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MARKET ECONOMY AS AN INFORMATION ECONOMY

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ABSTRACT

The paper deals with the concept of economic information and its relation to the information society. The aim of the paper is to show that so-called information society, development of information technologies and development of information management are based on principles of the economic system. There are two different kinds of knowledge used in the economy according to Hayek. One type is connected with the science, the other with individual trade practice. Competitive economic system is a kind of information mechanism for effective using of knowledge. Economic information also corresponds to the definition of information from G. Bateson: "a difference that makes a difference". Information management is so only logic result of economic development and our society is based as information society since modern period.

KEY WORDS

information management, economic information, knowledge, IS/ICT.

INTRODUCTION

Massive use of information systems and information technologies (IS/ICT) is closely related with economic development. This relation is twofold: general economic development facilitated evolution of IS/ICT and IS/ICT is regressively used in individual organisations to support their economic expansion. In addition, IS/ICT is incorporate in economic concept of capital. The focus of this paper is to explore theoretical reflection of these relations and then derive some possible practical consequences for information management.

Concept of information society is usually connected only with the development of information and communication technologies, but information nature of contemporary society has been theoretically described yet before development of ICT. Exploration of foundation of information management can expose potentialities of range and meaning of this discipline. At first we take a look at economic theories for reflection of role prescribed to information.

SOME REFLECTIONS ON INFORMATION IN ECONOMIC THEORIES

There is a mention of information and knowledge almost in every economic theory even though mostly implicit. For instance, the concept of perfectly informed homo oeconomicus in neoclassic economy or concept of corporate governance or path dependency in (neo)institutional economy. For the topic of this paper, the most interesting approach to information in economy is proposed by F. A. Hayek (most noticeably in his text The Use of Knowledge in the Society). It must be noticed that

Hayek and other economists from Austrian school use terms information and knowledge in a bit different manner than is common in informatics.

According to Hayek, the main problem of any economic system is the best use of knowledge diffuse within population. "*The various ways in which the knowledge on which people base their plans is communicated to them is the crucial problem for any theory explaining the economic process* (Hayek, 1945)". It would be only logical task to construct rational economic order if all required data are centralised in one brain. But economic-mathematics models are working with kind of data that couldn't be given to one individual brain - on one place. It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge which is not given to anyone in its totality. "*Centrally planned economy if would like to work effectively need such totality of such data. In competitive economy is planning made vice versa in decentralised way by individual market subject* (Hayek, 1945)."

It is interesting for us that Hayek distinguishes two basic types of information in economy. One type is scientific information that seems to be the most important kind of economic information. This seeming precedence can make perception that a group of adequately selected experts is in better position than individuals. But "there is ... a body of very important but unorganized knowledge which cannot possibly be called scientific in the sense of knowledge of general rules: the knowledge of the particular circumstances of time and place. It is with respect to this that practically every individual has some advantage over all others because he possesses unique information of which beneficial use might be made (Hayek, 1945)." Personal knowledge and skills of individuals that are acknowledged with particular areas and local conditions offer to their holders advantage over others. For some professions is this information more important than for science information (e.g. for brokers and carriers etc.). This information can be used only when a decision making is kept on this individuals.

Individuals must constantly adapt their decisions on difference in their neighbourhood. But it isn't sufficient to know only neighbourhood for efficient decision making, individual need additional information to co-ordinate decisions with changes in all economic system. Individual needn't to know all specific changes in economic system, their absolute meaning and reasons, only relative meaning of this changes touch individual. Price system deals this information need. "*Fundamentally, in a system in which the knowledge of the relevant facts is dispersed among many people, prices can act to co-ordinate the separate actions of different people in the same way as subjective values help the individual to co-ordinate the parts of his plan (Hayek, 1945)." So price system secures that whole acts as unitary market, even though no one has overview about this whole.*

"Geniality" of price system rests on its economy of use of information that are transferred. Individual market participants need to know only relatively little. Price is a kind of symbol that transfer only most essential information and only to that people for there is referent. Hayek assimilates price mechanism to kind of telecommunication system: "*It is more than a metaphor to describe the price system as a kind of machinery for registering change, or a system of telecommunications which enables individual producers to watch merely the movement of a few pointers, as an engineer might watch the hands of a few dials, in order to adjust their activities to changes of which they may never know more than is reflected in the price movement (Hayek, 1945)." Meaning of single decisions of individuals leading by price changes so extensive overhang their immediate goals. People in a big society are continually using rules and symbolic systems to meaning of which they don't understand and by their using they empower knowledge that they don't have. Price mechanism is one of most remarkable systems for transferring of information.*

Hayek identified main meaning of economic system as a best way to transfer information over people that don't know each other. Sense of economic theory is than except other to uncover principles of function of this system. Conclusions of Hayeks paper are not useful only for economics, but also for frame of reflection of practical focus, especially for management applications. There

arose a specific gap between microeconomics and managerial economics in progress of economic theories - especially in neoclassics. In the light of this reflection is significance of Austrian school in elimination of this difference. Everydays businessmen decisions in competitive economy are guided by unique knowledge and by price signals without necessity of theoretic understanding of market function. It is possible to say with a bit of exaggeration that management knowledge guided by practise can frequently offer better description of market function than economic theory.

SCIENTIFIC KNOWLEDGE AND NATURE AS AN INFORMATION SYSTEM

According to Hayek there are important two kinds of information for economy and its development. Knowledge of a scientific nature and unique personal knowledge of the circumstances of place and time. The source of the first type of knowledge is scientific and technical development and research. The result of research and development is a change in the structure of knowledge - invention. Inventions are then a source of changes in the production character - innovation. Business innovations thus objectify the results of primary scientific research and implement them on the market through the economic system. But let's go back to scientific knowledge. The nature of scientific knowledge, on which the economic system described above (and thus our society today) stands, is specific and does not permeate the whole of human history. The advent of this way of knowledge is connected with the modern age. It is beyond the scope and focus of this paper to outline in more detail the specificity of modern (experimental) science. If we stick to Hedegger's thinking, then the relationship of modern science to the subject of its interest is always "enforceable." For the needs of science, the researched subject is set up as a (computable) information system, which science effectively exploits. "When modern physics has to be increasingly satisfied that the field of its representation remains inconspicuous, then this renunciation is not dictated by any research commission. This waiver is enforced (encouraged) by the reigning negotiation (Ge-stell), which requires the orderability of nature as usability. That's why physics can never give up one thing at all, and that it was the only standard short time ago, that nature announces itself in some computable way and that it remains orderable as an information system. (Heifegger, 2000)"

THAT IT IS NOT ONLY HEIDEGGER'S SPECULATIONS OR A CERTAIN FORM OF METAPHOR CAN BE SHOWN IN N. WIENER'S CONCEPTION OF SCIENTIFIC KNOWLEDGE. IT IS NO COINCIDENCE THAT THE EXPLANATION OF THE INFORMATION-ENFORCING NATURE OF HUMAN KNOWLEDGE IN THE MANNER OF SCIENCE IS FOUND IN AN AUTHOR WHO HAS DEALT WITH CYBERNETICS AND INFORMATION THEORY. ACCORDING TO WIENER, A SCIENTIST ALWAYS TRIES TO "DECODE" THE CIPHER OF NATURE AND FIND ORDER IN IT. NATURE IS CHARACTERIZED BY PASSIVE RESISTANCE TO THIS EFFORT. "A SCIENTIST WHO ALWAYS WORKS TO REVEAL THE ORDER AND ORDER OF THE UNIVERSE IS THUS STRUGGLING WITH HIS GREATEST ENEMY - DISORGANIZATION. (WIENER, 1963)"

The first type of knowledge and information important for the economic system are therefore inventions that provide (with appropriate risk) to the entrepreneur, who realizes them in the form of innovation, a temporary competitive advantage and thus profit. The "informational" nature of inventions also lies in their connection to the basic way of scientific knowledge as the "extraction" of information from nature.

BUSINESS AND ECONOMIC INFORMATION

The second type of economic knowledge and information is personal in nature. The advantage of owning this knowledge is very short-lived, the useful life depends on the speed of change in the environment. This type of economic information also depends on the existence of changes, but not on changes in the structure of human knowledge, but on the existence of changes in the economic

system itself. "It is probably important to emphasize that economic problems always arise as a result of change. If things are going as they are, or at least we expect them to be, there is no new problem that requires a decision, no need to formulate a new plan. (Hayek, 1945)." Hayek points out that, although this type of knowledge seems completely insignificant compared to scientific one, its importance is immense. It ensures cooperation within the entire economic system and thus the efficient allocation of individual resources and the efficiency of the system as a whole.

The daily efforts of managers consist in finding unused loopholes in the market and especially in preventing cost growth. Much of the decision needed depends on information in the form of price signals. The information content of the price signal is considerable for the behaviour of the market entity concerned, and only a proportional relationship is communicated, which does not contain any superfluous data on causes and other circumstances. The price is thus essentially non-redundant information.

We can look at the economy with its price system as a spontaneous information mechanism. Change plays an important role in this system. This also corresponds to some types of information definition. For example, Gregory Bateson defines information as a difference that creates some other difference in the system. "What we really mean by information - the basic information unit is the difference that makes the difference. (Bateson, 1985)" Bateson's definition of information fits into his conception of knowledge and cognitive processes. In reality, we always notice only some cuts, and by making a certain choice in this way, a cognitive difference is produced. Thinking is a process of selection in relation to the outside world. Human behavior is possible only on the basis of images of the external environment constructed in the brain. Luhman works similarly with information, especially focusing on social systems. Change has been one of the basic concepts of cybernetics since Ashby. The concept of economic information thus fits into the more general concept of information.

A certain connection of the theoretical approach to the concept of information and knowledge and their significance in economics can be found in the unfinished multi-volume work of F. Machlup *Knowledge: Its Creation, Distribution and Economic Significance*.

CONCLUSION

We tried to show that information management follows a more general social development. Our society - at least in its era begun with the modern age - is primarily based on information and is therefore an information society. The development of information and communication means directly corresponds to this characteristic and is the realization of what has already begun, albeit in secret. From the point of view of business and management, the same is true, and information management is therefore not just a fashion wave, but a logical outcome of the modern turn of the human spirit.

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SYSTEMIC APPROACH TO ANALYZE DATA FROM COVID DATA DASHBOARDS

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ABSTRACT

The article summarizes the new Covid current news analysis. Covid-19 data dashboard is new on websites, it did not exist two years ago. Statistics on the number of infected Covid-19 have become part of the news.

KEY WORDS

websites; Covid news

INTRODUCTION

In the last two years, Covid-19 news has been added to the main page of Czech portals and all the classic news media. Number of confirmed cases of Covid-19, cumulative numbers, numbers of Covid-19 patients hospitalized in hospitals, number of deaths, number of vaccinated, all this data appears in the daily news and the media devote parts of their coverage to these issues. As well as information on anti-epidemic measures and restrictions and lockdowns. A Covid-19 pandemic-related agenda has been added to central government offices, especially to the Ministry of Health.

NEW WEBSITES AND DASHBOARDS

Czech web portals responded to the need to inform about the epidemic situation and included data dashboards on their main pages. In the last two years, Covid-19 news has been added to the main page of Czech portals and all the classic news media. Number of confirmed cases of Covid-19, cumulative numbers, numbers of Covid-19 patients hospitalized in hospitals, number of deaths, number of vaccinated, all this data appears in the daily news. All major news media devote a few minutes a day to covid news.

However, websites focused only on covid news were also created. We could say that covid information systems were created in all European countries and the United States. These can serve the public much like students serve student information systems (SIS).



Figure 1- seznam.cz dashboard

"According to de Freitas, et al., [1] student information systems (SIS) provide information that can be stored in the cloud. Resources mostly state how to evaluate learning and outcomes." (de Freitas, et al. 2017)

iDNES	S.cz	Dne _{každý}	ŠNÍ KřÍŽOV den nové luštění	ka	V	yluštit			Před 10	00 lety
iDNES.cz	Zpravoc	lajství	Koronavirus	Kraje	Sport	Magazíny	Premium	Expres il	DNES.tv	≡
PANDEMIE COVID-19	07:56 De za jeden tý	enní přírů iden více	stek nakažených k než zdvojnásobil.	oronaviren	n se v Něme	ecku 🌼 Aktuálni opatřeni	7 6 666 NOVÉ PŘÍPADY	2 508 V NEMOCNICI	7 404 70 INCIDENCE	>

Figure 2 - idnes.cz dashboard

The data placed on Czech web portals contain more detailed information on the development of the covid situation than, for example, on German portals.



CORONA-RADAR

Bremer 7-Tage-Inzidenz überschreitet 1000er-Marke

Figure 3 - bild.de CORONA-RADAR

In addition to web portals, new websites were created. In the Czech Republic, it is mainly a portal called COVID-19 | Onemocnění aktuálně od MZČR which operates Ústav zdravotnických informací a statistiky ČR and Institut biostatistiky a analýz Lékařské fakulty Masarykovy univerzity. Data processing, editing, programming and graphical tools are described in the paper Complex reporting of coronavirus disease (COVID-19) epidemic in the Czech Republic: use of interactive web-based application in practice (Komenda, et al. 2020).



Figure 4 - Přehled aktuální situace v ČR

"Due to an urgent need for a tool that presents important reports based on valid data sources, a team of government experts and researchers focused on the design and development of a web app intended

to provide a regularly updated overview of COVID-19 epidemiology in the Czech Republic to the general population." (Komenda, et al. 2020)

OPEN DATA SETS

The web-based app introducing an overview of the current spread of COVID-19 in the Czech Republic is available in the previous Figure 4. (Komenda, et al. 2020)

On the website that describes COVID-19: Overview of the current situation in the Czech Republic ¹ and starts on March 11th 2020 is also *Open data sets* of daily situation 19². (Komenda, et al. 2020)

Open data sets intended for further processing are an integral part of this information website. Source data in CSV (comma-separated values) and JSON formats are published daily at regular intervals and can be downloaded by anyone who wants to process them either by a computer or manually." (Komenda, et al. 2020)

The paper 3 (Komenda, et al. 2020) describes the analysis of traffic to this web portal from March to April 2020. There are great number of returning visitor of this website. (Komenda, et al. 2020)

We started downloading table COVID-19: *Overview of performed tests by type and indication* from Open data sets daily. We created an archive of tables from open data sets and analyzed it. We chose new Microsoft Power BI tools and Excel Power Query tools for analysis this archived tables to join it together to one table.

We have started to analyze only last four columns of table of the open data sets - *COVID-19: Přehled provedených testů podle typu a indikace*: PCR_pozit_sympt, PCR_pozit_asymp, AG_pozit_symp, AG_pozit_asymp_PCR_conf,, which CSV ³ schematic is published at the described dashboard ⁴. The sum of the values in these four columns is the number of infections reported each day in the media and also on the dashboard described here. Potvrzené případy = PCR_pozit_sympt + PCR_pozit_asymp + AG_pozit_symp + AG_pozit_asymp_PCR_conf, We found that the number of confirmed cases still changes in the following days in the open data set table. This is also stated in the dashboard presented here (Komenda, et al. 2020) for the seven-day incidence data: "*About the fact that the published data are being validated and the report is being supplemented, minor changes may occur retroactively in the surveys of persons with laboratory-proven COVID - 19 according to the KHS and laboratory reports. The data in this report was last updated at midnight the previous day."* (Komenda, et al. 2022)

CSV file table from Open data sets we convert every day to Excel XLSX style file using well known Excel functionality *Data - Text to Columns*. Since November 16th 2021structure of table was changed, to table there was added one column named *id*.

¹ https://onemocneni-aktualne.mzcr.cz/covid-19

² https://onemocneni-aktualne.mzcr.cz/api/v2/covid-19

³ Comma-separated values (CSV)

⁴ https://onemocneni-aktualne.mzcr.cz/api/v2/covid-19/testy-pcr-antigenni.csv-metadata.json

Denní přehled počtu osob s nově prokázaným onemocněním COVID-19 dle hlášení krajských hygienických stanic a laboratoří



Přehled za posledních 15 dní | Kompletní přehled za celé období | Tabulkový přehled

Figure 5 - Covid-19 dashboard ¹

Changes in table *COVID-19: Přehled provedených testů podle typu a indikace* from Open data sets we can described at joined table from three days April 1st 2021, April 2nd 2021 and April 3rd 2021. At the next figure we show changes of number of confirmed cases, last row (431) at figure is from 01.04.2021, next number at row (218) above it from 02.04.2021, last one from 03.04.2021 at row (4).

	Α	В	С	D	Е	F	G	н	1	J	К	L	М	N	0	Р
1	Data.dat 🗾	Dat 💌	Data 💌	Dat 💌	Dat 💌	Data 💌	Da 💌	Dat 💌	Dat 💌	Da 💌	Da 💌	Da 💌	Dat 💌	Da 💌	Da 💌	Da 🔽
2	03.04.2021	7870	26527	2980	5163	25395	859	2149	733	980	286	150	847	852	287	163
3	02.04.2021	14589	38939	5558	8596	37987	1387	3821	1441	1450	565	365	1707	1416	266	432
4	01.04.2021	24777	169512	10632	24727	156741	2189	6245	2662	2434	842	307	2762	2295	554	634
217	02.04.2021	13700	37396	5242	8055	36458	1341	3809	1450	1440	555	364	1707	1418	264	420
218	01.04.2021	24777	164569	10663	24157	152337	2189	6246	2663	2431	842	310	2765	2298	563	620
431	01.04.2021	21845	150313	9635	21830	138631	2062	6207	2666	2423	809	309	2766	2299	563	579

Figure 6 - joined table Excel

How the table grows every day is shown on the sample data cube in the following Figure 7.



Figure 7 - data cube of tables

1

Zdroj.Název	PCR_pozit_asymp	PCR_pozit_sympt	AG_pozit_asymp_PCR_conf	AG_pozit_symp	Rok	Čtvrtletí	Měsíc	Den
testy-pcr-antigenni 01.04.2021.xlsx	2299	2766	579	563	2021	Qtr 2	duben	1
testy-pcr-antigenni 02.04.2021.xlsx	2298	2765	620	563	2021	Qtr 2	duben	1
testy-pcr-antigenni 03.04.2021.xlsx	2295	2762	634	554	2021	Qtr 2	duben	1
testy-pcr-antigenni 04.04.2021.xlsx	2295	2761	637	552	2021	Qtr 2	duben	1
testy-pcr-antigenni 05.04.2021.xlsx	2280	2761	645	560	2021	Qtr 2	duben	1
testy-pcr-antigenni 06.04.2021.xlsx	2272	2758	656	556	2021	Qtr 2	duben	1
testy-pcr-antigenni 07.04.2021.xlsx	2270	2758	664	551	2021	Qtr 2	duben	1
testy-pcr-antigenni 08.04.2021.xlsx	2267	2757	666	552	2021	Qtr 2	duben	1
testy-pcr-antigenni 09.04.2021.xlsx	2265	2758	665	554	2021	Qtr 2	duben	1
testy-pcr-antigenni 10.04.2021.xlsx	2265	2758	669	551	2021	Qtr 2	duben	1
testy-pcr-antigenni 11.04.2021.xlsx	2265	2755	673	550	2021	Qtr 2	duben	1
testy-pcr-antigenni 12.04.2021.xlsx	2264	2753	677	549	2021	Qtr 2	duben	1
testy-pcr-antigenni 13.04.2021.xlsx	2264	2753	678	550	2021	Qtr 2	duben	1
testy-pcr-antigenni 14.04.2021.xlsx	2263	2753	680	549	2021	Qtr 2	duben	1
testy-pcr-antigenni 15.04.2021.xlsx	2264	2751	678	551	2021	Qtr 2	duben	1
testy-pcr-antigenni 16.04.2021.xlsx	2263	2751	681	549	2021	Qtr 2	duben	1
testy-pcr-antigenni 17.04.2021.xlsx	2262	2751	682	549	2021	Qtr 2	duben	1
testy-pcr-antigenni 18.04.2021.xlsx	2262	2751	681	550	2021	Qtr 2	duben	1
testy-pcr-antigenni 19.04.2021.xlsx	2262	2751	684	547	2021	Qtr 2	duben	1
testy-pcr-antigenni 20.04.2021.xlsx	2261	2751	679	553	2021	Qtr 2	duben	1
testy-pcr-antigenni 21.04.2021.xlsx	2261	2751	684	548	2021	Qtr 2	duben	1
testy-pcr-antigenni 22.04.2021.xlsx	2260	2750	683	551	2021	Qtr 2	duben	1
testy-pcr-antigenni 23.04.2021.xlsx	2260	2750	684	550	2021	Qtr 2	duben	1
testy-pcr-antigenni 24.04.2021.xlsx	2260	2750	687	547	2021	Qtr 2	duben	1
testy-pcr-antigenni 25.04.2021.xlsx	2260	2750	684	550	2021	Qtr 2	duben	1
testy-pcr-antigenni 26.04.2021.xlsx	2260	2750	684	550	2021	Qtr 2	duben	1
testy-pcr-antigenni 27.04.2021.xlsx	2260	2750	682	552	2021	Qtr 2	duben	1
testy-pcr-antigenni 28.04.2021.xlsx	2260	2748	684	552	2021	Qtr 2	duben	1
testy-pcr-antigenni 29.04.2021.xlsx	2259	2748	693	545	2021	Qtr 2	duben	1
testy-pcr-antigenni 30.04.2021.xlsx	2259	2747	691	548	2021	Qtr 2	duben	1
testy-pcr-antigenni 02.04.2021.xlsx	1418	1707	420	264	2021	Qtr 2	duben	2
testy-pcr-antigenni 03.04.2021.xlsx	1416	1707	432	266	2021	Qtr 2	duben	2
testy-pcr-antigenni 04.04.2021.xlsx	1414	1706	438	263	2021	Qtr 2	duben	2
testy-pcr-antigenni 05.04.2021.xlsx	1415	1704	441	265	2021	Qtr 2	duben	2
testy-pcr-antigenni 06.04.2021.xlsx	1412	1704	447	264	2021	Qtr 2	duben	2
testy-pcr-antigenni 07.04.2021.xlsx	1411	1705	445	268	2021	Qtr 2	duben	2
testy-pcr-antigenni 08.04.2021.xlsx	1410	1704	448	268	2021	Qtr 2	duben	2

Figure 8 - joined tables query Power BI

In Figure 8 Power BI analysis is shown, it shows that the data on 01.04.2021 were still changing on 29.4.2021. This means that the figures in news portals and traditional media reports change long after they have been published in these media.

INTERNATIONAL COVID-19 DASHBOARD

In cooperation Center for Systems Science and Engineering (CSSE) and Johns Hopkins University (JHU), both in Baltimore, was created Covid-19 international Dashboard that improves all countries covid data. Dashboard allows you to view covid data of any country in the world, cumulative number of cases, 28 days cases, deaths and vaccine doses administrated.

👽 COVID-19 Map - Johns Hopkins 🗙 🕂				~ - a ×
← → ♂ ♂ ♠ coronavirus.jhu.edu/ma	p.html			양 ☆ 🛛 🔞 :
	JOHNS HOPKINS CORONAVIRUS UNIVERSITY & MEDICINE RESOURCE CENTER	Home Topics v	By Region Events & News About Search Do	ta dy Neglon Q
	Tracking Home Data Visualizations 🗸	Global Map U.S. Map Dat	a in Motion Tracking FAQ	
🐺 COVID-19 Dashboar	d by the Center for Systems Science and Engi	eering (CSSE) at Johns Hopkins University		=
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Figure 9 - Covid-19 international Dashboard ⁵

"Johns Hopkins experts in global public health, infectious disease, and emergency preparedness have been at the forefront of the international response to COVID-19. This website is a resource to help advance the understanding of the virus, inform the public, and brief policymakers in order to guide a response, improve care, and save lives. This Project is supported by Bloomberg Philanthropies and the Stavros Niarchos Foundation (SNF)." [4]

CONCLUSION

New coronavirus disease (Covid-19) epidemic, which first cases were reported in People's republic of China, the epidemic changed the lives of all people on Earth. Humanity has not remembered a similar epidemic since the Spanish flu epidemic of 1918-1920. The global epidemic of Covid-19, which began in 2019, has changed many areas of human activity, including websites. New Covid portals and dashboards were created on many new portals.

We briefly showed some examples of covid dashboards and a possible procedure for analyzing the development of epidemic statistics. We used an archive of tables from open data sets that we created over a period of one year. In further research we will apply OLAP operations to this described table archive.

⁵ https://coronavirus.jhu.edu/map.html

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AUTONOMOUS VEHICLES VS ETHICS

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ABSTRACT

The paper deals with the field of Autonomous Vehicles (AV) in relation to applied AI Ethics viewed from the basic perspective of possible benefits, risks and dilemmas related to planned introduction of AV into daily operation.

Firstly, I provide the introduction of AV and Information ethics applied to the automotive industry where relevant summarizing of the previous research is provided. Secondly, I highlight the broad context of AV and open the following questions: Will be the AV a product or service? Where will the AV intelligence be located... At infrastructure, cars, cloud, humans or society? and especially Is the AV introduction more the technical or ethical problem?

Finally, based on provided research of AV benefits and risks I discuss the possible dilemmas such are: Business interests vs Humans well-being, AV Safety vs Efficiency, Legal agenda vs Social pressure to non-AV ban, Regulations & Safety vs Faster development & AV adoption, Global mandatory settings & AV standards vs Individual rights & Liberty.

KEY WORDS

autonomous vehicles, benefits, dilemmas, ethics, risks

ETHICAL CHALLENGES OF FACEBOOK

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ABSTRACT

Facebook (hereafter FB) has been widely used all over the world for different purposes. Since its creation in 2004, it has passed a long way of changes, but also challenges and many different worldwide trends to reach the current framework.

To offer people the capacity to establish communities and bring the globe closer together," says Facebook's mission statement. However, a closer examination of their economic strategy reveals that tearing people apart is significantly more profitable. By developing "filter bubbles"—social media algorithms meant to boost engagement and, as a result, generate echo chambers where the most inflammatory information receives the most attention—we are able to build echo chambers where the most inflammatory content receives the most attention.

Extremism, bullying, hate speech, deception, conspiracy theories, and rhetorical violence are all profitable for Facebook. Facebook's issue isn't one of technology. It's a problem with the business model. This is why technological remedies have failed to stop the flow of problematic content. The algorithmic outcomes would be substantially different if Facebook's business model focused on efficiently providing correct information and various viewpoints, rather than hooking people to highly engaging content within an echo chamber.

KEY WORDS

Facebook, ethics, information management

COMPLEXITY THEORY OF AND ITS SOLUTION OF THE DIGITAL DIVIDE IN THE CZECH REPUBLIC

Tomáš Zajda

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ABSTRACT

Article addresses the problem of the digital divide and seeks a solution in the context of the Czech Republic using the complexity theory system approach. Firstly, the phenomenon of the digital divide is defined, its history is mapped, the basic methodology used to identify it is described, and the rationale for why the digital divide is a problem for which a solution should be sought is also provided. The four dimensions of the digital divide, as defined by researchers van Dijk and van Deursen, are used as a working framework to help find solutions that would reduce or outright eliminate the issue of digital divide.

Secondly, the thesis introduces the complexity theory, which is based on the chaos theory, one of the most influential ideas of the last century. Using these systems approaches, it is possible to find patterns and rules even in otherwise seemingly chaotic and complicated systems, such as communities or societies. In this thesis, complexity theory is described and a practical operationalization that would suit the case of the Czech Republic is presented.

Lastly, this thesis focuses primarily on the digital divide in the context of the Czech Republic, which has been deepened and accentuated by the COVID-19 pandemic. Two demographic groups affected by the digital divide are identified as students and senior citizens, and ways to help these groups are sought. Some of the explored options are alternative communication canals (e.g. infolines and paper forms) of state institutions to help senior citizens communicate, universal access to digital tools and devices for all students, and education in information and internet ethics.

KEY WORDS

digital divide, Czech Republic, complexity theory

INFORMATION OVERLOAD AND PROCRASTINATION

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ABSTRACT

The aim of this essay/seminar work is to explore the information overload and procrastination. Specifically, it examines the connection between these two phenomena and their influence on young adults. Therefore the research question guiding the research was: how do young adults perceive information overload and procrastination.

After introduction of the general notion of media influence on people' lives and research methodology, the essay aims to describe the terminology relevant to the topic and draw connections to the finding of the survey. Each term is presented through theoretical explanation followed by a hypothesis of the authors, which is later contrasted with the results of the survey. The data is in form of answers of 53 participants to 19 questions especially designed to reflect the research aim.

Generally, there are two main chapters, namely, information overload and procrastination. The former explains terminology such as information pollution, media literacy, and information hygiene. Moreover, it presents how the participants responses in reference to these phenomena. The questions focused not only on the knowledge of the terminology but also on participants' behaviour and habits when searching information. Secondly, the topic of procrastination is explained as well as time-management, and motivation. Additionally, the chapter offers suggestions for ensuring effective time-management including SWOT analysis.

KEY WORDS

information overload, procrastination

ADVERTISING ASSESSMENT FROM THE ETHICAL POINT OF VIEW

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ABSTRACT

Presented work focuses on evaluation of advertisement and its ethicality from a consumer's point of view. There are many possibilities for an advertiser's evaluation, but an evaluation from the point of view of a consumer is often omitted.

We discuss why commercials are beneficial for the consumer. As they are tools to convey product information, they are accountable for such as competitive prices. We also discuss why it is important to judge the advertisement from a consumer's standpoint and what impacts it can have if we do not undergo any evaluation or regulation of an advertisement.

We propose a definition of a "better" and "worse" advertisement from the position of a consumer based on the ethicality of such an advertisement:

The more ethical the commercial is, the better quality it has for the consumer.

The less ethical the commercial is, the lesser quality it has for the consumer.

For the evaluation of ethicality we expand further on Forsyth's two-dimensional framework for judging the morality of business practices. The first dimension, relativism, judges the advertisement for its efficacy, meaning and usefulness for the consumers. The second dimension, idealism, judges the advertisement for its adherence to moral virtues and higher ideals of the culture of the consumer.

Different consumers credit different importance to different dimensions and to different aspects of those dimensions. This is further discussed, and we propose a framework for how to focus on the minimization of extremes. We assume it is better to focus on not offending rather than polarizing. Offense within an advertisement must be "worth it" and must be accompanied by a positive impact on the customers. We propose to consider both the priorities of the customer and the benefits to the customer. This is compared to other evaluation tools (e.g., the Eight Standards established by the Institute for Advertising Ethics), and we propose a Checklist for an advertisement evaluation sustaining of three measures:

The measure of consumer tolerance to possible misinformation.

The measure of adherence to consumer relativism.

The measure of adherence to consumer idealism.

In the last section we utilize this framework to judge several controversial advertisements from recent years. We evaluate them by discussing the measures from the proposed framework and therefore their quality from the standpoint of a consumer. We tested the validity of the proposed framework further by discussing the selected controversial commercials with other seminar attendees. Based on the results of those measures we decide whether we would judge such commercials as ethical and therefore would allow them to be distributed to the customers.

KEY WORDS

ethics, advertisement, Czech Republic

ETHICAL IMPLICATIONS OF USING DATABASE BASED FACIAL RECOGNITION SYSTEMS

Martina Hudáková

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ABSTRACT

The aim of this paper is to explain the ethical implications of using database based facial recognition systems, using the hard systems methodology. The main focus of this paper is the usage of CCTV in Great Britain for monitoring of its inhabitants and its effect on their privacy not only in public, but also in the private sector.

First part of the paper explains the hard systems methodology based on the model, used for finding a solution to a given problem using a 9 step process, where each of the steps can be revisited throughout determining the best possible solution of the problem.

Second part of the paper explains CCTV and various types of technology used for monitoring as well as usage and storage of the data. Third chapter outlines various biometric technologies used worldwide, though most widely used are fingerprint scanning and face recognition.

The last chapter defines two key issues. The first one is using CCTV for suspect identification after a crime was committed. A problem arises, when the cameras used for identification do not provide adequate resolution, resulting in inaccurate recognition, and in some cases wrongful prosecution. A solution for this problem is ensuring new technology is purchased and installed, along with design and implementation of a new system used for identification.

Another determined issue is data storage. With advancements in technology, a high number of data leaks has been recorded over the past few years, which in many cases contained sensitive information. With GDPR laws being implemented, a solution for this problem would be a process, where data would automatically be deleted after a certain period of time. This process may also have some legal ground in the future as the importance of data protection is being addressed.

KEY WORDS

ethics, facial recognition

TRANSHUMANISMUS

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ABSTRACT

My paper focuses on transhumanism. The purpose of this paper is to provide an overview of transhumanism by touching on its origins, going over some cases where transhumanist thought can be used in practice, and lastly by examining problems that transhumanism can face in the future.

The first part focuses mainly on how this concept came to be. The history of transhumanism as a concept is quite long and it stretches back to what we today regard as the cradle of civilization. From there on the concept sees occasional use and development throughout the millennia and all the way to modern times.

In the next part the focus shifts to describing how one could use the concept of transhumanism in practice. There are four main avenues of practical use of transhumanist thought described in this work: improvement of human reflexes, slowing or stopping of aging, whole brain emulation, better adaptation to different conditions.

The last part of this work focuses on the problems of transhumanism. There are four main categories of problems of transhumanism highlighted: religious criticism, socio-economic problems with the implementation of transhumanism, the return of eugenics and existential risks.

This paper finds that transhumanism is a natural evolution of human philosophy. Transhumanist thought is in many ways not only a reaction to the accelerating pace of the growth of technology and its use in everyday life, but it also tries to find solutions to problems which humanity is facing either now or in the future. Due to all these circumstances, some adaptation of transhumanism in real, day-to-day life might be, even despite all its problems, just about inevitable.

KEY WORDS

transhumanism, ethics, practice

PRIVACY AND DIGITAL HERITAGE IN THE ENVIRONMENT OF FACEBOOK

Jan Novotný

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ABSTRACT

When in 2004 Mark Zuckerberg launched Facebook from his Harvard dormitory it seemed to be a useful tool for finding friends and staying in touch with them within the university campus. Soon after that, this social network started spreading between different American and Canadian universities. Starting September 2006 anyone of 13 years of age and older and a valid email address could create his or her Facebook account. Over 100 million accounts have been created over the course of next two years. Nowadays, it is every 4th person on Earth who has.

Facebook provides a platform for people to stay in contact, organize events and express their opinions. People can share information and photos about themselves and follow what others decided to share about them. The visibility of the shared information can be limited by cautious privacy settings that each user can adjust anytime. The selection of what is private and what is publically accessible is crucial since it determines one's image in front of the world. Looking at an unknown person's Facebook profile and thus learning about him or her is a quite common practice during applicant selection process at American universities but also while hiring someone for a work position.

All the information is being stored by Facebook to be consequently used for targeted advertisement. This allows Facebook to provide its services without charge. Everyone leaves behind a, so called, digital footprint that maps all the online activity. This research paper describes all those aspects of Facebook reality, focusing on those that are important or interesting to know about. Not that many Facebook users have thought about the topic of digital heritage. This research contains a field study in a form of a questionnaire that is analyzed in the last chapter..

KEY WORDS

digital heritage, privacy, Facebook

POTENTIAL IMPACT OF SOCIAL MEDIA ON CRYPTOCURRENCIES

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ABSTRACT

Social media impacts our lives in many ways we don't even know. Cryptocurrencies are one of the latest trends in digital currencies.

In this work, we are trying to prove existence of impact, that social media have on cryptocurrencies. Since much of cryptocurrencies price, and many other trading aspects are affected by demand, exploring connection between them and social media was chosen as a fairly plausible hypothesis.

The goal of this work is then to explore potential Impact of social media on cryptocurrencies, which we hypothesis is present in current cryptocurrency market.

In this work will define cryptocurrencies, and way how we will explore their connectedness with social media, and try to prove correlation between them. This specifically will be explored in methodology part of this work.

After exploring data, we came upon while answering stated question, final conclusion and results will be presented in discussion part of this work.

Our goal will be to study potential influence of social media to trade volume of chosen cryptocurrencies. This was to be supported by sentiment analysis of social media to provide additional context. Results however found no correlation between chosen variables.

KEY WORDS

cryptocurrency, social media, Bitcoin, blockchain, Twitter

Research on student's activity in Facebook students 'groups

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ABSTRACT

This paper focuses on students of the University of Economics in Prague and their usage of Facebook for educational purposes. It consists of two independent researches. The one using a questionnaire and the other one using data from student groups on Face-book. We also compare the questionnaire's answers from students from University of Liechtenstein with those from University of Economics in Prague (hereafter VSE) and find that the Facebook activities are very similar in both groups, even though students in Prague use Facebook more frequently.

The paper further describes the type and fre-quency of activity of students of the VSE on social media and what benefits it brings them. The paper also studies if the students find the official school resources more or less helpful than Facebook. One of the key findings coming from group analysis is that students use Facebook groups for exchanging study materials, purchasing books, communication between each other, sharing administration and other useful information. In general, we find that the Facebook is a very useful tool for education purposes.

KEY WORDS

social network, Facebook, social media, internet

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