durables, the Ward method was applied, which is a hierarchic method of grouping. The characteristic feature of this method is that in order to estimate the distance between the clusters, the approach of variance analysis is used. In the Ward method, one aims at minimizing the sum of the squares of the deviations of any two clusters that may be

formed at any stage. In the beginning of the procedure, it is assumed that each object constitutes a separate cluster, then stepwise, the most similar objects are connected in groups until a single cluster is obtained containing all information. The method is deemed effective, as it ensures the homogeneity of the objects inside the clusters and at the same time, their heterogeneity among the clusters [22]. It is indicated that the optimum number of clusters can be received by cutting the dendrogram stems where they become too long, that is, where the distance between the clusters is getting significantly greater.

The statistical analysis has been performed with the use of Statistica 10 and Excel.

4 Expenses for home furnishings in the European households

In European countries the highest shares of the expenses for household equipment were recorded for Bulgaria and Italy - 7.5 and 7.2%, respectively (see Fig. 2). Then there were: Iceland - 6.9%, Malta - 6.8% and Austria - 6.5%. The lowest percentage of the income assigned for household equipment was recorded in Latvia - 3.5%, Estonia and Greece - 4% each, Hungary - 4.3% and Poland - 4.5%. In 2011, compared to 2005 or 1995, a decrease in the percentage of expenses for household furnishings was observed in many

countries. The reason for this situation might have been the economic crisis at the end of the first decade of the XXI century.

According to the data provided by National Office for Statistics [2] in Poland, the average monthly expenses for household furnishings in 2012 were PLZ 50 per person and grew by over PLZ 1 compared to 2011, and in 2006, they were just below PLZ 38. The share of the expenses for household equipment was reduced in 2006; it was 5.1% of the total expenses.

The expenses for the household furnishings varied, depending on the type of household. In 2012, the highest expenses for household furnishings were recorded for households with income generated by white-collar jobs and self-employment just below PLZ 72 and over PLZ 65 per month per person, respectively, while in the households where the income was generated by blue-collar jobs, the expenses oscillated around PLZ 36 and for the retired citizens, just below PLZ 37.

The effect resulting from the management scale is the fact that as the number of people in a household grows, the expenses for the household equipment per capita drops. In single-person households, the average monthly expenses amounted to over PLZ 71, while in the case of six-person households and greater, these were just below PLZ 24.

Significant differences in the level of expenses in households were observed when the households were divided with regard to financial situation. In households qualified to the I-quintile group¹, the average monthly expenses were at the level of PLZ 21, and in the households qualified to the V-quintile group, over PLZ 108.

The analysis of the expenses for the household equipment depending on the presence and number of children proves that in childless households, the greatest amounts of money were assigned for household equipment—almost PLZ 76 per capita. As the number of children grew in the family, the expense for the household equipment per capita decreased. In 2012, the monthly expenses in the households with one child were just below PLZ 68 per capita and in the house-

holds with three and more children - just below PLZ 30.

In general, much higher expenses for household equipment were incurred in households of people having a university degree - just below PLZ 89 per month per capita, while in the households of people at the level of primary education or with no education, these expenses were at the level of just below PLZ 31.

It has also been observed that the expenses of households located in larger cities were greater than those of the smaller ones and villages. In towns with population below 20,000, the average expenses for household equipment were PLZ 47 per capita and in the households of cities with the population of 500 and greater PLZ 77. In the villages, the expenses for the household equipment were the least - PLZ 41 per month per person.

5 Household durables equipment level

In order to diagnose the situation of the household level of equipment with durables, we can use a three-degree scale of saturation [23, p. 335–336]. In a situation that a given piece of equipment is present in over 80% of the households, it indicates a high degree of saturation. Average degree of saturation is when 50–80% of the households own a given piece of equipment. If a given piece of equipment is owned by less than 50% of the population, we have a low degree of saturation. Based on the product life cycle², the household equipment level, and the degree of saturation, we can steadily forecast further development of a product in the market.

² Product life cycle is a term denoting a period in which the product is present in the market. This cycle is composed of four stages: market launch, increase in the sales, saturation/maturity, drop in the sales. At the first stage, the customers are informed that the product is available in the market and sometimes they are educated on how to use it. In the stage of the sales increase, the sales are growing rapidly, the effect of which is the reduction in the unit costs of production, promotion and further market growth. In this phase aftermarket, follow-on products may appear and their number and force may lead the producers to implement necessary modifications to the product. In the maturity stage, the sales grow but this growth is slower than in the previous stage. At this stage, the producers should aim at conquering new markets and/or new market segments on which the company operates. In the last stage, a drop in the production and sales takes place. Advertising the product does not bring expected results. A successful instrument for promotion maybe the reduction in price, finding new applications for the product, new distribution channels, product modification or targeting different segment of clients.

¹ In the GUS (National Office for Statistics) poll, households are divided into five-quintile groups. The first-quintile group is the households of the lowest income - in 2012, the average monthly income per capita amounted to PLZ 411.25. The V group includes households with the highest income - in 2012, the households' available income amounted to PLZ 2679.19 per capita.

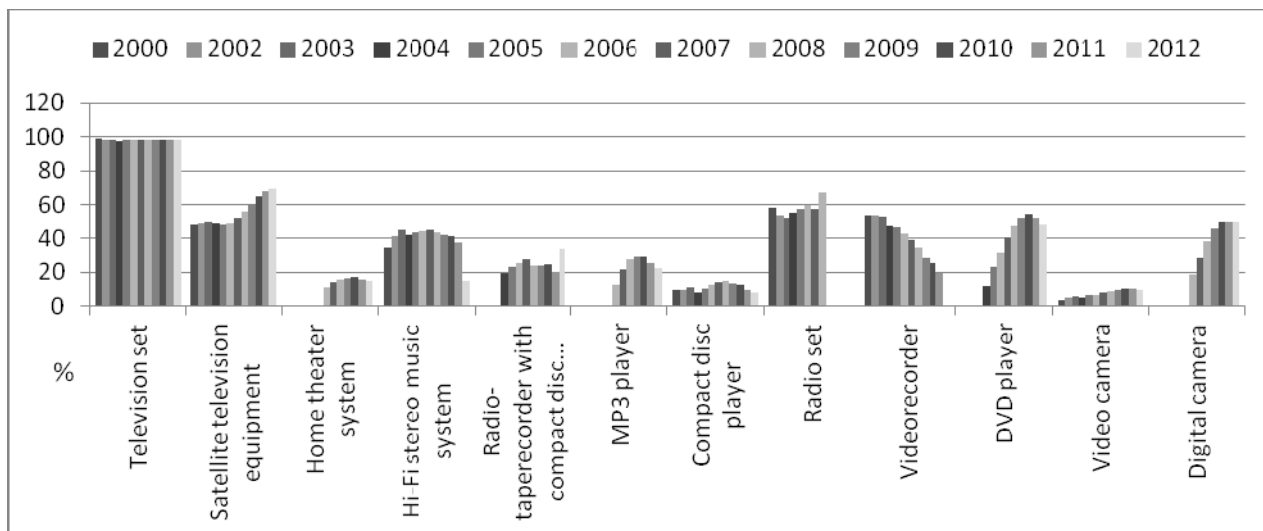


Figure 3. The share of Polish households owning audio entertainment equipment in the years 2000 – 2012
(source: own work based on data from Eurostat)

The data contained in the GUS Household Budget statistics indicate that such goods as satellite television, cell phones, washing machines, vacuum cleaners or refrigerators have a high degree of saturation in the Polish households. The lowest degree of saturation is of (below 20% of the households) home theaters, video cameras, video recorders, CD players, computers without access to the Internet, dishwashers, motorcycles and scooters. From the manufacturers of products having a high-saturation degree, we require introducing innovation so as to be distinguished among the competition and attract the consumer (product novelty, better functionality, and better cost effectiveness).

In the first decade of the XXI century, many changes took place in the Polish households. Modern data carriers made VCRs obsolete that in the beginning of the decade were owned by almost 52% of the households and in 2011 by approximately 19%. The market saw a relatively large increase in goods such as: cell phones (in 2001, 37% of the households; in 2011, over 90%), computers (from 16 to 67%), printers (from 9 to 40%), DVD players (from approximately 11 to almost 52%), digital cameras (from 28% in 2007 to 50% in 2011), microwave ovens (from 17 to over 53%) (see Fig. 3). In the case of some of the entertainment goods, a short-life cycle of products was observed resulting from the introduction of new technologies. The examples of the products with such a short-life cycle are radio receivers fitted with a CD player, CD players and MP3 players.

Among household appliances, the greatest increase was observed for microwave ovens, from 17% in 2000

to over 54% in 2012, and dishwashers, from approximately 2% in 2000 to almost 20% in 2012. The statistics for washing machines have been observed to grow as well from approximately 71% in 2000 to over 92% in 2012.

Relatively small changes in the household equipment were observed for vehicles. In 2000, 60% of the households had bicycles, approximately 4% mopeds and over 47% cars. In 2012, this was over 64%, approximately 6% and 60%, respectively.

On one hand, it is indicated that in the era of crisis, the consumers are more careful deciding about their purchases and services, while on the other hand, the analyses of ConsumerLab 2012 have shown that the crisis did not influence the use of electronic services. Among the most conspicuous consumer trends, access to the Internet was the most frequently appearing need. Household budgets indicate that the household level of equipment with computers with access to the Internet is growing gradually. In 2000, the share of Polish households having access to the Internet was 5.1% and in 2012 – 64.7%. Printers were a part of the household equipment with a share of 8.8% while in 2012, this was 37.2%. A similar situation was seen in the case of cell phones³. In 2002, 37.1% of the households had a cell phone while 11 years later, this grew to 92%.

³ In the GUS Household Budgets, the item indicating the household level of equipment with cell phones is given starting from 2002.

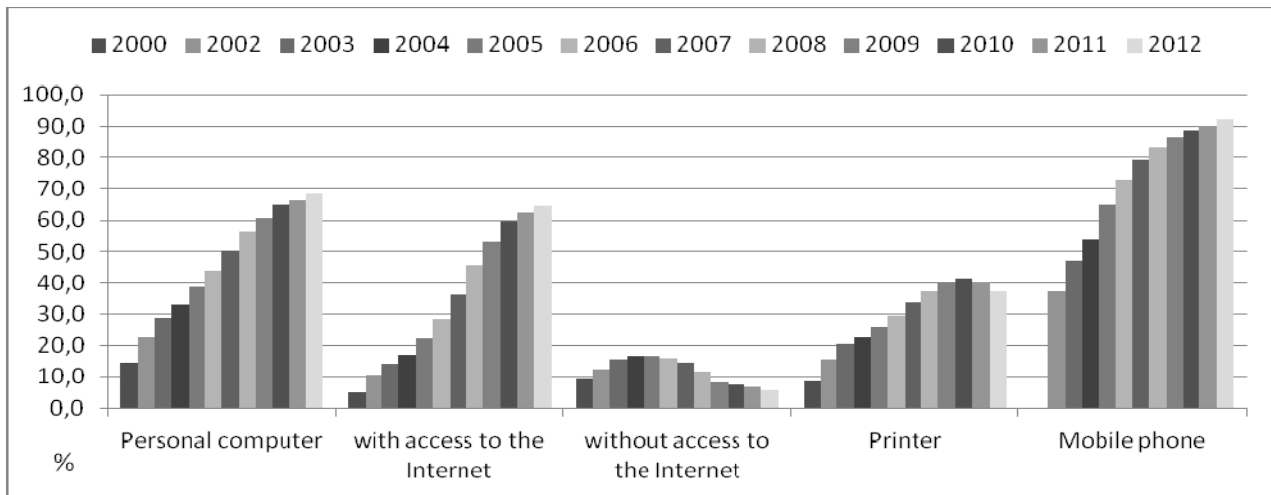


Figure 4. Average rate of changes in the equipment of households with durables in the years 2000–2012
(source: own work based on data from Eurostat)

In Europe in 2012, the greatest share of households having access to the Internet was recorded for Iceland, Holland, Luxembourg and Denmark – over 90% of the households had access to the Internet. On average, in the EU (27 states), 76% of the households had access to the Internet. The Internet access shares similar to that of Poland were observed for the Czech Republic and Latvia (69% each). The lowest share of the households having access to the Internet was observed in Bulgaria – 51% and Greece and Romania – 54%.

The number of people who can efficiently use the Internet is growing. The greatest share of people who can search for required information in the Internet was recorded in Norway - 91% and the UK and Iceland - 90%. The lowest number of people who can efficiently use the Internet was recorded in Romania 2%, Bulgaria – 49% and Greece – 53%. In Poland, 64% have declared the ability to search the Internet.

The ever-growing use of the Internet and the presence of social media may contribute to the entrepreneurs obtaining a competitive advantage. Integrity and reliability of the producers and service providers may result in good reviews on the internet forums.

Entrepreneurs cannot operate as they used to; they cannot end on declarations on social responsibility. Businesses have to open an honest dialogue with the consumers. We must also remember that the consumer is becoming increasingly demanding.

Analyzing the household level of equipment with durables, we can divide them into standard, that is, such that are available for each household and are owned by more than half of them, higher standard goods owned

by 10 to 50% of the households, and luxury goods owned by less than 10% of the households [9, p. 161, 164].

A new device that became popular in the beginning of the XXI century in Polish households was a dishwasher. In 2001 – 2.4% of the households were equipped with a dishwasher and 10 years later, the number grew to 17.7%. A luxury device in Polish households also turned out to be ceramic cooktops. In Household Budget Statistics [2, p. 198], it has been included since 2010 when 8.2% of the households declared having such a device. The number grew to 8.4% in 2012.

The index of the rate of changes in the equipment level of Polish households in the years 2000–2012 shows that the highest dynamics had the computers with access to the Internet. The average growth rate in the said years was 26%. A relatively high rate was also seen in the case of dishwashers (on average, from year to year, the share of dishwashers present in the households increased by 24.2%), DVD players (from year to year by 19.3%) digital video cameras (from year to year by 17.9%) (see Fig. 4). A relative stabilization in the share of durables in Polish households was observed for bicycles, refrigerators, freezers, vacuum cleaners, washing machines, radio cassette players and CD players, television sets and Hi-Fi stereo. The greatest negative rate of change was observed for VCRs – from year to year, the share of the households having this piece of equipment decreased by 9.7%, and computers without access to the Internet - from year to year, this share decreased by 4.1%.

6 Comparison of the equipment of different types of households

The level of household equipment with durables is an indicator of wealth and consumption position of the households. The equipment of households with certain goods also results from the need to have them. The greatest share of households equipped with dishwashers was recorded for the self-employed families (46.3%), for families where the head of the household had a university degree (35.6%), couples with two children (34.3%) and people generating their income from white-collar jobs (31.3%). The lowest share of households equipped with dishwashers was recorded for the families where the head of the households had high-school education (3.6%), retired people (5.3%) and singles (6.5%). The dishwasher then turns out to be a luxury device for some of the households and a higher-standard device for the other [2, p. 215]. The greatest share of the households equipped with a ceramic cooktop was recorded for self-employed families (20.9%) and the lowest for families of the lowest education

level (1.9%) and in the households located in the Podkarpackie (1.9%) and Świętokrzyskie (2.8%) regions of Poland. From the research [13, p. 101], it results that the presence of durables in households is most heavily dependent on the available income. The possession of ceramic cooktop significantly differed depending on the material status in the households. In 2011, this device was owned by 3.3% of the poorest households and 15.1% of the wealthiest ones [2, p. 215].

In the next tables, the shares of households equipped with selected luxury and higher standard goods have been listed depending on the type of household. A difference has also been calculated between greatest and lowest shares of the presence of a given device in a household in %.

From the analysis of the equipment with durables with regard to the financial situation in a household (quintile group), it results that the greatest differences were observed for laptop computers, printers, dishwashers, ceramic cooktops, video cameras and access to the Internet (see Tab. 1).

Table 1. The share of the households equipped with durables depending on the quintile income group
(source: own work based on data from Eurostat)

Specification	QG* I	QG II	QG III	QG IV	QG V	The difference between the maximum and minimum in percentage points
Home theater system	11.2	13.9	14.9	15.3	19.4	8.2
Hi-Fi stereo music system	36.3	36.4	35.5	34.4	43.2	8.8
Radio with compact disc player or radio tape recorder with compact disc player	17.3	19.2	18.5	19.4	23.9	6.6
MP3 player	24.6	27.4	24.0	22.3	28.3	6
Compact disc player	7.3	9	8.5	9	11.6	4.3
Video recorder	16.9	18.8	18.0	19.7	21.5	4.6
Video camera	5.1	7.6	8.9	9.5	15.6	10.5
Laptop	23.7	28.8	30.1	34.0	52.3	28.6
Personal computer with broadband access to the internet	43.0	46.2	44.5	43.0	59.2	16.2
Personal computer without access to the internet	12.7	7.9	5.8	5.4	5.3	7.4
Printer	35.1	39.6	38.4	36.3	47.8	12.7
Electric ceramic cooker	3.3	4.5	5.6	7.3	15.1	11.8
Dishwasher	8.8	12.2	14.3	16.5	29	20.2
Motocycle, scooter, motorbike	9.2	8.2	6	4.7	4.4	4.8

The analysis of the household equipment with durables with regard to the socio-economic group proved that the greatest difference in the equipment were for (similarly, as in the case of the financial situation)

laptop computers, access to the Internet, printers, dishwashers but also MP3 players and Hi-Fi stereo (see Tab. 2).

Table 2. The share of the households equipped with durables depending on socio-economic group
(source: own work based on data from Eurostat)

Specification	Households						The difference between the maximum and minimum in percentage points
	of employees in manual labour positions	of employees in non-manual labour positions	farmers	of the self-employed	retirees	pensioners	
Home theater system	19.4	24	12.4	32.2	5.1	4.7	27.5
Hi-Fi stereo music system	44.3	53.6	40.1	55.8	19.4	16.6	39.2
Radio with compact disc player or radio tape recorder with compact disc player	21.3	26.5	21.9	27.7	14.2	12.5	15.2
MP3 player	30.7	41.3	27.7	40.9	6.5	7.5	34.8
Compact disc player	10.2	14	11.2	15	4.9	3.8	11.2
Video recorder	19.7	21.2	24	22.4	18.4	14.7	9.3
Video camera	8.6	18.2	5.8	27.4	3.9	2.2	25.2
Laptop	34.4	61.5	26.4	64.7	14.7	12	52.7
Personal computer with broadband access to the internet	54.8	72.8	48.3	72.9	22.2	19.5	53.4
Personal computer without access to the internet	9.3	7.2	12.1	8.4	3.8	4.1	8.3
Printer	44.1	62.5	49.2	71.5	16.5	14	57.5
Electric ceramic cooker	4.7	14.1	5.4	20.9	4.3	3	17.9
Dishwasher	12.7	31.3	15.3	43.6	8.6	5.3	38.3
Motocycle, scooter, motorbike	8.8	5.7	17.4	10	2.7	2.7	14.7

The analysis of the household equipment with durables with regard to the biological type of family proved that

the greatest differences were for MP3 players and access to Broadband Internet (see Tab. 3).

Table 3. The share of the households equipped with durables depending on the biological type of family (*source: own work based on data from Eurostat*)

Specification	Households without children	Marriage with one dependent child	Marriage with two dependent children	Marriage with three and more dependent children	Mother or father with dependent children	The difference between the maximum and minimum in percentage points
Home theater system	12.3	28.1	30.8	19.3	15.8	18.5
Hi-Fi stereo music system	30.1	52.7	55.9	51.5	44.4	25.8
Radio with compact disc player or radio tape recorder with compact disc player	17.4	24.4	27.7	26.6	23.6	10.3
MP3 player	10.9	41.5	47.2	44.9	42.9	36.3
Compact disc player	7.3	13.7	14.7	12.3	9	7.4
Video recorder	21.6	20.5	22.4	22.4	15.2	7.2
Video camera	8.3	19.1	23	13.9	11.3	14.7
Laptop	29.2	53.7	51.7	38.8	44.8	24.5
Personal computer with broadband access to the internet	37.0	69.2	70.4	61.6	58.8	33.4
Personal computer without access to the internet	4.5	7.4	9.8	13.2	10.4	8.7
Printer	27.6	60.6	66.8	59.6	45.1	39.2
Electric ceramic cooker	8.7	12.9	14.1	7.3	9.4	6.8
Dishwasher	18.3	28.4	34.3	24.2	18.8	16.0
Motocycle, scooter, motorbike	3.5	6.8	9.6	13.8	2	11.8

The greatest difference in the household equipment depending on the education level of the head of the household were, as previously, for computers, printers, access to the Internet and dishwashers (see Tab. 4).

Table 4. The share of the households equipped with durables depending on the education level of the head of the household (*source: own work based on data from Eurostat*)

Specification	Level of education of the reference person				The difference between the maximum and minimum in percentage points
	Tertiary	Post-secondary; secondary vocational and secondary general	Basic vocational	Lower secondary, primary, no formal education	
Home theater system	22.2	16.8	14.9	5.6	16.6
Hi-Fi stereo music system	50.5	39.6	37	17.4	33.1
Radio with compact disc player or radio tape recorder with compact disc player	26.9	21.4	19.3	10	16.9
MP3 player	37.6	27.7	23.3	8.6	29
Compact disc player	13.3	10.4	8.8	3.1	10.2
Video recorder	21.5	21.7	20	10.5	11.2
Video camera	19.9	11.1	6.8	1.7	18.2
Laptop	63.5	39.1	26.9	10.2	53.3
Personal computer with broadband access to the internet	70.3	52.2	44.7	17.6	52.7
Personal computer without access to the internet	6.8	6.8	7.9	5.3	2.6
Printer	61.3	44.3	36.2	11.8	49.5
Electric ceramic cooker	17.8	8.2	4.4	1.9	15.9
Dishwasher	35.6	18.3	12.1	3.6	32
Motocycle, scooter, motorbike	4.8	5.3	8	5.6	3.2

The size of the households also determined the access to the Internet, laptop computers, Hi-Fi stereo and printers (see Tab. 5).

Table 5. The share of the households equipped with durables depending on the size of the household
(source: own work based on data from Eurostat)

Specification	Households						The difference between the maximum and minimum in percentage points
	One-person	Two-persons	Three-persons	Four-persons	Five-persons	Six and more persons	
Home theater system	4.5	11.5	22.4	26.7	19.7	15.8	22.2
Hi-Fi stereo music system	18	30.5	47.8	53.3	50.8	47	35.3
Radio with compact disc player or radio tape recorder with compact disc player	12.4	17.8	22.9	26.3	24.6	27.3	14.9
MP3 player	9.4	13.6	34.2	43.4	40.1	34	34
Compact disc player	4.2	7.5	12.3	13.7	12.3	11.6	9.5
Video recorder	12.4	20.6	21.3	22.3	23.6	22.0	11.2
Video camera	2.7	7.7	14.4	18.1	12.8	8.7	15.4
Laptop	21.0	30.0	46.5	49.8	42.1	35.9	28.8
Personal computer with broadband access to the Internet	24.0	38.5	62.5	67.8	63.7	58.9	43.8
Personal computer without access to the Internet	3	5.1	7.5	9.9	11.2	13	10
Printer	14.5	28.8	53	62.7	59.7	54.6	48.2
Electric ceramic cooker	5.6	7.9	10.2	11.2	6.8	4.6	6.6
Dishwasher	6.5	16.2	22.3	28.1	22.1	17.6	21.6
Motocycle, scooter, motorbike	1.5	3.5	5.9	9.4	12.1	17.4	15.9

The greatest differences in the share of the households equipped with a given durable device with regard to the location of the household were recorded for laptop computers and access to Broadband Internet (see Tab. 6).

From the performed comparison, it results that the durables that differentiate the households most are: laptop computers, printers and access to the Internet.

Table 6. The share of the households equipped with durables depending on the classification of the location of residence

Specification	Town by size in thousand					Rural	The difference between the maximum and minimum in percentage points
	Less than 20	20–99	100–199	200–499	500 and more		
Home theater system	16.8	17.2	19.3	17.1	15.1	12.8	6.5
Hi-Fi stereo music system	36.1	37.2	39.9	42.1	41.6	34.6	7.5
Radio with compact disc player or radio tape recorder with compact disc player	20.6	20.6	22.2	21.9	22.8	17.3	5.5
MP3 player	23.5	24.5	26.5	30.2	34.3	20.9	13.4
Compact disc player	9.6	10.3	7.6	10.9	10.7	8.1	3.3
Video recorder	18.4	22.1	19.0	22.5	16.9	18.2	5.6
Video camera	9.8	11.4	10.5	12.7	14.2	6.8	7.4
Laptop	32.2	35.4	39	44.8	54.7	25.8	28.9
Personal computer with broadband access to the internet	44.3	46.4	55.3	55.2	64.2	39.7	24.5
Personal computer without access to the internet	6.3	6.6	5.3	6.1	5.3	8.7	3.4
Printer	40.6	39.7	38.8	43	45.2	37.7	7.5
Electric ceramic cooker	6.6	6.7	10.6	9.7	12.6	6.3	6.3
Dishwasher	17.8	17	18.8	18.5	23.9	14.8	9.1
Motocycle, scooter, motorbike	5.3	4	2.9	2.4	2.5	11.2	8.8

7 Classification of Polish households with regard to home entertainment and electronic equipment

In this chapter, a classification of the types of households has been performed with regard to durables.

Such a classification may be helpful when developing marketing strategy of a product, particularly in the pricing and promotion strategies. The household groups may be treated as market segments⁴.

The application of cluster analysis allowed distinguishing five groups of households with regard to the home entertainment and electronic equipment (see Fig. 5). The dendrogram has been cut at the level of 50.

In cluster I, there were households (see Fig. 6): of self-employed and white-collar workers, couples with one or two children and families where the head of the household had a university degree. Four-person families were also a part of this group. These households turned out to be best equipped in home entertainment and electronics.

Cluster II included households: of single mothers or fathers, three- and five-person families as well as couples with three and more children.

In the said households, the equipment in home entertainment and electronics was greater than in clusters III, IV and V and lower than in I. It appears as though having children in the family forces the possession of many entertainment and electronic goods, yet a relatively more difficult financial situation in these households compared to the households from cluster I manifests through a much poorer equipment statistics.

For cluster III, the following households qualified: households located in cities with population above 100,000, households of blue-collar workers and families where the head of the household had high-school education and the wealthiest households.

The share of households equipped with home entertainment and electronics was similar to that of cluster II; only a lower share of households had MP3 players, DVD players and digital cameras.

The qualification of the wealthiest and other households to one cluster calls for an explanation. Average available income in households from quintile group V and households of blue-collar workers differ significantly.

Durables, including home entertainment are frequently a substitute for the consumption of certain market services, particularly those pastime-related. In the poll, the equipment of households with durables is analyzed, while in some of the households, these goods may be substituted by market services (movie theater).

The analysis shows the household level of equipment with durables, in terms of quantity and the level of wear and obsolescence is not analyzed, which may render individual households different.

In cluster IV, there were single-person households with the lowest education level and retired people. These were the households of the relatively worst entertainment and electronic equipment statistics.

A characteristic feature in this cluster is the highest share of equipment with radio receivers and cassette players. The features of the households, however, indicate that this kind of equipment is obsolete.

Cluster V included the most types of households, two-person households, childless households, the households from I to IV quintile group, those located in the rural areas and cities of the population below 100,000, farmers and families where the head of the households had a vocational education level.

These households were characterized by relatively poorer statistics in the equipment with home entertainment and electronic goods, while many of these households were equipped with obsolete devices such as radio receivers.

⁴ Market segment - a relatively uniform group of clients with distinguished features: geographical, demographic, psychographic, or behavioral.

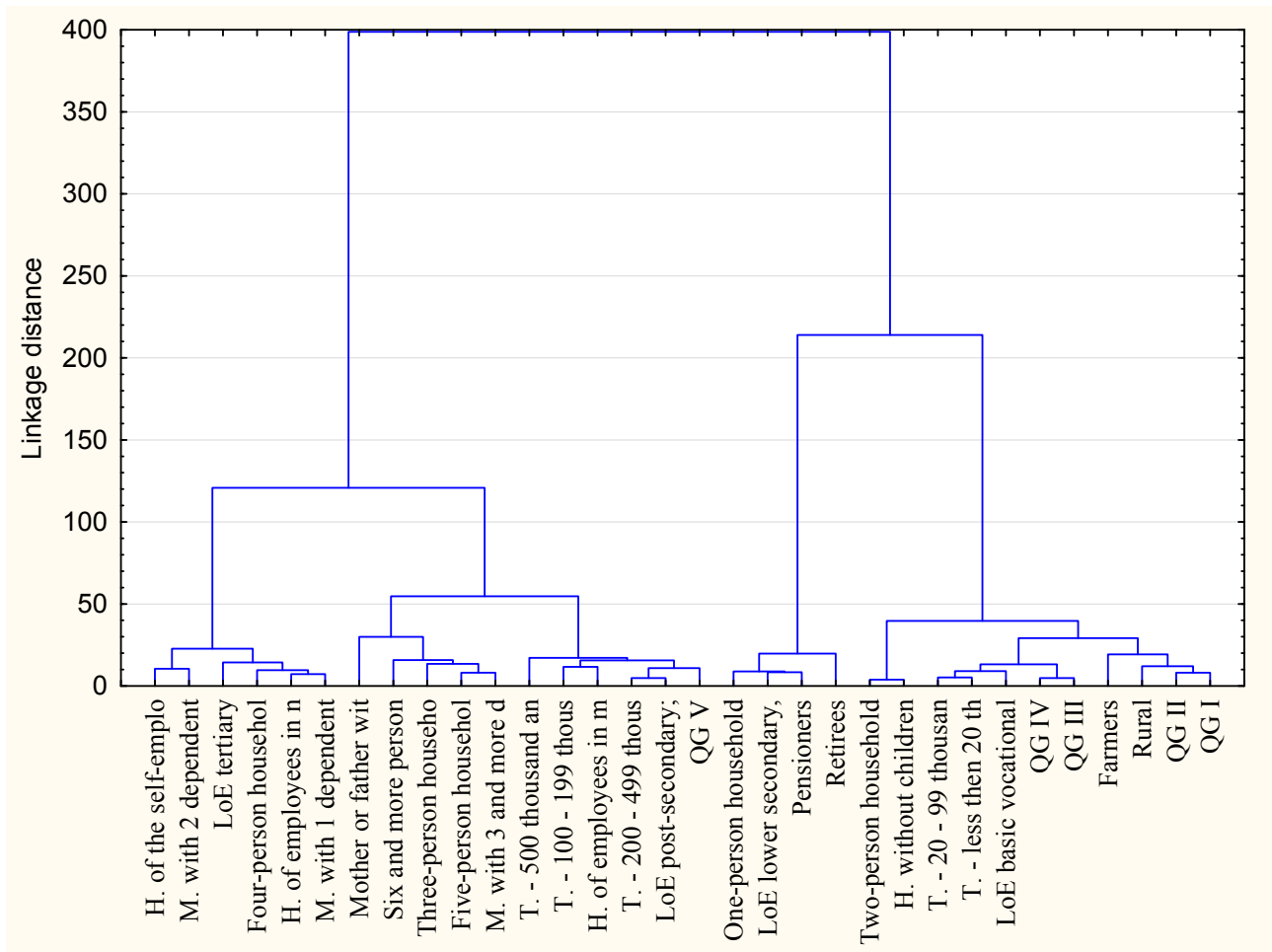


Figure 5. Groups of households distinguished with regard to home entertainment and electronic goods

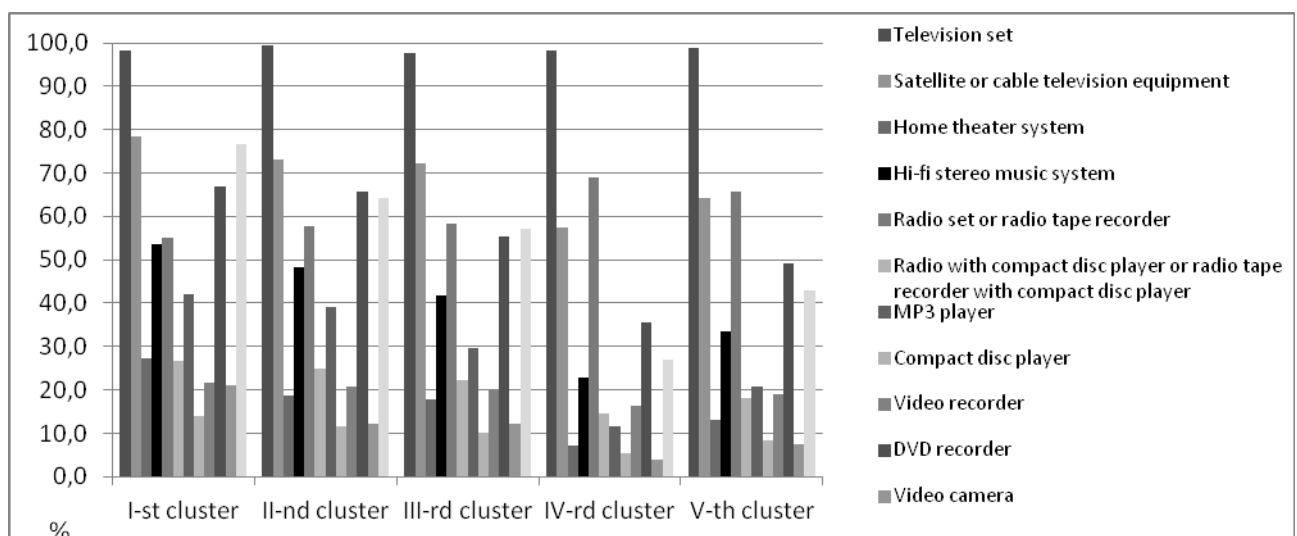


Figure 6. Average share of households in the subsequent clusters with regard to home entertainment and electronic goods

8 Classification of Polish households with regard to equipment with household appliances

The application of the cluster method allowed distinguishing four groups of households with regard to the equipment with household appliances. The graph has been cut at the level of 30 (see Fig. 7).

Cluster I included the following types of households (see Fig. 8): households located in towns of population below 20,000 and villages, households whose source of income was agriculture and blue-collar jobs; three, five and more person families; and couples with three and more children. The equipment with household appliances of the said households we can place on the second position after cluster II. The analyzed types of households are characterized by a relatively good level of equipment. This may be the result of specificity of these households. It appears that in households located in the villages, because of, as we call it, self-supply, there is a need to own certain durables (freezers).

Cluster II included households whose source of income was white-collar jobs, households of the self-employed, families with one and two children, four-person families, the wealthiest households as well as the households whose head had a university degree. These households were characterized by a relatively highest level of equipment with household appliances.

Cluster III included single-person households, with the lowest education level of the head of the household and retired people. These were households of the lowest level of equipment with household appliances. In this cluster, there were households of the lowest number of persons for which, as it appears, there is no need to own certain household appliances.

Cluster IV covered households: located in towns and cities of the population greater than 20,000 and villages, with no children, households of single mothers or fathers, two-person households, households from I to IV quintile group, with basic vocational education of the household head. The said types of households had a lower share of household appliances than clusters II and I.

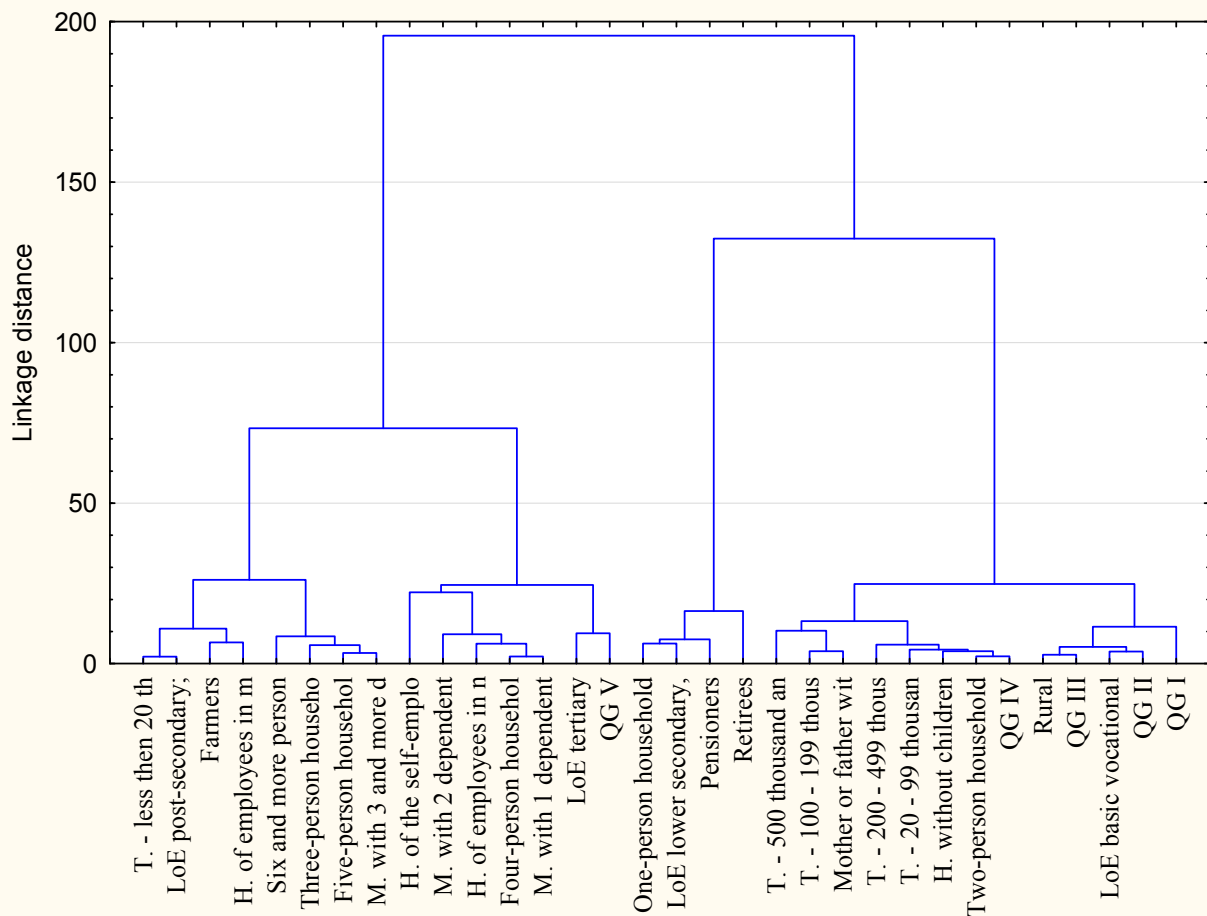


Figure 7. Groups of households distinguished with regard to equipment with household appliances (source: own work based on data from Eurostat)

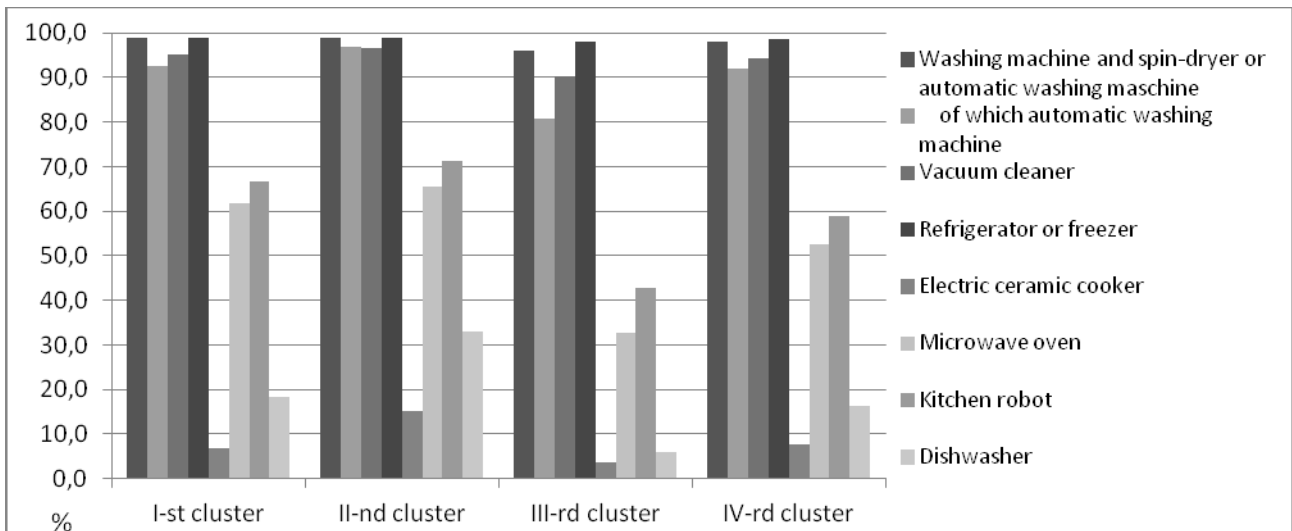


Figure 8. Average share of the households in subsequent clusters equipped with households appliances
(source: own work based on data from Eurostat)

9 Classification of Polish households with regard to equipment with computers and the Internet

Owing to the application of cluster analysis, six groups of households were distinguished with regard to the equipment level with computers, the Internet and printers. The dendrogram was cut at the level of 30 (see Fig. 9).

Cluster I contained households (see Fig. 10): three, six, and more person families and single mothers or fathers. In this cluster, a relatively high percentage of households was equipped with computers, the Internet and printers. The presence of children in a household confirms the need to own many goods, computers and the Internet, in particular.

Cluster II included households: couples with children, four- and five-person families, households whose source of income was self-employment and white-collar jobs, households whose head had a university degree. These were the households the greatest percentage of which was equipped with computers and printers as well as access to the Internet. The presence of children in the households and a relatively better financial situation compared to cluster I results in a better equipment level.

Households located on the right side of the dendrogram branch are characterized by a worse level of equipment with computers and access to the Internet than that of the same on the left side of the dendrogram branch.

Cluster III contains households of the retired people, single-person households and households of the lowest education level of the head. In the said households, the poorest equipment with computers, printers and access to the Internet was recorded. Elderly persons and people with a lower level of education still have difficulties using the computer or the Internet.

Compared to the rest, cluster III is characterized by an average level of equipment with computers and access to the Internet.

Cluster IV included households: located in cities with population above 99,000, whose source of income was blue-collar jobs and agriculture, households from the V quintile group and households whose head of the household had high-school education.

Cluster V included two types of households: two-person and childless households. Cluster VI included households qualified in the I to IV quintile group, located in cities with the population above 100,000 and households of basic vocational education of the head of the household.

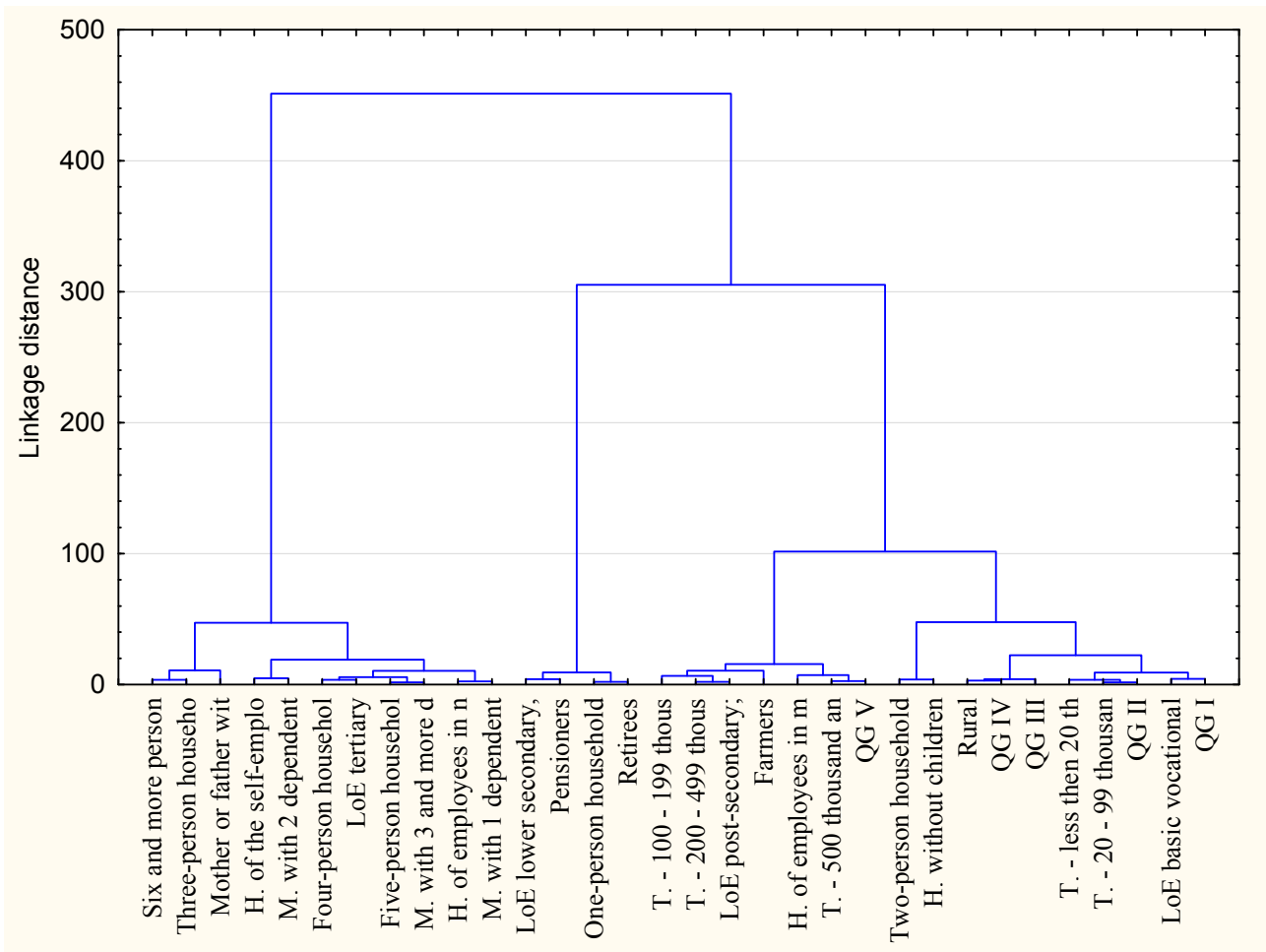


Figure 9. Household groups divided with regard to the level of equipment with computers, printers and access to the Internet

(source: own work based on data from Eurostat)

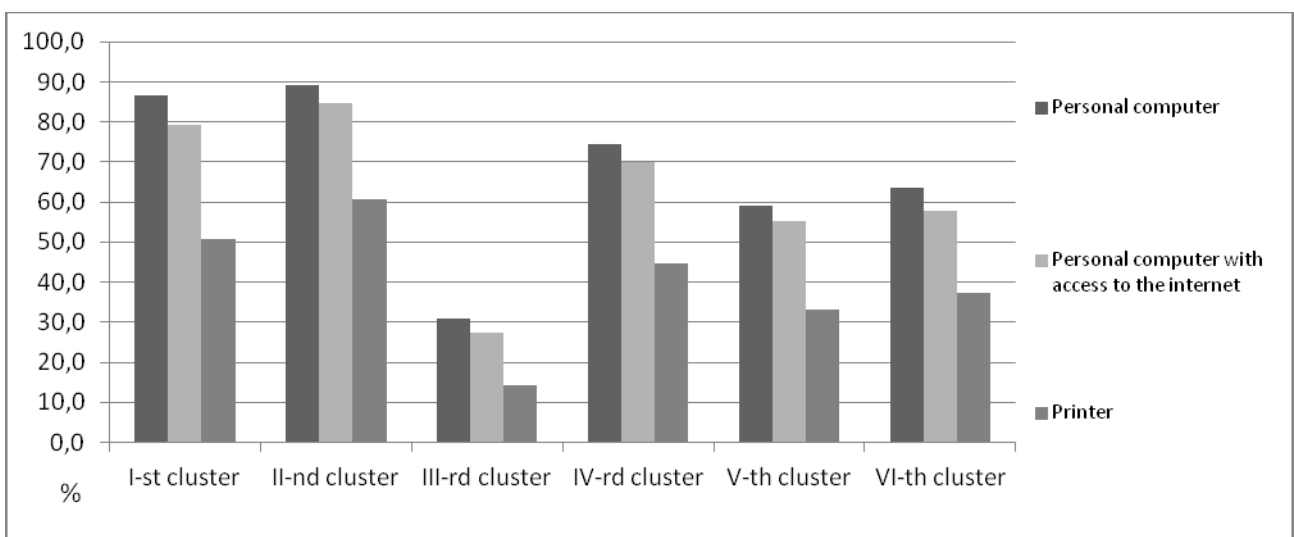


Figure 10. Average share of households in subsequent clusters in terms of computers, printers and access to the Internet

10 Classification of Polish households with regard to mobile durables

The performed cluster analysis allowed distinguishing five groups of households with regard to mobile durables such as vehicles, motorcycles, scooters and bicycles (see Fig. 11). The dendrogram has been cut at the level of 50.

Cluster I included households of farmers, self-employed people, four and more person families, couples with two and more children (see Fig. 12). These were household types of the greatest level of equipment with vehicles. The rural location forces the possession of vehicles due to lack of public transit.

Cluster II included households whose head had a university degree, three-person families, white-collar workers and couples with one child. These were households where bicycles were present less frequently than in cluster I and V but passenger vehicles were relatively frequent.

Cluster III included single-person households, households of retired people, households whose head had the lowest level of education and “incomplete” families. These were households whose lowest share had bicycles and motor vehicles.

Cluster IV aggregated the households located in cities with the population of over 20,000, households from the III, IV and V quintile group, childless households, households with high-school education level of the head and two-person families. The households of the said cluster had a relatively poor level of equipment with vehicles.

The last cluster included households located in the rural areas and small towns, households from the quintile groups I and II, households whose main source of income was blue-collar jobs and the head of the household had a basic vocational education level. The said households had two-wheeled vehicles more frequently than in the households of clusters II, III, and IV.

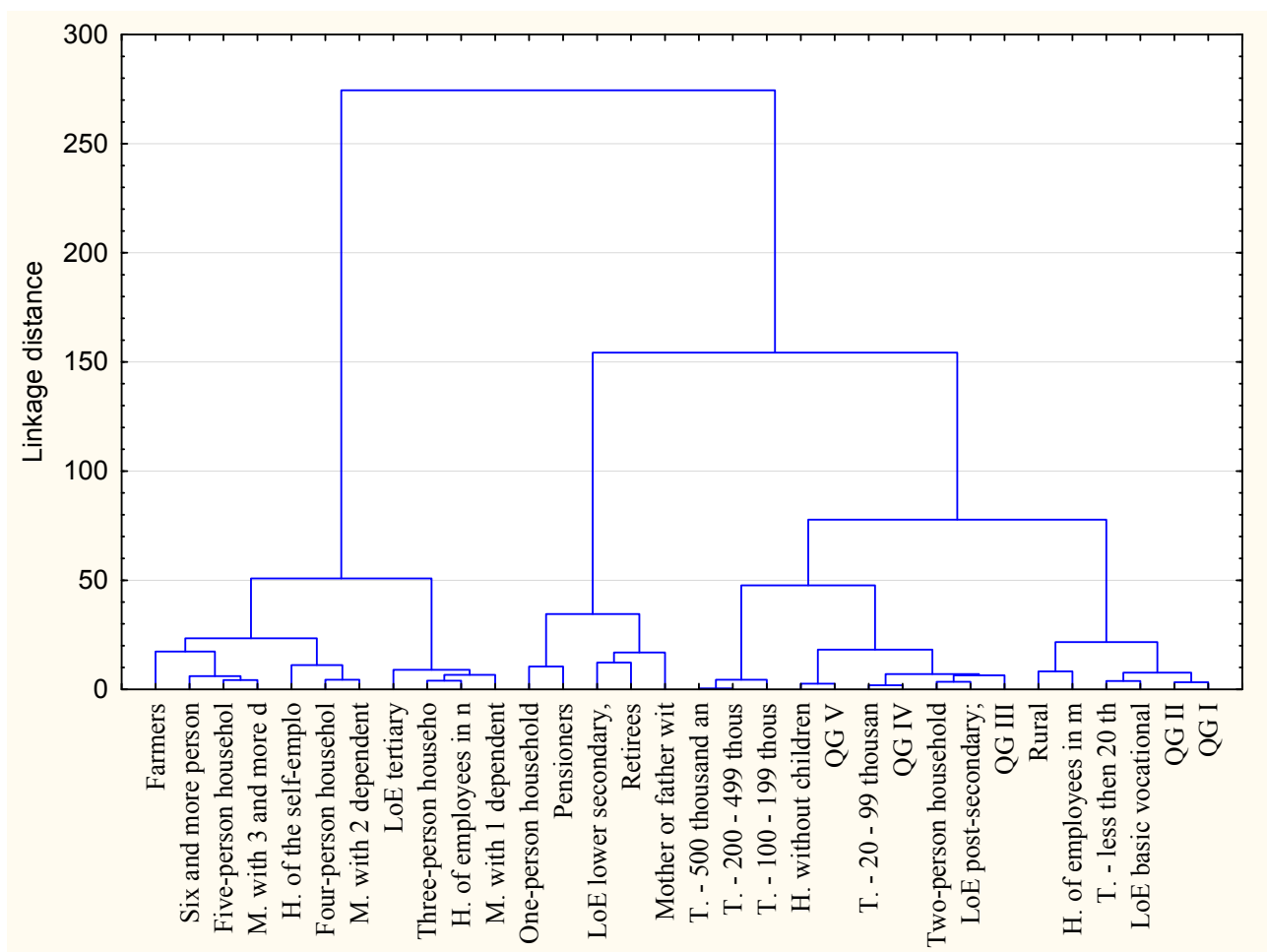


Figure 11. Household groups divided with regard to the level of equipment with mobile durables (*source: own work based on data from Eurostat*)

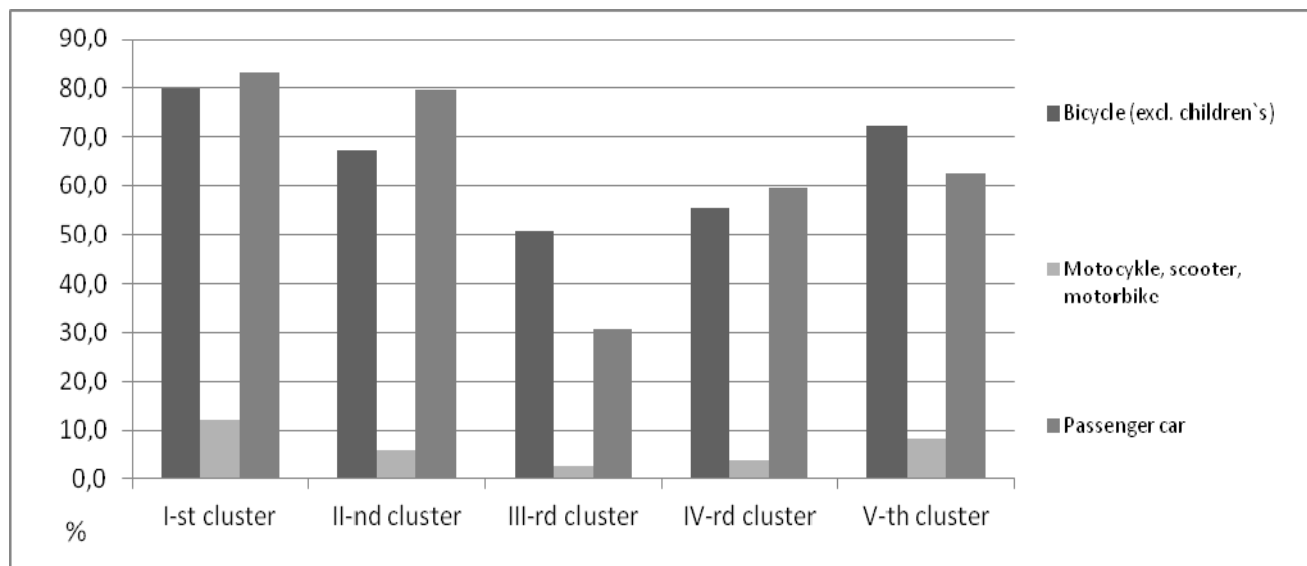


Figure 12. Average share of households in subsequent clusters in terms of mobile durables
(source: own work based on data from Eurostat)

11 Summary and conclusions

To conclude, if the level of life comfort is to be measured by the indicator of household equipment with durables, then, in recent years, an improvement in Poland is visible. Polish households are consequently getting better equipped with many appliances.

This image is most likely influenced by the fact that many goods are getting cheaper, thus becoming increasingly available for a wider group of consumers. Some of the goods are losing popularity (home telephone lines, Hi-Fi stereo, CD players), but the reason for this is the technological advancement (cell phones, MP3 players). It is noteworthy that the level of equipment with durables is not a good indicator of the level of life.

A more important indicator is the opinion of the household members on their needs satisfied by these durables. It is also noteworthy that the GUS (National Office for Statistics) data give a quantitative status, not providing information on the conditions or obsolescence of the appliances. As Zalega stresses [24, p. 17), an improvement in the equipment level with durables has both a quantitative and qualitative nature.

An increase in the equipment level in ICT (Information and Communication Technology) media confirms the advancement of the consumption models and is far more visible in households of higher available income.

The conducted analysis allowed solving the research problems set forth in the beginning of this paper:

- The greatest amount of money from general expenses in European households was spent by Bulgarians and Italians and the least amount of money was spent by Latvians, Estonians, and Greeks. The increasing wealth of the societies, of Central and Eastern Europe in particular, should lead to an increase in the expenses for household equipment and development of this market;
- Expenses for durables in Poland are getting higher each year. The greatest amount of money was invested in households having the best financial situation and the least – in numerous families;
- Goods of high saturation in the Polish households are: television sets, vacuum cleaners, washing machines and cell phones. Many goods are phased out of the market (a VCR) by more modern appliances. In the years 2000–2012, a dynamic growth was observed in the household equipment with microwave ovens, computers and access to the Internet, cell phones as well as dishwashers, yet in the case of the dishwashers, we can still observe a low level of saturation in the Polish households;

- Cluster analysis allowed distinguishing groups of households of similar saturation with durables. The best-equipped households with most of the durables turned out to be the households with one or two children and a better education level of the household head. In less numerous households of a relatively worse financial situation and households of the elderly people, the lowest equipment level was observed.

The distinguished clusters of households are consumer segments. The presented analyses also indicate the trends of the Polish consumers in terms of the equipment with durables.

In many cases, the lack of a need results in the absence of a given durable that is, elderly persons are very likely not to need to own a computer with access to the Internet. The role of the marketing is, hence, to induce these needs.

We may expect that in the nearest future, in households of lower level of equipment with durables, we will observe a growing trend. Consequently, the expenses for durables will grow.

The adaptation of the market offer to individual types of households becomes a necessity. Also, the trends in the consumption are not to be neglected (society ageing, migration to cities, households of reduced number of family members) if we wish to properly design durable goods.

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