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INFORMATION GOODS – TOWARDS IDENTIFICATION AND CLASSIFICATION

DOBRA INFORMACYJNE - W STRONĘ IDENTYFIKACJI I KLASYFIKACJI

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Słowa kluczowe: *informacja, dobra informacyjne, Klasyfikacja Produktów wg Działalności (CPA)*

Abstract
The article concerns *information* as an economic category in the dimension of information products and services (goods). Critical review of information goods' definition proposals existing in literature was conducted. In the next stage author proposed his take on these categories. On this basis the crucial features describing information products and services were identified and ordered. Using e.g. this approach the information goods in Statistical Classification of Product by Activity were indicated.

Streszczenie
Artykuł dotyczy problematyki informacji jako kategorii ekonomicznej w wymiarze produktów i usług informacyjnych (dóbr informacyjnych). Przeprowadzono krytyczny przegląd funkcjonujących w literaturze przedmiotu propozycji definicyjnych pojęcia dobra informacyjnego. W kolejnym kroku zaproponowano autorskie ujęcie kategorii dobro informacyjne. Na tej podstawie wyodrębniono i usystematyzowano kluczowe cechy charakteryzujące produkty i usługi informacyjne. Z wykorzystaniem m.in. tego podejścia dokonano identyfikacji produktów i usług informacyjnych na bazie statystycznej klasyfikacji produktów według działalności.

INTRODUCTION

In economics as a scientific field multivariate analysis of information as an economic category should be applied.
One of research areas ought to concern the role of information in explaining the rules of market (including information market) functioning in terms of imperfect information with taking into account business entities' behaviour. These behaviour is the source of valuable, yet often overlooked information. Information plays crucial part in uncertainty reduction, transactional cost limiting and achieving material rationality.

The second one is focused on information as a specific economic good which is being sold and bought on market. In that view the information goods (i.e. products and services) are in the scope of analysis.

The third area concerns research of the meaning the information derivative, i.e. knowledge as an input (e.g. human capital) and output (e.g. innovation) in economic processes of resources allocation.

This article will describe the second area of information as economic category. Main goals of the article are the following:

- identification and systematisation of various literature approaches to define information goods as a specific economic goods which are being sold and bought on the market,
- compilation the set of criteria for identification of information goods,
- creation of author's definition of an information goods,
- analysis of Statistical Classification of Product by Activity (CPA v. 2.1.) in relation to the set of criteria for identification of information goods.

INFORMATION GOODS – LITERATURE REVIEW

Chronologically, the part of Machlup's [1962] approach can be considered as the first attempt to distinguish and define information goods in economic literature. Information services were recognized by him as a component of knowledge industries. Among these services were identified:

- professional services (legal, engineering, accounting and auditing, medical),
- financial services (banking, brokerage, insurance carriers),
- agents and brokers in wholesale trade,
- government services (legislative, judiciary),
- other business services.

Besides information services in a set of knowledge industries components Machlup pointed out the information machines. They were as follows: electronic computers, measuring and control devices, typewriters, signalling devices, telephone and telegraph apparatus, motion picture apparatus, musical instruments, printing trades machinery. Such a broad approach to information goods is correlated with methodology and definitions (e.g. information and knowledge as an economic category) adopted by the author [Machlup, 1962]. The definition of knowledge proposed by Machlup [1962, p. 7] is characterized by a broad and downright simple recognition of the term, i.e. anything that is known by somebody. "Knowledge is both what we know and our state of knowing it. Information as that which is being communicated becomes identical with knowledge in the sense of that which is known" [Machlup, 1962, p. 15]. As Duff [2000, p. 49–50] noticed: "Machlup's information sector includes not only industries whose final product is exclusively information; it also includes intermediate services and activities".

Several years later Porat's approach to information goods was presented. According to him [Porat, 1977, p. 19]: "(…) the information activity includes all the resources consumed in producing, processing and distributing information goods and services". He divided the information into two major activity sorts, i.e. the primary information sector (where information is exchanged as a commodity) and the secondary information sector (where information is embedded in some other good or service and not explicitly exchanged) [Porat 1977, p. 21].

The 'primary information sector' includes those firms which supply the bundle of information goods and services exchange in a market context. As Porat [1977, p. 43] noticed: "Conceptually, the good or service must intrinsically convey information or be directly useful in producing, processing, or distributing information to be accounted in the primary sector". Taking into account above standpoint, the primary information sector was created by activities such as:

- knowledge production and inventive industries (incl.: R&D and inventive industries, private information services),
- information distribution and communication industries (incl.: education, public information services, regulated communication media, unregulated communication media),
- search and coordination industries (incl.: search and non-speculative brokerage industries, advertising industries, non-market coordinating institutions),
- risk management industries (incl.: insurance industries, finance industries, speculative brokers),
- information processing and transmission services (incl.: non-electronic based processing, electronic based processing, telecommunication infrastructure),
- information goods manufacturing industries (incl.: non-electronic consumption or intermediate goods, non-electronic investment goods, electronic consumption or intermediate goods, electronic investment goods),

- selected government activities (incl.: primary information services in the federal government, postal service, state and local education),
- support facilities (incl.: information structure construction and rental office furnishings).

For each activity we could find Standard Industrial Classification (SIC) codes related to identified components of primary information sector. Considering, for example, 'information goods manufacturing industries' there are 33 codes, e.g.: (2893) – printing ink, (3573) – electronic computing equipment, (3611) – electrical measuring instruments and test equipment and thirty more [Porat, 1977].

These two exploratory research (Machlup's and Porat's) were partly devoted to identify and define information goods as an economic category. Next attempts to set these terms were undertaken in the next years by different authors. Among the most interesting proposals to describe information products, services and goods we can indicate in chronological order, as below:

"The basic unit that is transacted is what I call 'information goods'. I take this to be anything that can be digitized – a book, a movie, a record, a telephone conversation. Note carefully that the definition states anything that *can* be digitized; I don't require that the information *actually* be digitized. Analog representations, of information goods, such as video tapes, are common, though they will likely become less so in the future" [Varian, 1998]

- "Information product is an example of Type III (beside Type I and Type II products), i.e. has a big information component and small good and small service component" [Freiden et al., 1998]
- "Essentially, anything that can be digitized – encoded as a stream of bits – is information. (...) Baseball scores, books, databases, magazines, movies, music, stock quotes, and Web pages are all information goods" [Shapiro, Varian, 1999]
- "We define information goods to be products that can be digitized and for which the primary source of value to consumers is the digitizable portion of the product, rather than the medium on which the information may be presented. (…) we consider a book to be an information good when consumers value the information content of the book" [Bhargava, Choudhary, 2001]
- "Information is exchanged under a wide range of formats or packages (which are not necessarily digital). These formats are generically called information goods. Books, movies, music, magazines, databases, telephone conversations, stock quotes, web pages, news, etc. all fall into this category" [Belleflamme, 2002]
- "(…) goods consisting of data, information and knowledge content, typically with high sunk costs that are traded online at a close-to-zero marginal cost of production" [Lopez, Galetta, 2002]
- "(…) digital information goods – from web pages offering auctions through software, music and movies – are broadly defined as experience goods encoded as a string of bits" [Mahnke, Venzin, 2002]
- Goods, or "information products" are self-contained arrays of quantitative information, with or without interpretation, which can be stored for future retrieval. The medium in which these arrays are recorded is immaterial. Thus, such "goods" might include a yearbook of national accounts; a CD-ROM with the standard industrial classification; and tables on exports and imports by commodity groupings, downloadable from a web site [United Nations Statistics Division, 2003]
- "An information good is mainly a 'collection of symbols', and its value primarily derives from the precise arrangement of these symbols, rather than from the medium used for their preservation and transmission. Naturally, information goods are intangible and can be classified as 'experience goods', as potential consumers typically have to experience the good to understand its quality" [Viswanathan, Anandalingam, 2005]
- "An information good is a good whose value comes from the information it contains" [Children, 2006]
- "Information goods are immaterial goods which require carriers for implementation. Information goods are restricted three constraints: creation constraints, access constraints, and usage constraints. (…) anything one can send and receive over the Internet has the potential to be a digital product. (…) Digital information goods exhibit three anomalies: (1) buying anomaly, i.e., information goods have trust and experience features, so they cannot be evaluated by consumers before buying otherwise he will not buy it anymore, (2) price anomaly, i.e., pricing of an digital information good

cannot be determined by margin costs because they tend to be negligible, and (3) copy anomaly, i.e., copy and original of an information object cannot be distinguished" [Maass et al., 2007]
- "Information, Communication, Technology (ICT) goods are those that are either intended to fulfil the function of information processing and communication by electronic means, including transmission and display, or which use electronic processing to detect, measure and/or record physical phenomena, or to control a physical process" [OECD, 2007]
- "The value of a digital good is measured by its information content rather than its physical content. (…) These characteristics of "information goods" imply that they have a fairly specific cost structure: high fixed cost for product development, but zero or near zero marginal cost for production and distribution" [Chen, Seshadri, 2007]
- "(…) information goods is understood as definable quantity of data which the economic subject attach a benefit to. Such information goods, which are in the meantime predominantly dealt with digitally, are, e.g. news, music, pictures or any kind of software" [Linde, 2009]
- "Information goods can be defined as products that are valued mostly because of the information carried, for example, magazines, software, music, videos, books, etc." [Wang, Zhang, 2009]
- "Information product is a finished set of information mapped in a specific language on relatively durable, separated and identifiable tangible medium" [Czerwiński, 2011]
- "We define an information good as a product whose unit production and distribution cost is zero, once it has been developed. (…) The best examples of information goods are digital product (…)" [Jones, Mendelson, 2011]
- "(…) we define information goods as a combination of characteristics, and quality is defined as an aggregation of values that consumers get from these characteristics. Thus, quality is determined by the set of characteristics, and more characteristics yield higher quality. It may be helpful to think of characteristics as functionality or as content" [Wei, Nault, 2014]
- "A critical distinction between information and physical goods is that the former incurs large sunk costs of development but negligible costs of reproduction and distribution [Wei, Nault, 2014]
- "ICT sector covers goods and services that enable electronic processing of information and communication (including transmission and display)" [GUS, 2021]
- "Digital information goods can be defined as goods containing any kind of information decoupled from their physical carriers such as paper, vinyl records or Blu-ray (i.e., dematerialized). (…) These goods differ from analogue information goods in several important respects" [Śledziewska, Włoch, 2021]
- "An information good is something that is valued for the information it contains rather than the material of which it is made. A common example of an information good is a book. The paper and glue that makes up the material part of the book is not what generates the price of the good. The price is derived from the material written and drawn on the pages [McGee, 2022].

After analyzing all presented approaches, it is proposed to define ***information goods*** as products or services which: (1) can be digitized, (2) value comes from the information they contain, (3) utility of information component is more important than utility of material (tangible) or service (intangible) components.

In the next sub-section the main features characterizing so defined information goods will be identified, sorted out and explained.

KEY CHARACTERISTICS OF INFORMATION GOODS

Information goods are characterized by a number of peculiar features. Among the most interesting literature proposals describing them, we can indicate, as below:

- ***common externalities, in particular network externalities*** – the value of the good for an individual is greater when a large number of entities also use the same good; it is also observed that the value of a network is proportional to the square of the number of connected users of the network (n^2) – i.e. so called Metcalfe's law; economists claimed network externalities are more

important for information goods than for other goods and pointed out demand economies of scale with standards creation,

- ***high fixed (sunk) costs*** – it can be noticed on supply side that essential part of information goods costs is determined by fixed costs; these costs should be covered in advance and they are difficult to get back (so called sunk costs); additionally these costs are generally very high, which is caused by specificity of input necessary for information goods creation – e.g. dedicated software, database management system, etc.,
- ***very low (or negligible) marginal costs of reproduction*** – each additional units of information goods may be reproduced and distributed at very low costs approaching to zero level – it creates so called supply-side economies of scale; such a situation occurs assuming reproduction without changes or slight-low-cost changes in original good and digital channel of distribution,
- ***inherently nonrival and sometimes non-excludable*** – result of combination of high fixed costs and low or often negligible marginal costs; the consumption possibilities of one individual do not depend on the quantities consumed by others because the marginal cost of providing the good to an additional consumer is close to zero; both – seller and buyer information goods are aware of incomplete appropriation them after transaction; the feature of permanence (quantity and invariability) despite the consumption; in some cases one person cannot exclude another person from consuming the information good in question; part of information goods has a tendency and can be perceived as public goods,
- ***ease to copy with little – if any – quality degradation*** – most of information goods are easy to copy without loss its quality and utility; in this context it is worth mentioning that a type and form of goods matter (e.g. installation version of the computer program generally can be easily copied towards specialized legal service); such feature determines the creation of institutions that reduce the level of uncertainty between transaction sides, e.g. intellectual property law; IPR are difficult to verify compliance with and the piracy phenomenon can appear; there is the incentive problem (minimal incentive to produce information goods due to piracy),
- ***experience or credence-qualities goods*** – Nelson [1970] defines an experience good as one whose qualities cannot be determined before purchase; on the other hand Darbi and Karni [1973] added the concept of 'credence' qualities, i.e. those qualities that cannot be evaluated in normal use; true value of information goods cannot be revealed to the consumer until they can be consumed; demand side can't assess the value and quality *ex ante* and has to trust supply side; this feature of information goods causes reducing a potential demand and supply size; methods which allows mitigate this problem are: sampling, signaling, standards adopting, observing of other buyers behavior and practices imitation, claims about experiences,
- ***customization and discrimination (windowing, versioning, bundling)*** – product differentiation and prices discrimination are common pricing strategies implemented by the firm offering information goods; there are high opportunities of low-cost product differentiation and customizing them in terms of content, functionality, period access, interface, technical support, upgrades, etc.; to customize offerings for different consumers enables to price them differently (first, second and third-degree discrimination); for information goods three different types of the second degree price discrimination have an important role (i.e.: windowing, versioning and bundling); windowing concerns bringing finished information goods (films, TV programs, books) in different forms at varying times on to the market; with versioning the corporation offers its product in various versions and leaves it up to the customer to select the suitable one for him/herself [Linde, 2009]; versioning through vertical (various features) and horizontal (diverse quality) differentiation can be implemented [Wei, Nault, 2014]; bundling many unrelated information goods increases the consumers' willingness to pay for an item in comparison with the retail sale,
- ***blurring the border between information products and information services*** – there are two reasons for this, i.e.: one of them is that – low marginal cost of information goods increases intensity of price competition that prompts vendors to offer them as a service instead of products and the other one is correlated with the higher protection level against piracy for services compared to products; [Freiden et al., 1998] identified three types of products consisted of tangible goods, services and information components; Type I is dominated by the tangible goods component, Type II is

dominated by service and Type III – called as 'information product' is dominated by information component; generally, this goods collection is consisted of intangible goods,

- ***variety of forms with digitization tendency*** – information goods may exist in several modes (words, symbols, pictures, sounds) and be delivered by several media (print, broadcast, digital); nowadays digitization is indicated as a dominant tendency in information goods development direction; classification framework for digital products based on product category (i.e.: tools and utilities, content-based digital product and online services) and characteristics (i.e.: delivery mode, granularity and trialability) can be found in Hui and Chau [2002]; other categorization of information digital goods was presented by Maass et al. [2007] – according to it, information goods can be either referential (representations of entities or situations in user-perceivable worlds) or self-referential (do not refer to user-perceivable entities or situations) in static (content centered) or dynamic (content centered or service centered) dimensions,
- ***switching costs and customer lock-in*** – switching costs measure the extent of a customer's lock-in to a given supplier [Shapiro, Varian, 1999]; both switching cost and customer lock-in are typical for information economy (goods) because information is processing using a specific 'system' consisting of multiple pieces of hardware and software and because specialized skills are required to use specific systems [Shapiro, Varian, 1999]; the following types of customer lock-in and associated switching costs can be indicated [Shapiro, Varian, 1999]:
- contractual commitments↔compensatory or liquidated damages
  - durable purchases↔replacement of equipment; tends to decline as the durable ages
  - brand-specific training↔learning a new system, both direct costs and lost productivity; tends to rise over time
  - information and databases↔converting data to new format; tends to rise over time as collection grows
  - specialized suppliers↔funding of new supplier; may rise over time if capabilities are hard to find/maintain
  - search costs↔combined buyer and seller search costs; includes learning about quality of alternatives
  - loyalty programs↔any lost benefits from incumbent supplier, plus possible need to rebuild cumulative use.

Based on indicated ten essential characteristics of information goods and proposed definition of them, the attempt to point out of information products and services with the use of Statistical Classification of Products by Activity in the European Union (CPA) was conducted.

To achieve that goal, the essential part of approach presented by Czerwiński [2011] was implemented, with few modifications created by the author.

Information products and services

The statistical classification of products by activity, abbreviated as CPA, is the classification of products (goods as well as services) at the level of the European Union (EU). CPA has a hierarchical structure with six levels, each identified with a specific code [Eurostat, 2022]:

- first level: 21 **sections** (alphabetical code);
- second level: 88 **divisions** (two-digit numerical code);
- third level: 261 **groups** (three-digit numerical code);
- fourth level: 575 **classes** (four-digit numerical code);
- fifth level: 1 342 **categories** (five-digit numerical code);
- sixth level: 3 142 **subcategories** (six-digit numerical code).

With the usage of CPA the identification of information products and services' was prepared and presented on section and subcategory levels in the table 1.

Table 1. Information products and services' examples according to CPA Version 2.1

Tabela 1. Przykłady produktów i usług informacyjnych zgodnie z CPA wersja 2.1

Section	**G**	**WHOLESALE AND RETAIL TRADE SERVICES; REPAIR SERVICES OF MOTOR VEHICLES AND MOTORCYCLES**
Subcategory	46.49.21	Wholesale trade services of books
	46.49.22	Wholesale trade services of magazines and newspapers
	47.00.61	Retail trade services of books
	47.00.62	Retail trade services of newspapers and magazines
	47.00.64	Retail trade services of music and video recordings
	47.00.92	Retail trade services of second-hand books
Section	**J**	**INFORMATION AND COMMUNICATION SERVICES**
Subcategory	58.11.11	Printed educational textbooks
	58.11.12	Printed professional, technical and scholarly books
	58.11.13	Printed children books
	58.11.14	Printed dictionaries and encyclopaedias
	58.11.15	Printed atlases and other books with maps
	58.11.16	Printed maps and hydrographic or similar charts, other than in book form
	58.11.19	Other printed books, brochures, leaflets and the like
	58.11.20	Books on disk, tape or other physical media
	58.11.30	On-line books
	58.12.10	Directories and mailing lists printed or on physical media
	58.12.20	On-line directories and mailing lists
	58.12.30	Licensing services for the right to use directories and mailing lists
	58.13.10	Printed newspapers
	58.13.20	On-line newspapers
	58.14.11	Printed general interest journals and periodicals
	58.14.12	Printed business, professional and academic journals and periodicals
	58.14.19	Other printed journals and periodicals
	58.14.20	On-line journals and periodicals
	58.14.40	Licensing services for journals and periodicals
	58.19.11	Printed postcards, cards bearing greetings and the like
	58.19.12	Printed pictures, designs and photographs
	58.19.13	Printed transfers (decalcomanias), calendars
	58.19.14	Printed unused postage, revenue or similar stamps; stamp-impressed paper; cheque forms; banknotes, stock, share or bond certificates and similar documents of title
	58.19.15	Printed trade advertising material, commercial catalogues and the like
	58.19.19	Other printed matter
	58.19.21	On-line adult content
	58.19.30	Licensing services for other printed matter
	58.21.10	Computer games, packaged
	58.21.20	Computer games downloads
	58.21.30	On-line games
	58.21.40	Licensing services for the right to use computer games
	58.29.11	Operating systems, packaged
	58.29.12	Network software, packaged
	58.29.13	Database management software, packaged
	58.29.14	Development tools and programming languages software, packaged
	58.29.21	General business productivity and home use applications, packaged
	58.29.29	Other application software, packaged
	58.29.31	System software downloads

	58.29.32	Application software downloads
	58.29.40	On-line software
	58.29.50	Licensing services for the right to use computer software
	59.11.11	Motion picture production services
	59.11.12	Promotional or advertisement motion picture and video production services
	59.11.13	Other television programme production services
	59.11.21	Motion picture, video and television programme originals
	59.11.22	Cinematographic film
	59.11.23	Films and other video content on disk, tape or other physical media
	59.11.24	Films and other video downloads
	59.12.11	Audio-visual editing services
	59.12.12	Transfers and duplication of masters services
	59.12.13	Colour correction and digital restoration services
	59.12.14	Visual effects services
	59.12.15	Animation services
	59.12.16	Captioning, titling and subtitling services
	59.12.17	Sound editing and design services
	59.12.19	Other motion picture, video and television programme post-production services
	59.13.11	Licensing services for film rights and their revenues
	59.13.12	Other motion picture, video and television programme distribution services
	59.20.11	Sound recording services
	59.20.12	Live recording services
	59.20.13	Sound recording originals
	59.20.21	Radio programme production services
	59.20.22	Radio programme originals
	59.20.31	Printed music
	59.20.32	Electronic scores
	59.20.33	Musical audio disks, tapes or other physical media
	59.20.34	Other audio disks and tapes
	59.20.35	Music downloads
	60.10.12	Radio broadcasting originals
	60.20.20	Television broadcasting originals
	60.20.31	Television channel programmes, except for subscription television
	60.20.32	Subscription television channel programmes
	61.10.12	Fixed telephony services - calling features
	61.20.12	Mobile telecommunications services - calling features
	62.01.11	IT design and development services for applications
	62.01.12	IT design and development services for networks and systems
	62.01.21	Computer games software originals
	62.01.29	Other software originals
	62.02.10	Hardware consultancy services
	62.02.20	Systems and software consultancy services
	62.09.20	Other information technology and computer services n.e.c.
	63.12.10	Web portal content
	63.91.11	News agency services to newspapers and periodicals
	63.91.12	News agency services to audio-visual media
	63.99.10	Information services n.e.c.
	63.99.20	Original compilations of facts/information

Section	**K**	**FINANCIAL AND INSURANCE SERVICES**
Subcategory	66.19.91	Financial consultancy services
	66.21.10	Risk and damage evaluation services
	66.22.10	Services of insurance agents and brokers
Section	**L**	**REAL ESTATE SERVICES**
Subcategory	68.31.11	Residential buildings and associated land sale services on a fee or contract basis, except of time-share ownership properties
	68.31.12	Time-share properties sale services on a fee or contract basis
	68.31.13	Residential vacant land sale services on a fee or contract basis
	68.31.14	Non-residential buildings and associated land sale services on a fee or contract basis
	68.31.15	Non-residential vacant land sale services on a fee or contract basis
	68.31.16	Real estate appraisal services on a fee or contract basis
Section	**M**	**PROFESSIONAL, SCIENTIFIC AND TECHNICAL SERVICES**
Subcategory	69.10.11	Legal advisory and representation services concerning criminal law
	69.10.12	Legal advisory and representation services in judicial procedures concerning business and commercial law
	69.10.13	Legal advisory and representation services in judicial procedures concerning labour law
	69.10.14	Legal advisory and representation services in judicial procedures concerning civil law
	69.10.15	Legal services concerning patents, copyrights and other intellectual property rights
	69.10.16	Notarial services
	69.10.17	Arbitration and conciliation services
	69.10.18	Auction legal services
	69.10.19	Other legal services
	69.20.10	Financial auditing services
	69.20.21	Accounting review services
	69.20.22	Compilation services of financial statements
	69.20.23	Bookkeeping services
	69.20.24	Payroll services
	69.20.29	Other accounting services
	69.20.31	Corporate tax consulting and preparation services
	69.20.32	Individual tax preparation and planning services
	70.21.10	Public relations and communication services
	70.22.11	Strategic management consulting services
	70.22.12	Financial management consulting services (except corporate tax) –
	70.22.13	Marketing management consulting services
	70.22.14	Human resources management consulting services
	70.22.15	Production management consulting services
	70.22.16	Supply chain and other management consulting services
	70.22.30	Other business consulting services
	70.22.40	Trademarks and franchises
	71.11.10	Plans and drawings for architectural purposes
	71.11.21	Architectural services for residential building projects
	71.11.22	Architectural services for non-residential building projects
	71.11.23	Historical restoration architectural services
	71.11.24	Architectural advisory services
	71.11.42	Landscape architectural advisory services
	71.12.11	Engineering advisory services

	71.12.12	Engineering services for building projects
	71.12.13	Engineering services for power projects
	71.12.14	Engineering services for transportation projects
	71.12.15	Engineering services for waste management projects
	71.12.16	Engineering services for water, sewerage and drainage projects
	71.12.17	Engineering services for industrial and manufacturing projects
	71.12.18	Engineering services for telecommunications and broadcasting projects
	71.12.19	Engineering services for other projects
	71.12.31	Geological and geophysical consulting services
	71.12.35	Map-making services
	72.11.11	Research and experimental development services in health biotechnology
	72.11.12	Research and experimental development services in environmental and industrial biotechnology
	72.11.13	Research and experimental development services in agricultural biotechnology
	72.11.20	Research and development originals in biotechnology
	72.19.11	Research and experimental development services in mathematics
	72.19.12	Research and experimental development services in computer and information sciences
	72.19.13	Research and experimental development services in physical sciences
	72.19.14	Research and experimental development services in chemistry
	72.19.15	Research and experimental development services in earth and related environmental sciences
	72.19.16	Research and experimental development services in biological sciences
	72.19.19	Research and experimental development services in other natural sciences
	72.19.21	Research and experimental development services in nanotechnology
	72.19.29	Other research and experimental development services in engineering and technology, except biotechnology
	72.19.30	Research and experimental development services in medical sciences
	72.19.40	Research and experimental development services in agricultural sciences
	72.19.50	Research and development originals in natural sciences and engineering, except for biotechnology
	72.20.11	Research and experimental development services in economics and business
	72.20.12	Research and experimental development services in psychology
	72.20.13	Research and experimental development services in law
	72.20.19	Research and experimental development services in other social sciences
	72.20.21	Research and experimental development services in languages and literature
	72.20.29	Other research and experimental development services in humanities
	72.20.30	Research and development originals in social sciences and humanities
	73.11.11	Full service advertising services
	73.11.12	Direct marketing and direct mailing services
	73.11.13	Advertising design and concept development services
	73.11.19	Other advertising services
	73.20.11	Market research services: qualitative surveys
	73.20.12	Market research services: quantitative ad-hoc surveys
	73.20.13	Market research services: quantitative continuous and regular surveys
	73.20.14	Market research services other than surveys
	73.20.19	Other market research services
	73.20.20	Public opinion polling services
	74.10.11	Interior design services
	74.10.12	Industrial design services
	74.10.19	Other specialised design services
	74.10.20	Design originals
	74.20.11	Photographic plates and film, exposed but not developed

	74.20.12	Photographic plates and film, exposed and developed, for offset reproduction
	74.20.19	Other photographic plates and film, exposed and developed
	74.20.21	Portrait photography services
	74.20.22	Advertising and related photography services
	74.20.23	Event photography and event videography services
	74.20.24	Aerial photography services
	74.20.29	Other specialised photography services
	74.90.12	Business brokerage and appraisal services other than for real estate and insurance
	74.90.13	Environmental consulting services
	74.90.14	Weather forecasting and meteorological services
	74.90.15	Security consulting services
	74.90.19	Other scientific and technical consulting services n.e.c.
SECTION	**N**	**ADMINISTRATIVE AND SUPPORT SERVICES**
Subcategory	77.22.10	Rental services of video tapes and disks
	78.10.11	Executive search services
	78.10.12	Permanent placement services, other than executive search services
	79.11.11	Reservation services for airlines
	79.11.12	Reservation services for railways
	79.11.13	Reservation services for buses
	79.11.14	Reservation services for vehicle rental
	79.11.19	Other travel agency services for transport reservations
	79.11.21	Reservation services for accommodation
	79.11.22	Reservation services for cruises
	79.11.23	Reservation services for package tours
	79.90.11	Tourism promotion services
	79.90.12	Visitor information services
	79.90.20	Tourist guide services
	79.90.31	Time-share exchange services
	79.90.32	Reservation services for convention centres, congress centres and exhibit halls
	79.90.39	Reservation services for event tickets, entertainment and recreational services and other reservation services n.e.c.
	82.11.10	Combined office administrative services
	82.19.12	Mailing list compilation and mailing services
	82.19.13	Document preparation and other specialised office support services
	82.20.10	Call centre services
	82.30.11	Convention organisation services
	82.30.12	Trade show organisation services
	82.91.11	Credit reporting services
	82.91.12	Collection agency services
SECTION	**P**	**EDUCATION SERVICES**
Subcategory	85.20.11	On-line primary education services
	85.20.12	Other primary education services
	85.31.11	On-line lower general secondary education services
	85.31.12	Other lower general secondary education services
	85.31.13	On-line upper general secondary education services
	85.31.14	Other upper general secondary education services
	85.32.11	On-line technical and vocational lower secondary education services
	85.32.12	Other technical and vocational lower secondary education services
	85.32.13	On-line technical and vocational upper secondary education services
	85.32.14	Other technical and vocational upper secondary education services
	85.41.11	On-line post-secondary non-tertiary general education services

	85.41.12	Other post-secondary non-tertiary general education services
	85.41.13	On-line post-secondary non-tertiary technical and vocational education services
	85.41.14	Other post-secondary non-tertiary technical and vocational education services
	85.42.11	On-line first stage tertiary education services
	85.42.12	Other first stage tertiary education services
	85.42.13	On-line second stage tertiary education services
	85.42.14	Other second stage tertiary education services
	85.42.15	On-line third stage tertiary education services
	85.42.16	Other third stage tertiary education services
	85.51.10	Sports and recreation education services
	85.52.11	Dancing schools and dance instructors services
	85.52.12	Music schools and music instructors services
	85.52.13	Fine arts schools and arts instruction services
	85.52.19	Other cultural education services
SECTION	**Q**	**HUMAN HEALTH AND SOCIAL WORK SERVICES**
Subcategory	86.21.10	General medical practice services
	86.22.11	Analysis and interpretation services of medical images
	86.22.19	Other specialist medical practice services
	86.90.15	Medical laboratory services
	86.90.18	Mental health services
SECTION	**R**	**ARTS, ENTERTAINMENT AND RECREATION SERVICES**
Subcategory	90.01.10	Services of performing artists
	90.02.11	Performing arts event production and presentation services
	90.02.12	Performing arts event promotion and organisation services
	90.02.19	Other performing arts support services
	90.03.11	Services provided by authors, composers, sculptors and other artists, except performing artists
	90.03.12	Original works of authors, composers and other artists, except performing artists, painters, graphical artists and sculptors
	90.03.13	Original works of painters, graphical artists and sculptors
	91.01.11	Library services
	91.01.12	Archive services
	91.02.10	Museum operation services

Source/Źródło: own study based on/opracowanie własne na podstawie A. Czerwiński, 2011, p. 203–213

THE DISCUSSION OF LIMITATION

As indicated above there are many proposals for describing information goods. It is difficult to point out the holistic and common acceptable definition of these goods. Identification and systematisation of such products and services crucial features is a very important step to reach a terminological consensus. On this basis the attempts of information products and services in existing classifications can be indicated. Nevertheless, both the broad number of features and subjective of information goods' definitions are the most important constraints for statistical classification. To limit them it is suggested to settle the international group of researchers, for example similar to the Working Party on Indicators for the Information Society, that would enable better and more effective cooperation in that area.

CONCLUSIONS

In presented article many views of information goods were identified and analyzed. After that the author's definition was proposed. It became the basis for indication and organizing the key characteristics of information products and services. Using the Statistical Classification of Products by Activity in the

European Union (CPA) with connection to the key features and above terms, the set of information goods was indicated in the table.

In the future, based on this chapter results, author intends to implement measurement approach with use of "final demand". The calculation of the amount of expenditure on information final goods (products and services) will allow to measure the size of the information economy with the use of the expenditure method in calculating results of economic activities.

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