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ISSUES IN INFORMATION SCIENCE – INFORMATION STUDIES

The core purpose of *Issues in Information Science – Information Studies (Zagadnienia Informacji Naukowej – Studia Informacyjne,* ZIN *– Studia Informacyjne)* is to provide a forum for the dissemination of scientific papers and research results in the field of information science and other disciplines which analyze social and technological aspects of various information-related activities performed by contemporary communities. Moreover, the journal is to disseminate critical reviews and summaries of new publications in the field of information science and reports from important conferences discussing contemporary information problems.

We publish papers in Polish or English. For each paper a set of metadata is provided: an abstract and keywords in both languages) as well as author's bio and contact information.

The subtitle of the journal – *Information Studies* – emphasizes the interdisciplinary nature of its subject profile covering a broad spectrum of issues studied by various academic disciplines and professional activity domains related to access to resources of recorded information and knowledge and the use of these resources by contemporary man and society. Other subjects to be covered by ZIN *– Information Studies* involve: (1) theoretical ponderings on the practice of information-related activities performed by various communities, (2) the results of research on the conditions influencing those activities and ways of improving methods and tools employed for the activities in question, (3) the methodology of information science research, information science history and education concerning the information science. The subject profile of ZIN *– Information Studies* covers, among else, the issues of:

– information services in institutions of science, culture, business, education and administration,
– information and knowledge management,
– traditional and online scholarly communication,
– information and knowledge organization,
– metadata theory and practice,
– Web 2.0,
– Semantic Web,
– information architecture,
– information websites usability,
– digital humanities,
– human-computer interaction,
– natural language processing,
– information retrieval,
– use of information and behavior of the information users,
– social response to modern information technologies,
– culture of information,
– information, digital and media skills,
– information policy,
– information ethics.

ZIN *– Information Studies* is addressed to: (1) information science teachers and lecturers, researchers and students, (2) practitioners of information-related activities who analyze methods and tools used to implement those activities in various domains and organizational environments, (3) politicians and donators related to information activities in various domains. The journal content may also be of some interest to teachers, students and researchers in other disciplines of science which deal with various aspects of information existence and use in the contemporary world.

ZIN *– Information Studies* is included in the list of journals scored by Polish Ministry of Science and Higher Education and indexed by: Central European Journal in Social Sciences and Humanities (CEJSH), Central and Eastern European Online Library (CEEOL), Cambridge Scientific Abstracts (CSA), Library and Information Science and Technology Abstracts (LISTA), Polish Bibliography of Book Studies (PBB), Knowledge Organization Literature, Worldcat and Polish Scholarly Bibliography (PBN). The journal is registered in the European Reference Index for the Humanities (ERIH Plus).

ZAGADNIENIA INFORMACJI NAUKOWEJ − STUDIA INFORMACYJNE

Głównym celem *Zagadnień Informacji Naukowej – Studiów Informacyjnych* (ZIN – *Studia Informacyjne*) jest zapewnienie forum dla rozpowszechniania artykułów naukowych i wyników badań z zakresu nauki o informacji (informatologii) oraz innych dyscyplin, w których podejmowane są analizy społecznych i technologicznych aspektów działalności informacyjnej prowadzonej w różnych sferach współczesnego życia społecznego. Czasopismo służyć ma również rozpowszechnianiu krytycznych recenzji i omówień publikacji z tego zakresu oraz problemowych sprawozdań z ważnych konferencji poświęconych współczesnym problemom informacyjnym.

Publikujemy artykuły w językach polskim i angielskim. Każdy artykuł posiada zestaw metadanych: abstrakt i słowa kluczowe (w obu językach) oraz nota biograficzna autora i dane do kontaktu z nim.

Czasopismo adresowane jest zarówno do czytelnika polskiego jak i zagranicznego, publikujemy artykuły zarówno w języku polskim jak i angielskim. Podtytuł czasopisma – *Studia Informacyjne* – podkreśla interdyscyplinarny charakter jego profilu tematycznego, który obejmuje szeroki zakres problemów podejmowanych przez dyscypliny akademickie i dziedziny działalności zawodowej związane z zapewnianiem dostępu do utrwalonych zasobów informacji i wiedzy oraz ich wykorzystywaniem przez współczesnego człowieka i współczesne społeczeństwo. Czasopismo publikuje też artykuły prezentujące teoretyczną refleksję o praktycznej działalności informacyjnej prowadzonej w różnych dziedzinach i obszarach życia społecznego, a także wyniki badań służących poznaniu różnych uwarunkowań tej działalności oraz doskonaleniu jej metod i narzędzi. Na łamach ZIN publikowane są także artykuły poświęcone metodologii badań informatologicznych, historii nauki o informacji oraz edukacji w zakresie nauki o informacji. Profil tematyczny półrocznika ZIN – *Studia Informacyjne* obejmuje m.in. problematykę:

- usług informacyjnych w instytucjach nauki, kultury, biznesu, edukacji i administracji,
- zarządzania informacją i wiedzą,
- komunikacji naukowej i cyfrowej komunikacji naukowej,
- organizacji informacji i wiedzy,
- teorii i praktyki metadanych,
- zagadnień Web 2.0,
- zagadnień Sieci Semantycznej,
- architektury informacji,
- projektowania użytecznych serwisów informacyjnych,
- humanistyki cyfrowej,
- interakcji człowiek – komputer,
- przetwarzania języka naturalnego,
- wyszukiwania informacji,
- wykorzystywania informacji i zachowań informacyjnych użytkowników,
- społecznej recepcji nowoczesnych technologii informacyjnych,
- kultura informacji,
- kompetencji informacyjnych i cyfrowych,
- polityki informacyjnej,
- etyki informacyjnej.

Zagadnienia Informacji Naukowej – Studia Informacyjne adresowane są do wykładowców, badaczy i studentów nauki o informacji, a także praktyków działalności informacyjnej, krytycznie analizujących metody i narzędzia jej realizacji w różnych środowiskach dziedzinowych i organizacyjnych oraz polityków i donatorów działalności informacyjnej w różnych dziedzinach. Lektura czasopisma może też zainteresować wykładowców, studentów i badaczy innych dyscyplin, które zajmują się różnymi aspektami funkcjonowania informacji we współczesnym świecie.

Zagadnienia Informacji Naukowej znajdują się na liście czasopism punktowanych Ministerstwa Nauki i Szkolnictwa Wyższego. Czasopismo jest indeksowane w bazach: Central European Journal in Social Sciences and Humanities (CEJSH), Central and Eastern European Online Library (CEEOL), Cambridge Scientific Abstracts (CSA), Library and Information Science and Technology Abstracts (LISTA), Polska Bibliografia Bibliologiczna (PBB), Knowledge Organization Literature, Worldcat, Polska Bibliografia Naukowa (PBN). Czasopismo jest zarejestrowane w European Reference Index for the Humanities (ERIH Plus).

Spis treści | Contents

Od Redakcji

Różnorodność tematyki poruszanej w numerze, który oddajemy do rąk Czytelników, od-zwierciedla wszechstronność właściwą dla badań informatologicznych. Już sama informacja – główny obiekt badań w tej subdyscyplinie – tematycznie może być powiązana z wieloma sferami życia, a przecież oprócz niej w obszarze badawczym znajdują się również inne wątki i podmioty. Zapraszamy więc do lektury tekstów poruszających różne zagadnienia, pokazujących w wybranym ujęciu obraz badań realizowanych obecnie na gruncie polskiej informatologii i dyscyplin pokrewnych.

W pierwszym z nich Katarzyna Materska proponuje wykorzystanie paradygmatu ekosystemów informacyjnych do analizy środowisk walk informacyjnych, jako możliwe poszerzenie perspektywy badań wspólnotowych praktyk i zachowań informacyjnych. W następnym tekście Marek Nahotko przedstawia propozycję wspólnego wykorzystania dwóch różnych modeli oceny innowacji technologicznych, na przykładzie modeli dojrzałości usług związanych z zarządzaniem danymi badawczymi, ze szczególnym uwzględnieniem potrzeb ich użytkowników. Marzena Świgoń omawia wyniki badania jakościowego dotyczącego oddziaływania sytuacji kryzysowych na pracę młodych polskich naukowców z wybranych dyscyplin (nauki humanistyczne, nauki o sztuce, teologia), na początku ich drogi akademickiej. W kolejnym tekście, również łączącym w sobie perspektywę informatologii i naukoznawstwa, Zbigniew Osiński prezentuje wyniki analizy obszaru badań nad kulturą cyfrową (cyberkulturą) w oparciu o dane bibliograficzne dostępne w serwisie Web of Science. Ostatni artykuł również nawiązuje do wpływu sytuacji kryzysowych na zachowania i kompetencje informacyjne, w tym wypadku specyficznej i wrażliwej populacji, jaką stanowią beneficjenci fundacji charytatywnej.

W numerze tym, tekstem wspomnieniowym autorstwa ks. Krzysztofa Goneta i prof. Jadwigi Woźniak-Kasperek, żegnamy prof. Annę Sitarską, badaczkę znaną i cenioną w środowisku informatologicznym i bibliotekoznawczym. Prof. Anna Sitarska w swoich poszukiwaniach łączyła podejście naukowe z potrzebami praktyki, pogłębiając wiedzę o metodach i możliwościach systemowego badania bibliotek, w tym w oparciu o dostępne rozwiązania techniczne. Jak piszą Autorzy wspomnienia, była ona *inicjatorką i prekursorką wielu przemian w bibliotekach polskich, a także w akademickiej dydaktyce bibliotekarzy i pracowników informacji. Była błyskotliwa, profesjonalna, perfekcyjna, pracowita i boleśnie bezkompromisowa*. Wiele i wielu z nas miało możliwość korzystać z Jej wiedzy w trakcie studiów czy spotkań, chociażby konferencyjnych.

Przejmując obowiązki redakcyjne, tym numerem witamy się z Państwem – Czytelnikami i Autorami – i zapraszamy do publikowania tekstów prezentujących wyniki badań zarówno stricte informatologicznych, jak i tych przekraczających granice pól badawczych, a podejmujących wątki informacyjne.

Szczególnie zachęcamy do publikowania artykułów na temat usług informacyjnych w instytucjach nauki, kultury, biznesu, edukacji i administracji, organizacji i zarządzania informacją i wiedzą, komunikacji naukowej i cyfrowej, zagadnień Web 2.0 i Sieci Semantycznej, architektury informacji i projektowania użytecznych serwisów informacyjnych,

humanistyki cyfrowej, interakcji człowiek-komputer, eksploracji danych i tekstów, zachowań informacyjnych, społecznej recepcji nowoczesnych technologii informacyjnych, kompetencji informacyjnych, cyfrowych i medialnych, polityki informacyjnej, etyki informacyjnej oraz teorii i metodologii nauki o informacji.

Zapraszamy do lektury tego i kolejnych numerów.

Małgorzata Kisilowska-Szurmińska
Anna Mierzecka
Magdalena Paul

Walki informacyjne w paradygmacie ekosystemów informacyjnych

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Abstrakt

Cel/Teza: Celem Autorki jest wyjaśnienie i wprowadzenie paradygmatu ekosystemów informacyjnych do analizy środowisk walki informacyjnej i ukazanie jego przydatności.

Koncepcja/Metody badań: Posłużono się metodą analizy i krytyki piśmiennictwa i wspierająco techniką kuli śnieżnej. Wykorzystano także metodę analizy pojęciowej.

Wyniki i wnioski: Ekosystemy walk informacyjnych wymagają nieustającej uwagi podmiotów odpowiedzialnych za bezpieczeństwo jednostek, wspólnot, państw i społeczeństw. Wskazano podstawowe komponenty ekosystemów oraz zachodzące w nich zależności ze szczególnym uwzględnieniem praktyk i zachowań informacyjnych uczestników.

Oryginalność/Wartość poznawcza: Zaprezentowane podejście implikuje propozycje zmian na gruncie informacji naukowej: wzbogacenie badania ogólnie pojętego środowiska informacyjnego człowieka o eksplorację ekosystemów informacji, których zrozumienie może przyczynić się do sprawniejszego podejmowania działań naprawczych; zdecydowanie należy też poszerzyć uwagę o społeczne (wspólnotowe) praktyki i zachowania informacyjne.

Słowa kluczowe

Ekosystem informacyjny. Praktyki informacyjne. Środowisko informacyjne. Walka informacyjna. Zachowania informacyjne.

1. Wstęp

„Ekosystemy i złożoność stały się naturą współczesnego świata" (OECD, 2017, 16), który nieustannie ujawnia się jako globalna arena współpracy i konkurencji.

W ostatnich latach wielu badaczy wykorzystuje metaforę ekosystemu do konceptualizacji i modelowania wieloaspektowych relacji pomiędzy ludzkimi i nie--ludzkimi aktorami środowisk informacyjnych. Zależności te tworzą różnej jakości możliwości prosperowania w dynamicznym i niepewnym krajobrazie informacyjnym. Szerokie zastosowanie metafory ekosystemu, udokumentowane w literaturze (zob. np. Bhardwaj et al., 2022; Wardle, 2021; Zuckerman, 2021; Yoon & Copeland, 2020; Gupta et al, 2019; Morrison & Fisher, 2018; Hyrynsalmi & Mäntymäki, 2018;

Järvi, 2018; Niall, 2014; Szpunar, 2014; Hart & Nassimbeni, 2013; Walter, 2008) oznacza, że posługiwanie się analogią do ekosystemu ma wartość dla badania zróżnicowanych obszarów życia.

Większość badaczy i autorów posługujących się terminem „ekosystem informacyjny" zakłada jego intuicyjne rozumienie i, niestety, nie podejmuje próby zdefiniowania ekosystemu, (np. Grabowski & Muraszkiewicz, 2017; Allen et al., 2020). Ekosystem informacyjny (dalej EI) pozostaje więc wciąż pojęciem niedopracowanym w literaturze, stopniowo budującym swój potencjał. EI w polskiej literaturze informatologicznej reprezentowane są bardzo nielicznie i pokazują tylko wybrane ich wymiary (zob. np. Babik, 2016; Grabowski, 2016; Grabowski & Muraszkiewicz, 2017; Materska, 2021). Zamierzeniem badawczym, opisanym w tym artykule, jest próba wskazania podstawowych komponentów ekosystemów, szczególnie tych, w których prowadzone są informacyjne walki oraz ich zasadniczych cech, ze szczególnym uwzględnieniem ról, praktyk i zachowań informacyjnych uczestników. Ponadto celem autorki jest wyjaśnienie i wprowadzenie paradygmatu EI do analizy środowisk walki informacyjnej i ukazanie jego przydatności. „(...) ekosystem – stał się paradygmatem podejścia do złożoności współczesnego świata informacji". (García-Marco, 2011). W niniejszym tekście autorka rozumie paradygmat EI jako zespół założeń poznawczych, pojęć, teorii i poglądów, które wynikają z natury i złożoności ekosystemów informacyjnych. Ich badanie, opis i wyjaśnianie w perspektywie ekologii informacji mogą znacząco poprawić kondycję środowisk informacyjnych człowieka.

Różni autorzy często zamiennie używają terminów „walka" i „wojna", chociaż mają one odmienny zakres znaczeniowy. W artykule posłużono się pojęciem „walka informacyjna" dla podkreślenia, że rozważania nie dotyczą ujęcia militarnego. Jak podkreśla H. Batorowska (2019, 502–502), walka jest pojęciem wieloznacznym i może oznaczać ścieranie się sprzecznych interesów lub poglądów dwóch lub więcej stron. Walka może oznaczać również zabieganie o coś, usilne staranie się, co często wymaga ciężkiej pracy; walka to także konkurowanie, rywalizowanie, które zachodzą w przestrzeni polityki, nauki, gospodarki, kultury, a nawet osobistej. Kiedy podstawą działań stosowanych w walce czyni się manipulację i dezinformację oraz inne operacje informacyjne mające zapewnić zwycięstwo jednej ze stron, mamy do czynienia z walką informacyjną (zamiennie używany jest w tym tekście termin „konflikt informacyjny").

W pracy badawczej zastosowano przede wszystkim metodę analizy i krytyki piśmiennictwa – najnowszej literatury przedmiotu i dokumentów źródłowych (głównie literatury anglojęzycznej). W światowych bazach danych (Web of Science, Scopus, LISTA oraz wyszukiwarce naukowej Google Scholar) poszukiwano początkowo literatury naukowej na temat ekosystemów informacyjnych (ang. *information ecosystem OR information ecosystems*) z lat 2000–2022. Z uwagi na wciąż niedostateczną reprezentację opracowań w podjętym zakresie w naukach społecznych,

wykorzystano również technikę kuli śnieżnej (ang. *snowball sampling*), w której przeglądanie bibliografii załącznikowych oraz analiza cytowań, prowadziły do kolejnych wartościowych publikacji powiązanych w różnych perspektywach z tematem. Następnie z pomocą wyszukiwarek naukowych Google Scholar oraz Semantic Scholar wytypowano artykuły na temat wojen i walk informacyjnych (ang. *information warfare*), z wykluczeniem publikacji w kontekście militarnym. Zebrany materiał uzupełniono wstępną analizą publikacji dotyczących zachowań i praktyk informacyjnych w kontekście zachowań ofensywnych i defensywnych. W celu doprecyzowania zaproponowanego dalej pojęcia ekosystemu walki informacyjnej posłużono się metodą analizy pojęciowej. Ze względu na interdyscyplinarność podjętej tematyki, sięgnięto do różnych paradygmatów i ujęć, np. teorii systemów, socjologii, sieci społecznych, ekologii informacji, a także społeczno-konstruktywistycznego oraz afektywnego wymiaru zachowań informacyjnych.

2. Od pojęcia ekosystemu do idei ekosystemów społecznych

Ekosystem w naukach biologicznych to fragment przyrody (pewna przestrzeń środowiska naturalnego) stanowiący funkcjonalną całość, w której zachodzi wymiana między jej częścią żywą (biocenozą), a nieożywioną (biotopem). Wszystkie organizmy żywe występują w populacjach, pomiędzy którymi dochodzi do interakcji. Biorąc pod uwagę korzyści lub straty, wzajemny wpływ populacji na siebie może być korzystny lub nie. Najbardziej pożądane są różne zależności protekcyjne, tj. takie, które nie wywołują negatywnych skutków dla żadnej ze stron (np. symbioza, mutualizm, protokooperacja i komensalizm, które rozróżnia stopień czerpania korzyści każdej ze stron). Do stosunków antagonistycznych należą: konkurencja, amensalizm, pasożytnictwo i drapieżnictwo (Skubała, 2015). Te ostatnie relacje oznaczają, że populacja jednego gatunku ma negatywny wpływ na populację drugiego. Złożone i wielorakie interakcje między organizmami w ekosystemie (bezpośrednie i pośrednie) dowodzą jego ogromnego potencjału.

Odzwierciedleniem rosnącego zainteresowania współzależnościami między podmiotami różnych środowisk społecznych, biznesowych i kulturowych jest wprowadzenie koncepcji systemu ekologicznego (ekosystemu) do nauk innych niż biologiczne. Pojęcie ekosystemu dosyć szybko przeniknęło do środowisk gospodarczych, w których ekosystem biznesowy rozumiany jest jako sieć różnych organizacji, zaangażowanych w dostarczanie określonego produktu lub usługi zarówno w formie konkurencji, jak i współpracy, jako wspólnota organizmów adaptujących się i ewoluujących po to, by przetrwać (np. Moore, 1993). Zwraca tu uwagę początkowe odwoływanie się do analogii organizmu zaczerpniętej z koncepcji socjologii Augusta Comte i Herberta Spencera (społeczeństwo to nie prosta suma ludzi, lecz zintegrowany i funkcjonujący organizm społeczny).

W obszarach społecznych dotychczas nie przyjął się termin „ekosystem społeczny", badacze wolą posługiwać się określeniem „system społeczny", który w XX wieku wprowadzono w miejsce „organizmu". W systemie społecznym ważne są nie tyle konkretne jednostki, ile raczej pewne wyróżnialne pozycje społeczne i związane z nimi role, funkcje, obowiązki i uprawnienia. Dalszy krok na drodze socjologicznej „abstrakcji" polegał na wyodrębnieniu sieci relacji z całości systemu. Zauważono, że można szukać regularności tych powiązań niezależnie od tego kogo wiążą, w jakich zbiorowościach się przejawiają, np. struktura konfliktu ma swoje prawidłowości, niezależnie od tego czy występuje w sprzeczce koleżeńskiej czy konflikcie pomiędzy państwami. W kolejnych badaniach dostrzeżono, że ludzie zasadniczo należą do zbiorowości poprzez swoją aktywność, w której zawarty jest jakiś sens, znaczenie, i która związana jest ze środowiskiem człowieka i jego kulturą. Ponadto podkreślono, że rzeczywistość społeczna, zdarzenia i procesy społeczne są w stanie ciągłego stawania się (Sztompka, 2021).

Tak więc zbiorowości jednostek podejmują wobec siebie nawzajem kulturowo wyznaczone i strukturalnie ukierunkowane działania i w toku tego procesu modyfikują i wytwarzają grupy, struktury społeczne i kulturę, stanowiące z kolei kontekst dla przyszłych działań.

Analizując piśmiennictwo dotyczące różnych (eko)systemów społecznych (używam jednak tego określenia w poszerzonym socjologicznie sensie, dla podkreślenia udziału w nich ludzkich zależności) dostrzeżemy wiele elementów socjologicznych teorii. Podjęta przez autorkę próba wyodrębnienia najistotniejszych atrybutów wspólnych dla większości ekosystemów społecznych w prześledzonej literaturze wskazuje na kontekstowość, konkretny zestaw interesariuszy, złożoność, zróżnicowanie i wieloaspektowość, dynamiczne zależności i interakcje pomiędzy komponentami ekosystemu, zazwyczaj nakierowane na współpracę (relacje symbiotyczne), ale także cechujące się niekiedy zachowaniami konkurencyjnymi, antagonistycznymi, czy wręcz walką. Zasadnicze zmiany w ekosystemach są ekologiczne w takim sensie, że są układem wzajemnych i koewolujących relacji pomiędzy składnikami ekosystemów. Zmiana jednego czynnika powoduje zmiany w całym ekosystemie, zagrożenie dla jednej części systemu obciąża cały system. Zmiana systemowa w ekosystemie wymaga adaptacji i dynamicznej równowagi; współpraca i synergia efektów działania elementów oznaczają, że ekosystem ma większe znaczenie niż suma jego części. Ekosystemy są konstruktami społecznymi, które kierują się określonym zapotrzebowaniem; preferują pewne wartości, wzajemnie korzystne cele (takie jak np. zysk komercyjny/emocjonalny, wspólny interes, czy innowacje), a tym samym spójność społeczną. Występuje w nich wiele różnych podmiotów (ludzkich i pozaludzkich, indywidualnych i korporacyjnych), z których niektóre pełnią rolę kluczowych gatunków (ang. *key species*). Zrównoważony rozwój odgrywa istotną funkcję w ekosystemach – pozwala dbać o zaspokojenie podstawowych potrzeb uczestników ekosystemu z jednoczesnym

zachowaniem różnorodności i integralności ekosystemu oraz możliwości jego dalszego harmonijnego rozwoju[1].

Mówiąc o ekosystemach społecznych odnosi się je do dowolnej wielkości, której ramy ogranicza określona przestrzeń fizyczna lub mentalna. Można je definiować na różnych poziomach, w tym krajowym, społeczności lokalnej lub grup interesu w ramach pewnej społeczności. Wszystkie „zdrowe" ekosystemy można uznać za sieci interesariuszy, w których różne elementy współdziałają, by tworzyć wygodne i bezpieczne środowisko. Takie środowiska nie wykluczają możliwości rywalizacji o uwagę, zaangażowanie i lojalność ludzi, o zasoby (w tym informacyjne), usługi, dostęp do innowacyjnych technologii, przestrzeń twórczą (zarówno fizyczną, jak i wirtualną), wystarczające fundusze i inne. Każdy z interesariuszy może mieć swoje własne pomysły, zainteresowania, narzędzia i usługi. Różnorodność w stanie harmonijnej równowagi (ang. *equilibrium*) jest niezbędna dla zdrowia ekosystemów, aby umożliwić im przetrwanie nieustających zmian i rozwój.

Powyższe cechy wskazują na punkty wspólne dla większości ekosystemów społecznych i sprawiają, że pojęcie to staje się bardziej zrozumiałe i użyteczne w praktycznych kontekstach. Atrybuty te zostaną wzięte pod uwagę przy omawianiu ekosystemów informacyjnych.

3. Ekosystemy informacyjne (EI)

Jesteśmy świadkami mnożenia się nowych koncepcji próbujących wyjaśnić złożoność świata w ramach poszczególnych obszarów życia i dyscyplin naukowych poprzez metaforę ekosystemu (np. w naukach o komunikacji społecznej i mediach, naukach o zarządzaniu i jakości, pedagogice, naukach socjologicznych, biologicznych, informatyce, naukach o bezpieczeństwie), w którym główną rolę odgrywa informacja. Kuehn (2022) dostarcza kilku egzemplifikacji stopniowego przenikania koncepcji EI do nauk o informacji, sięgając m.in. do wybranych przykładów z obszaru zarządzania biznesem, społeczeństwa obywatelskiego i badań w medycynie. Z przeglądu wynika, że każdy z obszarów definiuje ekosystem informacji inaczej, zgodnie z potrzebami, którym ten konstrukt ma służyć.

Ekosystem jest jednym z podstawowych pojęć ekologii, analogicznie więc, próbując określić EI, należałoby w pierwszej kolejności sięgnąć do teorii ekologii informacji. W podejściu ekologii informacji nie używa się explicite terminu ekosystem informacyjny, ale naczelną zasadą jest nadanie priorytetu człowiekowi

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1 W raporcie Światowej Komisji Środowiska i Rozwoju ONZ pt. „Nasza wspólna przyszłość" (1987, polski przekład 1991) następująco zdefiniowano pojęcie zrównoważonego rozwoju (ang. *sustainable development*): „Proces mający na celu zaspokojenie aspiracji rozwojowych obecnego pokolenia, w sposób umożliwiający realizację tych samych dążeń następnym pokoleniom" (World Commission, s. 67).

w jego złożonych relacjach z informacjami i technologicznymi komponentami. Aleksiej L. Eryomin, przedstawiciel tego nurtu twierdzi, że to multidyscyplinarne pole badawcze powinno czerpać z „szerokiego zakresu teorii informacji, ekologii, fizjologii, medycyny, zdrowia publicznego, bezpieczeństwa, studiów nad konfliktami, nauk politycznych, lingwistyki, zarządzania itd.", aby badać prawa rządzące wpływem informacji na kształtowanie i funkcjonowanie biosystemów, ich zdrowie i dobrostan społeczny (Eryomin, 1998, s. 251).

Bonnie Nardi i Vicki O'Day (2000) używają terminu „ekologie informacji", aby opisać systemy składające się z ludzi, praktyk, wartości i technologii, które ewoluują w oparciu o relacje w ramach systemu. W metaforze ekologii obie autorki podkreślają znaczenie pojęcia lokalności, które jest nieobecne w perspektywie systemowej. Podają przykłady ekologii informacji (odpowiednika ekosystemów informacyjnych), takich jak biblioteki, szkoły, szpitale i biura, gdzie technologie są starannie integrowane (lub nie) z istniejącymi zwyczajami i praktykami, zgodnie z wartościami danej ekologii, aby osiągnąć określony w jej ramach cel.

Zupełnie inne podejście i metodologię badawczą dla EI prezentuje Internews Center for Innovation & Learning, które od 2012 roku bada EI w wielu krajach świata, zwłaszcza w społecznościach narażonych na rozmaite katastrofy i kryzysy. W dokumencie „IEA – human-centered approach" (Internews, 2021), Internews podkreśla, że tradycyjne podejście do analizy EI (IEA – Information Ecosystem Analysis) uwzględnia zarówno stronę „podaży", jak i „popytu", która obejmuje potrzebę informacji, dostęp, pozyskiwanie, dzielenie się, zaufanie i umiejętność korzystania z informacji. Jednakże raport „Patient zero" (Internews, 2022) wyraźnie pokazuje, że tradycyjne linie podziału pomiędzy aktorami „strony podaży" i „strony popytu" uległy zatarciu w środowisku nowych mediów. Nowy cyfrowy EI zmienia sposób interakcji ludzi, organizacji i technologii.

Proponując swoją definicję EI, która ma być przydatna dla bibliotekarzy i badaczy głównie w perspektywie kształtowania kompetencji informacyjnych (ang. *information literacy*), Kuehn o EI mówi następująco: „wszystkie struktury, podmioty i czynniki związane z przepływem informacji semantycznej istotnej dla domeny badawczej, jak również sama informacja." (Kuehn, 2022, 2). Definicja ta podkreśla wagę informacji semantycznej (czyli takiej, która jest znacząca dla ludzi) oraz granice ekosystemu wyznaczone przez konkretną domenę badawczą.

Do EI z pewnością zaliczyć można ekosystemy medialne (Zuckerman, 2021), wiadomości (Stonebraker & Green-Barber, 2021), informacji badawczej i komunikacji naukowej (Scherer et al., 2020), ekosystemy biblioteczne (Walter, 2008) – żeby podać tylko kilka przykładów. Są to ilustracje ekosystemów, które teoretycznie są stabilne (bez większych zakłóceń), stawiają na integralność, sieci pozytywnej współpracy, wspólne wysokie standardy jakości, wartości etyczne, są nakierowane na poprawę i rozwój swoich środowisk, by sprostać obecnym i przyszłym pokoleniom (ekosystemy zrównoważone).

Odrębną funkcjonalnie grupę stanowią niestabilne, zaburzone i zubożone EI, np. ekosystemy zanieczyszczone patogenami informacyjnymi, toksyczne, dezinformacji lub fałszywej informacji (np. Wardle, 2017; Wardle & Derekshan, 2018; Wardle, 2021). Miarą niestabilności i zaburzenia są tu liczne zakłócenia strukturalne i funkcjonalne, jakie napotykają i tworzą aktorzy ekosystemu. Korzystając z nowych technologii cyfrowych i platform społecznościowych, każdy może kreować dowolne treści, w tym fałszywe lub niskiej jakości, kierując się złośliwymi lub innymi motywami o potencjalnie szkodliwym wpływie. Niepożądany przepływ niektórych rodzajów informacji wzmacniany jest przez model komunikacji wielu-do-wielu. „Ekosystem informacyjny to coś więcej niż partyjna komora echa (...). Te ekosystemy nie są odgórnie sterowane ani liniowe. Są sieciowe, uczestniczące i całkowicie oddzielone od mediów głównego nurtu. Wewnątrz tych alternatywnych ekosystemów informacyjnych zakorzeniają się całe systemy przekonań i alternatywne światopoglądy." (Wardle, 2021). Ekosystemy fałszywej informacji są napędzane przez trolle, boty, media informacyjne i aktorów z różnych obszarów życia społecznego, którzy realizują swoje programy polityczne, biznesowe, kulturowe i inne, np. poprzez wzmacnianie i tłumienie wybranej narracji oraz rekomendowanie i transferowanie informacji, tak jak robią to profesjonalni wydawcy. Nie mniej ważni dla funkcjonowania takich ekosystemów są także uczestnicy pełniący role pożytecznych idiotów i reprezentujący ogólnie niskie kompetencje informacyjne.

Różnice i granice pomiędzy wyszczególnionymi tutaj ekosystemami nie zostały jasno wyartykułowane w literaturze przedmiotu i ta niejednoznaczność z pewnością utrudnia właściwe wykorzystanie koncepcji EI. Wielu badaczy zwraca uwagę na to, że ekosystemy „nakładają się na siebie, zazębiają i wchodzą ze sobą w interakcje" (Zuckerman, 2021). Obok różnie nakreślanych granic domenowych i dziedzinowych, ekosystemy lokalne mogą być np. częścią ekosystemów regionalnych, krajowych, międzynarodowych, czy wręcz globalnego ekosystemu. Autorka, nie chcąc rygorystycznie zawężać pola badań, przyjęła szeroką koncepcję EI jako złożonego systemu interakcji z informacją, co przybliżone zostanie w dalszej części tekstu.

Można dostrzec, że idea EI jest zakorzeniona w różnych teoriach, np. teorii systemów, teorii sieci społecznych, konstruktywizmu, ekologii informacji, odporności informacyjnej. W tym krótkim tekście nie sposób odnieść się do wszystkich z nich, dlatego zwięźle zostaną ujęte wybrane ich elementy, potrzebne autorce do ujęcia w ich ramy walk informacyjnych.

Po pierwsze, EI są konstruktami społecznymi. U podstaw badania EI leży założenie, że informacja jest z natury społeczna, korzystanie z informacji jest postrzegane jako konstruktywistyczne działanie (Tuominen et al., 2005). „Kiedy mówimy i piszemy, tworzymy i organizujemy naszą rzeczywistość społeczną" (Tuominen & Savolainen, 1997). EI jako konstrukt społeczny określający różne aspekty relacji międzyludzkich nabiera znaczenia tylko w określonym kontekście społecznym. Patrząc na relacje w EI, możemy wyróżnić modelowe (idealistyczne) ich typy,

np. ekosystemy koncyliacyjne, oparte na adaptacji i współpracy w osiąganiu celów, charakteryzujące się nieantagonistycznymi interakcjami. Takimi systemami powinny być, przykładowo, ekosystem edukacji, ekosystem innowacji w nauce czy ekosystem otwartej nauki. EI to wielowymiarowe społecznie konstrukty, w których stosowane są różne praktyki informacyjne. Dominuje w nich wymiana, transfer i wykorzystanie informacji. Istotą IE jest zatem komunikacja pomiędzy ludzkimi i nie-ludzkimi aktorami systemu. Stąd na uwagę zasługują role odgrywane przez poszczególnych aktorów (jednostki, grupy aktorów, platformy), którzy mogą pełnić np. funkcje liderów (gatunków kluczowych), autorytetów informacyjnych, nadawców, pomocników (ang. *enablers*), katalizatorów, gatekeeperów, hakerów, użytkowników, pożytecznych idiotów, aktywatorów przyspieszających bieg rzeczy (ang. *accelerators*).

EI to czasowe struktury społeczne (socjotechniczne), które istnieją tak długo, jak długo istnieją odpowiednie zasoby (w tym działania informacyjne związane z doświadczeniem, wiedzą i umiejętnościami) skupione wokół określonych kontekstów (dyscyplin, dziedzin czy dylematów społecznych). Konteksty te wyznaczają mentalne i dynamiczne granice EI (np. odrębne ekosystemy dziedzinowe czy ekosystemy informacyjne związane z jakąś sytuacją kryzysową). W ekosystemach istotne są specyficzne dla danego zakresu społeczności, które rozpoznają, organizują, wspierają, hamują lub przekazują informacje. EI nie są trwale ukształtowane, zmieniają się w różnych kontekstach i wymagają interdyscyplinarnych badań. W rozważaniach nad EI łączy się poziom społeczny i psychologiczny (ludzie), fizyczny i wirtualny (środowisko informacyjne, przestrzeń informacyjna) oraz technologiczny. Podejście ekosystemowe inspiruje do holistycznego spojrzenia na przemiany towarzyszące eksploatacji środowisk informacyjnych i zrozumienia, że „ekologiczna koncepcja ekosystemu (...) służy jako obraz „większego obrazu" dla myślenia strategicznego (...), że dobro całości pochodzi ze zdrowia jej części i relacji między nimi." (Hart & Nassimbeni, 2013).

Po drugie, ekosystemy możemy postrzegać przez pryzmat złożonych zależności, biorąc pod uwagę strukturę systemu, relacje między jego częściami, przepływy informacji oraz zachowania informacyjne krytyczne dla tych relacji. System jest zawsze dynamiczny i ze swej natury podlega ciągłej ewolucji i zmianom.

Podsumowując, można założyć, że w ekosystemie informacyjnym konieczny jest dostęp do zasobów informacji (w granicach ekosystemu), zapewniający sprawne komunikowanie się oraz ekologicznie kształtowane praktyki informacyjne (ang. *information practices*) ludzkich i pozaludzkich aktorów ekosystemu, co zostanie przybliżone w dalszych częściach artykułu.

Z całą pewnością możemy powiedzieć, że nie ma jednego ekosystemu informacji. Jest wiele EI, do których należymy i w których uczestniczymy.

4. Walki informacyjne w ekosystemach informacyjnych

„Walka jest jednym z podstawowych zachowań istot żywych pozwalających im przetrwać i rozwijać się w środowisku, którego są częścią". (Batorowska 2019, 502). Walczące strony pojawiają się także w ekosystemach informacyjnych.

W ostatnich latach widoczna jest zmiana postrzegania konfliktów informacyjnych, z uwagi na ich coraz większe znaczenie dla funkcjonowania społeczeństw. Do niedawna konflikty informacyjne były często uważane za zjawisko marginalne, występujące głównie w sytuacjach konfliktów zbrojnych lub politycznych. Jednak w ostatnim czasie stały się one bardziej powszechne i złożone, a ich wpływ na społeczeństwo (różne jego sfery) jest coraz bardziej widoczny.

W przeciwieństwie do ekosystemów poprawiających jakość swojego otoczenia informacyjnego autorka proponuje wyodrębnić ekosystemy ze specyficzną funkcją zewnętrzną, która generalnie zakłóca funkcjonowanie szerszych (zewnętrznych) środowisk ekosystemu (tj. ekosystemy dezinformacji, fałszywej informacji, walk informacyjnych, i innych zaburzeń informacyjnych).

EuroVoc, wielojęzyczny tezaurus Unii Europejskiej, podaje następującą definicję walki informacyjnej: „Ofensywne i defensywne wykorzystywanie informacji i systemów informacyjnych w celu zdewaluowania, wykorzystania, uszkodzenia lub zniszczenia zasobów informacyjnych przeciwnika, stosowanych przez niego procesów i systemów informacyjnych oraz sieci komputerowych, jednocześnie chroniąc własne zasoby informacyjne." (EU, b.d.). Definicja ta, oficjalnie przyjęta w dokumentach UE, wydaje się autorce dobrą inspiracją do dalszych rozważań, szczególnie w odniesieniu do interakcji z informacją podejmowanych przez uczestników ekosystemów.

Wraz z powszechnym dostępem do mediów społecznościowych, które stały się ważnym źródłem informacji dla ludzi na całym świecie, a także rozwojem algorytmów globalnych platform, ich baniek informacyjnych, systemów sztucznej inteligencji, walki informacyjne stają się coraz bardziej widoczne, a jednocześnie trudne do zrozumienia; z uwagi na nieustającą „innowacyjność" ich uczestników wymagają też coraz to nowych narzędzi do ich identyfikacji. W ramach przemian walk informacyjnych można dostrzec, że kształtują się odrębne grupy lub ekosystemy, które często działają na różnych płaszczyznach i wykorzystują różne strategie i narzędzia do prowadzenia działań informacyjnych. Walki między ludzkimi i pozaludzkimi podmiotami o kontrolę nad informacją, jej przypływem i interpretacją, o zdobycie przewagi informacyjnej mogą tworzyć i wykorzystywać różne zagrożenia w osobowej i technologicznej przestrzeni informacyjnej. Aby temu przeciwdziałać toczy się również walka o wyższą kulturę informacyjną, o informacyjny ład, transparentność algorytmów, systemów informacyjnych i platform. Wszyscy aktorzy walki informacyjnej są podmiotami przetwarzającymi informacje. Walczą o uwagę, emocje, wzmocnienie swoich przekazów kosztem innych, możliwość

specjalnie ukierunkowanej rekomendacji, co może prowadzić do dezinformacji, podziałów społecznych i w efekcie destabilizacji danego ekosystemu, a więc negatywnego wpływu na jednostki, grupy, organizacje czy społeczeństwa. Oznaką walki informacyjnej toczonej w sferze pozamilitarnej jest sytuacja, kiedy „zła" informacja staje się co najmniej równie powszechna, przekonująca i trwała jak dobra.

Walki informacyjne w sferze pozamilitarnej mogą wynikać z różnych przyczyn, np. różnic światopoglądowych i kulturowych; złożoności i braku przejrzystości informacji (co może prowadzić do konfliktów interpretacyjnych); braku zaufania do źródeł informacji (np. walki o autorytet, przewagę informacyjną); polaryzacji społecznej (która może prowadzić do konfliktów informacyjnych związanych z interpretacją faktów oraz wartości odmiennych dla grup o skrajnie różnych przekonaniach); świadomości, że jest się manipulowanym, wprowadzanym w błąd bądź poddawanym innym zakłóceniom informacyjnym (np. przez rządy, partie, korporacje i media).

Na walki informacyjne można także spojrzeć przez pryzmat praktyk i zachowań informacyjnych w ekosystemie. Ten kontekst upoważnia do zaproponowania ich w kategoriach działań ofensywnych i defensywnych.

5. Ofensywne i defensywne praktyki i zachowania informacyjne w ekosystemach informacyjnych

W zaburzonych EI najczęściej dochodzi do walk informacyjnych z powodu zachowania jakiegoś podmiotu (agresora), który stwarza zagrożenie informacyjne, przed którym inny podmiot musi się bronić. Atak agresora może być próbą eliminacji przeciwnika z przestrzeni informacyjnej lub zneutralizowania go, zagarnięcia zasobów, podziału (rozproszenia i odwrócenia) uwagi informacyjnej, naruszenia czyichś granic (także osobistych), a nawet stanowić zagrożenie życia czy zdrowia poprzez dezinformowanie. Zachowanie agresora, zakłócające stan (względnej) równowagi („pokoju informacyjnego"), wpływa na wszystkie komponenty ekosystemu, które próbują reagować – bronić się lub kontratakować, a jeśli zmiana jest zasadnicza i długotrwała, adaptować się do nowej sytuacji.

Perspektywa ekosystemowa sugeruje, by traktować praktyki i zachowania informacyjne (ZI) jako tworzenie kontekstu, co nawiązuje do zasygnalizowanej wyżej idei konstruktywizmu. Takie podejście do ZI lokuje je „w społecznych ramach norm, wartości, relacji interpersonalnych, aktywności i praktyk informacyjnych" (Krakowska, 2022, 111). W różnych ekosystemach możemy dostrzec normatywne ZI ich uczestników, które są wynikiem wzajemnych relacji i oddziaływania, opartych „na społecznych, kulturowych, afektywnych, ale też poznawczych determinantach" (Krakowska, 2022, 113) i które czynią dany ekosystem bardziej spójnym i przewidywalnym. Normy te określają, jakie praktyki związane ze zdobywaniem,

przetwarzaniem, udostępnianiem i wykorzystywaniem informacji są akceptowalne, a jakie nie. Na przykład, wiele społeczności uważa, że prywatność jest ważna i oczekuje się, że ludzie będą szanować prywatność innych, nie ujawniając ich informacji osobistych bez zgody. W różnych EI istnieją unikalne normy praktyk i ZI, np. w ekosystemie prawniczym normą powinna być m.in. ochrona poufności informacji, szacunek dla praw autorskich, rzetelność w przedstawianiu dowodów, przechowywanie i udostępnianie informacji w sposób zgodny z przepisami prawa.

Warto w tym miejscu odnieść się do różnicy pomiędzy zachowaniami i praktykami informacyjnymi, podnoszonej na gruncie informacji naukowej, biorąc pod uwagę kontekst EI. W literaturze informatologicznej termin „praktyki informacyjne" używany jest rzadziej. Zdecydowanie więcej miejsca poświęca się ZI indywidualnych użytkowników informacji. Zakres terminu „praktyki informacyjne" (oraz ZI) został niedawno szerzej omówiony na gruncie polskim przez Monikę Krakowską (2022, 3–36). I chociaż terminy te często traktowane są jako równorzędne lub dopełniające się, wśród prezentowanych przez nią wielu podejść różnych autorów na świecie, uwagę zwracają następujące konstatacje: wszystkie praktyki są społeczne (zapośredniczone społecznie), uwarunkowane kontekstowo (społecznie i kulturowo), wywodzą się z interpretacji między członkami społeczności i w drodze normatywnych ustaleń (są uzasadnione regułami nie tylko jednostki, ale całej społeczności), praktyki informacyjne podejmowane przez członków społeczności, są powtarzalne, często rutynowe, istotnie powiązane i ukonstytuowane poprzez ustalenie miejsca społecznego (usytuowane np. w różnych domenach wiedzy). Oznacza to, iż można założyć, że ZI jednostek prowadzą do praktyk informacyjnych w danej zbiorowości (w EI).

Nie podejmując się w tym miejscu rozgraniczenia zachowań i praktyk informacyjnych, do przykładowych interakcji z informacją, które pojawiają się w kontekście walk informacyjnych i przyczyniają się do ich tworzenia, autorka zalicza: szerzenie niezweryfikowanych informacji, rozpowszechnianie dezinformacji, stosowanie propagandy, brak krytycznego myślenia, emocjonalne reagowanie, wiara w teorie spiskowe, tworzenie fałszywych kont i deepfake'ów, wykorzystywanie botów i farm trolli.

Podmiotami zakłócającymi normy praktyk i ZI przyjętych w danym ekosystemie i powodujących sytuacje konfliktowe mogą być osoby indywidualne, które celowo, z różnych powodów, łamią normy, na przykład poprzez udostępnianie fałszywych informacji, naruszanie prywatności innych osób, kradzież informacji, kradzież tożsamości. Mogą nimi być także grupy, które działają w internecie i mają niejasny status prawny lub społeczny. W takich przypadkach może być trudno określić, jakie normy ZI powinny w takich społecznościach obowiązywać. Dotyczy to również społeczności z różnymi wartościami i oczekiwaniami w odniesieniu do praktyk i ZI. Podobnie ma się sprawa z firmami i organizacjami działającymi niezgodnie z przyjętymi w środowisku biznesowym normami, np. poprzez zbieranie danych

osobowych lub też ich udostępnianie bez zgody klientów czy złośliwe niszczenie reputacji konkurencyjnej firmy. Ważne jest, aby w poszczególnych EI istniała świadomość norm i żeby były one respektowane.

Krótka przykładowa analiza walk informacyjnych w paradygmacie ekosystemowym pokazana zostanie poniżej na przykładzie EI w nauce. Kontrowersje pojawiają się tu wokół utowarowienia nauki, upolitycznienia nauki i oceny czasopism, wokół badań i publikacji naukowych, powstających pod wpływem potrzeb biznesowych (komercjalizacji badań) lub nacisków politycznych, wywołując niekiedy ostrą polemikę ze strony innych naukowców, spór między naukowcami a grupami przemysłowymi lub lobbystami, którzy starają się wpłynąć na wyniki badań naukowych lub ich interpretację w celu osiągnięcia swoich celów (zob. np. Baranowski, 2021; Pawlak, 2019; Krimsky, 2006). Przykładami tematów konfliktowych mogą być: kontrowersja wokół bezpieczeństwa genetycznie modyfikowanej żywności, czy bezpieczeństwa szczepionek. Przypomnijmy, że badanie Andrew Wakefielda z 1998 roku sugerowało związek między szczepieniami a autyzmem, ale później badania wykazały brak dowodów na takie powiązanie. Spory naukowców wykorzystują grupy przemysłowe i lobbyści w celu wpłynięcia na decyzje polityczne lub regulacyjne. Konflikt informacyjny w nauce ma znaczący wpływ na opinię publiczną i podejmowane decyzje; naukowcy często muszą walczyć z dezinformacją i manipulacją w celu zapewnienia, że ich badania są przedstawiane w sposób rzetelny i zgodny z faktami.

Wiodącymi aktorami w ekosystemie nauki są naukowcy, którzy prowadzą badania naukowe, publikują wyniki w naukowych czasopismach oraz prezentują je na konferencjach naukowych. Naukowe publikacje są poddawane procesom recenzji, co ma zapewniać możliwość ich testowania i sprawdzania przez innych badaczy przed publikacją. Innymi uczestnikami charakterystycznymi dla tego akurat ekosystemu mogą być: uniwersytety i inne instytuty badawcze, agencje rządowe, które finansują badania naukowe, wydawcy. Nie spotkamy ich w wielu innych EI.

W przypadku konfliktów informacyjnych ważne jest, aby naukowcy dążyli do osiągnięcia stanu równowagi ekosystemowej poprzez przestrzeganie normatywnych praktyk i ZI typowych dla ekosystemu nauki, aby zapewnić społeczeństwu (środowisku tego ekosystemu) poprawę jego funkcjonowania i rozwoju. Za normy praktyk dla zdrowego ekosystemu nauki powszechnie uznaje się rzetelną analizę źródeł informacji, otwartość na dialog, zwracanie uwagi na kontekst, walidację wyników, przestrzeganie zasad etycznych.

Przykładem praktyk i zachowań naruszających normy ekosystemu nauki, które prowadzą do walk informacyjnych mogą być: pseudo-nauka, czyli promowanie badań, które nie są oparte na naukowej metodzie lub nie przeszły procesu recenzji, co prowadzi do rozpowszechniania nieprawdziwych informacji; manipulowanie wynikami badań w celu osiągnięcia pożądanych wyników, co prowadzi do fałszywych informacji i niewiarygodnych wyników; plagiat, tj. kopiowanie i publikowanie

cudzych prac bez uzyskania zgody autora, co jest nieetyczne i skutkuje brakiem zaufania do naukowców i nauki jako takiej; wykorzystanie wyników badań w celu zyskania poparcia politycznego lub promowania jakiejś ideologii, co prowadzi do manipulowania informacją i propagandy; komercjalizacja nauki związana z finansowaniem badań przez firmy lub organizacje, które mają interes w potwierdzeniu „zamówionych" rezultatów badań, co prowadzi do braku obiektywności i rzetelności. Wyraźnie więc widać jak wymienione praktyki i ZI naruszają / zaburzają ekosystem nauki.

Ogólniej rzecz ujmując, w zaburzonych ekosystemach, w których dochodzi do walk informacyjnych (ekosystemach walk informacyjnych), występują znaczne zakłócenia jakości informacji, problemy z oddzielaniem faktów od opinii, zwiększenie podatności ludzi na dezinformację i teorie spiskowe oraz asymetryczny dostęp do wiarygodnych informacji (zależny od moderacji treści i rankingów platform społecznościowych wspieranych przez nieprzejrzyste algorytmy). Zaburzenia obejmują również rosnącą liczbę „złych" aktorów, brak równowagi w praktykach i ZI (od pozytywnych do antagonistycznych) oraz znaczące różnice w poziomach kultury i odporności informacyjnej. Dodatkowym napędem walk informacyjnych jest „temperatura emocjonalna" środowisk informacyjnych.

6. Zakończenie

Obecnie na wiele pytań dotyczących relacji człowieka z informacją można odpowiedzieć jedynie w holistycznym kontekście oddziałujących na siebie elementów ekosystemu (myślenie ekosystemowe). Ekosystemy walk informacyjnych jako konstrukty, które nie są constans, wymagają nieustającej uwagi podmiotów odpowiedzialnych za bezpieczeństwo jednostek, wspólnot, państw i społeczeństw, szczególnie gdy bierze się pod uwagę pomysłowość i „innowacyjność" pewnych społeczności w sferze prowadzenia działań informacyjnych.

Pokazane w artykule podejście implikuje, w rozumieniu autorki, co najmniej dwie zasadnicze zmiany na gruncie informacji naukowej. Po pierwsze, jest to wskazanie na potrzebę wzbogacenia badania ogólnie pojętego środowiska informacyjnego człowieka o badanie EI, w których żyjemy, pracujemy, wypoczywamy i walczymy. Można założyć, że środowisko informacyjne pełni w tym podejściu rolę otoczenia EI. Na przykład, jeśli weźmiemy pod uwagę trzy ekosystemy: nauki, polityki i biznesu, w każdym z nich inaczej będą definiowane najistotniejsze źródła i zasady dostępu do informacji, cele przetwarzania informacji, wiodące technologie i potrzebne regulacje, podstawowe potrzeby i cele głównych aktorów, obowiązujące (normatywne) praktyki i ZI. Postrzeganie coraz bardziej złożonego środowiska informacyjnego jako szeregu specyficznych ekosystemów informacyjnych może sprzyjać uważniejszej obserwacji i zrozumieniu zachodzących w nich

mechanizmów oraz przyczynić się do lepszego typowania i podejmowania działań naprawczych (niwelujących niektóre zagrożenia informacyjne). W zdrowych ekosystemach informacyjnych wszystkie elementy powinny znajdować się w równowadze zależnej od kontekstu.

Po drugie, każdy z nas może być uczestnikiem wielu nakładających się ekosystemów i pełnić w nich odmienne role uwarunkowane społecznie i kulturowo, co koniecznie trzeba tu podkreślić. Ta ekologiczna zależność wpływa na społeczne (grupowe, wspólnotowe) praktyki i ZI, które należy zdecydowanie szerzej eksplorować. Do interesujących kwestii badawczych należy szukanie odpowiedzi na pytania: Jak kształtują się (wyłaniają) społeczne praktyki informacyjne? Na ile ZI jednostek kształtuje normy społeczne? Czy zaproponowany w kontekście walki informacyjnej podział na praktyki ofensywne i defensywne stanie się normą?

Na tle różnych paradygmatów przenikających się w nauce o informacji, paradygmat ekosystemowy wydaje się mieć potencjał do nowych innowacyjnych badań i dyskursów.

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Information warfare
in the information ecosystem paradigm

Abstract

Purpose: The author aims to clarify and introduce the information ecosystem paradigm into the analysis of information warfare environments and demonstrate its usefulness.
Methods: The author employed literature analysis and criticism methods, supported by the snowball sampling technique. Additionally, the conceptual analysis method and elements of the observational method were utilized.
Results and conclusions: Information warfare ecosystems demand sustained attention from those responsible for the security of individuals, communities, states, and societies. The study identifies the essential components and interdependences of these ecosystems, with a particular emphasis on the information practices and behaviors of the participants.
Value: The presented approach implies proposals for changes in the field of information science: enriching the study of the human information environment in general through exploring information ecosystems, understanding which can contribute to more efficient remedial actions; it is also crucial to broaden attention to social (community) information practices and behavior.

Keywords

Information ecosystem. Information practices. Information environment. Information warfare. Information behavior.

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Information technology maturity and acceptance models integration: the case of RDS

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Abstract

Purpose/Thesis: This article presents three methods for evaluating technological innovations, with a particular focus on information technology innovations such as information systems and services. These methods include assessing maturity, the diffusion of innovative information technologies, and their acceptance. The aim is to indicate the complementarity of these methods, which makes their integrated application appropriate.

Approach/Methods: There are two types of theories that take into account the perspectives of both the creators of information technologies (technology maturity models) and their users (technology acceptance models). The article attempts to identify the commonalities between these models to enable their joint use. The joint application of these models is demonstrated through an example using research data services (RDS) maturity models. Six RDS maturity models known from the literature were analyzed from the perspective of their completeness using the technology acceptance model (TAM).

Results and conclusions: This approach enables the assessment of maturity models from the perspective of RDS users' needs, affecting the level of their acceptance. The results indicate that existing RDS maturity models do not sufficiently consider the needs and perspectives of their users, hindering the acceptance of the technology.

Originality/Value: The article demonstrates a new point of view on information systems assessment, which serves to integrate two previously used methods of assessing the IS: maturity models and innovative information technologies acceptance models. The article proposes combining both methods to obtain a more coherent and universal research tool.

Keywords

Information system acceptance. Information system innovativeness. Information system maturity. Research data services. RDS.

1. Introduction

Over the past two decades, information scientists and professionals in information systems (IS) have recognized the need to evaluate the quality of information system services, including those of libraries. This evaluation helps to meet user expectations, fulfill their information needs, and achieve the goals of scientific and professional organizations. Another factor that requires analysis is the widespread use of information and communication technologies (ICT), which are essential in modern information acquisition, processing, and dissemination. ICT forms the basis of electronic services (Babalhavaeji et al., 2010), but it can also create barriers that impede users' access to information. Therefore, appropriate measures are necessary to assess the quality of these services (Nitecki, 1996), which should be firmly grounded in created models of ISs and their users. Maintaining a balance between users' expectations and users' perception of the actual state, and minimizing the discrepancy between the two factors, is essential in delivering high-quality services. Thus, users are the primary source of data for evaluating the quality of information services.

Quality can be understood and defined in many different ways, for example, as a degree of excellence (Merriam-Webster, n.d.). However, five distinct yet related ways of thinking about quality are useful in the context of information activities. These include treating quality as indicative of the uniqueness of something beyond a high standard, excellence (or consistency), a tool to achieve a goal, financial value, or transformation (qualitative changes) (Harvey & Green, 1993). In the case of information activities, the most useful approaches treat quality as striving for perfection by achieving successive levels of maturity and as a tool to fulfill the stated or implied information needs of users (Derfert-Wolf, Górski & Marcinek, 2005).

Therefore, the most important factor and tool for the successful implementation of an IS is the existence of a community of users willing to use it (Shareef et al., 2011). Phenomena such as acceptance, diffusion (spread), and maturity of IS depend on the decisions of users to use these systems. While the technological development and diffusion of networked information systems of all kinds seem undeniable, the willingness of potential users to use them can sometimes be debatable.

The role of users and their needs in evaluating IS has been emphasized in the ACRL (Association of College & Research Libraries, USA) standards. According to these standards, the assessment of information systems is based on three grounds:
- inputs, seen as the raw materials of information activities – money, space, collections, equipment, and personnel;
- outputs, values used to quantify the work done, e.g. the number of advice given to users, the number of visits to the website, etc.;
- outcomes identify how information users change as a result of their exposure to information resources and services.

The assessment of the first two points can be conducted in various ways by analyzing objective quantitative indicators. However, the third point is the most crucial as the assessment of outcomes heavily relies on the user's perspective. The analysis of inputs and outputs provides an overview of the library's functioning, while the assessment of outcomes mainly aims to determine user satisfaction. It encompasses several dimensions such as services, instructions, resources, access to resources, staff, facilities, communication and collaboration, administration, and budget. This article focuses primarily on this sphere.

The purpose of the article is to present and combine various tools and models for assessing the quality of new information technologies (IT) emerging in various sciences and research environments, while describing the conditions for IT success measured by acceptance. Acceptance of IT is defined as an innovation process with user acceptance and system maturity being its significant aspects (Drljevic, Aranda & Stanchev, 2022). Acceptance is a decision-making process determined by the user's attitudes, values, and intention to use the IS (Alomary & Woollard, 2015). It directly impacts the diffusion of the IS. Maturity is understood as the successive stages of evolution that users go through in a complex information environment. It indicates the level of application of each new aspect of activity in the process (Wendler, 2012). Integrating the level of acceptance and maturity helps understand user behavior and levels (stages) of the innovation diffusion process, which is essential for sustainable and successful implementation of IS. The article focuses on the listed features of ISs: diffusion and acceptance (outcomes) and maturity (input/output), and particularly the relationship between them, described in the first three parts of the article. The fourth part presents the assessment of maturity models (MM) of research data services (RDS) as an example of organizational and technological innovation using the achievements of the information technology acceptance theory/model (TAM) from the previous parts of the article.

Answers were sought to the following research questions:
(1) What are the relationships between theories functioning in the field of implementation and acceptance of new ITs?
(2) Can the simultaneous (integrated) application of these theories facilitate the evaluation of new ITs to predict their success?
(3) Is it possible to use different assessment tools built separately within each of these theories?
(4) Is it possible to evaluate RDS maturity models using TAM structures and assumptions?

The search for answers to these questions is based on developing a conceptual model of the studied phenomena and then applying it to selected examples of RDS as parts of information systems. The resulting model is a way of expressing a particular view of an IS, with special emphasis on RDS. This procedure is the research method adopted in this work.

In the following parts of this article, we will present the relationships between various theories and models that have emerged in different research environments regarding the development of IT. We will begin by discussing the issue of IS maturity and its models. Next, we will present the theory of innovation, especially in the field of IT, and models of the diffusion of these innovations. We will then discuss information technology acceptance models with a particular emphasis on different types of TAM, mainly TAM3. Importantly, we will present a modification of the TAM model that takes into account the place of the MM. The next part will present the relationship between the previously discussed models: diffusion of innovation, acceptance of technology, and maturity of the IS. We will also introduce an element of the Gartner[1] hype cycle. The last chapter before the conclusions will present the practical use of the described relationships between theories and models to assess the completeness of six selected models of RDS maturity.

2. Theories and models used

In this section of the article, we present basic data on the maturity of information systems, IT innovation, and IT acceptance models based on a literature review.

2.1. IS Maturity

In information and library science, a lot of attention is given to the quality of information services and methods of assessing appropriate quality (Głowacka, 2009; Heath, 2011; Hufford, 2013). Several tools have been developed to measure the effectiveness of information activities, ranging from simple questionnaires to complex tools such as SERVQUAL and its derivative LibQUAL+, which is better suited to the specificity of library services (Hiller, 2001; Kiran & Diljit, 2012). LibQUAL+ is used to assess user satisfaction by measuring the differences (gaps) between three levels of maturity: minimum, actual, and optimal (expected) quality of information services, determined in three dimensions, divided into 22 parts (Jankowska, 2006; Kamath et al., 2022). Despite the widespread use of these types of tools worldwide, they are subject to criticism. From the viewpoint of commonly used theories, LibQUAL+ measures the level of disapproval rather than the attitude of the user, based on the service quality gap theory (Mauri, Minazzi, & Muccio, 2013), and therefore does not coincide with the views expressed in accepted economic, statistical, and psychological theories (Buttle, 1996).

These and many other works have led to the belief that the culture of cooperation in the field of evaluating information activities has reached full maturity

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1 https://www.gartner.com/

(Hart & Amos, 2018). Despite such an extensive literature on the assessment of information activities, the issue of maturity in information processes has not found much interest among information scientists. Several works concern the maturity of libraries, including digital ones (Wilson, 2015; Hart & Amos, 2018; Thorpe & Howlett, 2020; Yang, Zhu, & Zhang, 2016; Sheikhshoaei et al., 2021). This is surprising because the study of maturity in the field of IT began in the early 1990s in the field of software engineering with the creation of the Capability Maturity Model (CMM) (Paulk et al., 1993). This model has since been used in other areas and organizations to assess the level of capability and maturity of critical processes, such as project management (Crawford, 2006), information management (Keshavarz & Norouzi, 2022), or health information systems management (Gomes & Romao, 2018).

The CMM has five maturity levels: initial, repeatable, defined, managed, and optimizing. Each level represents a measure of the effectiveness of any process or program, from immature processes performed ad hoc to fully mature processes that are continuously improved. The CMM defines the criteria and characteristics necessary to reach a certain level of maturity. Actual activities are compared in detail based on the designated criteria with a description of each maturity level, which allows determining the level of maturity that best suits the current state of the system, carrying out its audit, and setting directions for development. Data on higher, yet unachieved levels of maturity allows setting a path for system improvement (Becker, Knackstedt, & Pöppelbuß, 2009). It also becomes possible to objectively compare organizations and their ISs at different levels of detail.

However, comparisons in this area are hindered by a differentiated understanding of both the concept of maturity and the model of maturity. Maturity is defined, among others, as

– a detailed process to clearly define, manage, measure and control the evolutionary growth of the individual unit being assessed (Paulk et al., 1993);
– a state in which the organization is perfectly capable of achieving the goals it has set for itself (Anderson & Jessen, 2003);
– evaluation criterion or state of being complete, perfect, and finished (Fitterer & Rohner, 2010);
– a concept, an idea that is developed from an initial state to a final (more advanced) state, i.e., to higher levels of maturity (Sen, Ramammurthy & Sinha, 2012);
– evolutionary progress in the manifestation of specific capabilities or the pursuit of a designated goal (Mettler, 2009).

Maturity models are a tool for measuring the level of maturity, which are also defined in various ways, for example, as:

– a set of successive levels that together form an assumed or desired logical path from the initial state to the final state of maturity (Pöppelbuß & Röglinger, 2011);

 – tools used in evaluating the maturity level of specific elements and in selecting appropriate actions to bring these elements to a higher level of maturity (Kohlegger, Maier & Thalmann, 2009);
 – an evaluation framework that allows an organization to compare its performance with best practices or competitor practices while defining a structured improvement path (Korbel & Benedict, 2007);
 – a tool for examining the current capabilities of the organization, supporting the introduction of continuous changes and improvements in a structured way (Jia et al. 2011).

This diversity of meanings, resulting from differences in defining the objectives and objects of MM, is the reason for the creation of many models in the same area of application. It implies different possible paths of development towards an individually defined state of maturity. But apart from the differences, all maturity models are similar in their structure: they define a number of assessment dimensions considered at several levels of maturity; the resulting matrix contains descriptions of activity features with varying levels of detail (Mettler, Rohner & Winter, 2010). The basic elements of these models are as follows:

 – a number of levels (usually three to six);
 – a description of each level (like levels from initial to optimizing in the CMM example);
 – a general description of the features of each level as a whole;
 – a certain number of dimensions (e.g. process areas in the CMM);
 – a certain number of items or activities for each dimension;
 – a description of each element or activity that can be performed at each maturity level.

The concept of using maturity models has been criticized for its weak theoretical basis among other things (Biberoglu & Haddad, 2002). The creation of models is based on good practices in a certain area and/or elements considered by practitioners as contributing significantly to success, making the selection of these factors subjective. Compliance with the model, even at its highest level, does not guarantee the success of an organization; it means that the organization has reached the designated standard of service or product, which may not be accepted by users/customers[2]. Therefore, attempts to combine maturity models with technology acceptance models described later in the article.

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2 Acceptance is understood as a positive decision to use a technology, product or process based on behavioral factors. It is determined by the user's attitudes and values and is closely related to behavioral intention (Drljevic, Aranda, & Stantchev, 2022).

2.2. *Innovativeness of information technology and its diffusion*

According to Schumpeter (1934), innovation is a significant change in the production function consisting of a combination of production factors different from previously used and occurring in a discontinuous manner. Schumpeter distinguished innovation from invention, stating that a new scientific idea, an invention, is transformed into an innovation when it is implemented and adopted in practice[3], for example, in business. This means that the creation of knowledge, an invention, is distinct from innovation, which is the introduction of knowledge to production and dissemination (diffusion of innovation). Innovation always means change, as it involves new or improved ways of doing things. Thanks to them, new ideas can have a significant impact on organizations and the social environment (Bucciarelli, 2015). Positive changes in the previous state may result from the use of new technologies, knowledge, or materials (Oslo Manual, 2005). Therefore, the constant growth of human capabilities, the building of the potential for change, and the gradual maturation of applied solutions are the main assumptions of this theory. Interesting connections can be observed between the theory of innovation and the development of maturity in organizations and their IS (Staniszewska, 2015).

The diffusion of innovation and its theory, advocated by Everett Rogers (2003), plays a significant role as an information process. Diffusion is the process by which innovation is communicated through specific information channels over time between members of a social system. Rogers presented the innovation life cycle by distinguishing five categories of users implementing innovation. Innovators (2.5% of the market) implement innovation first, they are young, prone to risk, and have sufficient financial resources. Early accepters (13.5%) are the most opinion-forming group, they are young, educated, have a high social status, and do not switch from novelty to novelty like innovators. The early majority (34%) accepts innovation after a long time, adapts more slowly to changes, and is not opinion-forming. The late majority (34%) accepts the innovation after half of the community of potential users accepts it. Its members are skeptical about innovation and financially weaker. Laggards (16%) accept innovation last, do not like changes, are older, financially weak, respect tradition, contact only a closed group of family and friends, and are not opinion-making. At the point of exceeding the critical mass (16% of the market), technology meets the basic needs of users. From this point on, technology as such loses its importance and the functionality of the solutions used in its products, i.e., the so-called perceived usefulness of the innovative technology, becomes more important.

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3 Adoption is an innovation process whose main aspects are acceptance and maturity. The degree of adoption is determined by the extent to which the technology is accepted and incorporated into approved business practices.

Rogers (2003) also identified factors that influence the level of innovation diffusion. He listed the following factors: relative advantage, complexity, compatibility, trialability, and observability. Compatibility refers to the degree to which innovation is considered compatible with the values of potential users, their previous experiences, and their needs for similar technologies. Complexity refers to the user's perceived level of difficulty in understanding the innovation and how easy it is to apply. It has a significant negative effect on the intention to use the technology. Relative advantage refers to the degree to which an innovation is considered better than the idea it replaces. It is recognized as one of the best predictors of the use of innovation. Trialability refers to the ability to test innovations on a limited scale. Observability refers to the ability of other people to see the results of innovation (Lou & Li, 2017). A review of the literature indicates that, of these five constructs, three (relative advantage, compatibility, and complexity) are the most appropriate to describe the level of acceptance of an innovative technology (Shareef et al., 2011; Gilbert et al., 2004). These features are also taken into account in technology acceptance models, which are described later.

Geoffrey Moore argued that there is a boundary (critical mass point) between early acceptance and early majority that many technologies cannot reach. Critical mass occurs at the point where the number of people accepting the innovation is so large that further dynamics of innovation growth are maintained spontaneously (Moore, 1991, 16). After exceeding it, for most users, technology becomes a secondary matter and, above all, they are looking for appropriate functionality (convenience, reliability, low costs) of solutions. Exceeding the critical mass results in the rapid development of technology and the dissemination of its products.

Innovation diffusion processes are also related to disruptive innovations (Christensen, 1997) and creative destruction theories, which describe the fate of technologies replaced by innovation. Disruptive innovations result in a product that is simpler (easier to use) and more affordable. The damaging effect is that managers compare the profitability of investing in a new business model with the profitability of an existing and operating model. This makes them find the innovation business model less attractive. In the meantime, new market participants appear who do not have such a choice and have to create a business from scratch. If they manage to create an accepted innovative product, it causes a (sometimes violent) disruption of the old technology market.

2.3. *Models of information technology acceptance*

The theory of innovation emphasizes the critical importance of the level of acceptance of new technology, e.g., IT, by potential users in creating the market for products utilizing this technology. The success of a new product on the market depends on its level of acceptance, exceeding the critical mass. IS creators have studied the

possibilities of utilizing models built in the field of psychology to describe intentions as a potential theoretical basis for research on the behavior of users of innovative systems. Martin Fishbein and Icek Ajzen (1975) formulated the Theory of Reasoned Action (TRA), which they later developed (Fishbein & Ajzen, 2010, 20) and modified into the Theory of Planned Behavior (TPB) (Ajzen, 2011). Korpelainen's review (2011) found that the Diffusion of Innovation (DOI), TRA, TPB, Technology Acceptance Model (TAM) (Davis, 1986; Davis, Bagozzi, & Warshaw, 1989; Venkatesh & Davis, 1996), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis, & Davis, 2003) are the most cited theories on technology acceptance (Nahotko, 2014, 54). These theories have their roots in cognitive psychology, which asserts that a small number of variables can explain a significant part of the variability of any behavior in any population. Specifically, these models indicate that the intention to exhibit a behavior is causally (though not necessarily rationally) based on the specific beliefs that people hold about those behaviors, and this intention can be the basis for predicting behavior.

The TAM provides for two forms of motivation for the use of technological innovation: extrinsic and intrinsic. Extrinsic motivation relates to the need to achieve a result separate from the technology itself, such as using technology to improve work efficiency. Intrinsic motivation leads to the use of technology for its own sake (Lin, 2007). Acceptance of technology is understood as the willingness of a group of users to use IT to perform the tasks for which it was designed to support (Dillon & Morris, 1998, 5).

Based on these assumptions, Davis (1985) proposed that user motivations should be explained using three main factors: perceived ease of use (PEU[4]), perceived usefulness (PU[5]), and attitude towards usage (ATU). Note that these constructs are comparable to the elements of the innovation diffusion theory described earlier: PEU with the complexity of innovations, PU with relative advantage, and ATU with the compatibility of the IS with the beliefs, values, and attitudes of the user influencing his/her behavior.

The model was also used by other researchers who introduced modifications (usually new variables), resulting in TAM becoming the basic model used to explain and predict the *acceptance* (use level) of IT systems. Despite these modifications, the original version of the TAM remains relevant for general applications where there is no need to consider application-specific variables. It has become so popular that it is quoted by most authors dealing with the issue of acceptance of ITs, although it is also criticized (Lee, Kozar, & Larsen, 2003; Chen, Li, & Li, 2011, 125).

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4 PEU is defined as the degree to which a person believes that using a particular system will be effortless.

5 PU is defined as the degree to which a person believes that using a particular system will increase his/her productivity.

3. Theories integration: towards a unified model

In this part of the article, we will integrate the previously described models, namely MM and TAM, using the modeling method, which allows learning about complex systems and structures of the 'real world' by building their representations. Due to the similar goals and elements of the models, it is possible to identify their commonalities. On the other hand, because the models adopt different points of view (e.g. the user's perspective in TAM and the system designer's perspective in maturity models), they can complement each other in creating a comprehensive image of the IS and assessing its chances of success (achieving maturity). By integrating the models, we can also take into account the role of user needs and significant features of the IS itself, predisposing it to success, understood as its diffusion.

The process of integration concerns the highest level of modeling, i.e. merging phenomena related to the acceptance and maturity of IT. Therefore, the acceptance model used can be replaced by other similar ones without the need to change the general principles. For further discussion, the model known as TAM3 (Venkatesh & Bala, 2008) was chosen because in this variant of TAM the relationship between the level of IS acceptance and maturity is the most evident (Fig. 1). This model allows for external variables related to IS design features. The individual difference variable pertains to personal and demographic characteristics (e.g., age, gender, occupation, experience) that may influence the individual perception of PU and PEU. System characteristics are particularly interesting for assessing the maturity of the IS. These are important design features of the system that can help users understand its usability or ease of use. Social influence refers to various social processes and mechanisms that affect users' perceptions of the usable aspects of IS. It can be more or less voluntary (Zuiderwijk, Janssen & Dwivedi, 2015). These factors significantly affect the diffusion of innovation. For example, women pay more attention to evaluations from others than men (Venkatesh, Morris & Ackerman, 2000). The impact of social influence should decrease with experience, which forms the basis for making decisions about accepting the system (Baishya, Samalia, & Joshi, 2020). Facilitating conditions represent organizational support (organizational and technical infrastructure) that facilitates the use of the IS. Institutional support in the implementation and use of IS plays an essential role in this area, enabling the acquisition of appropriate skills and knowledge.

Together, these four variables determine the level of technology maturity. However, the mere level of technology maturity is not sufficient for success. To achieve success, the sufficiently strong motivation of users is also necessary, which, of course, to some extent, results from the design features of the system, but not exclusively. We must also take into account the characteristics of individual users of the IS.
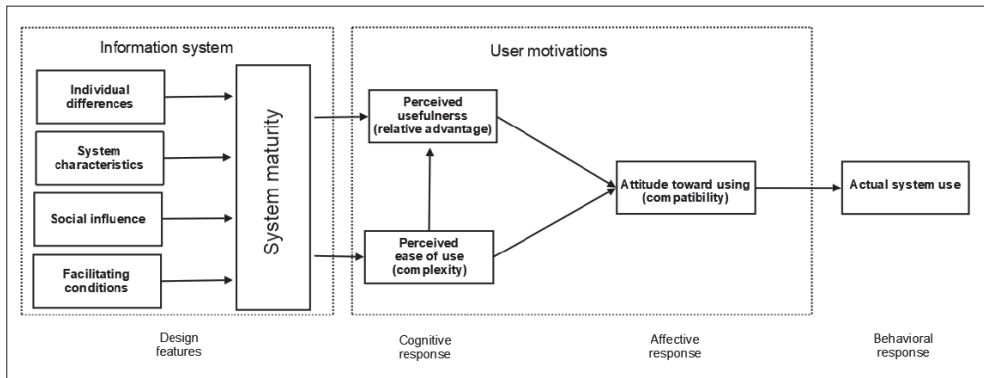
Fig. 1. The TAM3 model, taking into account the features of the IS affecting its maturity.
Source: own elaboration based on (Davis, 1985, p. 24; Venkatesh & Bala, 2008).

The maturity of IS, which are a type of social system, is strongly related to the concepts of innovation, improvement, and excellence (Mettler, 2011), described above. These relationships can be explained based on the work of Rogers (2003) and Utterback (1971), who examined conditions that increase or decrease the likelihood of acceptance of a technology, idea, product, or service.

According to the model of Utterback and Abernathy (1975), the development of each innovation follows the S curve (see the graph on the left in Figure 2). Innovation usually arises as a result of many small successive improvements to a product, service, process, or organizational rules. Over time, innovation goes through many successive levels of maturity. The stage of shaping disruptive innovation is particularly interesting when dominant solutions (i.e., commonly recognized standards or practices) become recognizable and used by the majority of members of the target group of users. Dominant solutions do not have to be perfect or even better than others; what is essential is that the acceptance of innovation becomes maximum (see the right side of Figure 2).

In the development of maturity models, recognizing the state (stage) of innovation is crucial, especially when the model has a prescriptive function. For innovations introduced to the market, the level of their maturity may be completely unknown, as there is no dominant solution in this area yet. The proposed improvement activities, although very useful at this stage, are often made based on intuition and previous, sometimes inadequate, experience, which is one of the reasons for mass innovation failures at this stage. In the case of mature innovations, their level of maturity and thus also the essential characteristics are known, but the possibilities for improvement are insignificant. Therefore, they can be considered artificially forced as they do not bring significant benefits. Similar reasoning can be applied to the diffusion of innovations, presented in the right-hand part of Figure 2. After reaching the maximum innovation diffusion point, further

improvement and pushing for a more mature product do not bring the expected results; on the contrary, they can lead to creative destruction and missed opportunities related to a new innovation introduced to the market.

When defining the level of maturity for a specific IS, it is necessary to reach a compromise between the state of uncertainty as to the success of the innovation and its actual diffusion, the measurement of which helps estimate the probability of the innovation's success. Such careful behavior when applying the MM makes it easier to obtain credible, but not too obvious, conclusions, which can help plan specific improvement actions.

The red line in Figure 2 (left side) indicates the Garner Hype cycle (Jayasundra, 2021). This model describes the development of technological innovation in five stages: technology trigger, peak of inflated expectations, trough of disillusionment, slope of enlightenment, and plateau of productivity. The most interesting phase is the third one, the trough of disillusionment, when early adopters begin to look more soberly at the possibilities of innovation, getting rid of the excitement and hype that are very strong in the second phase. This is a breakthrough moment when many adopters of technology may become more attached to it or abandon it. In the third stage, many IT users, including enterprises and entire industries, abandon the new technology, recognizing that negative opinions indicate that the technology is approaching the end of its life. According to this model, innovation develops from excessive enthusiasm of the first users, through disappointment, to final realism. This model, together with the Rogers model, provides the basis for distinguishing factors that determine the success of innovative technology.
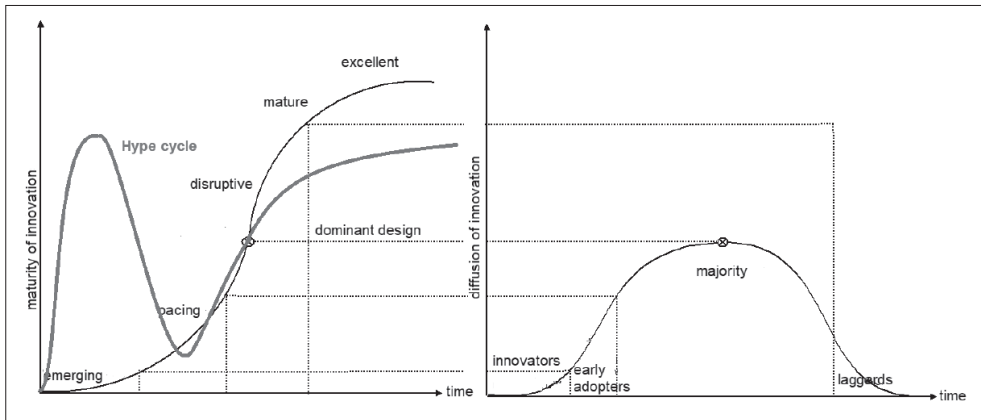
Fig. 2. Relations between maturity, perfection, and diffusion (acceptance) of innovation
Source: Prepared by the author based on (Mettler, 2011; Lajoie & Bridges, 2014).

Successive levels of maturity should lead to a state called organizational excellence, which includes the excellence of its IS. Such an IS is part of an environment

that ensures continued operational success, understood as functioning in the best interest of both the system and its users. Maturity is therefore one of the conditions for achieving excellence. Paradoxically, as shown in Fig. 2, achieving perfection in the use of a particular technology carries with it the potential for failure: it means the declining stage of its application, as it is soon replaced by other innovative solutions, initially not as perfect, but with functionalities previously unavailable. This innovation matures in subsequent stages of development, again striving for perfection.

It can therefore be said that maturity means organizational capabilities that must grow over time to enable the efficient operation of the IS (achieving success), while excellence means achieving and maintaining the highest level of information services, accepted by both the creators of the system and its users. The MM is thus a step-by-step roadmap to excellence (Looy, De Backer & Poels, 2011). The maturity models of ISs typically describe the standard behavior of a person or organization at a certain number of predefined levels of maturity for each of several dimensions and procedures considered useful to achieve the next level of maturity (the assumed goal). It follows that maturity refers to the organization of the system, while excellence refers to the results obtained from that organization. Maturity models are used to increase the organizational capacity of the system to meet the information needs of users. Reaching excellence consists of achieving the assumed results by improving organizational efficiency. However, in these activities, the preferences of users related to the degree to which they are ready to accept new ITs meeting their information needs should not be forgotten.

4. Towards practice: completeness of RDS maturity models in the light of TAM

The relationships between the diffusion of IS innovation, its acceptance, and maturity presented in the previous subsections have been experimentally tested using the example of research data services (RDS). RDS is a relatively new and innovative type of information activity that has already piqued the interest of many authors of MM in this area. This diversity makes it possible to compare them with each other and with other types of models. The growing role of research data in science, which is becoming increasingly data intensive, collaborative, and computer-based, has led to the need for new methods of data collection and representation to improve computer support and online, open community development (Murray-Rust, 2008).

RDS is provided as part of Research Data Management (RDM) performed in science institutions in various organizational configurations, but usually with the participation of the library, which plays a more or less leading role in this respect. These activities include typical information tasks such as documentation,

organization, storage, and sharing (Kim, 2021), but their specificity is related to the subject of these activities, which are research data. The need for RDM arises from the desire to ensure the availability and reuse of mass-produced research data. However, as in the case of all products of scientific activity, such as publications, scientists are experts in substantive research activities, but they do not necessarily have knowledge about managing information and data sets created in research processes and they do not need to have it. In the context of research data, this results in the need to organize a relatively new type of information services, namely RDS. These services cover a spectrum of RDM activities, including training and advice for researchers in the field of data management plans (DMP), required by research funding agencies. Creating a DMP requires educating researchers on good data management practices, which is often carried out as part of training courses organized by libraries.

Thanks to the digital and networked environment, indirect research results, such as research data, can be made visible and disseminated (Dempsey, 2017). A very important area of activity is the creation and operation of specialized IS, research data repositories, which have diverse organizational bases and institutional legitimacy. These repositories usually have a three-tier architecture consisting of file-based data storage, a metadata database, and a web interface facilitating access to data (Curdt & Hoffmeister, 2015). Repositories are a tool to facilitate data curation for their dissemination and reuse. Interoperable metadata collected in repositories for documenting and describing research data is an essential tool for proper data curation.

The area of issues related to research data is diverse and can be studied from many points of view, such as economic, social, technical, institutional, operational, political, and legal (Zuiderwijk, Janssen & Dwivedi, 2015). Due to this diversity of solutions in the RDM area, RDS maturity models are also created from different perspectives (Nahotko, 2022, 15). The RDS MM mentioned below were included in the research described later, and the variety of goals of these models was considered an advantage of this juxtaposition, as it made it possible to take into account the different points of view of their creators. From the point of view of the main application of RDS MM, the models used in the study can be divided into the following.

– Models created in the library community:
  • Cox et al. (2017) pointed to the urgent need to create mature services and research data activities, as very few extensive RDS have been found. Initially, library responses are focused on 'compliance' in response, for example, to funder mandates. Libraries, for the research community, should also create 'capacity' in areas such as RDM training. The authors foresaw the need for increasing requirements for re-engineering of organizational structures and business processes in the future. Libraries that

have a long tradition of playing the trusted stewardship role for traditional (printed) materials can now create new data repositories in a similar way.

- Cox et al. (2019) expanded and modified the earlier model. Four levels of development remained, but the lowest was marked as zero. Audits and surveys may be undertaken at this level. Level 1 (compliance) includes formal policy combined with advisory services. Level 2 (stewardship) is associated with the creation of a repository and associated services. At the top level (transformation) library services are being transformed for support high-level analytic services.

- The model Kouper (2017) was based on empirical analyzes services of ARL[6] libraries. In order to develop strong and mature RDS a library needs to have the following: a mission consistent with institutional mission; services matching user needs; qualified and dedicated staff; strong relationships with other units on campus and with other institutions; established policies that guide data collection, sharing, and use. Based on these themes, eight key areas of maturity were formed: leadership, services, users and stakeholders, research life cycle support, governance, cost and budgeting, cross-unit collaboration, and human capital. Compared to the CMM, the number of maturity levels has been reduced from five to three.

– Models used in the research process: Qin, Crowston & Kirkland (2014) proposed CMM for the RDM model, a modification of CMM key elements: key practices, key process areas, maturity levels, and generic processes, for RDM needs. In effect CMM for RDM includes five chapters describing five key process areas for RDM: data management in general; data acquisition, processing and quality assurance; data description and representation; data dissemination; repository services and preservation. In each chapter, key data management practices are organized into four groups according to the CMM's generic processes: commitment to perform, ability to perform, tasks performed, and process assessment (combining original measurement and verification). For each area of practice, the document provides a rubric to help projects or organizations assess their level of maturity in RDM.

– Models related to specific fields of science, like environmental protection: Peng et al. (2015) identified nine key components that are relevant to scientific data stewardship, which compose the maturity matrix. They are: preservability, accessibility, usability, production sustainability, data quality assurance, data quality control/monitoring, data quality assessment, transparency/traceability, and data integrity. For each component, a five-level progressive maturity scale is defined to assess stewardship practices applied to individual datasets, representing the Ad Hoc, Minimal, Intermediate, Advanced, and

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6 ARL – Association of Research Libraries (USA and Canada – https:// www.arl.org).

Optimal stages. This model ensures digital environmental data users needs, who are asking for data to be dependable in terms of quality and production sustainability, to come from credible, secure, and authoritative sources, to be easily and publicly accessible online, and to be easily usable in a standard-based common data format with relevant documentation.

– Models tailored to the needs of the selected country, like Canada: Fry et al. 2021 proposed MAMIC, the RDM Maturity Assessment Model in Canada. The model has two roles: first, to ascertain whether or not the different areas of the research data life-cycle are being supported; and second, to understand who is responsible for the different areas. The model consists of four tables for different categories (institutional policies and processes, IT infrastructure, support services, and financial support), and each category contains specific elements to assess. The assessment is calculated based on a 5-level scale, with the highest rating representing strong maturity for the element and lower ratings indicating possibilities for improvement (or gaps).

The research described below aims to demonstrate the possibility of evaluating the quality of RDS MM in terms of the completeness of their structure. As mentioned in the second part of the article, MMs are matrices of maturity levels and assessment dimensions, which are the areas subject to assessment at each of the distinguished levels. The first step was to compile a list of these features for the existing RDS MM. These matrices for each examined RDS MM are summarized in Table 1. Individual RDS MM were assigned their dimensions, ranging from three to nine, and levels, depending on the model, from three to five.

According to the TAM3 model (shown in Figure 1), the features of an information system that affect its maturity, and subsequently the decisions of its users regarding its usage, are individual differences, system characteristics, social influence, and facilitating conditions. Subsequent research aimed to assess the degree to which these features were taken into account in the structures presented in Table 1. To accomplish this, the dimensions (shown inside the matrix) included in selected RDS maturity models (matrix rows) were assigned to the features of the information system from the TAM3 model (compare design features in Fig. 1) in matrix columns. The result of this assignment can be seen in Table 2.

The primary challenge encountered during assigning dimensions of MMs to TAM3 design features was the lack of unambiguous definitions for dimensions and the arbitrary terminology used by the authors of the RDS maturity models. To match dimensions to design features, it was often necessary to refer to the descriptions of each element or action/process that can be performed at each subsequent maturity level, that is, the content of the maturity model matrix. However, also these descriptions sometimes did not provide clear definitions. Among the MMs used, only MAMIC contained explicitly defined dimensions. Additionally, it was found that some activities and processes were repeated in different

dimensions of the same maturity model (cf. Peng et al., 2015), which further complicated the process of clearly defining dimensions and assigning them to the appropriate design features. Analysis was also necessary to isolate dimensions that were named differently in different models but described the same or similar features of the RDS.

Tab. 1. Models used in the study

No.	Model name and author (date)	Key areas (dimensions)	Levels (quantity and names)
1	2	3	4
1	Cox et al., 2017	Policy and governance Service (advisory/technical) development Staff deployment and skills	Level0 None
			Level1 Basic
			Level2 Developing
			Level3 Extensive
2	Cox et al., 2019	Policy Services Support	Level0 None
			Level1 Compliance
			Level2 Stewardship
			Level3 Transformation
3	Kouper, 2017	Leadership Services Users and stakeholders Research life cycle support Governance Cost and budgeting Cross-unit collaboration Human capital	Basic: Foundation building
			Intermediate: Organization and standardization
			Advanced: Monitoring and optimization
4	Qin, Crowston, Kirkland, 2014 (CMM for RDM)	Data management in general Data acquisition, processing and quality assurance, Data description and representation Data dissemination Repository services and preservation	Level1: Initial
			Level2: Managed
			Level3: Defined
			Level4: Quantitatively managed
			Level5: Optimizing
5	Peng et al., 2015	Preservability Accessibility Usability Production sustainability Data quality assurance Data quality control/monitoring Data quality assurance Transparency/traceability Data integrity	Level1: Ah hoc, not managed
			Level2: Minimal, managed limited
			Level3: Intermediate, managed defined, partially implemented
			Level4: Advanced, managed well-defined, fully implemented
			Level5: Optimal, level4 + measured, controlled, audit

1	2	3	4
6	Fry et al., 2021 (MAMIC)	Institutional policies and processes IT Infrastructure Support Services Financial Support	Level0: Does not exist or do not know
			Level1: The element is not formalized or is ad hoc
			Level2: Element is under development
			Level3: Element is operationalized and launched
			Level4: The element is robust and focuses on continuous evaluation

Source: own study.

Tab. 2. RDS maturity model dimensions

Design features Maturity models	Individual differences	System characteristics	Social influence	Facilitating conditions
Qin, Crowston, Kirkland, 2014 (CMM for RDM)	–	Data acquisition, processing and quality assurance Data description and representation Data dissemination Repository services and preservation	Data management in general	–
Peng et al., 2015	Usability	Preservability Accessibility Usability	Production sustainability Data quality assurance Data quality control/monitoring	Transparency/ traceability Data integrity
Kouper, 2017	Users and stakeholders	Services Research life cycle support	Leadership Governance Cross-unit collaboration	Cost and budgeting Human capital
Cox et al., 2017, 2019	–	Services	Policy and governance	Staff skills
Fry, 2021, (MAMIC)	–	IT Infrastructure	Institutional policies and processes	Support Services Financial Support

Source: own study.

The data presented in Table 2 shows that not all design features of the IS are represented equally in the MMs. The RDS maturity models focus the most on system characteristics, with 11 dimensions dedicated to technical features of the RDS. In second place is social influence, with nine dimensions related to RDS

management, leadership, policies, and cooperation at various levels. Facilitating conditions appear 7 times, covering issues such as human resources, finance, and support services. Individual differences dimensions, which include issues related to RDS users, appear only twice.

Overall, this means that the RDS MMs prioritize the technical features of these services and their functioning in the information environment, with less emphasis on the problems of users' needs, particularly their individual needs. The most evenly distributed dimensions in relation to design features were found in the Kouper (2017) and Peng et al. (2015) models, which filled all design features of the TAM3 model. At the other end of this continuum is the Qin, Crowston, and Kirkland (2014) model, where the dimensions concern only the two most frequently used design features: system characteristics and social influence. Perhaps this is due to the conviction that the technical features of IS properly designed are sufficient for its acceptance. Models such as TAM and research using them prove otherwise.

It should be emphasized that the differences shown here do not necessarily result from mistakes made by the authors of maturity models. On the contrary, they may be the result of adjusting the model to the needs and tasks for which it was designed. The matrix presented in Table 2 indicates those design assumptions that were considered the most important by the authors of the MM. Knowledge of this choice makes it easier to decide on the use of a specific MM based on the design priorities set during its creation. In other cases, the analysis may support the process of updating and modifying the MM to supplement its structure.

Comparing the dimensions of RDS MMs with the design features of the TAM3 technology acceptance model reveals deficiencies in the structure of the former. These deficiencies may have resulted from design decisions or insufficient consideration of the features of the RDS information system. In any case, the comparison presented in Table 2 allows for the identification of gaps in the proposed RDS MM that should influence design decisions. Method used to create the Tab. 2 can be treated as a universal tool for evaluating all types of MM, all types of IS, allowing their creators to consciously direct attention to selected areas, recognizing others as less useful in a specific application. The mere creation of a new, better MM was not the goal of the author of the article because it is very dependent on the field and area of application. Therefore, two, even significantly different, MMs in the same area can both be useful due to the practical needs for which they were created.

5. Conclusions

Models that represent the level of novelty and complexity of IT systems are necessary to understand technology acceptance and its maturity and often ambiguous

relationships between them. Both of these indicators, in turn, influence the successful and sustainable application of an innovative information system. Understanding the motivations of stakeholders to accept or reject technological innovations is critical in determining the success of a particular technology in the market. Moreover, it is important to understand how technological innovation reaches maturity for organizational management decisions.

The models and theories used in the article are complementary and both the user (outcomes) and the system's (input/output) characteristics must be considered for a successful IT implementation. Maturity models primarily focus on the characteristics of IT, but the technology user and their needs should always be taken into account. Technology acceptance models, on the other hand, start from the user's needs but cannot disregard the technical features of innovative solutions. Otherwise, a technologically mature system may not be accepted by the targeted users. Therefore, combining both points of view gives the best results. What is more, their consistent use makes it easier to assess the usefulness of each of the tools, which was presented in the article on the example of RDS.

This indicates that the theories and models outlined in the article share many common features, making them easily combinable. Their combined use enables a multifaceted assessment and analysis of new ITs, allowing for a more accurate determination of the technology's stage in its life cycle and the probability of success in the next stages. Additionally, they complement each other by presenting different perspectives on the same processes and issues. The greatest benefit thus lies in their integrated use, which enables a multilateral analysis of the current IT situation and forecasting its development, affecting the level of acceptance. Such multifaceted analyses could also help to minimize errors during the implementation of new ITs, which are often associated with significant financial losses.

At every level of RDS maturity, the service developers should take into account users' views on their technological and psychological ability to use RDS, which is one of the most important factors allowing the development of beliefs, attitudes, intentions, and final acceptance of RDS, which can be estimated by such IT acceptance models as TAM. It is therefore important to take into account auxiliary factors that increase users' technological and psychological capacity to use RDS. Online services should be flexible, easy to navigate and download, and completely accessible. The maturity of RDS is not only in their extensive functionality. Technological assistance for users should be ensured, which gives hope for an increase in their mental motivation to use RDS.

The presented results may have practical implications for project management teams and for management strategies development for future RDS implementations, taking into account the perspective of RDS users on their usefulness and ease of use. In terms of RDS development, research may have practical implications for future planning and design of RDS solutions in relation to the main

determinants of their implementation in organizations such as libraries. RDS solutions should take into account the role of the maturity of these services in the institutions providing them.

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Integracja modeli dojrzałości i akceptacji technologii informacyjnych: przypadek RDS

Abstrakt

Cel/Teza: W artykule przedstawiono trzy metody ewaluacji innowacji technologicznych, ze szczególnym uwzględnieniem innowacji technologii informacyjnych, takich jak systemy i serwisy informacyjne. Metody te obejmują ocenę dojrzałości, dyfuzję innowacyjnych technologii informacyjnych oraz ich akceptację przez użytkowników. Celem jest wskazanie na komplementarność tych metod, co czyni właściwym ich zintegrowane stosowanie.

Koncepcja/Metody badań: Wykorzystano dwa rodzaje teorii uwzględniających punkt widzenia zarówno twórców technologii informacyjnych (modele dojrzałości technologii), jak i użytkowników (modele akceptacji technologii). Podjęto próbę wskazania podobieństw pomiędzy tymi modelami umożliwiających ich łączne stosowanie. Zaprezentowano łączne stosowanie tych modeli na przykładzie modeli dojrzałości serwisów danych badawczych (RDS). Przeanalizowano sześć modeli dojrzałości RDS dostępnych w literaturze przedmiotu, badając ich kompletność przy użyciu modelu akceptacji technologii (TAM).

Wyniki i wnioski: Wykazano możliwość integracji modeli stosowanych do oceny SI. Przedstawione podejście badawcze pozwoliło na ocenę badanych modeli dojrzałości z punktu widzenia potrzeb użytkowników RDS, wpływających na poziom ich akceptacji. Wyniki wskazują, że istniejące modele dojrzałości RDS niewystarczająco uwzględniają potrzeby i punkt widzenia użytkowników tych serwisów, utrudniając ich akceptację.

Oryginalność/Wartość poznawcza: W artykule zaprezentowano nowy punkt widzenia na ocenę systemu informacyjnego służący integracji dwóch, stosowanych dotąd metod oceny SI: modeli dojrzałości i modeli akceptacji innowacyjnych technologii informacyjnych. Zaproponowano połączenie obu metod dla uzyskania bardziej spójnego i uniwersalnego narzędzia badawczego.

Słowa kluczowe

Akceptacja systemu informacyjnego. Dojrzałość systemu informacyjnego. Innowacyjność systemu informacyjnego. Usługi danych badawczych. RDS.

MAREK NAHOTKO, dr hab. prof. uczelni, zatr. w Instytucie Studiów Informacyjnych Uniwersytetu Jagiellońskiego. Jest kierownikiem Zakładu Metodologii Badań Informacyjnych. Doktorat uzyskał na Uniwersytecie Wrocławskim (2002), habilitację na Uniwersytecie Warszawskim (2012). Specjalizuje się w zagadnieniach organizacji informacji i wiedzy, metadanych dokumentów elektronicznych oraz w stosowaniu internetu, dokumentów elektronicznych i danych badawczych w komunikacji naukowej i procesach informacyjnych. Najważniejsze publikacje obejmują książki: Teoria gatunków w organizacji informacji i wiedzy (Kraków, 2018), Komunikacja naukowa w środowisku cyfrowym (Warszawa, 2010), Naukowe czasopisma elektroniczne (Warszawa, 2007), Opis dokumentów elektronicznych. Teoretyczny model i możliwości jego aplikacji (Kraków 2006), Metadane. Sposób na uporządkowanie Internetu (Kraków, 2004). Opublikował także wiele artykułów w naukowych czasopismach informatologicznych, takich jak Journal of Academic Librarianship, Cataloging & Classification Quarterly, Annals of Library and Information Studies, Information Research, ZIN, Przegląd Biblioteczny, Zagadnienia Naukoznawstwa.

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Early career researchers in art, humanities and theology at the time of external crises – in light of the first round of longitudinal interviews of spring 2023

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Abstract

Purpose: This paper describes the impact of external crises, i.e. the pandemic, the war in Ukraine, inflation and the reform of science and higher education on the work of early career researchers.

Methods: The respondent group comprised early career researchers in humanities, theology and art. A qualitative analysis of free statements provided in the first round of in-depth interviews was performed. The Polish project (2023-) is a continuation of two international Harbingers projects, which included longitudinal interviews with early career researchers and dealt with changes in technology (2016–2018) and the pandemic (2020–2022).

Results: Quotations from the interviews conducted in spring 2023 were used to describe the impact of external crises on the work of early career researchers in the three fields of science. The interviewees usually mentioned being overworked, sometimes – undervalued and, less frequently – the feeling of professional burnout. Financial problems of the young generation of Polish scientists were also brought up.

Value: An attempt was made to characterise the conditions of work of Polish early career researchers in art, humanities and theology.

Key words

Early career researchers. Humanists. Scientists-artists. Theologians. Pandemic. War. Inflation. Reforms of science and academia. Poland.

1. Introduction

This paper presents characteristics of Polish early career researchers' opinions on the impact of several external crises on their research and teaching activities.

The empirical part of the study was carried out as part of the Polish continuation (project NCN No. 2022/45/B/HS2/00041) of two international analyses of scholarly

communication as seen by early career researchers before (Harbingers 1: the years 2016–2019) and during the pandemic (Harbingers 2: 2020–2022). Whereas the international study concerned science and social science researchers, the current study focuses on arts and humanities.

External circumstances always have a great impact on scientists all over the world, as shown by the findings of six rounds of Harbingers longitudinal interviews conducted annually for several years in eight countries: the USA, the UK, Spain, France, Malaysia, China, Russia and Poland – owing to this paper author's membership of the international research team led by prof. David Nicholas of CIBER Research Ltd. The first three interview rounds (in 2016, 2017 and 2018) revealed the significant impact of technological progress on changes in scholarly communication, which manifests itself in the increasing importance of the open access movement, social media and virtual research teams. The next three interview rounds conducted during the pandemic (in 2020, 2021 and 2022) demonstrated that forms of online communication have become widespread in the world of science (online conferences, online teaching) but that this also applies to alternative scientific information sources, e.g. Research Gate, and illicit services, such as Sci-Hub.

The aim of the Polish continuation of the Harbingers project, i.e. the interviews started in early spring 2023, is to examine the impact of other external events on early career researchers' work. The latest round of interviews as part of the Harbingers 2 project in Poland, i.e. in spring 2022, revealed a shift in the respondents' attention from the pandemic to the war in Ukraine, which did not manifest itself in the interviews in the other six countries (Russia was excluded from the project at the time, as required by the founder, Alfred P. Sloan Foundation). Hence, this paper addresses not only the ongoing pandemic and the war across the eastern border but also the economic situation in Poland, which is partly influenced by these factors. It encompasses topics such as inflation and the domestic reforms pertaining to science and higher education.

There are reports in the literature on the subject, focusing mainly on one of the external crises mentioned above, e.g. the feeling of professional burnout (Nicholas et al. 2022; Karwowski 2021; *Interdyscyplinarne...*, 2022; Donina et al., 2022). This paper is an attempt to look more comprehensively at how researchers in the three non-analysed fields of science functioned during a period of overlapping external crises.

2. Study organisation

All parts of the Harbingers project use the same methodology, with longitudinal interviews as its main part, i.e. annual conversations with the same respondents in groups of twenty people in each of the eight countries mentioned above. This

is a great opportunity to observe changes in the attitudes and behaviour of researchers and to compare them within countries, sexes, professional status and within time intervals. The interview questionnaire, with its core unchanged since 2016, has been described in several publications (Świgoń, Nicholas, 2023, 2017) and on the research centre's website (http://ciber-research.com/harbingers.html).

The interviews are recorded and, after they are transcribed, sent by e-mail to the respondents for completion. The questionnaire contains close-ended, semi-open-ended and open-ended questions (a total of over 50). The record is manually coded using a heuristic approach and a standardised thematic framework. This paper employs a qualitative response analysis (Mayring, 2000) to several semi-open-ended and open-ended questions in the questionnaire related to the crises and the feeling of overworking, being undervalued and professional burnout. This is supplemented by a quantitative analysis, i.e. the number of affirmative, negative or inconclusive responses (yes/no/yes and no).

The following research questions were formulated:
– Do various external crises have any impact on the research/art activity of early career researchers?
– Do early career researchers feel overworked, undervalued or professionally burned out as a result of these external crises and the reorganization of work caused by them?

The group of respondents comprises 25 researchers in arts and humanities of various public institutions of higher education around Poland. These include 19 doctors and 6 doctoral students – 15 females and 10 males. Numbers were used to maintain the respondents' anonymity (humanities: 2,3,4,8,9,10,13,14,15,16,17, 18,19,25; theology: 6,7,20,22,24; art: 1,5,11,12,21,23). Minor editorial changes were made in the quotations, e.g. replacing elements of descriptions which could potentially make it easy to identify a person or removing sensitive data (e.g. on attending therapeutic sessions). A full list of the responses was made available in the repository of open data (https://doi.org/10.18150/XSMX1M).

3. Study findings

3.1. External crises

3.1.1. Pandemic Covid-19

The question about the impact of the pandemic on the respondents' research activities was, in fact, a question about the past because no epidemic restrictions were in force in Poland at the time when the interviews were conducted, i.e. in spring 2023. Basically, the respondents focused on the negative effects of the pandemic

(12 people) or, with hindsight, perceived the positive effects of changes in communication from direct to online forms (13 respondents).

The impact of the pandemic on work in artistic fields was more complex. On the one hand, cultural life died down at the time, but on the other, it was also a time of the rapid development of various streaming-supported forms [12].

> *I kept receiving calls about the concerts being cancelled. At one time, streamed content became popular, i.e. video recordings of concerts and their "live" broadcasts.* [1]

> *For many industries (tourism, gastronomy), the pandemic was a time of uncertainty and even despair, while for me, it was a very good period. I cooperated with Netflix, and I had a lot of work from them. People did not return to the cinemas as soon as the pandemic ended, which is why the streaming platforms produced much more than before the pandemic. We had our hands full.* [21]

The difficulties encountered by artists-researchers during the pandemic were related to restrictions in business trips and forced online communication, which, however, had its merits.

> *I had to move forward with my foreign scholarship by six months (...) My foreign contacts expired, but I hope this is only temporary. We had remote student classes, which had negative consequences for the teaching quality. The pandemic had a positive impact on digitisation and the more common use of tools for online meetings, which is a positive thing.* [5]

> *Due to the pandemic, I couldn't present a vernissage in a traditional form – I had to do it as a 3D tour (...). Teaching on the Internet is difficult, but it presents one with new challenges and motivates one to seek different tasks than before (...).* [11]

> *We had to edit the film remotely. Work on sound and video editing was delayed because this is not as effective when done remotely as working directly with the editor. Certain procedures had to be followed on set, which made our work difficult (...).* [23]

Humanists were not bothered by online research work because, basically, they continued to work on their studies. But they were affected by online teaching [2] [3] [8] [17]. They talked about the negative impact on their relations with students [9] and on doing teamwork with students [4]. Certain good sides of online work platforms can be demonstrated by the fact that they are still used as supportive and sometimes as the main form of work with students [25].

Online teaching provided one with an opportunity to learn something new – a new method of conducting classes with new teaching aids (...). The pandemic did not restrict my research work, and it surely motivated me to learn about new technologies and issues and to share my skills with others. [13]

The negative impact on research work involved mainly preventing one from going on work-related trips, including conducting library and archive searches [16] [19] [15] [17]. The usefulness of remote services provided by libraries was appreciated [14], but this was not always sufficient.

The pandemic hindered historians' access to archives and to libraries, which stayed closed for a long time, and we simply couldn't continue most of our research. [9]

On the one hand, the pandemic slowed down my activity, as I had done my work in museums and archives, which were closed at the time (about a year of delay). On the other hand, I do remote work now (new opportunities). [10]

Humanists brought up the issue of online conferences, which were only a different form for some [13], but which presented a difficulty for others [18].

Online conferences are not the best option for building a network of scientific contacts. [25]

One cannot ignore the respondents' personal issues, including those that involve looking after sick persons or after children.

This was aggravated by problems with looking after a small child when the kindergarten was closed during the pandemic, and we had to have online classes from home or do our research work. In fact, for two years, I couldn't focus on my work. I didn't do even half of what I had planned at the time. [19]

This part is concluded with a humanist's statement on post-pandemic changes in the labour market.

The Covid pandemic changed the reality around us. We were forced to switch to the online mode of work. Now, the home office is nothing special, e.g. for programmers, in "the school in the cloud" or other similar solutions. People want to work from any place in the world and are not bound to one place. [4]

The majority of the theologians emphasised the positive aspects of working from home. Although they mentioned some inconveniences, the time of the pandemic was a good period for their research work, reading the literature on the subject and writing their publications.

Paradoxically, except for online teaching, the pandemic had a positive impact on my scientific work. Due to the lockdown, I had more time than usual for my scientific work and for preparing my publications. [24]

Paradoxically, it helped me greatly (...) with certain things that seemed impossible to do, which proved easier when you work from home. This is, for example, about meetings, which took place on very convenient teamwork platforms – all you had to do was choose the time. In effect, I was able to do more than I had thought (...). [20]

The pandemic provided me with various subjects for my publications. I looked not only for research ideas but also for various ways of reaching scientific materials through the web, not only on-site in libraries and archives. Moreover, the pandemic opened new opportunities for online work with students. [22]

Apart from these basically positive statements by theologians, there were some concerning difficulties with trips, reaching sources and meeting other scientists.

The pandemic prevented scientists from going to scientific internships, international conferences and Erasmus+. There were also some obstacles concerning inter-library book loans and participation in library searches. [6]

We lacked contacts with other scientists and acquaintances established in conference corridors. Online conferences involved rather passive listening to the lectures. [7]

3.1.2. War in Ukraine

Unlike the questions about the pandemic, the questions about the impact of the war in Ukraine on the respondents' scientific activity concerned the present. The analysis of the responses revealed their different distribution than in the case of the pandemic, although there were also two out of the three categories of responses. There were more affirmative (15) than negative responses (10) concerning the impact of the crisis on scientific activities, and there were more negative responses compared with the other crises taken into consideration in the interview questionnaire.

The highest negative impact of the war beyond the eastern border was visible in the researchers' mental sphere (no classification according to the field of science was applied in this part).

The war behind the eastern border affected me personally because a female friend of mine is Ukrainian. She is still in Ukraine. Moreover, I have students from Ukraine, so the war is a great mental burden for me. [2]

The war has a great impact on people's psyche, because artists also work on emotions. [23]

The respondents mentioned their own diverse involvement in helping Ukrainians, from material to scientific.

Initially, charity concerts were very popular. I took part in three, the income from which was transferred to foundations providing help to refugees. [1]

I went abroad to provide help there. I believe that helping someone who experiences such a tragedy is something more important than one's personal or scientific development. I had to take some time off, so I had a break from scientific activities. [20]

I support Ukrainian researchers by cooperating with them. I filed a joint grant application with a Ukrainian. [18]

Some interviewees were prevented by the war from carrying out their scientific enterprises [11] [14] [19].

We have concluded a cooperation agreement with the University in Lviv, but I can't carry out my internship and research plans there because of the war. [6]

The war has prevented historians from conducting any research on the history of Ukraine. Moreover, it hinders completing the research on the history of Polish lands in the 19th century because some sources from the times of partitions are kept in archives in Petersburg and in Moscow, which have been closed to us since 24 February 2022. [9]

Many foreign research programmes have been discontinued because of the war. I had to cancel many foreign trips. This war is taking place very close to us, and I think everyone is waiting for it to end. [12]

Several statements were indicative of a greater impact of the war on the respondents' teaching than scientific work [25] [11] [23], as in these quotations:

The war did not have a direct impact on research work. However, it did have an indirect one by teaching students who were affected by the war. Some of them were prevented from participating in lectures by the war. [22]

One of its effects is an increase in the number of students from Ukraine in Poland, which necessitated a certain kind of flexibility (on the part of the lecturers and the university). This diversity of nationalities among students is a great

advantage. On the other hand, the number of Erasmus students from other countries in Poland decreased. [5]

Another respondent talked about the impact of the war on practical activities.

Those who commissioned work began to act more conservatively, for example, reducing production or even withdrawing from Poland, which had an effect on our earnings in those projects. During the pandemic, I had several commissions at the same time, there was one project after another, but things have slowed down since the war broke out, the number of commissions is smaller, and their financial conditions are worse. [21]

As was mentioned earlier, for ten respondents (40%), the war has not had – at least up till now – a direct impact on their work [3] [4] [7] [10] [13] [15] [16] [24].

I would rather go west, for example, to Germany, for scientific purposes. [17]

The war does not affect my scientific work because recently I haven't been dealing with the subjects I used to deal with some time ago when I had to go to St. Petersburg. [8]

3.1.3. Inflation in Poland

The impact of a high domestic inflation rate (in double digits at the time when the interviews were conducted) was felt by a large majority of the respondents (21 people, 84%). Few of the respondents (4) denied such an impact.

Obviously, the main problem was related to low pay and doctoral scholarships received by Polish scientists [5] [9] [16] [17], and the inflation made their poor financial situation worse. This is associated with reforms in science and higher education, which did not result in significant pay rises in this sector.

Salaries at Polish public universities are relatively low, and when they rise, it does not make up for the effect of inflation (for example, a pay rise of 7–8%, with an inflation rate of 20%). The purchasing power of our salaries decreased greatly, which is of particular importance for young scientists, who have to find extra jobs to get extra income. [21]

I'm deeply dissatisfied with an assistant's salary at a Polish university. My first pay (...) *– and I had just defended my doctoral thesis – was like a slap in my face. Even before the inflation it was outrageously low, and now it's even worse.* [2]

The financial situation of young scientists in Poland deteriorated even more. We look ridiculous in comparison with our colleagues from the West. If Polish

scientist doesn't get a grant or other commissioned work by themselves, it's difficult for them to maintain a satisfactory living standard. [19]

Many early career researchers admitted that having to look for extra work reflected negatively on their scientific work.

The assistant's salary – and young researchers in humanities often start at this point – is very low, and those people simply must take extra jobs, which also affects their scientific work because, for example, instead of working on a publication, they are busy doing the other job. [3]

I must do one and a half jobs, that is, apart from working at the university, I have an extra job. Which means that I have much less time for my scientific work. [8]

If it wasn't for the fact that I'm employed at another place, I couldn't support myself on the doctoral scholarship alone. In general, it's a difficult situation because I have to choose between the duties of a doctoral student and my duties in the other job. And the professors and my scientific supervisor were not always too eager to accept my explanations (...) My fellow doctoral students also must look for extra paid jobs to maintain an acceptable living standard. [20]

The inflation greatly increased the cost of going to conferences (accommodation, journey costs and conference fees) [4] [6] [13] [18] and many other scientific undertakings, such as search trips to other towns, text translation and artistic events (cost of concert or exhibition organisation) [1] [12] [23].

I minimised the trips to archives and museums in Poland for financial reasons. I couldn't afford a week-long research visit to a large city in Poland. [10]

During an economic crisis, art is always less important when funds are concerned. [11]

It's difficult to do one's research when you have no money. The financial schedule for the grant was prepared 4–5 years ago, and now it's all insufficient today because of the inflation (train tickets, accommodation – all the prices have increased). [19]

Funding in philosophy and in Polish science, in general, is very poor. There are not enough funds for translating publications into English, I have to spend my private money, and translation rates are increasing. The salary increases at the university to compensate for inflation were not too large. Luckily, I don't work

as an assistant, but as a lecturer [adiunkt], which entails a higher pay, but it's still below the national average. [25]

The price increases also had an impact on research work because (...) the participation cost for various conferences and domestic and international meetings have increased. When it comes to the increasing fees, for example, for participation in conferences, I can only say that online conferences, which have become common since the pandemic broke out, are a good thing because you can invite professors and experts from abroad, which we couldn't normally afford. [22]

Finally, this incidental mention of the positive aspect of the finances can be expanded by adding that of those four people who did not feel the negative effects of inflation on their scientific activity [15] [7], two explained: *Because I've been taught to live a frugal life and I never complain about money.* [24] *Currently, I'm on a scholarship from abroad* [14].

3.1.4. *Reforms in science in Poland*

Although reforms in science and higher education have been underway for a long time, this generation of early career researchers is affected to the greatest extent by the "Constitution for Science", introduced in 2018. Respondents brought up issues related to it, such as changes in science classification and changes in doctoral education, and also financial issues. In this section, only four people definitely denied the impact of reforms on their work, whereas the others either confirmed it (14 respondents) or pointed to various negative effects of the reforms (7). A great emphasis was placed on low salaries, which have been discussed in the previous section (on inflation) and further in the findings section (i.e. one concerning feeling overworked and undervalued).

Changes in the **classification of sciences** applied to three fields dealt with in this study, but humanities most of all, at least in light of the responses obtained. The inconveniences were related, for example, to an inability to assign oneself to a specific discipline, which affects one's teaching and scientific work.

Introducing a new classification of sciences has had a great impact on my research work. I work in a city where the discipline which I'm interested in and which is associated with my study major was not parametrised at any university. In consequence, I had to be added to a different discipline in the doctoral school of my university (...) I also encountered some difficulties in selecting the subject for teaching. [4]

I couldn't write my doctoral thesis in ethnology, from which I graduated, because it was not included in the Polish classification of sciences in 2018–2022. [10]

I'd like to be assigned to a larger number of disciplines, not just to one. On the other hand, one is convenient for my superiors, my university, and my department. [18]

The following are opinions of early career researchers assigned to Polish language studies, isolated in December 2022, who declared two other disciplines earlier.

I chose two other disciplines before the Polish language studies, which was not good for me because I had to get a sufficient score in both. Polish language studies fit better by research interest. It was also beneficial for other reasons, that is, because I will no longer have to publish in English in periodicals abroad. This concerns appreciating the national philology (which is also typical of other countries) and the fact that Polish language studies seem to be a broader formula than literature studies or linguistics. [13]

Polish language studies suit me as a discipline to which I assign all my achievements. Because if I were assigned to two disciplines, I would have to divide my achievements and have high-scoring publications in both. In other words, I can't be a so-called "N zero" (with no publication for four years), that is, a burden on one of the disciplines. And I can assign – in accordance with the rules – 20% of my achievements to a different discipline. I'd like to add that it is not a good idea to have to assign oneself to a specific discipline. [19]

The opinions of the respondent theologians on the changes in their scientific discipline were very interesting – they were consistent in their uncertainty regarding the isolation of biblical studies (it is noteworthy that no early career researchers in this discipline were found in the Rodon database when the respondents for these interviews were sought).

I find it reasonable that a separate field of theological sciences exists. On the other hand, dividing theology into components (theological sciences and biblical studies), which was done close to the end of 2022 by the minister's decision, is not a good idea. I'm afraid that biblical studies are going to "thin down" theology. [6]

Regarding isolating the biblical studies, I don't understand why this particular sub-discipline was isolated from the theological sciences, as this could have been done with several others. [24]

I've heard opinions that isolating two disciplines within the field of theological sciences, i.e. biblical studies and theology, is not quite a good solution. There are fears about keeping a high category in the next parametrisation. Researchers in biblical studies have greater opportunities to publish in internationally

renowned periodicals than other scientists in this field. This is why it would be easier to work on one account, with one category A+ for one discipline. Isolation of biblical studies in the sense of declaring it by researchers has just started, not only in my university, but also in others. It's difficult to say how many representatives will ultimately be assigned to the new discipline (...). [22]

Apart from changes in the classification of sciences, there are some **other changes** of importance to some respondents in the three fields of science under study concerning doctoral education, promotion and researcher evaluation.

Among those welcomed were the replacement of previous doctoral studies with doctoral schools [9], and changes in scientific promotion [5], whereas changes in transitional provisions met with negative opinions [2].

Replacing previous doctoral studies with a new formula for doctoral schools is a good idea. I can compare them both because I started work at the time, and I interrupted my doctoral studies in the old system. The present system of doctoral education is better than the previous one. It may be more difficult to get admitted to a doctoral school now than in the past, but those who succeed have better opportunities, which I didn't have. There's also an obligatory scholarship. [20]

The promotion path in teaching, which was introduced by these science and higher education reforms, is also noteworthy. One can become a professor at a university without habilitation. [21]

A different procedure concerning appointing the board and reviewers. I was in doctoral studies, which were transformed into a doctoral school. There were a lot of ambiguities about the dates and the procedure for the defence of doctoral theses. [11]

Some respondents who commented on the score evaluation of scientific and scientific-artistic activity had only negative opinions.

Regarding the reform of higher education, I'm against evaluating scientists by granting them points. This, for example, applies to low-score conferences, where participation is not profitable because there are very few points one can get from them. Such reforms are not beneficial to the scientific development of early career researchers. [20]

Constant changes in the score for periodicals, for example, a sudden change from 20 to 70 points, are dispiriting. [25]

Like most staff in our university, I was employed as a researcher and a teacher, but some have been transferred to teaching jobs because of the university parametrisation. (...) According to the ministerial regulation, only the functions of director, set designer, costume designer, editor, producer, production manager and the actor/actress in the main role can be regarded as authors, and this can be regarded as an artistic achievement, for which one can receive a ministerial score in an evaluation of artistic achievements (...) the regulation ignores the artistic contribution of such professionals as the digital image technician, make-up artist or camera operator. [21]

This part is concluded by a statement from a respondent who critically summed up the issue of reforms at Polish universities.

I think that the education reforms in Poland, higher and general education, are very harmful. (...) If my work was guided by the ongoing changes in the law and the rules of academic promotion, I could not do my work at all. This would mean the total paralysis of any research initiative. I believe that universities in Poland are no longer research or educational institutions, but bureaucratic ones. (...) These constant curricular changes, changes to the entire course of study, this instability – all this is worrying both for us and for the students.[24]

3.2. Feelings of overwork and burnout

The questionnaire contained questions about the work reorganisation in connection with these external events and also about the feelings associated with 1) being overworked, 2) being undervalued and 3) professional burnout.

Online teaching and other forms of working from home were definitely the most common reasons for reorganisation at the workplace, and they were mentioned in nearly all responses (except one). References to the war in Ukraine were the least frequent (2 people). Financial issues, the economic crisis and inflation (6 times) and science reforms, including changes in science classification (8 times), were mentioned about a dozen times in this part of the interview.

Apart from online teaching, there were no changes caused by the pandemic. The reforms brought about a lot of changes in my faculty, e.g. several departments had to merge to make bigger teams. [7]

New personnel hiring at my university was blocked because of the economic crisis. Changes in the science classification prevented me from preparing a doctoral thesis in the field in which I'm most interested. [10]

As many as 18 people (72%) gave an affirmative response about feeling **overworked**, and only seven people gave a negative response. The reasons for that, as mentioned by the respondents, included difficulties in finding the right balance between scientific work and: teaching [24], administrative duties at the university [7] and an extra job [5], [11], taken not only out of necessity but also out of the need for professional practice useful in teaching [23].

> *I do several jobs, I'm a pianist, and I'm also a researcher who has research, teaching and administration duties. My professional activities are a network of communicating vessels. In my opinion, feeling overworked as a result of too many professional duties is a standard these days.* [12]

> *I'm permanently overworked. It's not only about the two jobs but also about many organisational duties at the university* (...). [13]

> *I'm overworked. I, and other early career researchers, am required to be committed to organisational activity, for example, helping in the promotion of study majors and coming up with new ideas and initiatives as an organiser of artistic and scientific projects.* [15]

> *In order to be a good teacher, one has to be a practician, involved in various projects all the time. In other words, it's not just doing an extra job to earn some extra money, but gaining new experiences, which we then pass on to students during classes or workshops. I'm personally tired of commuting for such a long distance* (...) *and of so many classes. It's exhausting. Unfortunately, there is professional exploitation in non-university work, and producers want to get as much as possible from performers and to pay for it as little as possible.* [21]

> *Definitely, especially that the bureaucratic restrictions, for example, applying for internal funding for book purchase or publication translation, require time and commitment at the expense of our scientific work and* (...) *we have to prepare new monographic lectures* (...) *again at the expense of the research work.* [25]

> *The doctoral school is highly demanding, and I have to balance it against my work duties, so yes, I'm overworked.* [17]

The reasons for feeling overworked, as mentioned by the respondents, included caring and family duties [19] [23]. Several respondents mentioned feeling overworked during the pandemic [8] [18] or continuing online meetings after the pandemic [9].

> *I was overworked during the pandemic, and I felt something like "mind overheating" – on the one hand, you could do a lot of things at home during the*

pandemic, but on the other, our employers and superiors expected more from us than we were actually able to do, and even you had to do several things at the same time (...). [20]

One of the seven short responses, which denied feeling overworked, was given during a foreign scientific internship programme.

I didn't, and I still don't feel overworked. I've always wanted to work at a university, I'm satisfied. [14]

The responses to the question about feeling **undervalued** were divided into more or less equal parts (11 people, 44%, in each) of those giving an affirmative and negative response. The remaining three people were not so much undecided, as they distinguished between being undervalued in terms of one's skills and being undervalued financially [2] [9], as in the following passage:

I win international contests, and I'm highly valued around the world. I'm invited to conferences and workshops abroad. Financially, as a university employee, I feel undervalued. When I compare my salary with the salaries of my foreign colleagues or with the budget for creative activity, I'm deeply frustrated. [5]

Among the reasons for feeling undervalued, 11 respondents in the three fields of science mentioned: low pay at the university [8] [21], absence of a permanent contract [10] [16] [18]; feeling undervalued artistically and scientifically [1] [11] [12] [21], generally, internal crises blocking creative work [1]. Two people mentioned having gone through psychotherapy sessions. The following responses mention other reasons for feeling undervalued, such as failures to receive a grant, being assigned to a different discipline or the hierarchical system at universities.

The situations associated with grants and pressure to publish in high-score periodicals are stressful. My expectations regarding future scientific work were too high during my doctoral studies, and I'm sometimes disheartened when my application for a scientific grant is rejected. It seems to me that if I fail to get a grant twice, my next attempts will not be successful either. [6]

Since I was assigned to a different discipline than I wanted, I feel a little undervalued, a little unwanted (...). All of this makes me feel like a "misfit". [4]

Polish universities are still ruled by a hierarchical system. (...) the approach to doctoral students at universities abroad is different. There, such a student can be a partner – maybe "inexperienced", but still a partner. In the Polish scientific world, we are often treated condescendingly. [14]

The absence of a feeling of being undervalued was mentioned more often in theology (four out of five respondents) than in art (one out of six) and humanities (six out of fourteen).

> *This is an internal, individual matter. If you have such an inner feeling of being appreciated, you don't need any proof from outside, such as praise from your superiors or awards. I work because of my sense of mission.* [22]

> *My salary is adequate for my work. I meet with kindness in my work, and I can count on help, support and good words.* [24]

> *I don't need extra appreciation from the outside. I don't have to be a scientist. If this work doesn't suit me, I'll quit. (...) Researchers in science, medicine or legal sciences are in a better position, as their work has effects on the economy. Humanities are often regarded as ballast. Obviously, this is wrong and shortsighted.* [19]

The proportions of people with(out) **professional burnout** were different, i.e. the number of those denying such feeling was the largest, i.e. 17 (68%), six of them gave an affirmative response, and two gave an inconclusive response.

The following opinion is one of those expressed by a majority – about the absence of professional burnout.

> *I think this is the kind of work in which – with a proper approach – you are not so much susceptible to burnout as in other jobs. And this is thanks to the large extent of freedom enjoyed by the university staff.* [19]

The feeling of **professional burnout** was associated mainly with the time of the pandemic and online teaching [4] [6] [7] in combination with other problems, including poor professional prospects [9] and the feeling of being overworked, which in turn is caused by the need to have an extra job.

> *I worked only on contracts of mandate and, at the same time, I was writing a doctoral thesis without having a scholarship. I had to support myself, so I took different jobs. I had a feeling of burnout then, and the pandemic only deepened it. Now I have my first contract of employment, for a limited period, but it's a good thing all the same. Nevertheless, I take on various jobs because I must practice all the time in my speciality.* [18]

> *When you go to an artistic university, you imagine that you'll work hard, become an artist and create art (...). Meanwhile, with these artistic ambitions, you graduate, and no one's waiting for you. You just get low-profile projects. It's very rarely the type of "content" you can call art without embarrassment. When*

(…) you work 12 hours a day (…), professional burnout comes early – I lose my health, I don't see my child, soon thoughts come: what's the sense of all this? [21].

Two inconclusive responses [16] [25] were rather typical of researchers-teachers because one of them has a feeling of burnout because of the continued teaching at her university, and the other – an intensive period of scientific work.

4. Conclusion

This paper presents the opinions of early career researchers in three fields of science: humanities, theology and art, on the external circumstances under which they conduct their scientific and artistic activity.

In conclusion, one must observe that although all the "external crises", i.e. the pandemic, the war, the economic situation as well as the reforms of science and higher education, had an impact on the feeling of being overworked, undervalued, and the feeling of professional burnout in early career researchers, the financial aspects, associated with the two crises, i.e. the reforms at universities and a high inflation rate, were the dominant factors. It seems that increasing doctoral scholarships as well as salaries of assistants and lecturers [adiunkt] would release them from having to seek extra jobs and would allow them to focus on scientific work. The respondents were satisfied with isolating Polish language studies in the science classification and with replacing the old form of doctoral studies with doctoral schools. Regarding the pandemic, certain positive aspects were noted in this global drama, e.g. the convenience of online forms of communication within academic circles. On the other hand, conducting online lectures, which is done at some universities, was met with negative comments. The war in Ukraine is associated with a mental burden, which hinders creative work. It has also brought about an increase in the number of female students from Ukraine in Polish universities.

In general, a large majority of the respondents admitted that they felt overworked (72%) when they started work, and a considerable part (44%) felt undervalued. A quarter of the respondents confirmed having a feeling of professional burnout.

This analysis was limited – especially with reference to the past and future international initiatives of the Harbingers team – by the fact that the group of respondents was only from one country, which does not allow for the generalisation of the conclusions. However, although not too numerous, the group is sufficiently representative to provide a picture of difficulties encountered by the present generation of early career researchers in Poland, at least in these three fields of science. Incidentally, these fields of sciences were outside the scope of interest of the international project founders, which is significant in the context of the study findings presented in this paper, especially underfinancing early career scientists-artists and humanists.

Open Data

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Początkujący naukowcy w dziedzinach artystycznych, humanistycznych i teologicznych w Polsce w dobie kryzysów zewnętrznych – w świetle pierwszej rundy wywiadów podłużnych z wiosny 2023 roku

Abstrakt

Cel: Opisano wpływ kryzysów zewnętrznych, tzn. pandemii, wojny w Ukrainie, inflacji i reform nauki i szkolnictwa wyższego na pracę badaczy rozpoczynających swoje kariery naukowe.

Metody badań: Grupę respondentów stanowili początkujący badacze z nauk humanistycznych, teologicznych oraz dziedziny sztuki. Przeprowadzono jakościową analizę swobodnych wypowiedzi z pierwszej rundy wywiadów pogłębionych. Polski projekt (2023-) jest kontynuacją dwóch międzynarodowych projektów Harbingers, które obejmowały wywiady podłużne z młodymi naukowcami w kontekście zmian technologicznych (2016–2018) oraz pandemii (2020–2022).

Wyniki i wnioski: Wykorzystując cytaty z wywiadów z wiosny 2023 roku, opisano wpływ kryzysów zewnętrznych na pracę początkujących badaczy z trzech dziedzin. Najczęściej w tej grupie przyznawano się do odczucia przepracowania, czasami – niedowartościowania, rzadziej – wypalenia zawodowego. Wybrzmiały problemy finansowe młodego pokolenia polskich naukowców.

Oryginalność: Podjęto próbę scharakteryzowania warunków funkcjonowania polskich badaczy rozpoczynających kariery w dziedzinach artystycznych, humanistycznych i teologicznych.

Słowa kluczowe

Początkujący naukowcy. Humaniści. Naukowcy-artyści. Teologowie. Pandemia. Wojna. Inflacja. Reformy nauki i szkolnictwa wyższego. Polska.

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Research on digital culture (cyberculture) – knowledge domain analysis based on bibliographic data from the Web of Science database[1]

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Abstract

Purpose/Thesis: The author's aim was to assess the state of research on 'digital culture / cyberculture' by analysing the knowledge domain. The second aim was to compare the results obtained through a simple analysis of bibliographic data from the Web of Science database with the results of data mapping and visualisation in CiteSpace.

Originality/Value: The knowledge domain 'digital culture / cyberculture' is relatively new. Research in this field is conducted mainly within the humanities, social sciences, and information technology.

Results and conclusions: A relatively small group of researchers makes noticeable contributions. However, different methods of analyzing the same set of bibliographic data lead to different conclusions. Research based on bibliographic data can only be a foundation of a complete analysis of the knowledge domain.

Keywords

Digital culture. Cyberculture. Knowledge domain analysis. Bibliographic data. CiteSpace. Web of Science database.

1. Introduction

For several years, the number of scientific publications on digital culture, also called cyberculture, has been steadily growing. However, as Stacey Koosel has observed, the digital culture research community has not yet developed a unified

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[1] This article presents the second part of research on methods for identifying the state of digital culture research. The first part of the research is described in the article: Zbigniew Osiński, Application of knowledge domain analysis to recognize the state of research on digital culture. Possibilities and problems as exemplified by Scopus database, "Przegląd Biblioteczny", 2022, no. 4.

coherent discourse or a paradigm, nor a standard research methodology (Koosel, 2011). Digital culture is studied within many different disciplines, with methodologies drawn from fields as far apart as computer science, humanities, and social sciences. The issues related to digital culture are addressed by representatives of the arts, philosophy, ethnography, psychology, cultural anthropology, media semiotics, sociolinguistics, as well as computer science. In these circumstances, it is a real challenge for scientists to keep up to date with research on digital culture (cyberculture). The first obstacle to forming a comprehensive assessment of the current scholarship is the multidisciplinarity of digital culture as a research field. The other is the relatively fast increase in the number of scientific publications. Fortunato et al. estimate that, on average, the volume of scholarship doubles every 15 years (Fortunato et al., 2018). Keeping track of scientific publications related to any topic becomes increasingly difficult. International and multidisciplinary bibliographic databases come to aid – the Web of Science and Scopus, which have been functioning for years, as well as the relatively new Dimensions Digital Science. These databases allow scholars to obtain selected bibliographic data of publications related to any research issue.

Methods based on bibliometrics and data visualization can help to assess the state of research on digital culture. The research presented in this article may be useful both to researchers interested in the subject of digital culture and to science managers. Both groups might be interested to realize that the same bibliographic data may suggest a different state of research on a given topic, depending on the adopted method of analysis. Science managers reading the article will find insights that may help them revise their approach to the use of bibliographic data in evaluating the systems of scientific institutions and their employees. To the best of the author's knowledge, no bibliometric analysis of the interdisciplinary knowledge domain "digital culture / cyberculture' has been carried out so far. Nevertheless, it is worth mentioning that a thematically similar knowledge domain, i.e. intangible cultural heritage, was analysed basing on the data obtained from the Web of Science database (Su et al., 2019). The authors used the visualisations generated by the CiteSpace software to investigate co-citations, distinguish thematic clusters, and establish networks of scientific collaboration.

Embarking on an analysis of any interdisciplinary knowledge domain, the researcher faces a significant challenge: how to acquire up-to-date and reasonably thorough knowledge of the state of research when it is very likely that the recent publications are scattered across books and journals devoted to diverse, often distant scientific disciplines? A partial solution is to refer to a multidisciplinary and worldwide bibliographic database, Web of Science, which facilitates access to information on scientific publications. It is well-known that this database includes only a part of 'academic production', and that in the humanities and social sciences, this fragment is relatively small (compared with, for example, medicine or science). A study

conducted by Philippe Mongeon and Adele Paul-Hus has proved that, compared with Ulrich's database (the most complete list of journals and serial publications worldwide), Web of Science indexes only a dozen percent of journals in the humanities and social sciences. The other global and multi-domain database, Scopus, offers a very similar set of bibliographic data, while worldwide specialised bibliographic databases in the humanities and social sciences do not exist (Mongeon & Paul-Hus, 2016). To analyse any knowledge domain in the humanities or social sciences, one has to assume that the data retrieved from the Web of Science (or Scopus) database capture at least the global, dominant trends in scholarship, thanks to selecting the most representative and influential publications. The author is aware of these databases' limitations, but he remains convinced that currently there is no more complete bibliographic database which would collect the data concerning the subject of digital culture / cyberculture. The choice to make the Web of Science the source of the data used in the study described in this article has been determined by the choice of the CiteSpace program for bibliographic data analysis. The data format processed by CiteSpace is based on the format of the data downloaded from the Web of Science. In addition, this database is reputed to provide more complete references, indexes, and links than other bibliographic databases (Su et al., 2020).

The article consists of several parts. The first part sets out the different definitions of digital culture and the methods for analyzing this knowledge domain. The second part presents the objectives and methods of the conducted research. The following sections present the results of the research and the conclusions.

2. Defining cyberculture and digital culture

The term 'cyberculture' appeared in scientific publications in the 1980s as a part of wider discussions concerning so-called cyber-themes, such as: cybernetics, computerisation, digital revolution, the cyberization of the human body, hacker subculture, cyberpunk, new media, as well as human activity in the Internet in general. This term has been used to describe the cultural and civilizational aspects of a social and cultural formation based on computer technology, known as information society, as well as cultural practices and lifestyles related to information and communication technologies (Macek, 2005). The term is closely related to the development of the Internet and electronic media. Some definitions of cyberculture emphasize the foundation of its development, i.e. cyberspace. Lev Manovich, a researcher in this field, argues that cyberculture should be understood as social phenomena connected with the Internet and network communication, such as e.g., online communities, collaborative online games, manipulation of identities in online reality, use of e-mail and mobile phones, and virtual erotic life (Manovich, 2001). Confronted with the multi-faceted nature of cyberculture, authors of major

publication on the concept refrained from providing an exhaustive definition. Instead, they described a number of phenomena occurring in cyberspace, which they considered to be elements of cyberculture, e.g. artificial intelligence, Linux, netiquette, matrix, wiki, virtual reality and others (Bell et al., 2004).

Departing from the description of cyberculture as a set of phenomena, David Bell claims that cyberculture is a way of thinking (and related practices) about the interaction of people and digital technologies, the impact of these technologies on people's lives, and life in cyberspace (Bell, 2007). Bell's definition represents the second trend in defining cyberculture, which emphasizes the role of the human in the development of cyberculture as more significant than its technological aspects. Definitions in this trend assume a much broader understanding of cyberculture. For example, David Silver describes cyberculture as a reality combining sets of cultural products and practices functioning or made available on the Internet with social reflection on these products and practices (Silver, 2000). Polish researcher, Piotr Zawojski, claims that cyberculture can be understood as a specific set of practices relating to the use of digital media in order to create a new model of culture based on the synergy of what is online and what is offline. This approach extends the scope of phenomena classified as cyberculture to include digital practices taking place outside the Internet. Zawojski treats cyberculture as a new cultural paradigm arising from the development of new technologies, primarily digital, which will definitively reformulate all aspects of social structures in a world dominated by computer technologies (Zawojski, 2018, 101, 113).

In the last decade or so, the term 'digital culture' has been used more frequently. According to Charlie Gere, techniques and technology constitute only one of many factors that have contributed to the development of digital culture. Other factors include technoscientific discourse on information and information systems, avant-garde artistic practices, countercultural utopianism, critical theory and philosophy, and even subcultural formations such as Punk. In his opinion, these phenomena contributed to the emergence of the paradigm of abstraction, codification, self-regulation, virtualization and programming that underlies digital culture – they became the foundations of cyberculture, just as much as the computer and the Internet. Gere challenges two popular beliefs about digital culture. First – that it represents a decisive break with what preceded it; second – that digital culture derives from and is determined by the existence of digital techniques and technology (Gere, 2008). Gere implies digital culture is a result of complex interactions and dialectical engagements between the aforementioned phenomena. This article will claim that digital technology and techniques are products of digital culture, and not the other way around. The article will argue that digitality as a cultural phenomenon refers not only to the affordances of a given technology – it defines and encompasses the ways of thinking and acting which are embodied in that technology and enable its development.

Mark Deuze defines cyberculture as a set of values, practices, and expectations regarding people's behaviour and interactions in today's network society. He states that digital culture is an expression of an increasingly individualised society in a globalised world. Deuze sees digital culture as a phenomenon consisting of three components: networked participation, remediation, and bricolage (Deuze, 2006). Stacey Koosel views digital culture as derived from the technological development of interactive and social media, which enable Internet users to create online communities, establish relationships, and construct and perform digital identities. Furthermore, we may also consider 'digital culture' as referring to the study of information age culture, including online cultural heritage. It is used to refer to the complex field known as digital humanities, which encompasses research in any discipline of the humanities, if it is related to computers and the Internet (Koosel, 2011). Tula Giannini and Jonathan P. Bowen, on the other hand, state that the digital revolution has created a cultural cyberspace, blurring the boundaries between real and virtual life and between real and digital culture (Giannini & Bowen, 2019). Another researcher in this field, Vincent Miller, associates cultural change with the development and innovation of new media and their consumption. Digital culture, in Miller's view, is both a phenomenon co-creating the information society and its product (Miller, 2020).

The newest definitions of digital culture return to the emphasis on technology in shaping culture. Nelson Chuquihuanca, Soledat Pesantes and others argue that digital culture refers to the circumstances in which technology and the Internet significantly shape the way in which individuals act, behave, think and communicate. Thus, digital culture is a product of the presence of technologies (virtual reality, the internet, mobile devices, and others) in society (Chuquihuanca et all., 2021).

This overview of definitions allows us to conclude that the area of research known as cyberculture or digital culture has no clear boundaries, as it is subject to constant evolution. The development of cultural, social and technological reality calls for ever newer interpretations of both terms. Therefore, an important task for academics researching cyberculture is to systematically monitor the state of scholarship.

3. Definition of knowledge domain analysis

The above-mentioned task can be accomplished by taking advantage of the possibilities offered by the knowledge domain analysis.

When explaining the analysis of knowledge domains, reference should be made to Birger Hjørland and Hanne Albrechtsen, who defined the knowledge domain as a community for exchanging ideas on a specific topic and a scientific sub-discipline with a specific way of organising knowledge, structure, patterns

of collaboration, forms of language and communication, and criteria for relevance (Hjørland & Albrechtsen, 1995). Hjørland thought that knowledge domains might be studied using bibliometrics (Hjørland, 2002). Richard P. Smiraglia proposed a different understanding of knowledge domain analysis: a scientific methodological paradigm that allows the ontological basis of a specific research problem to be discovered. This method is also used to systematically analyse the evolution of scientific communities and includes, e.g., bibliometric mapping (Smiraglia, 2015).

Following Olle Persson, there is a view in the literature on the subject that the knowledge domain describes the time-varyig body of knowledge extending between research fronts (the current state of knowledge in each specialty represented by collections of the latest papers which cite other texts) and intellectual bases (collections of articles cited by texts forming a research front) (Synnestvedt et al., 2005).

Undoubtedly, the basis for the analysis of knowledge domains is the acquisition, processing, and analysis of bibliographic data. According to Veslava Osińska, maps of science are produced by transforming bibliographic data into an exploratory space that allows the structure and dynamics of scientific knowledge to be discovered (Osińska, 2021). A similar approach is presented by such researchers as Chaomei Chen and Katy Börner. Chen calls science mapping the process of analysing and visualising scientific domains, disciplines, sub-disciplines, and research fields (Chen, 2017). Börner claims that the purpose of science mapping is to depict the structure and evolution of scientific knowledge. Maps of science are intended to help researchers navigate and communicate within the dynamic and changing structure and resource of science (Börner, 2010). In scientometrics, science mapping refers to the process of acquiring bibliographic data, visualising it and analysing it comprehensively (Osińska, 2021).

Science mapping is a method that can be applied to knowledge domains analysis.

The author's methodology in this study draws on Birger Hjørland and Jenna Hartel's claim that the study of knowledge domains should take into account the complex interaction of ontological (conceptual domain structure), epistemological (ways of interpreting reality) and sociological (researchers, research centers, journals participating in the discourse) influencing the development of fields of knowledge (Hjørland & Hartel, 2003). However, one should be aware that bibliometric research allows to determine only the sociological and ontological factors. The study of epistemological factors requires reading a selected group of scientific publications. The results of bibliometric analysis presented in this article provide the information necessary to select publications relevant for research on digital culture / cyberculture. This allows us to obtain an answer to the question – which publications will provide us the material that will become the basis of our assessment of epistemological factors forming the domain of knowledge digital culture / cyberculture.

4. Research objectives and methodology

A review of the scholarship on the use of bibliographic data prompted the following question: what methods should be used to analyze the data in order to accurately assess the state of research on a specific issue? What are the limitations of each method? Digital culture, being the author's primary research interest, was selected as the field to be examined.

The aim of this study is to establish the state of research on "digital culture / cyberculture" by analyzing the domain of knowledge in its sociological and ontological aspects. The second aim is to compare the results obtained through a simple analysis of bibliographic data from the Web of Science database with the results of data mapping and visualisation in CiteSpace.

The bibliographic database Web of Science Core Collection constituted the source of the data analyzed. Bibliographic data had to meet the following criteria:

(1) Search terms: 'Digital Culture', 'Cyberculture' – data as of 24.11.2021;
(2) Search within: Article title, Abstract, Author Keywords, Keywords Plus; Document Type: Article, Proceedings Paper, Book Chapter, Books.

Two sets of data were subsequently prepared for analysis:

(1) A summary table (see Appendix 1) for each search term, which included the following: the number of documents; the annual increase in the number of published documents; ten authors with the most publications; five scientific disciplines with the most publications; ten journals, collective works or conference proceedings with the greatest number of published documents; five institutions given as affiliations for the most documents; ten texts with the most citations.
(2) Complete bibliographic data sets obtained for each search term separately – Format: Plain Text File; Range: Full Record and Cited References.

Data from the tables were used for a simple bibliometric analysis in order to answer following questions:

– When did the study of digital culture (cyberculture) originate? Can periods of more intense development be distinguished?
– In what fields is classified the highest number of works related to both search terms?
– In what journals or collective publications have such works been published?
– What authors and research centres are at the forefront (most published works, most cited works) of research into digital culture (cyberculture)?

Complete bibliographic datasets were employed to develop knowledge maps using advanced analyses carried out in the CiteSpace programme (https://citespace. podia.com/). This application allows the user to visualise and analyse bibliographic data downloaded from scientific databases. Based on the bibliographic data of different scientific texts and the list of citations included therein, CiteSpace generates

interactive visualisations of networks of links from which various patterns, as well as the structure and dynamics of the knowledge domain, can be inferred. The analysis of such visualisations may provide answers to questions such as:

– How has the knowledge domain developed over time?
– Have there been any 'turning points' in the development of the knowledge domain?
– What works are gathered in clusters representing the research front and the intellectual base of the domain?
– What scientific works and what authors form these particular clusters?
– What texts experienced periods of increased research interest and when?
– What issues were the focus in the papers included in each cluster?

The study has already demonstrated that knowledge domain analysis will provide answers to these questions by visualising and exploring co-citation networks, turning points, construction, and development of clusters; the suitability of CiteSpace and its algorithms for this purpose has also been demonstrated (Chen et al., 2010).

In the next stages of the analysis, the following information sets and visualisations generated by CiteSpace were used: networks of document co-citation, accounting for their period and citation frequency; topic clusters and their contents; 'bursts' (rapid rise) in citations of scientific papers – an indicator based on Kleinberg's burst detection algorithm (Kleinberg, 2002), and timelines of cluster development. The information sets and visualisations were interpreted to answer the research questions listed above. The strategy of co-citation analysis of document titles rather than author names was adopted as it enables patterns to be noticed with more detail and accuracy, and allows for less ambiguous interpretations (Cen et al., 2010). It also circumvents the problem of multi-author texts, as CiteSpace considers only data of the first author. The foundation for clustering in CiteSpace is provided by the analysis of noun phrases extracted from the bibliographic data of documents (document titles, keywords, abstracts) and the analysis of the co-citation network of these documents (Chen, 2020).

5. Results

5.1. *Analysis of simple compilation of data*

A simple compilation of bibliographic data downloaded from the Web of Science database (Appendix 1) give us a picture of the current developments in the field of digital culture/ cyberculture. The search term 'digital culture' yielded (on 04.11.2021) 1,411 bibliographic records, while the term 'cyberculture' brought only 440. However, neither number is significant when compared with more than 79 million documents indexed in the WoS Core Collection. This indicates that the

study of digital culture /cyberculture is of limited interest. It is a relatively new area of research – all publications up to the late 20th century were authored by a single researcher (see Fig.1 and Fig. 2).
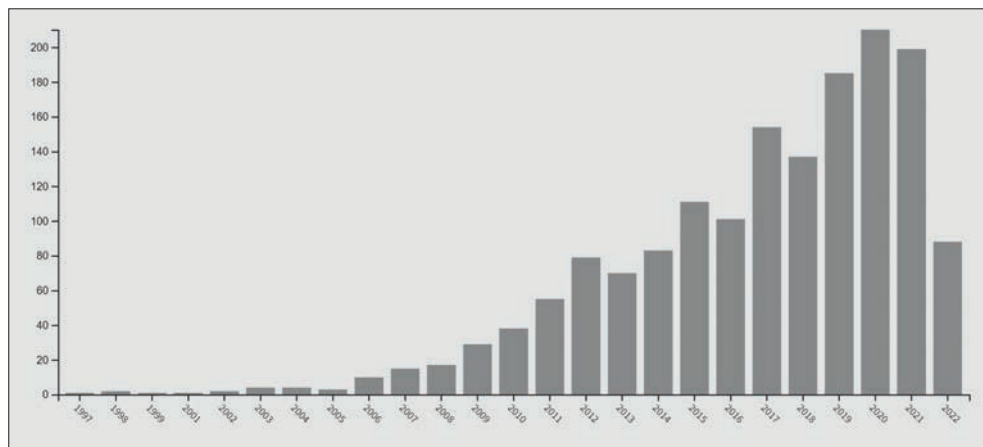
Fig. 1. Quantitative growth of publications on 'digital culture'.

Source: Compiled by the author.
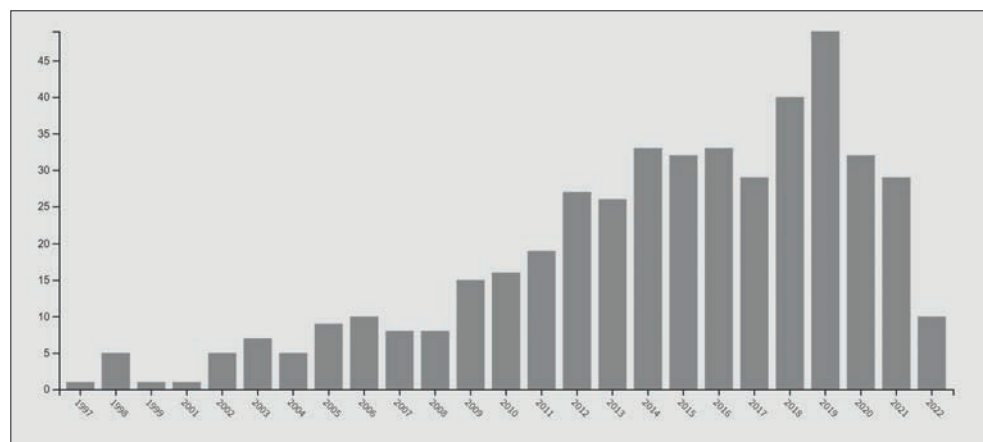
Fig. 2. Quantitative growth of publications on 'cyberculture'.

Source: Compiled by the author.

The Web of Science database provides a list of scientific disciplines with which digital culture/cyberculture research is associated. The users may find the list thanks to two functionalities from the menu 'Refine results' – WoS Categories and Research Areas. These two sets of information (the lists vary slightly) suggest

that the research on these topic is associated with the disciplines of Communication, Educational Research, Information and Library Science, Cultural Studies, and Computer Science.

Although publications on digital culture/cyberculture have been produced by scholars affiliated with more than two hundred universities, only a few made significant contributions (at least about 1% of all publications yielded by both searches). The WoS data shows that the leading universities are University of London, University of California System (consisting of 10 universities), Universidad Complutense de Madrid, Monash University in Melbourne, Queensland University of Technology, Universidade Federal De Santa Catarina, Universidade do Estado do Rio de Janeiro, Universidade Federal Da Bahia, Universidade Federal De Minas Gerias, Universidade Federal do Rio de Janeiro, and Universidade Federal Fluminense.

Bibliographic data indicate that the number of researchers working on digital culture/cyberculture does not exceed five hundred. With that said, only a dozen or so can be said to constitute the leading group in terms of the number of publications. When it comes to the term 'digital culture', the three most prolific authors are L. Shifman, J.P. Bowen, and T. Giannini. The term 'cyberculture' generated a different set of scholars: J.A.A. Valdez, R. Dos Santos, and L.M.M. Giraffa. The texts by the following authors received the most citations: J. Van Dijck, L. Shifman, S.C. Lewis (for digital culture); R.V. Kozinets, M. Deuze, A. Escobar (for cyberculture; for details see Appendix 1).

The bibliographic data also show which journals publish the largest number of texts related to digital culture/cyberculture issues. If we omit conference proceedings and monograph series, we get a set of several journals that can be considered as leading the research on the subject: *Convergence: The International Journal of Research into New Media Technologies, New Media and Society, Information Communication and Society, Media Culture and Society, International Journal of Communication, Social Media and Society.*

5.2. Analysis using CiteSpace

Knowledge domains were mapped using CiteSpace with the majority of the settings set to values the programme's developer, Chaomei Chen (2020). The following settings were changed: Link Retaining Factor was set to – 1, i.e., all citations were included; Look Back Years – set to – 1, i.e. no citation age restriction. In the case of the term 'digital culture', out of 1,411 bibliographic records retrieved from the database, CiteSpace included 1,383 from the years 1996 to 2021 (the remaining records were found to be faulty by the programme's algorithms). The programme created a co-citation network containing 781 nodes, i.e., cited documents and 4152 co-citation links connecting them. For the term 'cyberculture', 436 records

out of 440 from 1964 to 2021 were included. The co-citation network included 816 nodes and 3,798 co-citation links.

The first visualisation generated by CiteSpace (see Fig. 3) shows the network of document co-citations for the term 'digital culture' as it developed over time – the darker the colour, the older the citations. The points (nodes) indicate the cited documents, and the lines connecting them are the citation links.
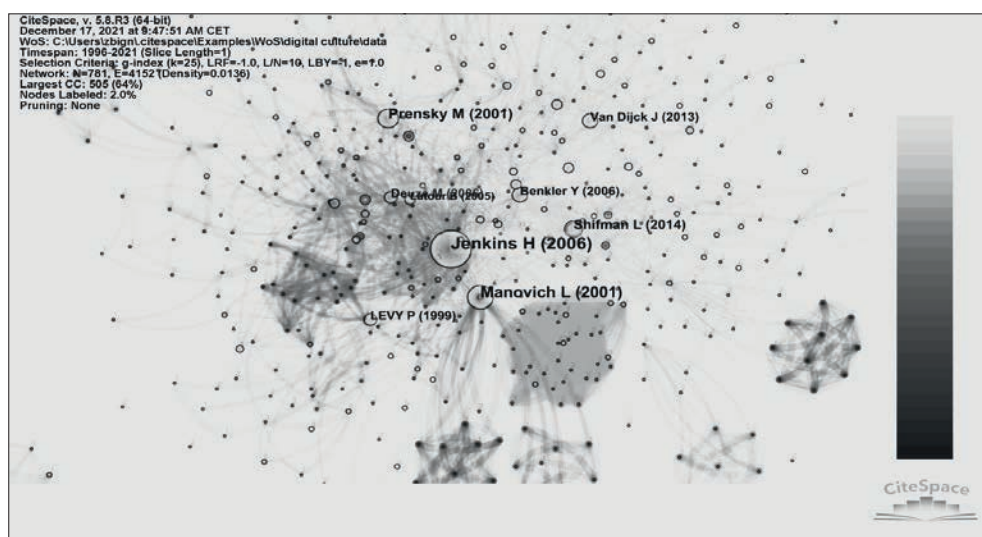
Fig. 3. Co-citation network for the term 'digital culture'.

Source: Compiled by the author.

This visualisation identifies the key papers (critical points) for the development of research on digital culture, linking research fronts and generating networks of co-citation. This group includes the following research papers:

(1) Jenkins H., Convergence Culture: Where Old and New Media Collide. New York: New York University Press 2006;

(2) Manovich L., Language of New Media, Cambridge: MIT Press 2001;

(3) Prensky M., Digital natives, digital immigrants. „On the Horizon", 2001, vol. 9, iss.5, p. 1–2;

(4) Shifman L., Memes in Digital Culture. Cambridge: MIT Press, 2014;

(5) Levy P., Cibercultura. Sao Paulo: Editora 34, 1999;

(6) Deuze M., Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture. "Information Society", 2006, vol. 22, iss. 2, p. 63–75;

(7) Benkler Y., The Wealth of Networks: How Social Production Transforms Markets and Freedom. New Haven and London: Yale University Press, 2006;

(8) Van Dijck J., The Culture of Connectivity: A Critical History of Social Media. Oxford Scholarship Online, 2013;

(9) Latour B., Reassembling the Social. An Introduction to Actor-Network-Theory. Oxford University Press, 2005.

The first two papers on the list have a relatively high Betweenness Centrality index. This index indicates the most important nodes (papers) in the co-citation network through which different clusters (thematic groups) are connected to each other. In CiteSpace, centrality scores between nodes are normalised to an interval of 0–1. The value of the Betweenness Centrality score of Jenkins' and Manovich's papers and the number of citations of these papers (Count) in the co-citation network (see Fig. 4) suggest that they played a key role in the development of digital culture research.

Visible	Count	Centrality	Year	Cited References
✔	85	0.38	2006	Jenkins H, 2006, CONVERG...
✔	49	0.16	2001	Manovich L, 2001, LANGUAG...
✔	22	0.06	2006	Benkler Y, 2006, WEALTH N...
✔	31	0.05	2014	Shifman L, 2014, MIT PRESS ...
✔	15	0.05	2005	Latour B, 2005, REASSEMBL...
✔	35	0.04	2001	Prensky M, 2001, HORIZON, ...
✔	10	0.04	2009	Jenkins H, 2009, CULTURA ...
✔	6	0.04	1991	Haraway DJ, 1991, SIMIANS ...
✔	22	0.03	2006	Deuze M, 2006, INFORM SO...
✔	18	0.03	2013	Van Dijck J, 2013, CULTURE ...
✔	13	0.03	2010	Gillespie T, 2010, NEW MEDI...
✔	12	0.03	2008	Lessig L, 2008, REMIX MAKI...
✔	10	0.03	2007	Boyd DM, 2007, J COMPUT-...
✔	23	0.02	1999	LEVY P, 1999, CIBERCULTU...
✔	13	0.02	1994	McLuhan M, 1994, UNDERS...
✔	6	0.02	2004	Galloway A, 2004, PROTOCO...
✔	4	0.02	2009	Castells M, 2009, COMUNIC...
✔	2	0.02	1996	Appadurai A, 1996, MODERN...
✔	2	0.02	2014	Bostrom N, 2014, SUPERINT...

Fig. 4. Key publications for the development of research on digital culture.

Source: Compiled by the author.

The second visualisation (see Fig. 5) shows the co-citation network for the term 'cyberculture'.

This network of co-citations is broken into several separate mini networks formed around the works of authors such as P. Levy, H. Jenkins, A. Lemos, C.A. Scolari,

Z. Bauman, L. Manovich, S.G. Jones, M. Castells, A. Appadurai, T.W. Adorno, F. Jameson, D.J. Harway, B. Anderson, C. Hine. Citation links are missing between some clusters. The visualisation indicates the particular importance of two papers:
   (1) Levy P., Cibercultura. Sao Paulo: Editora 34, 1999;
   (2) Jenkins H., Cultura da Convergencia. ALEPH, 2009.
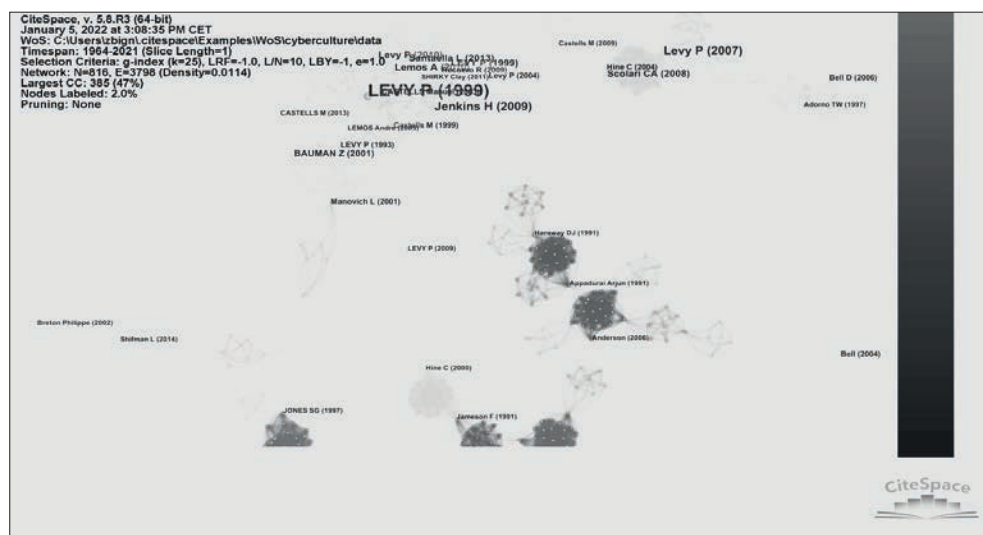
Fig. 5: Co-citation network for the term 'cyberculture'.

Source: Compiled by the author.

Furthermore, the Betweenness Centrality index and the number of citations in the co-citation network (Count) suggest the crucial importance of the subsequent editions of the book by P. Levy for the development of research into cyberculture. If we consider the Centrality index only, we find that the list of scientific publications that connect different thematic clusters, and thus had a significant impact on scholarship, is longer. It also includes researchers such as M. Castells, C. Hine, F. Jameson, M. McLuhan, R. Barthes or B. Anderson (see Fig. 6).

Subsequently, clusters of articles linked by co-citations were identified. For this, the 'Find Clusters' function was used, in combination with the 'Label Clusters' function using the data from Titles + Keywords + Abstracts. The selection criteria set by the creator of CiteSpace were used as a default (Chen, 2020). This method allowed us to distinguish 96 clusters. Each cluster can be characterised according to the following properties:
   (1) Number of cited documents (Size)
   (2) Network thematic homogeneity (Silhouette) – indicates whether the works within the network share a similar profile

(3) Average year of publication in the cluster (mean/Year) – indicates whether the network is dominated by newer or older papers

(4) Key terms selected by the selection algorithm LLR (Log-Likelihood Ratio), indicating the dominant topic (the creator of CiteSpace suggests that the LLR algorithm yields the best result in terms of uniqueness and term coverage) (Chen, 2020, p.45).

Visible	Count	Centrality	Year	
✔	40	0.28	1999	LEVY P, 1999, CIBERCULTURA, V0, P0
✔	4	0.22	1999	Castells M, 1999, SOC REDE, V2, P0
✔	3	0.21	2000	Hine C, 2000, VIRTUAL ETHNOGRAPHY, V0, P(
✔	3	0.21	2009	LEVY P, 2009, CIBERCULTURA, V0, P0
✔	3	0.20	1991	Jameson F, 1991, POSTMODERNISM CULTUR,
✔	2	0.19	1994	McLuhan M, 1994, UNDERSTANDING MEDIA, V
✔	2	0.16	1977	Barthes Roland, 1977, IMAGE MUSIC TEXT, V0,
✔	3	0.15	2006	Anderson, 2006, IMAGINED COMMUNITIES, V0,
✔	4	0.09	2001	Manovich L, 2001, LANGUAGE NEW MEDIA, V0.
✔	3	0.08	1991	Appadurai Arjun, 1991, RECAPTURING ANTHR \
✔	2	0.08	2004	Atton C, 2004, ALTERNATIVE INTERNET, V0, P(
✔	11	0.08	2009	Jenkins H, 2009, CULTURA CONVERGENCIA, V
✔	12	0.08	2007	Levy P, 2007, CIBERCULTURA CULTURA, V0, F
✔	3	0.06	1997	JONES SG, 1997, VIRTUAL CULTURE IDEN, V0
✔	6	0.06	2008	Scolari CA, 2008, HIPERMEDIACIONES ELE, V0

Fig. 6. Key publications for the development of digital culture research.

Source: Compiled by the author.

In the set of 96 clusters, seven clusters are relevant for research purposes as they comprise more than 20 documents (see Table 1).

Table 1. Largest clusters in 'digital culture' topics – data from Web of Science.

Cluster ID	Size	Silhou-ette	Mean (Year)	Top Terms LLR
0	100	0.828	2004	virtual life; digital practice; citizen journalism; cultural citizenship
1	95	0.843	2007	sexualized labour; social media; drag culture; religious populism; popular feminism
2	79	0.81	2003	digital condition; cultural studies; digital game
3	78	0.824	2007	museum professional; media lab; tech culture; entangled media
4	47	0.912	2001	bio-digital bodies; digital humanities; technological progress
5	36	0.993	2005	religious meme; religious identity; entertainment meme
6	29	0.971	2000	data provider; music industry; compulsive creativity; digital literacies

Source: Compiled by the author.

Another CiteSpace functionality for identifying research topics is the Latent Semantic Indexing (LSI) selection algorithm. It draws up a list of noun phrases based on data from all clusters. For clusters based on the WoS data, the following list of key terms was compiled (based on 50 phrases from each cluster drawn from the analysis of titles, abstracts, and keywords of scientific articles): digital literacies, textual content, digital technologies, teacher training, museum professionals, virtual communities, computer games, significant impacts, religious memes, stardom as mythology of the digital age, corporate disclosure, social networking sites, cultural identity, political communication, popular music, resistance strategies, new millennium, digital practices, civic education, digital art, internet literature, virtual social networks, digital sociology, sexualized labour, digital humanities, using communication technology, political participation, religious identity.

Using the Cluster – Cluster Explorer functionality, we obtained data indicating authors who had the greatest impact on the development and subject matter of each cluster. Two lists were created: the first list cited documents included in a given cluster together with the number of citations, thus indicating the intellectual background of the knowledge domain; the second list collected documents citing scientific works included in a given cluster, thus outlining the research front of the knowledge domain (see Table 2).

Table 2. Authors with the greatest impact on particular
‘digital culture’ clusters (selection by number of citations).

Cluster ID	Most cited documents	Citation count	Documents most often citing other documents from the cluster	Percentage of cited documents from the cluster
1	2	3	4	5
0	Jenkins H. (2006), Convergence Culture: Where Old and New Media Collide. New York: New York University Press	85	Thumim N. (2012), Self-Representation and Digital Culture, Palgrave MacMillan.	15
	Prensky M. (2001), Digital natives, digital immigrants. „On the Horizon", vol. 9, iss.5, p. 1–2	35	Perez-Gonzalez L. (2013), Amateur subtitling as immaterial labour in digital media culture: An emerging paradigm of civic engagement, Convergence, vol. 19, iss. 2, p. 157–175.	10
	Deuze M. (2006), Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture. "Information Society", vol. 22, iss. 2, p. 63–75	22	Lewis S.C. (2012), The tension between professional control and open participation, Information, Communication & Society, vol. 15, iss. 6, p. 836–866.	10
	Scolari C.A (2008), Hipermediaciones: elementos para una teoría de la comunicación digital interactiva, Editorial Gedisa.	14		

1	2	3	4	5
1	Van Dijck J. (2013), The Culture of Connectivity: A Critical History of Social Media. Oxford Scholarship Online	18	Giles D.C. (2018), Twenty-First Century Celebrity: Fame In Digital Culture, Emerald Publishing.	13
	Dawkins R. (2016), Extended Selfish Gene, Oxford University Press	14	Hearn A., Banet-Weiser S. (2020), The Beguiling: Glamour in/as Platformed Cultural Production, Social Media + Society, vol. 6, iss. 1.	10
	Gillespie T. (2010), The politics of 'platforms', "New Media & Society", vol.12, iss. 3, p. 347−364	13		
	Bruns A. (2008), Blogs, Wikipedia, Second Life, and Beyond: From Production to Produsage. Peter Lang	13		
2	Levy P. (1999), Cibercultura. Sao Paulo: Ed 34	23	Alen-Robertson J. (2013), Digital Culture Industry. A History of Digital Distribution, Palgrave MacMillan.	9
	Latour B. (2005), Reassembling the Social. An Introduction to Actor-Network-Theory. Oxford University Press	15	Srinivasan R. (2012), Re-thinking the cultural codes of new media: The question concerning ontology, New Media & Society, vol. 15, iss. 2, p. 203−223.	8
	Lessig L. (2008), Remix: Making Art and Commerce Thrive in the Hybrid Economy, New York: Penguin Press	12		
3	Shifman L. (2014), Memes in Digital Culture. Cambridge: MIT Press	31	Cook N., Ingalls M.M., Trippett D. (2019), The Cambridge Companion to Music in Digital Culture, Cambridge University Press.	15
	Benkler Y. (2006), The Wealth of Networks: How Social Production Transforms Markets and Freedom. New Haven and London: Yale University Press	22	Thayne M., West A. (2019), 'Doing' media studies: The media lab as entangled media praxis, Convergence, vol. 25, iss. 2, p. 186−208.	11
	Hayles N.K. (1999), How We Became Posthuman, University Chicago Press	11		
4	Manovich L. (2001) Language of New Media, Cambridge: MIT Press	49	Braga D. B., Ricarte I. L. (2005). Letramento na era digital: construindo sentidos através da interação com hipertextos. Revista Da Anpoll, vol. 1, n. 18.	11
5	Anderson B. (2006), Imagined Communities, London-New York: Verso	7	Han S., Nasir K.M. (2015), Digital Culture and Religion in Asia, Routlege.	36
	Campbell H. (2010), When Religion Meets New Media, Taylor & Francis Group	7		

1	2	3	4	5
6	McLuhan M. (1994), Understanding Media. The Extension of Man, London-New York: MIT Press	13	Van Dijck J. (2009), Users like you? Theorizing agency in user-generated content, Media, Culture & Society, vol. 31, iss. 1, p. 41–58.	15
	Jenkins H. (1992), Textual Poachers elevision Fans & Participatory Culture, Routledge	9	Van Dijck J., Nieborg D. (2009), Wikinomics and its discontents: a critical analysis of Web 2.0 business manifestos, New Media & Society, vol. 11, iss. 5, p. 855–874.	12

Source: Compiled by the author.

For the term 'cyberculture' the following results were obtained:

Table 3. The largest clusters in the 'cyberculture' theme (out of 147 detected).

Cluster ID	Size	Silhouette	Mean (Year)	Label LLR
0	101	0.951	2006	critical internet studies; digital culture; critical theory; critical studies
1	48	0.999	2001	political subjectivities; virtual space; study preface; audio-visual consumption
2	46	0.977	1989	virtual transnational community; computer English; marketing research
3	40	0.997	1990	anthropology biological technologies
4	37	0.987	1992	social work; blog; e-social work; thematic virtual community
5	33	0.97	1984	virilio; terminal
6	29	0.997	1994	cyberspace; politics; culture

Source: Compiled by the author.

The list generated by the LSI algorithm (based on 50 phrases from each cluster obtained from the analysis of titles, abstracts and keywords of scientific articles) included the following terms: marketing research, online communities, candomble communities, blog, political subjectivities, computer-mediated communication, electronic capitalism, critical political economy, anthropological theory, digital networks, critical cyberculture studies, public universities, literature courses, critical internet studies, virtual spaces, e-social work, digital narratives, cultural analyses, public policies, virtual class, human societies, anthropological analyses, critical studies.

The Visualisaion – Graph Views – Timeline View function allows the user to see how the clusters developed over time. In addition to the term indicating

the dominant theme in the cluster, it is possible to determine when the cluster developed and when its development was most intensive.

Table 4. Authors with the greatest impact on each
'cyberculture' cluster (according to the number of citations).

Cluster ID	Most cited documents	Citation count	Documents most often citing other documents from the cluster	Percentage of cited documents from the cluster
0	Levy P. (1999), Cibercultura. Sao Paulo: Ed 34;	40	Henriques M.S., Lima L.A. (2014), The publics make the spectacle: protagonism on crowdfunding practices over the internet. "Conexao-Comunicacao E Cultura", vol. 13, iss. 25.	11
	Jenkins H. (2009), Cultura da Convergencia. ALEPH;	11		
1	Levy P. (2007), Cibercultura: informe al Consejo de Europa. Anthropos Editorial	12	Valdez J.A.A. (2019), Cibercultura y nuevas formas de consumo audiovisual en la era de la globalización y la sociedad digital: una aproximación teórica para su estudio. Editorial Unison.	27
2	–		–	
3	–		–	
4	–		Aguilar Idáñez M.J, E-Social Work in Spain: An analysis of the professional blogs, "Cuadernos de Trabajo Social", vol. 32, No 1.	21
5	–		Zurbrugg N. (1999), Virilio, Stelarc and Terminal Technoculture, "Theory, Culture & Society", vol. 16, iss. 5–6, p. 177–199.	26
6	–		Jordan T. (2001), Language and Libertarianism: The Politics of Cyberculture and the Culture of Cyberpolitics, "The Sociological Rewiew", vol. 49, iss.1, p. 1–17.	26

Note: A '–' entry indicates that there are no documents cited at least five times or those citing at least five texts from the cluster.

Source: Compiled by the author.

Using the Visualization – Citation/Frequency Burst History function, a list of documents with a relatively large increase in citations over a short period was created. The papers listed attracted the attention of the scientific community and

thus made a significant impact on the development of scientific research on the topic under study. The CiteSpace programme detects 'bursts' of citations based on Kleinberg's algorithm. Figure 9 presents a list of such documents for the term 'digital culture' and Figure 10 for the term 'cyberculture'.
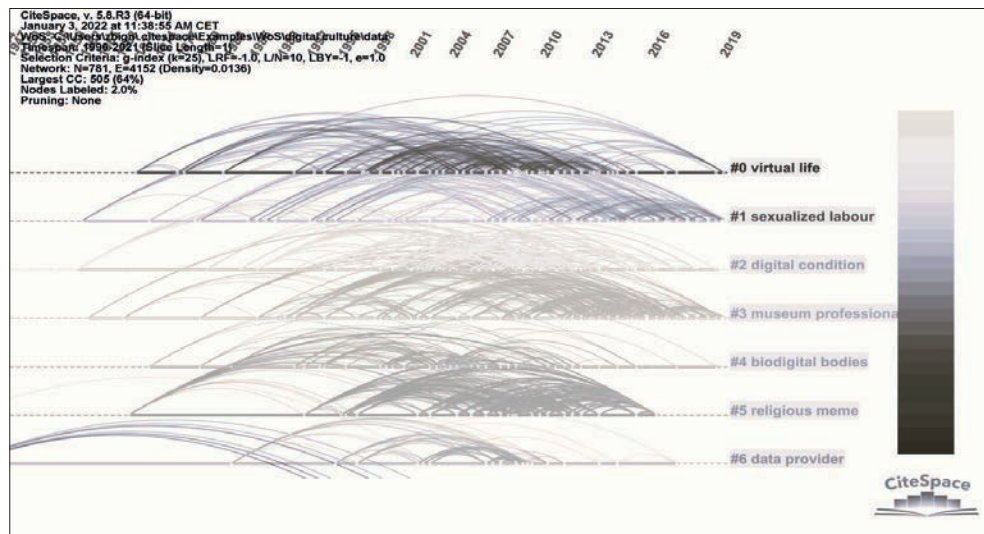

Fig. 7. The development of 'digital culture' clusters over time.
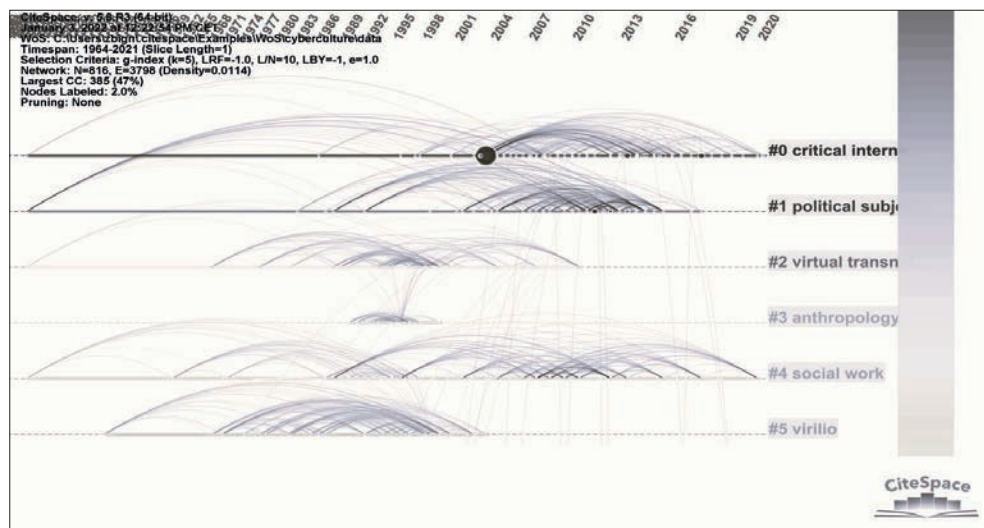
Source: Compiled by the author.

Fig. 8. The development of 'cyberculture' clusters over time.
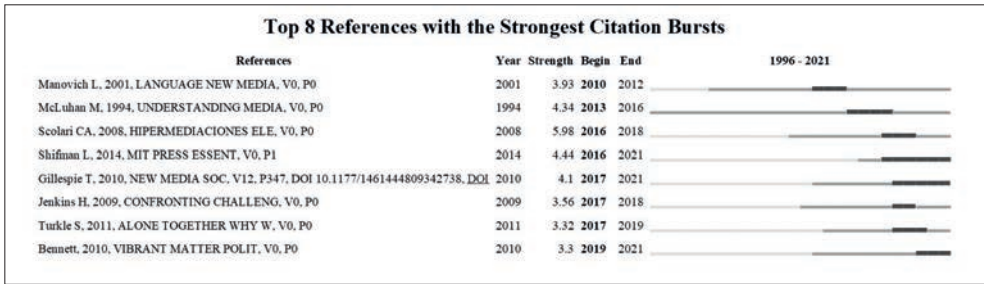
Source: Compiled by the author.

Top 8 References with the Strongest Citation Bursts

References	Year	Strength	Begin	End	1996 - 2021
Manovich L, 2001, LANGUAGE NEW MEDIA, V0, P0	2001	3.93	2010	2012	
McLuhan M, 1994, UNDERSTANDING MEDIA, V0, P0	1994	4.34	2013	2016	
Scolari CA, 2008, HIPERMEDIACIONES ELE, V0, P0	2008	5.98	2016	2018	
Shifman L, 2014, MIT PRESS ESSENT, V0, P1	2014	4.44	2016	2021	
Gillespie T, 2010, NEW MEDIA SOC, V12, P347, DOI 10.1177/1461444809342738, DOI	2010	4.1	2017	2021	
Jenkins H, 2009, CONFRONTING CHALLENG, V0, P0	2009	3.56	2017	2018	
Turkle S, 2011, ALONE TOGETHER WHY W, V0, P0	2011	3.32	2017	2019	
Bennett, 2010, VIBRANT MATTER POLIT, V0, P0	2010	3.3	2019	2021	

Fig. 9. Papers with the highest 'citation burst' rate for the term 'digital culture'.
Source: Compiled by the author.

Top 2 References with the Strongest Citation Bursts

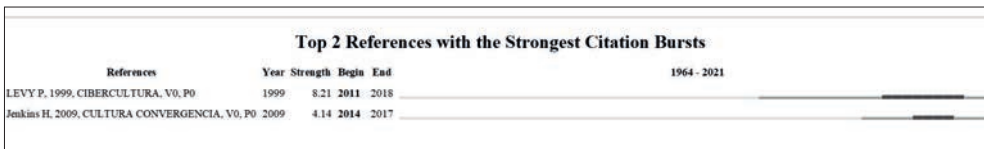| References	Year	Strength	Begin	End	1964 - 2021
LEVY P, 1999, CIBERCULTURA, V0, P0	1999	8.21	2011	2018	
Jenkins H, 2009, CULTURA CONVERGENCIA, V0, P0	2009	4.14	2014	2017	

Fig. 10. Papers with the highest 'citation burst' rate for the term 'cyberculture'.
Source: Compiled by the author.

The CiteSpace algorithms identified two books written on the subject of cyber-culture. Both appeared in Fig. 6 as key works for the network, as well as on the list of documents with the highest Citation Bursts index. Surprisingly, neither of these can be found on the list of the 10 most cited books. The first book, 'Cibercultura' by Pierre Lévy (1999) discusses the cultural implications of cyberculture in all its dimensions. He argues against the critiques of cultural phenomena related to people's functioning in the digital sphere and on the Internet. One of the main hypotheses of the book is that cyberculture constitutes a new cultural universe, different from previous forms of culture. Its development is due to the rapidly growing role of information, and information and communication technologies. The author sets out the cultural implications of the development of digital infor-mation and communication technologies. He objects to comparing cyberculture to another flood or barbarism. The book was the most popular ('burst of citations') among other researchers between 2011 and 2018.

The second book, 'Cultura da Convergencia' by Henry Jenkins (Spanish transla-tion of Jenkins H., *Convergence Culture: Where Old and New Media Collide*. New York: New York University Press, 2006) concerns the relationship between three concepts: media convergence, participatory culture, and collective intelligence (Jen-kins, 2009). The author defines the term *media convergence* as the flow of content between multiple media platforms, collaboration between multiple media markets and the migratory behaviour of media audiences who seek entertainment tailored

to their preferences. He describes participatory culture as a situation in which both producers and consumers influence (unequally) the shape and content of media messages. Consumers interact with media not alone, but rather as a collective intelligence – the sum of the knowledge, experiences, and views of media users. This book attracted the greatest interest from researchers between 2014 and 2017.

If we take the total number of citations as the main index of the impact of a scientific work on the development of science (Appendix 1), the texts that have had the most impact on the development of cyberculture research include, first, two articles by Robert V. Kozinets (1998, 2002). Both are devoted to a method of marketing research called 'netnography'. Netnography is a variation of ethnography, adapted to the study of online communities. As a method, netnography is faster, simpler and cheaper than traditional ethnography, and less invasive than focus groups or interviews. It provides information about the symbolism, meanings, and consumption patterns of consumer groups in the virtual world. The number of citations of the article 'The field behind the screen: Using netnography for marketing research in online communities' is so high because the author conducts research within management sciences. Marketing practices are researched much more frequently and on a much larger scale than cyberculture, and they attract a much larger group of researchers. Hence, there is a much greater chance of obtaining citations.

In third place in terms of the number of citations is an article by Marc Deuze, 'Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture' (2006). The author argues that digital culture emerged as a result of the computerisation of society. He concludes that digital culture can be seen as an emerging set of values, practices, and expectations about how people (should) act and interact within contemporary networked society. According to Deuze, digital culture can be conceptualised as a practice consisting of participation, remediation, and bricolage.

Identifying the academic works that had the greatest impact on the development of research on 'digital culture' is not as easy as in the case of 'cyberculture'. If we compare the five papers with the highest impact on the co-citation network for the term 'digital culture' and the five with the highest Strongest Citation Bursts index, only two scientific works feature on both lists. The first of these is the book 'Language of New Media' by Lev Manovich (2001). The author presents the theory of new media, pointing to their place in the history of visual and media cultures over the centuries. He discusses their intellectual and aesthetic foundations. He points out the dependence of new media on the convergence of older media types. Manovich draws on concepts from film theory, art history, literary theory, and computer science to develop new theoretical constructs such as the cultural interface and spatial assemblage. His book received a 'burst of citations' between 2010 and 2012.

The second work is a book entitled 'Memes in Digital Culture' by Limor Shifman (2014). The author analyzes the development of internet memes and their

contribution to digital culture. He proposes a novel definition of Internet memes: they are digital units of content with shared characteristics, created with mutual awareness of each other and distributed, imitated, and transformed across the Internet by multiple users. This work received the most citations between 2016 and 2021.

If, on the other hand, we consider the data from the visualisation of the co-citation network for the term 'digital culture' and the number of citations in particular clusters, the scientific works with the greatest impact on the studied domain of knowledge, as the indexes of the works' influence, we will have to consider the first English-language edition of Henry Jenkins' book, 'Convergence Culture: Where Old and New Media Collide' (2006). Two articles also fall into this category. In the first, 'Digital natives, digital immigrants', Marc Prensky claims that the American education system is ineffective in a situation where today's youth differs significantly from their predecessors from before the Internet era. He draws a distinction between 'digital natives', young people born and developing in the world of the Internet, online games and computers, and 'digital immigrants', those representatives of older generations who enter the digital world and virtual reality by painstakingly developing new competences. The brains of 'digital natives' develop differently from those of 'digital immigrants' or the digitally excluded. Hence, the education system should present a different offer to young people than to previous generations of pupils and students. The article also contains a set of proposals for educating the 'digital natives' (Prensky, 2006). Another paper that has had a significant impact on the field is the aforementioned text by Marc Deuze, 'Participation, Remediation, Bricolage: Considering Principal Components of a Digital Culture' (2006).

The book of Yochai Benkler, 'The Wealth of Networks: How Social Production Transforms Markets and Freedom', is also worth mentioning. The author describes the increasing role of information and communication in the age of the Internet and the emergence of a 'networked information economy'. This, according to Benkler, radically changes the economic reality and social relations. Benkler describes how the network environment alters the ways media, the economy, and society function. He indicates the new opportunities for the production and use of information, and the influence of these opportunities on activation of groups and individuals. He concludes that a 'social production of information' has emerged, transforming markets while offering new opportunities to increase individual freedom, cultural diversity, political discourse, and justice (Benkler, 2006).

In terms of the total number of citations for the term 'digital culture', the article by José van Dijck, 'Users like you? Theorizing agency in user-generated content' is at the forefront. The author introduces the concept of the 'engaged user' of online platforms, encompassing not only the user's cultural role as a facilitator of civic engagement and participation, but also his/her economic importance as a producer, consumer, and provider of data, as well as his/her unstable position as a volunteer or aspiring professional in an emerging work market. Using YouTube as an example,

van Dijck shows that the term 'engaged user' refers not only to content creators but also to data providers whose profiled information is capitalised on by online platform owners (Dijck, 2009). In second place is Limor Shifman's aforementioned book, 'Memes in Digital Culture'.

Third place went to the article by Seth C. Lewis, 'The Tension Between Professional Control and Open Participation'. The author reviews the literature discussing the tension observable in the media environment between the principles of professional journalism and open participation in the information process. He focuses on the growing difficulties for media professionals as they negotiate the increasingly contested boundary space between producers and professional control, and content users and openness in the digital environment. Considering the possibilities of digital technologies, the author supports open participation and its ideology (Lewis, 2012).

6. Conclusions

The bibliographic data taken from the Web of Science database allow us to examine the sociological and ontological aspects of the "digital culture / cyberculture" knowledge domain. The analysis of the data provides information about the scholars who conducted research in the field, where they conducted their research, and where their results were published. Thanks to the information on the number of publications and the number of citations, the data also allow to assess the degree of interest in these issues. The ontological aspects of the knowledge domain can be analyzed on the basis of keywords used by the editors of the WoS database or developed by the authors of publications, as well as on the basis of publication titles and their abstracts.

The knowledge domain 'digital culture / cyberculture' is relatively new. Papers in which the terms 'cyberculture' or 'digital culture' are used have begun to be published in the 1980s (with very few exceptions). The term 'cyberculture' appeared first, followed by 'digital culture' a few years later. Thematic clusters developed in the same order – the first to appear were those classified as 'cyberculture'. The visualisations presenting the development of the clusters over time show not only the periods of growth in popularity of each cluster (scientific publications are relatively frequent, which can be proved by the density of points on the timeline), but also the period of decline, and how far back in time they reach with citations (curves from right to left). They show that the 'cyberculture' clusters numbered 1, 2, 3 and 5 (thematic scope in Table 3 and the paragraph below this table) have already ceased develop. The same is true for the 'digital culture' clusters numbered 4, 5 and 6 (thematic scope in Table 1 and the paragraph below this table). It might be observed that publications included in the 'digital culture' clusters mainly cite

relatively recent scientific works – published in 1990s or later. Publications in the 'cyberculture' clusters (especially 0, 1, 2, 3) go back in their citations even to the 1960s.

Nevertheless, it was not until the end of the first decade of the 21st century that scientific texts on this subject began to be published more frequently than once or twice per month on average (considering only papers indexed in the Web of Science database). Until now, cyberculture has been a niche specialisation, not formally affiliated with any scientific discipline. Research in the field of digital culture (cyberculture) is conducted mainly within the humanities, social sciences, and information technology. In terms of the number of publications indexed in Web of Science, researchers from Australia, Brazil, Spain, the USA, and the UK dominate. The main places of publication of articles on the subject are journals such as: *Convergence*; *Information, Communication and Society*; *International Journal of Communication*; *Media Culture and Society*; *New Media and Society*, as well as *Social Media and Society*.

At this point, the following questions arise: to what extent the dominance of specific journals and researchers demonstrated by bibliographic data is a result of the principles behind the Web of Science database resources, and to what extent does it represent the actual state of science? Is the scientific output of the global South and Central and Eastern Europe regarding the subject of digital culture / cyberculture as small as the above-mentioned data would suggest? Unfortunately, answering these questions would require the creation of a bibliographic database indexing papers written in many more languages besides English, Spanish, French and German. Only such a base would fulfill the ideals for the development of science set forth in the book "Knowledge and Global Power. Making New Sciences in the South," which argues for the need of taking into account the theoretical and methodological achievements of the global South (as well as Central and Eastern Europe) (Connell et al., 2019). If scholarship produced in the peripheral zones is to be taken into account, it must first be made visible to academics abroad. As currently no database indexing scholarship in languages of Central and Eastern Europe exists, we are satisfied with the image of the state of research, which is the result of the analysis of bibliographic data from the currently most well-known database.

For each of the explored issues, it is possible to assess which scientific papers had the greatest impact on the scientific community and contributed the most to the development of the research. This is because they generated the largest 'citation burst', gained relatively many citations in the co-citation network, or achieved a relatively high centrality index. It can be said that they constitute the canon of the analysed field. However, the list of such works is not easy to unequivocally determine, even if we rely only on data from the Web of Science database, for it depends on the criteria adopted. If the only criterion is the number of citations, the Top 10 list will be as in Appendix 1 (item: 10 papers with the highest number of citations – in each of the two tables) for the individual terms studied. If, on the other hand,

we are guided by CiteSpace indications, then the list of key scientific papers will be partially different. The difference stems from the fact that the first list shows all citations of a given publication (obviously limited to those works cited that are indexed in Web of Science). In contrast, the citations shown by the CiteSpace programme come only from papers that form a co-citation network for the term 'cyberculture' or 'digital culture'.

The analysis of the clusters and key terms detected by the CiteSpace programme allows us to identify the specific issues that digital culture researchers analyse most often. In the case of academic works related to the term 'digital culture', these will include various aspects of everyday life with equivalents in the virtual world (including sex, drugs, religion, human relations, culture, politics, education), digital cultural practices (including citizen journalism, medialabs, digital museums, archives and galleries, the entertainment industry, digital art and literature, social media, social networks, computer games), digital humanities, digital and information literacy, online communication, and digital information management. The research papers related to the term 'cyberculture' addressed issues such as critical studies, digital narratives, virtual spaces, social networks, political life, online communities, online marketing, online education, anthropological research, the blogosphere, and online communication.

Finally, it should be emphasised that knowledge domain analysis, based on data from the Web of Science database and visualisations generated by the CiteSpace programme, has significant limitations. First, such an analysis does not take into account scientific papers that are not indexed in this database. The conclusions drawn from the visualisations generated by CiteSpace are founded on our trust in its algorithms and the settings recommended by its developer. Furthermore, we conclude that bibliographic data, such as those gathered in Appendix 1, should be a necessary complement to the aforementioned visualisations. The combination of findings from the visualisation analysis and from the simple analysis of bibliographic data gives a more complete picture of the knowledge domain. This is because in the first case the analysis is based on networks of co-cited documents, and in the second case on a compilation of all documents obtained from the Web of Science database in response to the use of the terms 'digital culture' and 'cyberculture'.

Research based on bibliographic data can only be a first step towards a complete analysis of the knowledge domain. The next stage would be the analysis of the content of at least a few key (relatively often cited) publications. This is the only way to describe the epistemological aspects of the domain of knowledge – to determine the researchers' approach to defining a given domain, to the organization and interpretation of knowledge generated within it, as well as their paradigms and methodologies. The analysis of bibliographic data suggests which publications had such a significant impact on the development of digital culture research. An epistemological analysis of these works is a topic to be undertaken in another article.

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Appendix 1

Basic information – „Digital Culture"

Information type	Data obtained	
1	2	
Number of documents	1411	
Increase in the number of publications	1996–2021; from the period 1996–2002 only 8; the highest increase (over 20 per year) in 2009–2021	
10 authors with the largest number of publications (+ those who are the authors of as many publications as the tenth from the list)	1. Shifman L. – 10, 2. Bowen J.P. – 9, 3. Giannini T. – 9, 4. Kanai A. – 6, 5. Beavis C. – 5, 6. Fantin M. – 5 7. Márquez I. – 5, 8. Apollon D. – 4, 9. Desrochers N. – 4 10. Gere C. – 4, 11. Johnson N. – 4, 12. Mihailidis P. – 4,	
5 fields of science with the most publications (one publication may be classified into several fields)	WoS Categories 1. Communication – 318 2. Educational Research – 279 3. Humanities Multidisciplinary – 118 4. Information and Library Science – 90 5. Cultural Studies – 89	Research Areas 1. Communication – 318 2. Educational Research – 286 3. Art Humanities Other Topics – 117 4. Computer Science – 117 5. Information and Library Science – 88 6. Cultural Studies – 84
10 journals, multi-author books or conference materials with the highest number of documents	1. New Media And Society – 22, 2. Convergence – 18, 3. Information Communication And Society – 17, 4. International Journal Of Communication – 15, 5. Museums And Digital Culture: New Perspectives And Research – 14 6. Springer Series On Cultural Computing – 14, 7. Educar Em Revista – 13, 8. Media Culture And Society – 13, 9. Revista Edapeci-Educacao A Distancia E Praticas Educativas Comunicacionais E Interculturais – 13, 10. Social Media And Society – 12,	

1	2
5 institutions listed as affiliations in the largest number of documents (+ those with as many documents as the fifth)	1. University of London – 36 2. University of California System – 16 3. Universidad Complutense de Madrid – 14 4. Monash University – 12 5. Queensland University of Technology – 11 6. Universidade Federal De Santa Catarina – 11
10 documents with the highest number of citations	1. Van Dijck, J., Users like you? Theorizing agency in user-generated content, Media, Culture and Society, 2009, 31(1) – 513, 2. Shifman, L., Memes in Digital Culture, 2014 – 446, 3. Lewis, S.C., The tension between professional control and open participation. Journalism and its boundaries, Information Communication and Society, 2012, 15(6) – 367, 4. Deuze M., Participation, remediation, bricolage: Considering principal components of a digital culture, Information Society, 2006, 22 (2) – 241, 5. Shifman, L., Memes in a digital world: Reconciling with a conceptual troublemaker, Journal of Computer-Mediated Communication, 2013, 18(3) – 191, 6. Shifman, L., An anatomy of a YouTube meme, New Media and Society, 2012, 14(2) – 177, 7. Deuze, M., Bruns, A., Neuberger, C., Preparing for an age of participatory news, Journalism Practice, 2007, 1(3) – 167, 8. Beer, D., Social network(ing) sites...revisiting the story so far: A response to danah boyd & Nicole Ellison, Journal of Computer-Mediated Communication, 2008, 13(2) – 152, 9. Van Dijck, J., Nieborg, D., Wikinomics and its discontents: A critical analysis of Web 2.0 business manifestos, New Media and Society, 2009, 11(5) – 149, 10. Duffy, B.E., The romance of work: Gender and aspirational labour in the digital culture industries, International Journal of Cultural Studies, 2016, 19(4) – 134,

Basic information – „Cyberculture"

Information type	Data obtained
1	2
Number of documents	440
Increase in the number of publications	1964–2021; from 1964 and 1965, each 1; a from 1992–2001 – 17; the highest increase (over 10 per year) in 2009–2021

1	2	
10 authors with the largest number of publications (+ those who are the authors of as many publications as the tenth from the list	1. Valdez JAA. – 7 2. Dos Santos R. – 5 3. Giraffa LMM – 5 4. Brock A. – 4 5. Cerutti E. – 4 6. Chumachenko S. – 4 7. Haddouk L. – 4 8. Hahanov V. – 4 9. Litvinova E. – 4 10. Martins C. – 4 11. Santos E. – 4	
5 fields of science with the most publications (one publication may be classified into several fields)	WoS Categories 1. Educational Research – 114 2. Communication – 79 3. Sociology – 40 4. Humanities Multidisciplinary – 35 5. Information and Library Science – 22 6. Social Science Interdisciplinary – 22	Research areas 1. Educational Research – 114 2. Communication – 79 3. Sociology – 40 4. Humanities Multidisciplinary – 35 5. Literature – 32
10 journals, multi-author books or conference materials with the highest number of documents	1. Information Communication And Society – 18 2. Revista Educaonline – 10 3. Educar Em Revista – 9 4. Periferia – 9 5. Revista Ibero-Americana De Estudos Em Educacao – 8 6. Cibercultura Y Nuevas Formas De Consumo Audiovisual En La Era De La Globalizacion Y La Sociedad Digital: Una Aproximacion Teorica Para Su Estudio – 7 7. New Media And Society – 7 8. Societes – 7 9. Texto Academicos – 7 10. Texto Livre-Linguagem E Tecnologia – 7	
5 institutions listed as affiliations in the largest number of documents (+ those with as many documents as the fifth)	1. Universidade do Estado do Rio de Janeiro – 14 2. Universidade Federal Da Bahia – 12 3. Universidade Federal De Minas Gerias – 8 4. Universidade Federal do Rio de Janeiro – 8 5. Universidade Federal Fluminense – 8	

1	2
10 documents with the highest number of citations	1. Kozinets, R.V., The field behind the screen: Using netnography for marketing research in online communities, Journal Of Marketing Research, 2002, 39(1) – 1522 2. Kozinets, R.V., On netnography: Initial reflections on consumer research investigations of cyberculture, Advances In Consumer Research, 1998, 25 – 246 3. Deuze, M., Participation, remediation, bricolage: Considering principal components of a digital culture, Information Society, 2006, 22 (2) – 241 4. Escobar A., Welcome to cyberia – notes on the anthropology of cyberculture, Current Anthropology, 1994, 35 (3) – 181 5. Van Mierlo, T., The 1% rule in four digital health social networks: An observational study, Journal of Medical Internet Research, 2014, 16(2) – 142 6. Rich, E., Anorexic dis(connection): Managing anorexia as an illness and an identity, Sociology of Health and Illness, 2006, 28(3) – 84 7. Wilson, B., Atkinson, M., Rave and Straightedge, the virtual and the REAL: Exploring Online and Offline Experiences in Canadian Youth Subcultures, Youth and Society, 2005, 36(3) – 53 8. Stokes, C.E., Representin' in cyberspace: Sexual scripts, self-definition, and hip hop culture in Black American adolescent girls' home pages, Culture Health & Sexuality, 2007, 9 (2) – 43 9. Simi, P., Futrell, R., Cyberculture and the endurance of white power activism, Journal of Political and Military Sociology, 2006, 34(1) – 41 10. Boler, M., Hypes, hopes and actualities: New digital Cartesianism and bodies in cyberspace, New Media and Society, 2007, 9(1) – 40

Badania nad kulturą cyfrową (cyberkulturą) – analiza domeny wiedzy na podstawie danych bibliograficznych z bazy Web of Science

Abstrakt

Cel/Teza: Celem była ocena stanu badań nad „kulturą cyfrową / cyberkulturą" poprzez analizę domeny wiedzy. Drugim celem było porównanie wyników uzyskanych poprzez prostą analizę danych bibliograficznych z bazy Web of Science z wynikami mapowania i wizualizacji danych w CiteSpace.

Oryginalność/Wartość poznawcza: Dziedzina wiedzy „kultura cyfrowa / cyberkultura" jest stosunkowo nowa. Badania w tej dziedzinie prowadzone są głównie w ramach nauk humanistycznych, społecznych i technologii informacyjnych.

Wyniki i wnioski: Stosunkowo niewielka grupa badaczy wnosi zauważalny wkład. Jednak różne metody analizy tego samego zestawu danych bibliograficznych prowadzą do różnych

wniosków. Badania oparte na danych bibliograficznych mogą być jedynie podstawą pełnej analizy domeny wiedzy.

Słowa kluczowe

Kultura cyfrowa. Cyberkultura. Analiza domeny wiedzy. Dane bibliograficzne. CiteSpace. Baza danych Web of Science.

ZBIGNIEW OSIŃSKI, doktor habilitowany, profesor w Instytucie Nauk o Kulturze UMCS w Lublinie; specjalności: nauka o informacji, cyfrowa humanistyka. Najnowsze publikacje: Osiński Z. (2020). Big data w praktyce badawczej humanistów – problemy metodyczne, [w] Big Data w humanistyce i naukach społecznych*, red. A. Firlej-Buzon, Warszawa: Wyd. SBP, s. 13–32. Osiński Z. (2021). Information literacy of Polish state administration officials in the context of the concept of "good governance".* Journal of Information Literacy, *vol. 15, no. 2, p. 4–25. Osiński Z. (2021). Wykorzystanie Google Scholar do identyfikowania najczęściej cytowanych badaczy i ich prac naukowych. Przypadek publikacji z zakresu nauki o informacji w języku polskim.* Zagadnienia Informacji Naukowej – Studia Informacyjne*, vol. 59, nr 1, s. 49–80.*

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Information literacy and information behaviour of disadvantaged people in the COVID-19 pandemic. Case study of beneficiaries of the charitable foundation

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Abstract

Objectives: The purpose of the study was to explore information behaviour and information literacy in the group of the charitable foundation beneficiaries, their attitudes, choices, and behaviour regarding particularly COVID-19 information.

Methods: Two series of quantitative CAPI studies were carried out. The first consisted of basic questions about access and preferences related to information sources. The other was explicitly related to COVID-19 pandemic information. Basic statistical descriptive measures and chi-square tests of independencewere used in the analysis.

Results: Poverty and the concept of small worlds seem to be a specific living context of vulnerable groups. Information flow is based mainly on personal sources. Their searches for pandemic information did not differ significantly from everyday behaviours. The respondents felt fatigued with information about the pandemic dominating the media and informal discussions. In relation to previous studies, we see similar behaviours and competencies levels indicating information poverty, although differences in source preferences are also observed. Volunteers appear to have a limited informative role concerning the COVID-19 pandemic compared to other studies of people in crisis.

Originality: Information behaviour patterns of the studied group indicate new tasks for caregivers in terms of provision of information and development of information skills, in particular in health or life-threatening circumstances.

Keywords

Health information needs. Health literacy. Information literacy Information seeking behaviour. Information skills. Vulnerable groups.

1. Background

Access to and usage of reliable information on health and fake news are what we generally think about regarding information behaviour and information ltieracy in the context of the COVID-19 pandemic. In a health-threatening situation, it is crucial to know how to find the information required to protect one's own and relatives' health. Additionally, it is important to distinguish between real and false information, the latter confusing information transmission.

It is particularly difficult for vulnerable groups to find their feet in the new conditions for information transmission. People from socially marginalised groups, those in crisis situations (health, economic, homeless, etc.), make up a specific group of information users. Often struggling with limited access to information sources and means to improve their competencies, they experience additional negative consequences of an exclusion cycle. Social crises, including the global coronavirus pandemic, influence all the people everywhere, and for the vulnerable groups, create an additional barrier in their already difficult lives. The needs and competencies of this group facing pandemic threats seem equally important as the other social groups. However, it is often overlooked due to the problem of access to disadvantaged groups, their reluctance to participate in research, or a general lack of interest in their situation.

This research gap was the background of exploring information behaviour, including health and COVID-19-related information seeking and reception of people in crisis; beneficiaries of the charity. The charity is active in Częstochowa, a medium-sized city in Poland, with approximately 230 thousand inhabitants.

A few research perspectives have been referred to. Firstly, considering the scale of permanent infection risk and the permanent availability of information on the pandemic (at least in media), information behaviour in everyday life should be mentioned here. The information space – its scope and diversification of information sources used daily – is the second important aspect. The third is the current knowledge of information literacy of people in crisis. Furthermore, last but not least, there is knowledge about information literacy research in the specific context of COVID-19.

Information literacy is hereinafter interpreted in general as a set of competencies indispensable for effective usage of information (ALA, 1989), but also in the perspective offered by CILIP (Secker, 2018), focusing on citizens' empowerment, which is particularly important for those in need. Information behaviour is defined broadly as people approaching and handling information (Rather & Ganaie, 2018).

Information literacy has been manifested in either passive reception or an active information search. Searching health information belongs to the category of everyday life information-seeking behaviours (ELIS) (Savolainen, 1995, 2005). Information can be searched purposefully to complement information gaps (Dervin,

1998), or acquired incidentally, depending on external or internal user's circumstances (Williamson, 1998).

Analysis of health information literacy, needs, and behaviours in COVID-19 pandemic context with reference to the ELIS concept can be challenging – nothing has been ordinary or routine here. However, on the other hand, after more than two years of living in the pandemic regime, we can think about a kind of habit and implementation of a new, time – and situation-specific routine.

Elfreda Chatman's (1992) theory of small worlds has been an essential reference for vulnerable groups' information literacy and behaviour studies. Small worlds are small communities of the specific, predictable mode of activity, based on accepted norms and beliefs of the group members, the so-called normative behaviours (Chatman, 2000). This predictability and internal normativity also refer to information usage. Chatman proved in her numerous studies (e.g., 1987b, 1991ab, 1992) that marginalised people had quite a narrow, specific, and local view of the world, limited to the well-known environment. Two components specific to the concept of small worlds seem to be important here. The first is the limited and organised horizon of information sources. The individual experience or trusted persons from the family or friends are the key sources, followed by the media (TV, less often newspapers), other people or institutions, or the Internet (Williamson, 1998; Savolainen, 2005).

The theory of information poverty (Chatman, 1992; Thompson, 2007) is another element of the small worlds concept, critical as a reference for this study. It was defined as a situation where people and communities in a specific context, do not have competencies, possibilities, or means to obtain adequate access to information, its understanding, interpretation, and appropriate usage (e.g., Marcella & Chowdhury, 2020). In short they are lacking access to information indispensable for survival, self-reliance, sustainable persistence, or development (Marcella & Chowdhury, 2020, 368).

The concept of small worlds has been quite often applied in the studies on the information practises of different marginalised groups, for instance, homeless mothers (Buchanan, Jardine, & Ruthven, 2017; 2019; Gibson & Martin, 2019) and parents (Hersberger, 2001), people in crisis receiving different forms of social assistance (Hayter, 2006; Nobilet & Ihadjadene, 2019), as well as the seniors (e.g., Eriksson-Backa et al., 2012; Pang, Karanasios, & Anwar, 2020).

The common elements of many of these projects are the scope and types of information needs, and the preferred information sources. Regarding the first one, the primary information needs focused on finances, followed by (depending on a specific group) the care for children, health problems, shelter, job seeking, availability of social support, and health care (Hayter, 2006; Hersberger, 2001). Nobilet and Ihadjadene (2019) found that the social service appeared to be the primary information need; followed by the availability of ICT (mainly the smartphone) which

allowed one to stay in touch with relatives, settle things online; and lastly – legal information. Nobilet and Ihadjadene conclusions differ, however, from those of other studies.

The social network has been constantly the primary information source (Buchanan, Jardine, & Ruthven, 2017; 2019; Gibson & Martin, 2019; Hayter, 2006; Hersberger, 2001; Nobilet & Ihadjadene, 2019). Social service professionals (Hayter, 2006; Nobilet & Ihadjadene, 2019; Pang, Karanasios, & Anwar, 2020), or media (including the Internet) were usually mentioned as secondary (Hersberger, 2001). Trust in a person, institution, or another entity providing the information was the key (Gibson & Martin, 2019; Hayter, 2006). However we can find an opposite perspective – anxiety linked to information searching has been observed as well, primarily due to previous experiences. Social workers or healthcare professionals were the sources of information concerning potential support (Hersberger, 2001; Pang, Karanasios, & Anwar, 2020) and were often mediators between the community and the external world (Hayter, 2006; Buchanan, Jardine & Ruthven 2017; 2019).

Again, the study of relatively poor people in northern France was an interesting exception (Nobilet & Ihadjadene, 2019). They often used not only close social contacts but also external sources, trusting the official ones. It might depend on the group specifics, i.e., the situation of relative rather than extreme poverty (low income, e.g., pension or retirement). A high level of trust in social services workers as information mediators was also found in this study.

Seniors were also the subjects of information literacy studies as a vulnerable group often experiencing, among other problems, poverty and digital exclusion. Easy access and understandability, particularly considering health information, was perceived as very important by the respondents of the Finnish study (Eriksson-Backa et al., 2012). In the study of the elderly in a situation of natural disaster (Pang, Karanasios & Anwar, 2020) the sense of closeness and informal mode of communication with information mediators, even with the representatives of institutions or authorities, were considered to be very important. In such circumstances, local institutions and regional-specific knowledge and habits appeared particularly important (even more important than the media).

Health literacy seemed crucial in the pandemic circumstances (Paakkari & Okan, 2020). Orkan Okan et al. (2020) proved that the pandemic might additionally worsen information literacy which already was not satisfactory in many European countries (Sørensen et al., 2015). The key problems were the inability to use competencies in health – or life-threatening situations, or regarding infodemics.

Archila et al. (2021) introduced a specific concept of COVID-19 literacy, defined as the understanding of COVID-19 and making informed decisions based upon this understanding. They carried out the study of COVID-19 literacy among students from a Columbian university. The Internet appeared to be the most frequently referred information source regarding pandemics and healthcare professionals – the

most reliable one. The more advanced (in age and education) students and the medical students had higher competencies, while general results were on a medium level.

Thus, enhanced care for education in information literacy and health IL in particular is currently needed, including access to verified content. Emotional support is also an important element of enhancing information competencies (Walton & Hepworth, 2011). For example, Rudd & Baur (2020) recommended developing verified, publicly and easily accessible information for users of different knowledge and the information competencies levels. The groups and individuals of lower education or social-economical status required particular informational care in such circumstances (Spring, 2020).

1.1. Social background

Częstochowa is the county city located in the central-south part of Poland, formerly (1975–1998) the capital of a region (voivodeship). According to statistics (Polska w liczbach, 2020), Częstochowa is the 13th among other Polish cities considering its area and number of inhabitants, with high economic potential. 1,738 new economic entities were registered there in 2018 (Polska w liczbach, 2020). The unemployment rate amounted to 4,4% at the end of March 2021 and was 1,1% lower than the average for the country (Polska w liczbach, 2020). The city, located near highway no. 1, connecting the north and south of Poland, is an important communication hub. Despite these factors, the number of inhabitants has been decreasing for almost 30 years, with 259,135 inhabitants in 1995 and 217,530 at the end of 2020 (Polska w liczbach, 2020).

According to regional statistics in Katowice, 3,5% of Częstochowa residents referred to the social service in 2019; for comparison, in the whole of Poland, it was an average of 3% (Polska w liczbach, 2020). The main reasons why Częstochowa residents refer to social services are poverty, unemployment, and disability.

The respondents of the surveys are the beneficiaries of the "Adullam" Christian Foundation, living in poverty and social exclusion. This charity is a non-governmental organisation that supports the poorest living in Częstochowa and the suburbs. Its principal activities include:

- Free cantinas – two-course dinners, as well as bread and other food products, are distributed six days a week to 564 people (all figures mentioned here come from the charity's financial statements for 2021),
- Social rehabilitation in the hostel for 106 men recovering from alcoholism, after serving criminal sentences, or long-time unemployed,
- A club for children and adolescents from dysfunctional families helping 60 children,
- A consultation point for the alcohol addicted persons and their families for 159 people,

– A repository of in-kind support for 472 people,
– Organising local communities in the Old Town district (Fundacja, 2021).

2. Objectives

The main objective of this study was twofold: to explore the information behaviour patterns and the level of basic information literacy in the group of the charity's beneficiaries, as well as to find out if (how much) they were explicitly applied to seek and evaluate the COVID-19 pandemic information (e.g., sanitary regime, risk of infection, potential treatment, vaccination).

Due to the specific characteristics of the population (and sample), only a few aspects of the information behaviour were included in the study, those we perceived as strongly related to information literacy. These are: selection of information sources in different circumstances, interest and attitude towards the pandemic situation, and information sources on this topic.

In order to achieve these two objectives, the following research questions were posed:

Q1: What information sources are routinely used by people in crisis? (What do they choose? Are these sources differentiated or not?)

Q2: Do they choose information sources according to their information needs?

Q3: To which information sources do they refer: in daily routine and in a crisis situation?

Q4: What is the interest in information about the crisis situation (namely: the COVID-19 pandemic) among this group?

Q5: What is the attitude of this group towards information about the crisis situation?

Q6: Is there a gender differentiation in the sample in terms of information behaviour (on selected examples) and interests and attitudes towards the crisis situation?

Q7: Is there an age differentiation in the sample in terms of information behaviour (on selected examples) and interests and attitudes towards the crisis situation?

3. Methods

Two waves of quantitative CAPI (Computer-Assisted Personal Interview) studies were conducted among the charity's beneficiaries. CAPI technique was used due to aforementioned reluctance to contact other people (strangers) or reveal some private information. Convenient and purposive sampling was applied: both surveys were carried out on the sample available at the charity's locations during interviewers' visits. The decision of sampling method was reasoned by the vulnerability

of this population and the researchers' intention to provide the respondents with adequate comfort, and not to discourage them from participating in the study. Two ways of the survey were conducted, because of the specific condition of the pandemic, which we found out to be important in the context of information behaviour and information literacy of the population.

Some interviewees might have problems with completing the survey on their own, e.g. with reading the standard print size, using a tablet or computer. Therefore, the interviewers recorded participants' answers using standardised Google Forms questionnaires. The interviewers were recruited from the full-time charity's workers. We acknowledge the problematic nature of this solution, i.e., exploiting certain power dynamics between helpers and help-seekers in the interviewer-interviewee relationship. However, this solution allowed for crossing the most significant barrier in this group – the lack of trust in people "from the outside" and the related reluctance to share information about oneself.

The first wave of the survey included basic questions about accessing information and preferred information sources. It took place in March 2021, with 163 respondents (55 women and 108 men). The questionnaire (see: Appendix 1) focused on the availability of information sources and preferred media and information types for specific purposes, to reveal actual choices of the respondents (behavioural aspect).

The second wave was carried out in June and July 2021, with 154 responses (46 women and 108 men). The questionnaire (see: Appendix 2) consisted of 12 closed questions and 5 demographic ones, with the following topics:
- Use of information sources during the COVID-19 pandemic,
- Evaluation of one's knowledge of the pandemic and the risk of infection,
- Information behaviour related to health and pandemics,
- Availability of information on the charity's activities and support, its evaluation during the pandemic, satisfaction from the received support.

4. Results

The basics on the information behaviour and competencies of the sample was established first, followed by the data on specific information behaviour patterns and competences related to the COVID-19 pandemic.

The results will be discussed in relation to the research questions.

Q1: What information sources are routinely used by people in crisis? (What do they choose? Are these sources differentiated or not?)

The question about routine usage starts with accessibility. About three-quarters of the respondents of the first wave of the study could access TV and broadcasting, and half of the respondents had access to the Internet and press in their homes. It is worth noting that almost 30% of them read the press also outside of home – not

so common behaviour concerning other media. More than 34% of the respondents declared that they did not have access to the Internet (see: Table 1). It might indicate that information poverty is present in this group, as in particular, the Internet was available in 90.4% of Polish households in 2020, according to Statistics Poland (2020a).

Tab. 1. Answers to the question "Do you have access to…?"
(first wave, N=163).

Access to Media	At home	Out of home	No access	N valid answers
Internet	58.3	7.4	34.4	163
TV	81.5	7.4	11.1	162
Broadcasting	71.3	11.3	17.5	160
Press	49.1	28.0	22.4	161

Source: Compiled by the authors.

Respondents (N=163) indicated the news as the most interesting topics of information (75.5%), followed by the curiosities (31.9%) and weather forecasts (30.1%). Other contents were indicated by 27.6% of them. People who indicated additional topics could be perceived as the most engaged information users, having specific preferences. Eighteen of them mentioned sport, eleven films and TV series, four people – social media. Three stated that they were not interested in any information.

However, overall the interviewees were not intensive media users. As presented in Table 2, not more than half of them declared having a favourite radio station (the so-called background medium). A bit less (42.9%) had a favourite TV series. About one third declared having a favourite newspaper or website.

Tab. 2. Percentage of people who declared having a favourite radio station,
TV programme, newspaper or website (first wave, N=163).

Do you have a favourite…?	% positive answers
Radio station	49.7
TV programme	42.9
Website	35.0
Newspaper	32.5

Source: Compiled by the authors.

Q2: Do they choose information sources according to their information needs?
This research question was divided into two survey questions. According to the literature, people living in information poverty tend to depend on personal

connections and personal information sources. Thus, the first question about perceived usefulness of selected sources of information was asked. It was formed in the hypothetical context of searching for job offers so that the respondent had a specific, real-life point of reference. Respondents answered using a five-point Likert scale.

The respondents highly preferred personal sources, followed by the Internet (Table 3). Institutional sources (job centres) were evaluated relatively low (although close to the mean value).

Tab. 3. Assessment of the usefulness of selected
information sources in job seeking(first wave, N=163).

How do you assess the usefulness of the following information sources in job seeking? (1 – not useful, 5 – very useful)			
Source	**N of valid answers**	**Mean**	**SD**
People I know	162	3.43	1.29
Internet	163	3.17	1.46
Newspaper advertisement	162	2.98	1.39
Information in a jobcentre	162	2.78	1.35
Advertisements on a board	163	2.64	1.24

Source: Compiled by the authors.

Next, respondents were also asked about finding information about transport to a new place, which is a much less complex information task than seeking a job. Traditional sources dominated here, readily available (timetable). Less than 25% of the respondents would ask for help or seek it on the Internet (see: Table 4).

Tab. 4. Finding information about transportation
to a new place (first wave, N=163).

How do you plan your transportation to a new place?	% positive answers
I check a schedule at a bus stop	50.9
I search on the Internet	23.9
I ask for help	22.7
Other	2.5

Source: Compiled by the authors.

Q3: To which information sources do they refer: in daily routine and in a crisis situation?

As a preferred source, we understand the most frequently used and perceived as the most convenient. However, we acknowledge that frequency is also strongly linked to access (regarding media access, see: Table 1). Data from the first wave shows to a certain extent that personal sources, such as family, friends, neighbours, and charity volunteers might be a preferred and important source (Table 3). More data concerning family and friends as preferred information sources in the context of the pandemic were gathered from the second wave.

Again, the so-called traditional media were the most frequently used (78% used them at least sometimes), together with personal sources (59%), i.e., family, friends, and neighbours. The Internet was the third choice (56%). Considerably less often, they referred for information to the charity's workers or volunteers (43%), or they obtained information on the occasion (heard somewhere on the street or in a store – 42%) (see: Figure 1).
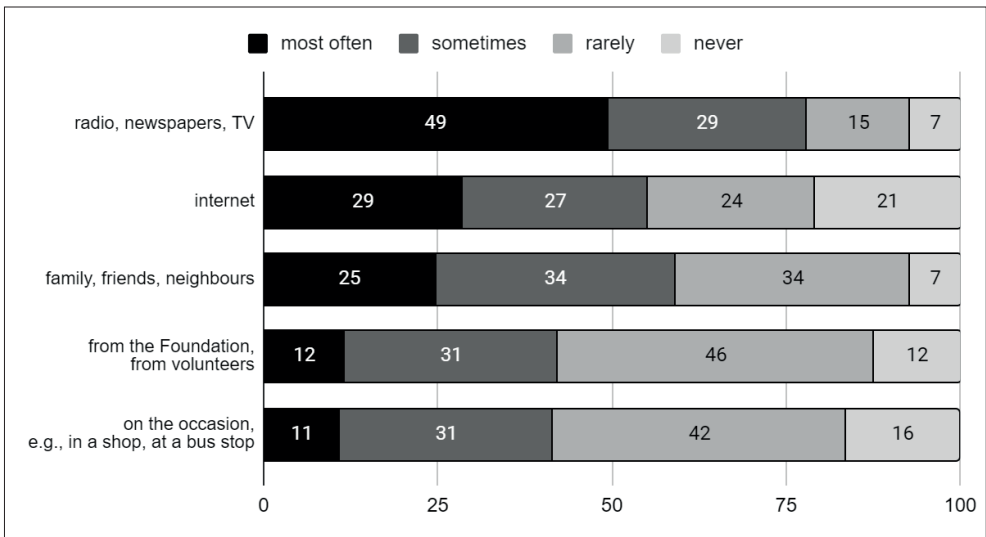

Fig. 1. The frequency of using selected sources of information
on the COVID-19 pandemic (second wave, N=154).
Source: Compiled by the authors.

Comparing these data with national statistics, more than 98% of people aged 16–74 followed information on COVID-19 in 2020 (Statistics Poland, 2020b, p. 1; see also: Statistics Poland, 2020a). The most preferred information sources were: TV (86.9%) and the Internet (68.5%). The older the respondents, the more often they chose traditional media (broadcasting, TV, newspapers, journals). Personal sources were not listed in the cited study.

Personal sources also dominated among the most convenient forms of information. 65% said that conversation with another person is definitely or rather a convenient form of COVID-19 information. It was followed by visual materials (photos, posters, diagrams, etc.) available in different media (54% positive answers). The least popular were texts (articles, leaflets) – 38%; and audio materials – 40% assessed them as a convenient form of information (see: Figure 2). Low preference for audiovisual material may confirm its role as a background medium, not listened to carefully, at least not all the time.
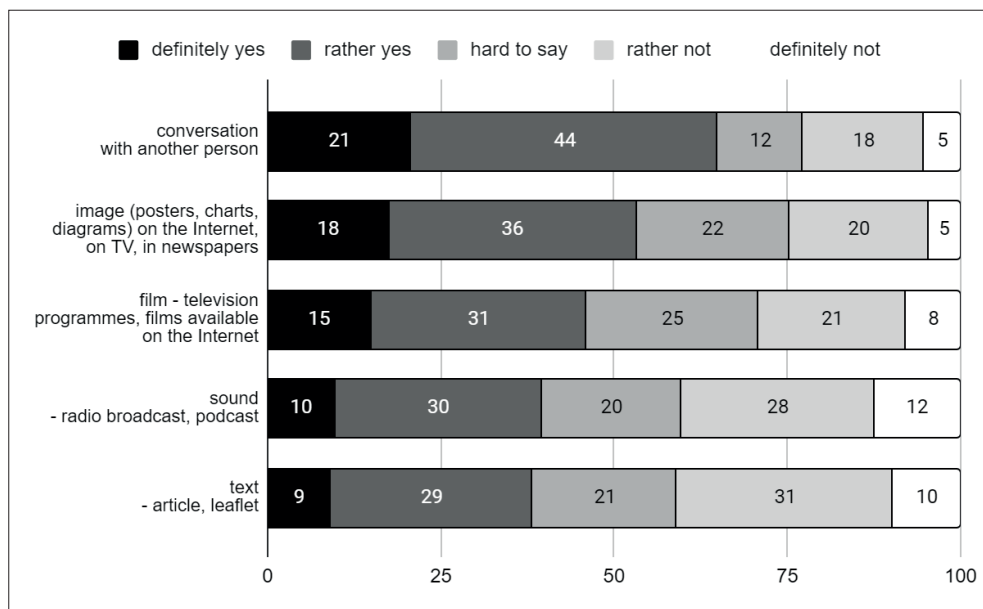

Fig. 2. Preferred forms of information about pandemic (second wave, N=154).

Source: Compiled by the authors.

Based on the data, conversation with others is one of the most used and considered the most convenient source of information. Therefore, let us look at the behaviour related to the exchange of information about the pandemic with the immediate environment. Respondents were asked if and how often they talk to others about the COVID-19 pandemic (see: Table 5).

Q4: What is the interest in information about the crisis situation (namely: the COVID-19 pandemic) among this group?

The COVID-19 pandemic was not a topic discussed very often with others. Only about one third often talked about it with family and friends or people they met by chance. Most of the respondents (41.6%) discussed the topic of the COVID-19 pandemic only sometimes. A quarter of the respondents avoided talking about it at all. The sample included relatively few people whose inability to leave home

limited conversations with others about the pandemic. Relatives, friends, and even people met by chance play a more important role as informants about COVID-19 than the charity's volunteers.

Tab. 5: Talking to others about the pandemic (second wave, N=163).

Respondents' answers	% positive answers
Often with family and friends	33.1
Often with people met by chance	35.1
Sometimes with a family, friends, neighbours, people met by chance	41.6
Seldom, only with a family, I do not go outside	7.1
Seldom, only with the charity's volunteers or workers, I do not go outside	5.2
No, I avoid this topic	24.0

Source: Compiled by the authors.

National public statistics revealed that 98.2% inhabitants of large cities, 98.4% residents of central Poland, and 97.6% of low-income households (average monthly net income from the first quartile) declared monitoring COVID-19 information in 2020 (Statistics Poland, 2020a). These results were on a similar and high level in all studied groups. Against this background, what is the interest in information about the COVID-19 pandemic in the studied sample?

Firstly, the respondents were asked about the topics they were interested in (see: Figure 3). The respondents' interests focused on personally important matters – first on the health status of the people they knew (68% said they were definitely or rather interested in this topic), personal protection (60%) and pandemic-related restrictions (59%). However, the interest in mortality and morbidity rates was not much smaller (56%). It might suggest the existence of information needs related to general knowledge on this specific and challenging situation. 53% of the respondents were interested in the accessibility of health services during the pandemic. The slightest interest concerned the availability of vaccines (40%), presumably due to the calendar of events. Vaccination for the oldest social groups was available in Poland since the end of January 2021, and the group of authorised patients has been successively extended for the following years. The study was carried out in summer 2021 when most of those who wanted to be immunised probably received the first dose.
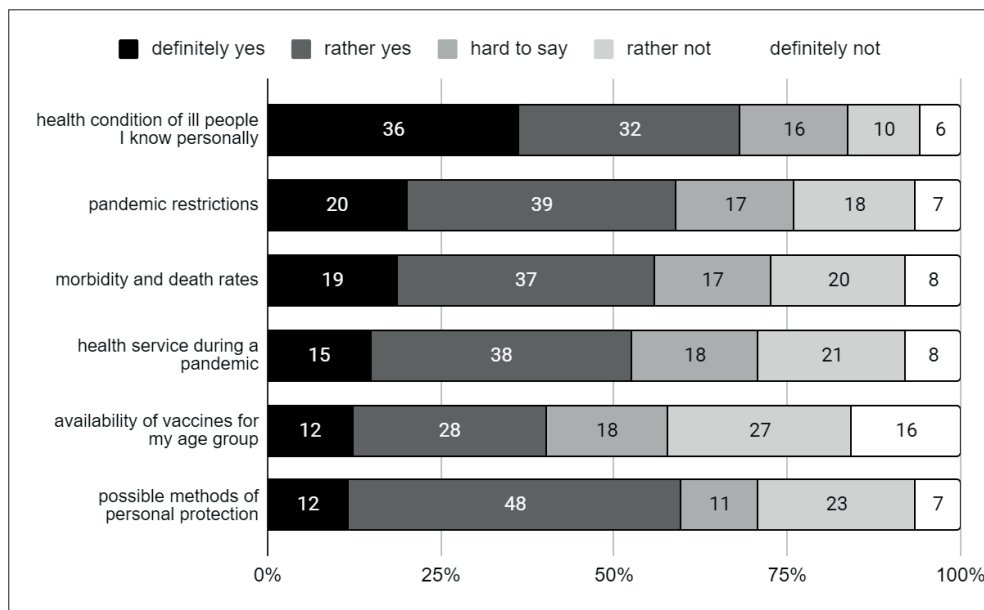
Fig. 3. Interest in pandemic-related topics (second wave, N=154).

Source: Compiled by the authors.

Q5: What is the attitude of this sample towards information about the crisis situation?

As the attitudes are the important components of the information competencies, respondents' attitudes towards pandemic information were also studied. The most frequent attitude toward the COVID-19 pandemic was fatigue. 80% of the respondents definitely or rather agreed with the statement that they are tired of pandemic and related information. The vast majority (65%) also felt that the available information was enough for them. They felt quite well oriented and updated (60%). However, almost half of the respondents reported feeling uninformed or threatened. The pandemic was not often discussed with the others (46%, which relates positively to the frequency of conversations about the COVID-19 pandemic). Furthermore, 32% declared that they were not interested in health topics at all, and 24% said they would like to know more but had some difficulty finding new information (see: Figure 4).

The attitudes may impact the importance of the pandemic topic for the respondents. Even if the pandemic is an important issue for them, prolonged exposure to its risk and information may lead to the sort of information fatigue that negatively influences the respondents' sensitivity and ability to judge its importance.
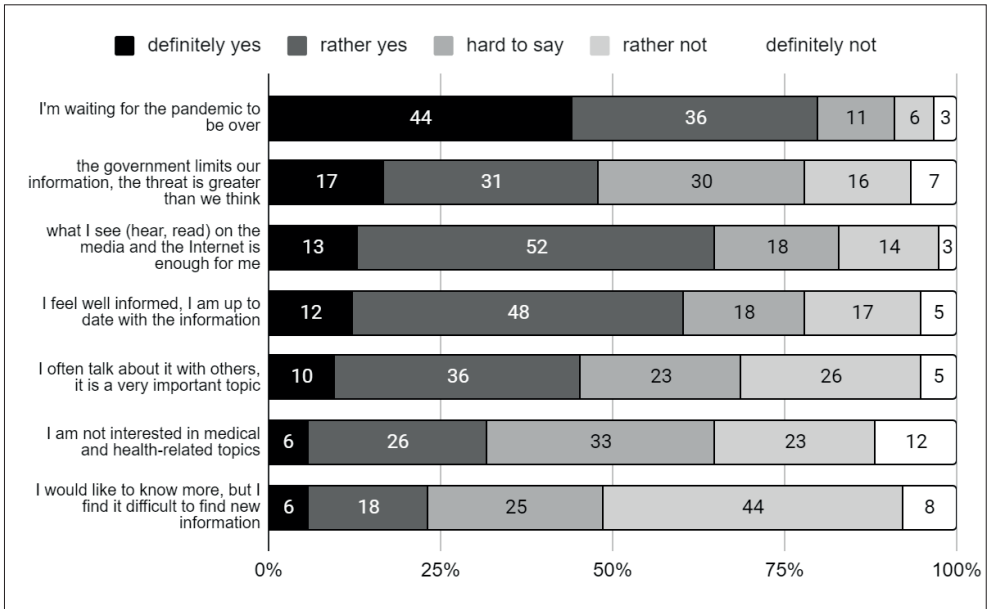
Fig. 4. Attitudes towards the information about the pandemic (second wave, N=154).

Source: Compiled by the authors.

Q6: Is there a gender differentiation in the sample in terms of information behaviour (on selected examples) and interests and attitudes towards the crisis situation?

– Within the sample, differentiation of access to media at home, out of home and no access is evident when it comes to television ($\chi2=6.7$, $p<0.05$), radio ($\chi2=11.5$, $p<0.01$) and press ($\chi2=9.5$, $p<0.01$). Women were more likely to declare access to television and press at home, while men – to radio. Detailed data are presented in Figure 5.

– In terms of established media preferences, differentiation can be seen in terms of having a favourite TV series ($\chi2=7.9$, $p<0.01$). More than half of the women (58.2%) had a favourite programme compared to 35.2% of the men.

– Women were generally much more likely to rate positively (as useful) the sources of information presented in the survey in the context of their job search[1]. Table 6 presents means, ANOVA test results and eta square values.

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1 The statistical significance of the variation for the variables was at least $p=0.01$ or less, except for the press adverts. In this case, $p=0.00502$. However, the gap between the mean value for men and women (0.64) and the eta squared value leads us to consider that there is variation in this case. This is confirmed by the statistical significance for the correlation between the evaluation of the usefulness of newspaper adverts and gender ($\rho=0.219$, $p=0.003$).
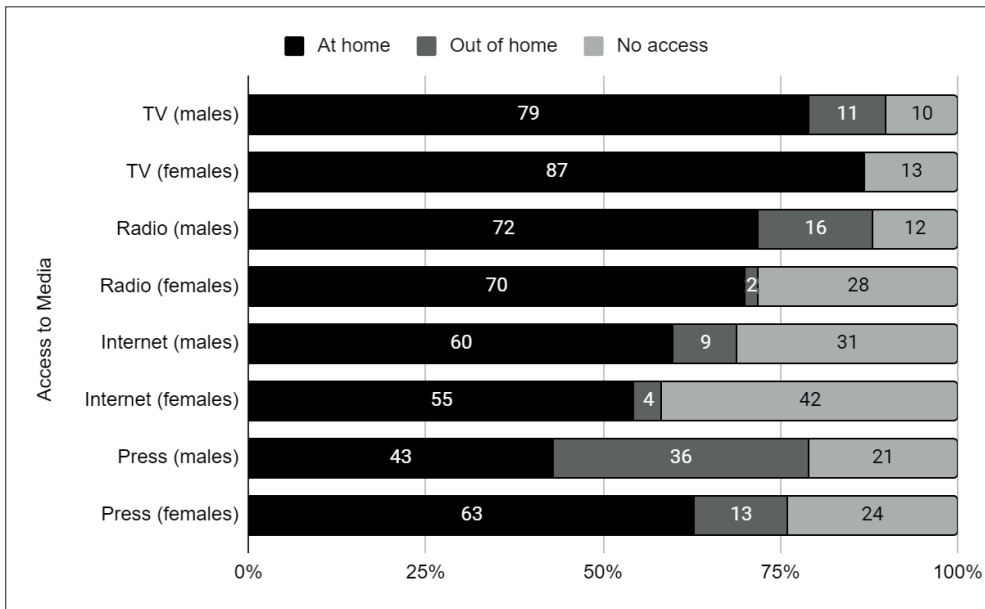
Fig. 5. Differentiation of access to media at home,
out of home and no access by gender (second wave, N=163).

Source: Compiled by the authors.

Tab. 6: Gender variation in usefulness assessment
of selected information sources in job seeking (first wave, N=163).

Item	M for males	M for females	ANOVA test results	Eta square
People I know	3.18	3.93	$F(1; 160)=13.1$	0.076
Internet	2.91	3.69	$F(1; 161)=11.2$	0.065
Newspaper advertisement	2.76	3.40	$F(1; 160)=8.1$	0.048
Information in a jobcentre	2.48	3.36	$F(1; 160)=17.2$	0.097
Advertisements on a board	2.36	3.20	$F(1; 161)=18.5$	0.103

Source: Compiled by the authors.

– We did not observe any gender differentiation in terms of the sources used in the context of seeking directions to a new location.
– We did not observe any gender differentiation in terms of the sources used in crisis situations (on the example of COVID-19 pandemics).

- We did not observe any gender differentiation in terms of talking to others about the pandemic.
- Regarding the topics that interested the respondents in the context of the pandemic, a gender difference is apparent only in the case of the health status of ill people whom the respondents knew personally (family, friends) (F(1; 151)=5.7, p<0.05; η=0.037). Women were significantly more likely to declare an interest in this topic (M=3.17) than men (M=2.67).
- We did not observe any gender differentiation in terms of attitudes towards the information about the pandemic.

Q7: Is there an age differentiation in the sample in terms of information behaviour (on selected examples) and interests and attitudes towards the crisis situation?

- In terms of access to media in the home, outside the home or no access, the only differentiation by age is apparent when it comes to the internet (χ2=17.2, p<0.001). Those under 50 years of age had internet access at home significantly more often than seniors (77.3% versus 45.4%). Almost half of the seniors had no internet access (46.4%, compared to 16.7% for those under 50) and were also more likely to use the internet outside the home than younger respondents (8.2% compared to 6.1% for those under 50).
- Age differentiated the sample in terms of having a favourite website (χ2=15.9, p<0.001). More than half (53%) of people under 50 – generally more likely to have internet access at home – had a favourite website compared to only 22.7% of older people.
- People over 50 years of age were generally more likely to rate positively (as useful) the sources of information presented in the survey in the context of their job search. The results are statistically significant for personal sources, the internet and advertisements on a board at the p<0.05 level. However, the variation by age is weaker than by gender. Table 7 presents means, ANOVA test results and eta square values.

Tab. 7: Age variation in usefulness assessment of selected information sources in job seeking (first wave, N=163).

Item	M for 18–50 years	M for 50+ years	ANOVA test results	Eta square
People I know	3.15	3.62	–	–
Internet	3.52	2.94	–	–
Newspaper advertisement	2.74	3.14	F(1; 161)=6.5	0.039
Information in a jobcentre	2.62	2.89	F(1; 161)=6.4	0.038
Advertisements on a board	2.35	2.85	F(1; 160)=5.4	0.033

Source: Compiled by the authors.

- – In terms of the sources used in the context of seeking directions to a new location, differentiation by age is apparent. People under 50 would be more likely than seniors to use the internet for this purpose (37.5% vs. 15.8%), while older people would check the timetable at the bus stop (57.9% vs. 43.8%) or ask for help (26.3% vs. 18.8%).
- – With regard to the use of information sources in the context of an emergency (COVID-19 pandemic), differentiation by age is only apparent for the Internet. People under 50 years of age declared more frequent use of the Internet than older people. Among those under 50 years of age, 36.1 % most often learned about the pandemic situation specifically from the Internet, 31.9 % used this medium sometimes, 23.6 % rarely and only 8.3 % never. Among seniors, 22% most often or sometimes learned about the pandemic situation from the Internet, 24.4% rarely and 31.7% never used the Internet for this purpose.
- – We did not observe any age differentiation in terms of talking to others about the pandemic.
- – Regarding the topics that interested the respondents in the context of the pandemic, age difference is apparent only in the case of the COVID cases and death rates – global, national, local ($F(1; 152)=6.2$, $p<0.05$; $\eta=0.039$). People over 50 were significantly more likely to declare an interest in this topic (M=2.62) than younger (M=2.14).
- – Regarding attitudes towards the information about the pandemic, age difference is apparent in the case of three items. People over 50 were more likely to say that they're waiting for the pandemic to be over, that they're satisfied with the information they consumed, and they consider pandemic a very important topic they talk about with others. Table 8 presents means, ANOVA test results and eta square values.

Tab. 8: Age variation in attitudes towards the information about the pandemic (second wave, N=154).

Item	M for 18–50 years	M for 50+ years	ANOVA test results	Eta square
I'm waiting for the pandemic to be over	2.90	3.30	$F(1; 152)=6.0$	0.038
The government limits our information, the threat is greater than we think	2.32	2.40	–	–
What I see (hear, read) on the media and the Internet is enough for me	2.39	2.76	$F(1; 152)=5.6$	0.036

I feel well informed, I am up to date with the information	2.31	2.59	–	–
I often talk about it with others, it is a very important topic	1.96	2.39	$F(1; 152)=6.2$	0.039
I am not interested in medical and health-related topics	1.82	1.99	–	–
I would like to know more, but I find it difficult to find new information	1.72	1.68	–	–

Source: Compiled by the authors.

5. Discussion

The majority of the charity's beneficiaries do not have any problem with access to information sources. They refer primarily to traditional media (TV, broadcasting) but also to the Internet. However, they are not intensive media users, which means they tend not to have favourite sources or programs they refer to regularly and by choice. So when they need information – the simple one related to public transport, and the more complex concerning job seeking – other people become an essential source of information. It is followed by the most accessible sources – the Internet (in job seeking, following newspaper ads) or public information (timetable at a bus stop – the first choice information source in this case).

These choices of information sources answer the first research question. Thus, they confirm the occurrence of information poverty in this particular group of people in a difficult situation. The respondents make routine choices, referring to the known and easily accessible sources – people from an inner cycle, followed by media and the Internet (Chatman, 1992; Savolainen, 2005; Williamson, 1998). Another important feature of this group in the perspective of information poverty is that **it lacks competencies rather than access to the media**. More than half of the respondents declared having the Internet at home and within the horizon of potential information sources. This confirms previous findings on the usage of the most straightforward and well-known solutions (Chatman, 1992; Thompson, 2007), and avoidance of any additional effort (e.g., Marcella & Chowdhury, 2020). The Internet is not a first-choice medium for this group, the habit to refer to traditional media in this case is more powerful.

The negative influence of the COVID-19 pandemic on information literacy (Okan et al., 2020) is also partially confirmed, as it comes to the preferred forms of pandemic information. The problematic situation does not urge them to develop searching skills or even refer to different forms of information. Besides conversation, the simplest are preferred, without effort of interpretation (visual and audiovisual).

Referring to the second and third research questions, concerning information sources' adequacy to information needs, the study revealed that family, friends, or voluntary caregivers are preferred and important pandemic information sources, was partially confirmed. Though traditional media are the first choice source for the respondents, members of the inner cycle – family and friends – were indicated as the second. At the same time, conversation with another person was indicated as the most convenient form of obtaining information. This is a difference in relation to previous studies (see: Buchanan, Jardine, & Ruthven, 2017; 2019; Gibson & Martin, 2019; Hayter, 2006; Hersberger, 2001; Nobilet & Ihadjadene, 2019; Pang, Karanasios, & Anwar, 2020).

Presumably, due to its scale and specificity, the COVID-19 pandemic impacts the choices of information sources (which also refers to the third research question). On the one hand, it can result from the widespread availability of news in traditional media and the Internet (the problem of its quality is beyond the scope of this study). On the other hand, it might be related to the scale, universality of the pandemic, which results in permanent presentation of news in different media.

The finding that the charity's volunteers are not perceived as convenient informants is a bit surprising, but important. Significantly fewer respondents declared that they talked to them about the COVID-19 pandemic than to the other people, including those who they accidentally met. Paradoxically, pandemic can be a kind of a "safe" topic like weather, as it concerns everyone and can be discussed safely, in the sense that everyone would have something to say about it. Presumably, the pandemic is also somewhat rather "popular" than an "important" topic, discussed by all of us.

It seems to suggest that preference and importance of personal information sources can be applied somewhat to the family or friends, not the people in rather formal relations. It may be precisely due to the specific nature of information needs and interests focusing on the health status of family and friends, and personal protection. Official information is available in the media, and private information is discussed with relatives.

Relationships with charity volunteers seem to be more nuanced. Usual topics discussed between beneficiaries and charity representatives touch upon rather private and even sensitive issues, such as social support service. Current needs and issues might be then discussed with the volunteers rather than the general situation of the city or country in the COVID-19 pandemic.

The pandemic turned out to be an important social topic for the respondents (answering the fourth research question). This topic is perceived primarily from a private experiences perspective, thus in line with the theory of small worlds (Chatman, 1992). Respondents declared interest mainly in the health status of family and friends, but also, like the whole Polish population, in personal protection equipment and (a bit less) pandemic restrictions, mortality, and morbidity rates. Fatigue appeared to be a prevalent attitude, but also, the majority had a sense of being well-oriented and up-to-date with the topic (answering the fifth research question).

The latter can be related to the limited horizons (Chatman, 1992) and a reluctance to take additional effort or specific information seeking (Archila et al., 2021).

Answering the sixth research question, we see some gender variation in terms of information behaviour (using selected examples) and interests and attitudes towards information in a crisis situation. Women seem to have more diverse and established preferences regarding media and information sources. Women were generally much more likely to rate positively the sources of information presented in the survey in the context of their job search. They are also more interested in the situation of those close to them in terms of COVID.

Lastly, in answering the seventh research question, age differentiation is also apparent. It seems to occur more frequently than gender differentiation, but the strength of the relationship is generally weaker. People under 50 have a stronger preference for online sources and older people for traditional sources. This is true for sources they use and like, searching for directions to a new place and pandemic information – and therefore for everyday and emergency situations. Those older than 50 usually rated more positively the sources of information in the context of their job search, and expressed more interest in information about cases and deaths by COVID. Among older people, selected attitudes towards the COVID pandemic were also more pronounced, especially recognising the pandemic as an important topic and talking about it with others.

6. Conclusions

The information behaviour patterns and information literacy level in the sample in terms of selection (quantity, diversification) of information sources is relatively low. In other words, the findings generally confirm information poverty, however defined in terms of poor competencies and undeveloped information needs rather than the accessibility of different information sources. The results also fit into the concept of small worlds, where information flow is based on personal sources, members of a given community. The respondents did not declare the need to obtain more information than gathered in the easiest and typical way or further diversification of sources. According to the least effort principle, the search for pandemic information was carried out according to everyday schemes and habits. The pandemic appeared to be an important topic, particularly considering its influence on personal life. On the other hand, it is perceived as a tiring issue, which is an essential factor demotivating to conduct additional searching and evaluate information reliability, particularly with poor information skills.

The status of information literacy of the studied group indicates new tasks for caregivers in terms of adequate provision of information and development of information skills, particularly in health or life-threatening circumstances.

The study has its limitations. Data is declarative in character, which creates a need to be complemented or confronted with qualitative study (e.g., observation, experiment, e.g., information searching task). The sample was relatively small. Therefore, similar surveys in other social support organisations would be valued. Another limitation refers to the time of the study. Both parts were carried out between April and July 2021, that is, during the specific pandemic period (third high wave in Poland and summertime following). Since, information skills and choices, as well as the respondents' attitudes, could have changed during the whole pandemic, starting from March 2020 until today.

These limitations can also be considered as future research needs. Information literacy studies can explore the dominant attitude of pandemic fatigue. Fatigue can be an essential or even decisive factor in searching for information or updates in a critical situation. Poor motivation and information literacy levels, simultaneously with information overload, can negatively enhance the search and interpretation of information. Fatigue and weakened motivation can also be analysed from an affective perspective, i.e., considering the potential dependence between emotional (or even psychological) status, level of information literacy and behaviour.

In such a crisis as a COVID-19 pandemic, it is also crucial to know that beneficiaries living in small worlds have specific information rituals. Despite different and challenging circumstances, they do not easily change their choices or develop new competencies. The findings of this study might be important for organisations and caregivers – to help develop so-called COVID-19 literacy (Archila et al., 2021) or these information competencies, which can be crucial for safe living in crisis. A strong preference for personal information sources – family and friends – suggests the need to communicate key information to beneficiaries and people in their inner circle. This strategy can potentially increase the effective transmission of information. It would be in line with the relational concept of information literacy (Jasiewicz et al., 2015; Kisilowska, Jasiewicz, & Mierzecka, 2017), according to which information users develop the appropriate skills in their specific situations.

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Kompetencje informacyjne i zachowania informacyjne osób w trudnej sytuacji w trakcie pandemii COVID-19. Analiza przypadku podopiecznych fundacji charytatywnej

Abstrakt

Cele: Celem projektu było zbadanie kompetencji i zachowań informacyjnych podopiecznych fundacji charytatywnej, ich postaw i zachowań zwłaszcza w odniesieniu do informacji dotyczącej COVID-19.

Metody: Przeprowadzono dwie serie badań ilościowych techniką CAPI. Pierwsza dotyczyła podstawowych kwestii dostępu do źródeł informacji oraz preferencji w tym zakresie. W drugiej skupiono się na informacji dotyczącej pandemii COVID-19. Wyniki przeanalizowano z użyciem podstawowych narzędzi statystycznych.

Wyniki: Sposób życia osób w trudnej sytuacji warunkuje ubóstwo oraz koncepcja małych światów. Informację czerpią przede wszystkim ze źródeł osobowych. Ich zachowania informacyjne dotyczące pandemii nie różnią się od codziennych zachowań informacyjnych. Respondenci zgłaszali poczucie zmęczenia informacją o pandemii, która zdominowała media i rozmowy nieformalne.

Wnioski: Stwierdzono podobny do opisanego w literaturze poziom kompetencji informacyjnych i zachowania wskazujące na ubóstwo informacyjne, choć zaobserwowano różnice w preferowanych źródłach. Wolontariusze fundacje odgrywają niewielką rolę jeśli chodzi o przekaz informacji o pandemii.

Oryginalność: Stan kompetencji informacyjnych badanej populacji sugeruje nowe zadania dla opiekunów w zakresie dostarczania informacji i rozwijania kompetencji informacyjnych, zwłaszcza w sytuacjach ryzyka zdrowotnego.

Słowa kluczowe

Zdrowotne potrzeby informacyjne. Kompetencje zdrowotne. Kompetencje informacyjne. Zachowania informacyjne. Grupy w trudnej sytuacji.

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Anna Sitarska
(1938–2023)

Anna Sitarska (a właściwie Danuta Anna, z domu Buresz) urodziła się 29 czerwca 1938 roku w Baranowie koło Ostrołęki, zmarła 21 kwietnia 2023 roku w Warszawie. Jej rodzicami byli Maria i Alfred Bureszowie. W 1956 roku ukończyła Państwowe Liceum Bibliotekarskie w Łodzi, a w 1961 roku studia bibliotekoznawcze na Uniwersytecie Warszawskim. Jej praca magisterska napisana pod kierunkiem dr. Michała Ambrosa _była bibliografią podmiotowo-przedmiotową Jerzego Andrzejewskiego. Po studiach w 1961 roku podjęła pracę na Uniwersytecie Warszawskim w Katedrze Bibliotekoznawstwa. W roku 1969 uzyskała także na Uniwersytecie Warszawskim stopień naukowy doktora na podstawie pracy poświęconej organizacyjnym i metodycznym problemom automatyzacji bibliografii napisanej pod kierunkiem doc. dr hab. Krystyny Remerowej. W latach 1972–1974 podjęła czasowo pracę w Bibliotece Narodowej, gdzie między innymi przeprowadziła analizę systemową BN związaną z jakże wtedy śmiałymi planami automatyzacji tej Biblioteki. (Była autorką nowatorskiego projektu automatyzacji BN – niestety, nie został on nigdy

wdrożony). W latach 1974–1981 ponownie zatrudniona na stanowisku adiunkta w Instytucie Bibliotekoznawstwa i Informacji Naukowej UW (IBIN UW), następcy Katedry Bibliotekoznawstwa, przez dwa lata pełniła funkcję dyrektora tej jednostki. Habilitację uzyskała w roku 1990 na Uniwersytecie Wrocławskim na podstawie rozprawy zatytułowanej *Systemowe badanie bibliotek. Studium metodologiczne* (Łódź 1990). O tytuł profesora nie ubiegała się, co nie zmienia faktu, że dla wszystkich, którzy Ją znali, była na wskroś profesorem.

Życie zawodowe Profesor Anny Sitarskiej było dynamiczne, pełne zmian miejsc zatrudnienia, pulsowało nowymi zainteresowaniami badawczymi, praktycznymi, dydaktycznymi. Na mapie instytucji, z którymi była związana, są między innymi Biblioteka Uniwersytecka w Warszawie (1981–1983), Biblioteka Naukowa Zamku Królewskiego w Warszawie, Katedra Bibliotekoznawstwa Uniwersytetu Łódzkiego (1987–1991), Uniwersytet w Białymstoku (1996–2003), gdzie Anna Sitarska założyła Zakład Bibliotekoznawstwa i zainicjowała akademickie kształcenie bibliotekarzy, Instytut Informacji Naukowej i Bibliotekoznawstwa na Wydziale Zarządzania i Komunikacji Społecznej Uniwersytetu Jagiellońskiego. W 2001 roku otrzymała nagrodę im. Adama Mickiewicza dla bibliotekarza polskiego. A w 2013 roku, za wybitne zasługi w pracy naukowo-badawczej w dziedzinie bibliotekoznawstwa i informacji naukowej, za zasługi na rzecz zachowania dziedzictwa narodowego, została odznaczona przez prezydenta Bronisława Komorowskiego Krzyżem Komandorskim Orderu Odrodzenia Polski. Była niespokojnym duchem. Ciągle stawiała przed sobą nowe wyzwania, nie bała się zmian i tego, co dopiero nadchodziło i jeszcze nie było rozpoznane. Inicjatorka i prekursorka wielu przemian w bibliotekach polskich, a także w akademickiej dydaktyce bibliotekarzy i pracowników informacji. Była błyskotliwa, profesjonalna, perfekcyjna, pracowita i boleśnie bezkompromisowa.

W dorobku Profesor Anny Sitarskiej można wyróżnić co najmniej trzy konsekwentnie przez Nią eksplorowane pola badawcze. Przede wszystkim ukochane bibliotekoznawstwo i bibliotekarstwo, które twórczo łączyła z nowymi metodami i technikami pracy niesionymi przez, jak się wówczas mówiło, informację naukowo-techniczną. Bezsprzecznie Anna Sitarska była nie tylko pionierką, ale i największym autorytetem w zakresie analizy systemowej bibliotek i innych instytucji kultury i informacji (zob. *Systemowe badanie bibliotek: studium metodologiczne*, wyd. 2., *Z Prac Naukowych Książnicy Podlaskiej Nr 1*, Białystok 2005; wyd. 1. Łódź 1990) oraz automatyzacji bibliotek. Z determinacją na różne sposoby walczyła o miejsce dla bibliotek w świecie nowoczesnych technologii informacyjnych i w zmieniającym się społeczeństwie (informacyjnym, cyfrowym, dziś mobilnym). Reprezentowała Bibliotekę Narodową na międzynarodowych sesjach normalizacyjnych ISO, w efekcie czego bibliotekarstwo i bibliotekoznawstwo polskie dotrzymywało kroku światowym zmianom normalizacyjnym, również w obszarze terminologicznym. A jak wiadomo, terminologia i język są obrazami świata. Poprzez słowa, ich znaczenia i stojące za nimi pojęcia odkrywamy głębię i złożoność

rzeczywistości. Przy współpracy Profesor Sitarskiej z Biblioteką Uniwersytecką w Warszawie, opracowany został projekt centralnego katalogu piśmiennictwa z nauk społecznych oraz analiza istniejących systemów klasyfikacyjnych pod kątem możliwości ich zastosowania jako języka informacyjno-wyszukiwawczego tego katalogu. Innym materialnym efektem tych prac był napisany wspólnie z Anną Romańską poradnik *Specjalizacja zbiorów bibliotecznych* (Anna Romańska, Anna Sitarska, *Specjalizacja zbiorów bibliotecznych: zagadnienia metodyczne*, wyd. 2., Warszawa 1986; wyd. 1. w 1984 roku). W owym czasie idea centralizacji i specjalizacji bibliotek, była jednym z priorytetów polityki biblioteczno-informacyjnej, zagadnieniem interesującym poznawczo i bardzo ważnym praktycznie.

Kolejnym obszarem badań i sukcesów Profesor Anny Sitarskiej była bibliografia, obecna w Jej życiu zawodowym od początku, tj. od etapu pracy magisterskiej, przez doktorat, intensywne lata siedemdziesiąte (między innymi *Nowe formy informacji bibliograficznej*, Warszawa 1971; *Nowe metody i techniki bibliografii*, PWN, Warszawa 1971), aż po lata pełni twórczości, zwieńczone między innymi opracowaniem *Jan Paweł II poza cenzurą PRL: bibliografia 1976–1989* (Wydawnictwo Księży Marianów, Warszawa, Fundacja Jana Pawła II. Ośrodek Dokumentacji Pontyfikatu, Rzym 1996, współautorką była Stefania Skwirowska). Warto przypomnieć, że w badaniach prowadzonych w związku z pracą nad rozprawą doktorską (wówczas) mgr Sitarska wykorzystywała pierwszy na Uniwersytecie Warszawskim komputer, czyli jak wówczas mówiono, elektroniczną maszynę obliczeniową. Można dziś już tylko spekulować, jak potoczyłyby się losy Profesor Sitarskiej i polskiego bibliotekarstwa, gdyby jednak pozwolono Jej wyjechać na stypendium do USA. Wprawdzie nie odmówiono zgody, ale, niestety, zwlekano na tyle długo, aż wygasło prawo do wykorzystania stypendium.

Wreszcie, trzeba podkreślić, jak nieoceniony był wkład Profesor Anny Sitarskiej we wzmacnianie podstaw teoretycznych i metodologicznych bibliotekoznawstwa i nauki o informacji. Naszym zdaniem, w tym obszarze, dorobek Profesor Sitarskiej wpisuje się w dziedzictwo bibliotekoznawstwa i nauki o informacji wypracowane przez takie znakomitości drugiej połowy XX wieku, jak Jan Muszkowski, Józef Grycz, Maria Dembowska, Barbara Bieńkowska, Karol Głombiowski czy Krzysztof Migoń.

Osiągnięcia naukowo-dydaktyczne Profesor Anny Sitarskiej mają istotne znaczenie dla rozwoju bibliografii, informacji naukowej i nowoczesnego bibliotekarstwa w Polsce. Przez ponad 40 lat prowadziła zajęcia dydaktyczne na uniwersytetach, wygłaszała referaty i prelekcje, występowała na konferencjach, bezkompromisowo walcząc o automatyzację i dobrostan polskich bibliotek. Jej myśl naukowa, działalność praktyczna i postawa przyczyniły się w wydatny sposób do ukształtowania nowego pokolenia bibliotekarzy, pracowników informacji i badaczy.

Profesor Anna Sitarska była naszym nauczycielem akademickim w czasie studiów w ówczesnym Instytucie Bibliotekoznawstwa i Informacji Naukowej na Wydziale Historycznym Uniwersytetu Warszawskiego. Byliśmy drugim naborem studentów,

którym dano możliwość wybrania po drugim roku studiów specjalizacji „Informacja naukowa", obok istniejących już specjalizacji „Wiedza o dawnej książce" i „Biblioteki szkolne i pedagogiczne". W 1975 roku nastąpiło bowiem zasadnicze zróżnicowanie profilów nauczania na studiach bibliotekoznawczych w Polsce: wariant humanistyczny został opracowany i zrealizowany w Instytucie Bibliotekoznawstwa Uniwersytetu Wrocławskiego (za nim poszła większość akademickich ośrodków kształcenia bibliotekarzy) oraz wariant społeczno-matematyczny, przygotowany przez IBIN UW, przyjęty też przez zakłady bibliotekoznawstwa Uniwersytetu Jagiellońskiego i Uniwersytetu Adama Mickiewicza w Poznaniu. Krzysztof Gonet był też bezpośrednio uczestnikiem seminarium (wówczas) dr Anny Sitarskiej, a ja byłam wtedy pod opieką dr. Jana Bobrowskiego. Wspominamy z ogromną wdzięcznością i nutą nostalgii tamte lata i środowisko ludzi pracujących i związanych z naszym IBIN-em. Czyż można zapomnieć też spotkania „Pod Gruszą", w zawsze otwartym domu Państwa Sitarskich? Były one dla nas ucztą duchową i intelektualną, jak „obiady czwartkowe u króla Stasia", choć na stole „królowała" zalewajka i „japońskie" kanapki, czyli chleb posmarowany masłem z plasterkami jabłka. Ale przede wszystkim pamiętamy rozmowy i dyskusje, będące doznaniami intelektualnymi i estetycznymi, formowaniem postaw i charakterów. Tego się nie da zapomnieć. Wiele zawdzięczamy Profesor Sitarskiej w wymiarze akademickim, zawodowym, ale również ukształtowania naszych charakterów, postaw i wartości. Mamy nadzieję, że nie tylko my, ale i kilka pokoleń współczesnych bibliotekarzy i bibliotekoznawców, może podpisać się pod tezą, którą sformułował Ks. Krzysztof Gonet w słowie pożegnania na pogrzebie Profesor Anny Sitarskiej w dniu 28 kwietnia 2023 roku: *Hinc omnia – Stąd wszystko*. „Wszystko to, co w bibliotekarskim wątku mojego życia wymyśliłem i zrobiłem, ma swój początek w inspiracjach Pani Profesor Anny, które czerpałem z jej wykładów i publikacji, z długich rozmów i dyskusji, a także z podpatrywania jej przykładu i życiowych postaw. Przepraszam, ze mówię o swoim doświadczeniu, ale przecież najlepiej je znam. Mam jednak nadzieję, że wyrażam też myśli wielu studentów i wychowanków Pani Prof. Anny, którzy są tu dziś z nami obecni". (Tekst Pożegnania zostanie opublikowany w najbliższym numerze czasopisma „FIDES: Rocznik Bibliotek Kościelnych"). Jesteśmy Jej wdzięczni za wszystko, co dla nas uczyniła, czego nas nauczyła, a przed wszystkim za piękną Przyjaźń, którą nas obdarzyła.

Kończąc to bolesne dla nas, ale i przepełnione wdzięcznością oraz nadzieją wspomnienie, przywołamy retoryczną, ale bardzo trafną i serdeczną, wypowiedź Jana Leończuka (Jan Leończuk, *Rozterki redaktora „Księgi Jubileuszowej"*, W: *Od księgoznawstwa, przez bibliotekoznawstwo do nauki o informacji XXI wieku*, Białystok 2007, s. 7.), wieloletniego dyrektora Książnicy Podlaskiej im. Łukasza Górnickiego w Białymstoku.

„Jak zamknąć w słowach dorobek i osobę Pani Prof. dr hab. Anny Sitarskiej i Jej:
– błyskotliwą, żywą niby rtęć inteligencję

– nieposkromiony apetyt na wiedzę
– niezwyczajny talent (…) i pracowitość, które obficie owocują, bez względu na mało żyzną glebę naukowych poletek doświadczalnych i dziwnie wciąż niesprzyjające warunki atmosferyczne
– trud wieloletnich zmagań z (…) żywiołem studenckich rzesz; wieloletnich wysiłków dydaktycznych, podejmowanych z zawsze silnym przekonaniem o celowości trudów i – wymagań
– lata zdobytych doświadczeń i specjalizacji, prekursorskie intuicje i pionierskie wkraczanie na elektroniczno-systemowe ścieżki bibliotekarskiej i bibliotekoznawczej przyszłości
– wreszcie (…) wielką osobowość i mocną (…) osobowość, o niepowtarzalnym uroku, bogactwie, sprzecznościach (właściwych wielkim osobowościom) i zagadkach…?".

Profesor Anna Sitarska spoczęła obok swojego Męża Grzegorza na cmentarzu rzymskokatolickim w Nadarzynie.

Ks. Krzysztof Gonet
Jadwiga Woźniak-Kasperek

Libraries in the Digital Age (LIDA) Conference
Osijek, Croatia, 24 May – 26 May 2023

The LIBRARIES IN THE DIGITAL AGE (LIDA) conference, an annual academic gathering, has been organized by Croatian universities since the year 2000. The most recent iteration of this conference, titled "Information Everywhere", was hosted in Osijek through a collaborative effort between the University of Zadar and the University of Osijek.

Before delving into the central theme of the conference, it is noteworthy to acknowledge that the entire event was dedicated as a memorial to the recently departed Ross J. Todd. Ross J. Todd, an esteemed Associate Professor of Library and Information Science at Rutgers' School of Communication and Information, emerged as an indelible figure in the landscape of LIDA's history, having served as a co-director. In particular, his profound contributions to the realm of school libraries and his benevolent mentorship extended to fledgling researchers resonated throughout the conference. A dedicated session to commemorate his legacy was led by Professor Carol Gordon.

Professor Annemaree Lloyd delivered the opening speech of the conference, focusing on the question: "How should we approach information literacy practice?" Her talk skillfully clarified the changing ideas and difficulties related to information literacy, considering the widespread belief that information is everywhere. This pervasive stance was not only evident within the inaugural address, but also permeated the broader theme of the conference.These sessions went beyond assessing library operations, covering a wide range of aspects within information science.

The significance of enhancing education in Library and Information Science (LIS) was highlighted in the panel "Perspectives and Strategies for Excellence in LIS Pedagogy". During this session, findings was shared by researchers from various countries, including the USA, Slovenia, and Croatia. They concurred that the field of LIS has been experiencing substantial changes, necessitating adjustments in educational programs, a task often beset by challenges. A related discourse emerged in the "Research on Information Literacy and Competencies" panel. The presentations echoed the conference's guiding principle, the ubiquity of information – emphasizing the imperative to cultivate adept information usage skills as a fundamental component of higher education across disciplines.

The panel "Theoretical and Philosophical Approaches in LIS" also delved into LIS evolution and challenges of LIS. Particularly interesting was the contribution of researchers from the University of Buffalo – Amy VanScoy, Africa Hands – and

the University of Ljubljana – Tanja Merčun, Katarina Švab, Maja Kuhar. Their project aimed to gauge the integration of theoretical concepts and models into the professional practice of information experts in the United States and Slovenia. Confronting the abstract nature of theories, the researchers ingeniously employed a "card sorting" method, utilizing concise theory descriptions on cards to enhance participant engagement. This methodological fusion of theory and LIS practice deserves attention.

The subsequent panel, titled "Preservation, Legacy, Archival Pursuits", wove together diverse strands encompassing user behaviors concerning the preservation of digital legacies, the selection of films for digitization, and the creation of virtual research environments for glagolitic manuscript investigations. A common thread emerged, underlining the noticeable shift of research activities and information practices toward digital realms.

The panel "Human Information Behavior in Context" yielded a plethora of varied insights. The topics ranged from interactions with information during collaborative projects to seeking health-related information, the impact of the environment on individual and collective information behaviors, and even the information experiences of individuals with tattoos. Evidently, the vital importance of engaging with information resonates in a variety of domains. This principle was further emphasized in the "Privacy, Disinformation, and Trust" panels as well as in the "Critical Approaches to Diversity, Equity, and Inclusion". Here, the emphasis was on the need for tailored information solutions that align with specific user contexts. Nonetheless, an intriguing study by Elke Greifeneder and Paulina Bressel among German scholars (presented within the "Exploring Virtuality & Information Services" panel) revealed that the seeking behaviors were very similar, and participants criticized when digital services were too different. This study indicates that it is really a universal necessity to check the actual needs of users rather than individualizing the solutions introduced.

Two panels focused on library studies themes within the context of public libraries: "Digital Services in Public Libraries" and "Information Literacy and Initiatives and Innovations in Public Library Services". Researchers explored how libraries address contemporary challenges. This spans from the realm of widespread digital presence (examined through discussions such as "How public libraries deliver value online: The perception of librarians") to assuming new roles during emergencies (as illustrated by the case of "Public library services for Ukrainian refugees in Hungary and Poland").

The conference provided a global platform, drawing together researchers from various corners of the world, including the USA, Spain, Slovenia, Croatia, Norway, Denmark, Sweden, the Netherlands, Lithuania, Hungary, Germany, Pakistan, Poland, and New Zealand. It is important to note that the mentioned speeches represent just a fraction of the comprehensive conference proceedings. A more

comprehensive view, including abstracts and presentation materials, can be accessed at https://lida.ffos.hr/program/.

The conference's overarching theme, "Information Everywhere," aptly encapsulates its essence. The diverse range of presentations underscores that the role of libraries in the digital age extends beyond the traditional scope of collecting and providing access to materials. In this dynamic landscape, libraries must flexibly adapt their services to cater to users' needs and be omnipresent in contexts where information interaction occurs. In essence, this signifies a pervasive presence across all spheres, everywhere.

Anna Mierzecka

Paulina Sajna-Kosobucka, (2023). Badania architektury informacji *na przykładzie radia akademickiego. User Experience i User Interface.* Toruń: Wydaw. Naukowe Uniwersytetu Mikołaja Kopernika. ISBN 978-83-231-4944-6.

Publikacja *Badania architektury informacji na przykładzie radia akademickiego. User Experience i User Interface* ukazała się w 2023 roku nakładem Wydawnictwa Naukowego Uniwersytetu Mikołaja Kopernika. Monografia składa się z sześciu rozdziałów, wstępu, bibliografii, zakończenia, aneksów oraz dodatkowych spisów (ilustracji, tabel i wykresów).

Architektura informacji to wciąż nowy i nie do końca zbadany obszar odgrywający istotne znaczenie przy tworzeniu serwisów internetowych, aplikacji oraz interfejsów urządzeń, których działanie powinno być zbieżne z oczekiwaniami i potrzebami użytkowników. W literaturze naukowej tematyka ta w ostatnich latach jest dosyć często podejmowana przez przedstawicieli dyscyplin ścisłych, ale nie tylko. Umiejętność odpowiedniego organizowania i etykietowania stron internetowych, intranetowych, społeczeństw sieciowych oraz oprogramowania w celu wspierania użyteczności informacji to przede wszystkim domena specjalistów informacji, już nie tylko zajmujących się problematyką wyszukiwania, gromadzenia, udostępniania i właściwego przechowywania danych. Coraz częściej, oprócz jakości, zwraca się uwagę na sposób prezentacji informacji. Jest to związane z rozwojem technologicznym i pojawieniem się nowych mediów, które zyskują coraz większe grono odbiorców.

Badacze z zakresu nauk humanistycznych i społecznych traktują architekturę informacji jako obszar służący przede wszystkim użytkownikowi. Jak zauważył Stanisław Skórka, jej podstawowym celem jest badanie zjawisk mających wpływ na proces poszukiwania informacji i efektywność zarządzania informacją. Jest także wykorzystywana w badaniu nowych narzędzi, metod i inspiracji, koncentrując się na samej informacji, analizowaniu jej cech i atrybutów w kontekście całego procesu informacyjnego (Skórka, 2021). Z kolei Marcin Roszkowski, odnosząc się do rozważań najważniejszych teoretyków architektury informacji – Louisa Rosenfelda, Petera Morville i Jorge Arango – zwrócił uwagę na rolę rozumienia i interpretacji w projektowaniu architektury informacji. Według niego, systemy organizacyjne, etykietowania, nawigacji i wyszukiwania powinny być traktowane jako środki ekspresji, sprzyjające nawiązaniu porozumienia pomiędzy użytkownikiem a systemem (Roszkowski, 2019). Architekci informacji coraz częściej muszą uwzględniać potrzeby i preferencje użytkowników. Według Alexandra Bleiera, Colleen M. Harmeling i Roberta W. Palmatiera, projektowanie skutecznych doświadczeń klientów (ang. *user experience*) za pomocą dobrze zaprojektowanych stron internetowych ma kluczowe znaczenie w przyswajaniu informacji, a w konsekwencji – może wpływać także na inne obszary (np. w handlu przyczynia się do podnoszenia sprzedaży). Dlatego specjaliści zajmujący się projektowaniem i zarządzaniem serwisami internetowymi powinni dbać o to, aby końcowy produkt wzbudzał pozytywne odczucia w odbiorcach, którzy będą z niego korzystali (Bleier, 2019).

Monografia Pauliny Sajny-Kosobuckiej to nie tylko studium przypadku, ale także

kompendium wiedzy w zakresie teorii architektury informacji. Pierwszy rozdział stanowi punkt wyjścia do rozważań na temat implementowania odpowiednich zasad przy tworzeniu serwisów internetowych. Autorka szczegółowo omówiła systemy organizacyjne, etykietowania, nawigacyjne i wyszukiwawcze, a także zwróciła uwagę na dodatkowe elementy, które mają wpływ na poprawę użyteczności i funkcjonalności tworzonych stron internetowych. Wśród nich zaprezentowała m.in. algorytmy Google, które indeksują treści i hierarchizują wyniki wyszukiwania. Niezwykle ważne, zarówno z punktu widzenia twórców jak i użytkowników jest także wykorzystanie innych metod badawczych m.in. *user experience*, *user interface* oraz *design thinking*. Na szczególną uwagę zasługuje część opisująca eksperymenty z udziałem użytkowników. Autorka dokonała analizy najważniejszych metod testowania, zwracając uwagę na ich poszczególne etapy, a przede wszystkim odpowiedni dobór testerów.

W drugim rozdziale podjęto kwestię transformacji mediów, która jest konsekwencją ich konwergencji i transformacji. Jako przykład zaprezentowano radio internetowe, będące specyficznym rodzajem medium, którego jednym z nadrzędnych celów jest kształcenie przyszłych kadr dziennikarskich. Autorka szczególną uwagę poświęciła witrynom internetowym ośmiu polskich akademickich stacji radiowych, opisując z niezwykłą dbałością poszczególne ich elementy, a także najważniejsze funkcjonalności. Nie zdecydowano się na szczegółowe omówienie każdego serwisu pod kątem zastosowanych rozwiązań. Zabieg ten wydaje się zasadny, biorąc pod uwagę, że głównym tematem publikacji jest rozgłośnia bydgoskiej uczelni, stanowiąca główny przedmiot rozważań omawianej monografii.

Przedstawienie poszczególnych elementów architektury informacji w odniesieniu do bydgoskiego Radia Uniwersytet poprzedzono zaprezentowaniem historii rozgłośni, nadającej od 2007 roku z kampusu Uniwersytetu Kazimierza Wielkiego. W dalszej kolejności Autorka dokonała omówienia kryteriów oceny jakości składowych architektury informacji. Wyniki analiz zostały uzupełnione o materiał ilustracyjny w postaci zrzutów ekranowych. Ważną część stanowi zwrócenie uwagi na dodatkowe elementy wspierające architekturę informacji oraz realizację wymogów stawianych przez algorytmy Google. Na przykładzie rozgłośni radiowej, czytelnik może przekonać się, w jaki sposób powinien wyglądać funkcjonalny, użyteczny i prawidłowo indeksowany przez wyszukiwarkę serwis internetowy.

W czwartym rozdziale Autorka podjęła próbę ujęcia pozostałych elementów omawianego serwisu internetowego. W pierwszej kolejności dokonano omówienia sprzętu i oprogramowania, będących składowymi budowy Radia Uniwersytet. Dokonano wyróżnienia czterech najważniejszych wymiarów – technicznego, danych, zabezpieczeń i operacyjnego. Na dalszym etapie pod uwagę wzięto tzw. społeczność sieciową, czyli ludzi odpowiedzialnych za tworzenie i funkcjonowanie rozgłośni. Analizując pracę radiowców, wyszczególniono najbardziej istotne kryteria obejmujące: działalność, związki pomiędzy członkami redakcji oraz parametry sprzęgania zespołów. Przy okazji omówiono najważniejsze zadania poszczególnych zespołów, ujawniając kulisy przygotowania materiałów radiowych. Oprócz prowadzenia audycji w trybie stacjonarnym, istnieje bowiem możliwość nagrywania w trybie zdalnym – za pomocą odpowiedniej aplikacji lub poprzez emisję „na żywo". Ważną kwestią jest także odpowiednie rozplanowanie ramówki, która wyświetla się w serwisie internetowym. Aby wszystko przebiegało w sposób płynny, redakcja korzysta z arkusza Google skonfigurowanego w taki sposób, by odpowiednie algorytmy potrafiły rozpoznać, że robot prosi o dostarczenie danych.

Piąty rozdział stanowi prezentację wyników przeprowadzonych badań. Wybrane składowe serwisu Radia Uniwersytet zostały poddane ocenie, w ramach której Badaczka przyznawała punkty, dokonując przeglądu najważniejszych elementów wchodzących w skład poszczególnych systemów. Wnioski zostały zaprezentowane w formie tabeli podsumowującej. Zwrócono też uwagę na wygląd serwisu w poszczególnych latach podkreślając, iż najlepszą pod względem architektury informacji była strona funkcjonująca w latach 2013 – 2014. Kolejne jej odsłony sukcesywnie uzupełniano o nowe funkcjonalności, w zależności od potrzeb i oczekiwań użytkowników.

W ostatnim rozdziale przedstawiono propozycje ulepszeń odnośnie do serwisu bydgoskiego Radia Uniwersytet. Autorka nie tylko zwróciła uwagę na elementy, które powinny ulec przebudowie, ale także uzupełniła swoje wnioski o materiał ilustracyjny, który stanowią szkice i projekty nowego serwisu. Załączone makiety zawierają wszystkie części składowe, które mogą wpłynąć na poprawę funkcjonalności strony, a przede wszystkim uczynić ją bardziej przyjazną dla odbiorcy. Zaproponowane rozwiązania mogą także stanowić inspirację dla twórców serwisów internetowych i deweloperów pracujących nad aplikacjami, o czym Autorka wspomniała także w zakończeniu monografii.

Publikacja Pauliny Sajny-Kosobuckiej stanowi ważny głos w dyskusji na temat roli i znaczenia architektury informacji w tworzeniu serwisów internetowych. Zaprezentowanie najważniejszych zasad i wytycznych na przykładzie radia akademickiego pozwala spojrzeć na stronę internetową w szerszym kontekście. Podjęte rozważania stanowią ciekawy punkt wyjścia do kontynuacji badań na ten temat i z pewnością mogą zachęcić czytelników do tego, by jeszcze dokładniej przyjrzeć się kwestiom związanym z architekturą informacji, a przede wszystkim tym elementom, które są kluczowe, jeśli chodzi o użyteczność i funkcjonalność serwisu internetowego.

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1. Zasady ogólne

1.1. Format

Wszystkie pliki (tekst artykułu, materiały ilustracyjne) należy przesyłać jako dokumenty edytora MS WORD w formacie RTF. Zaleca się stosować w tekście czcionkę Times New Roman 12 pkt, interlinię 1.5. Tytuł artykułu należy wyróżnić czcionką Times New Roman 16 pkt. **Nie należy używać automatycznych stylów.**

Materiały ilustracyjne, wstawione w treść artykułu, dodatkowo należy przesyłać również w formacie JPG. Załączniki powinny być ponumerowane według kolejności występowania w tekście oraz zawierać nazwę, np.: *1. Tab. 1. Poziomy metadanych* albo *3. Rys. 1. Mapa myśli*.

1.2. Długość tekstu

Artykuł nie powinien przekraczać 40 000, a recenzja lub sprawozdanie 14 000 znaków (ze spacjami).

1.3. Strona tytułowa

Autorzy artykułów proszeni są o przygotowanie odrębnej strony tytułowej, zawierającej:
- **tytuł artykułu (w językach polskim i angielskim)**
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- **adres** *e-mail*
- **adres do korespondencji**
- **notę biograficzną autora (patrz niżej)**
- **abstrakt ustrukturyzowany (patrz niżej)**
- **słowa kluczowe (patrz niżej)**
- **oświadczenie o oryginalności tekstu (patrz niżej).**

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Na stronie tytułowej należy umieścić zwięzłą notę biograficzną (ok. 70 słów) każdego autora artykułu. Nota powinna zawierać następujące informacje: tytuł / stopień naukowy lub zawodowy autora, aktualne miejsce pracy i zajmowane stanowisko; specjalności naukowe lub zawodowe, najważniejsze publikacje (max. 3). Opisy publikacji powinny być sporządzone zgodnie z zasadami APA Style 6th.

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Na stronie tytułowej należy umieścić abstrakt w języku polskim o objętości ok. 100 słów (ok. 1 tys. znaków) oraz jego przekład na język angielski. W abstrakcie należy wyróżnić co najmniej cztery spośród następujących kategorii informacji:

– **Cel/Teza | Purpose/Thesis** *(obowiązkowo)*
– **Koncepcja/Metody badań | Approach/Methods** *(obowiązkowo)*
– **Wyniki i wnioski | Results and conclusions** *(obowiązkowo)*
– **Ograniczenia badań | Research limatations** *(opcjonalnie)*
– **Zastosowanie praktyczne | Practical implications** *(opcjonalnie)*
– **Oryginalność/Wartość poznawcza | Originality/Value** *(obowiązkowo)*

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Na stronie tytułowej artykułu należy umieścić od 4 do 10 słów kluczowych, w formie fraz nominalnych w mianowniku liczby pojedynczej, których pierwszy wyraz zapisany jest wielką literą, uporządkowanych alfabetycznie, rozdzielonych kropkami. Słowa kluczowe należy podać w językach polskim i angielskim.

1.7. Oświadczenie o oryginalności tekstu

Na stronie tytułowej artykułu należy umieścić oświadczenia autora /autorów, że tekst przedstawiany Redakcji *Zagadnień Informacji Naukowej – Studiów Informacyjnych* nie był dotychczas opublikowany ani zgłoszony do publikacji w żadnym innym czasopiśmie lub pracy zbiorowej. Jeśli tekst był prezentowany na konferencji, należy podać jej szczegółowe dane wraz z ewentualnymi informacjami o publikacji materiałów konferencyjnych. Jeśli artykuł jest częścią przygotowywanej do druku książki, należy podać jej dane oraz planowany termin publikacji.

2. Zasady opracowania artykułu

2.1. Organizacja i podział tekstu

Tekst artykułu powinien być podzielony na podrozdziały zaopatrzone w tytuły. W pierwszej części pod nagłówkiem **Wprowadzenie** zaleca się umieścić informacje wprowadzające w problematykę prezentowaną w artykule. W części ostatniej – pod nagłówkiem **Wnioski** lub **Zakończenie** – wnioski końcowe i podsumowanie przedstawionych rozważań.

Dopuszcza się stosowanie do trzech poziomów podziału tekstu, każdy wyodrębniony własnym śródtytułem i opatrzony oznaczeniem numerycznym zgodnie z następującymi regułami:

1. Pierwszy poziom podziału
1.1. Drugi poziom podziału
1.1.1 Trzeci poziom podziału

2.2. Przypisy

Nie stosuje się przypisów bibliograficznych. Odesłania do wykorzystanej literatury należy przygotować zgodnie z edytorskimi standardami tekstu naukowego APA 6th (patrz niżej).

Przypisy zawierające komentarze, dygresje, objaśnienia i inne dodatkowe informacje należy umieszczać na dole strony i numerować liczbami arabskimi; zaleca się ograniczenie liczby przypisów do niezbędnego minimum.

2.3. Pisownia tytułów w tekście artykułu

Tytuły wystaw, konferencji, programów itp. powinny być zapisane w cudzysłowie. Tytuły publikacji (książek, czasopism, artykułów itp.) należy wyróżnić kursywą.

2.4. Wyróżnienia w tekście

W tekście można stosować wyróżnienia za pomocą czcionki półgrubej (bold).

2.5. Materiały ilustracyjne i ich oznaczanie w tekście

Materiały ilustracyjne (tabele, wykresy itp.) powinny być przygotowane w odcieniach szarości lub kolorystyce czarno-białej. Wszystkie tego typu materiały należy oznaczyć wskazaniem rodzaju materiału (np. Tabela, Rysunek, Fotografia, Wykres), jego numeru w tekście oraz jego tytułu (np. Tab. 1. Poziomy metadanych). W odpowiednich miejscach tekstu artykułu należy umieścić odesłania do informacji prezentowanych w formie ilustracji, używając w tym celu skrótu określenia rodzaju ilustracji oraz jej numeru (np. zob. Tab. 1, zob. Wykr. 5).

2.6. Cytowanie wykorzystanej literatury w tekście i bibliografia załącznikowa

Cytowania w tekście i bibliografię załącznikową należy przygotować zgodnie ze standardami edytorskim publikacji naukowych APA 6th. W bibliografii załącznikowej mogą być umieszczone wyłącznie opisy publikacji cytowanych w tekście artykułu.

Publikacje należy cytować w tekście używając odsyłaczy w formie: (nazwisko, rok wydania), np. (Dembowska, 1991); gdy publikacja ma dwóch autorów należy podać obydwa nazwiska połączone znakiem ampersand (nazwisko1 & nazwisko2, rok), np. (Cisek & Sapa, 2007); gdy publikacja ma trzech i więcej autorów należy podać nazwisko pierwszego autora, skrót *et. al.* i rok wydania (nazwisko1 et al., rok), np. (Berners-Lee et al., 2001); gdy publikacja jest pracą zbiorową, należy podać nazwisko redaktora, skrót red. i rok wydania (nazwisko, red., rok), np. (Kocójowa, red., 2005). Jeśli w publikacji nie wskazano nazwiska autora lub redaktora, należy podać pierwszy wyraz tytułu i rok wydania (Wyraz, rok), np. (Biblioteki, 1976). Odwołania do określonych stron cytowanych tekstów należy podawać w formie: (Dembowska, 1991, 15), albo (Cisek & Sapa, 2007, 40–42), (Dervin & Nilan, 1986, 3) albo (Kocójowa, red., 2005, 18).

Opisy bibliograficzne wykorzystanych publikacji należy umieścić na końcu tekstu w układzie alfabetycznym, bez numeracji pozycji, pod nagłówkiem **Bibliografia**.

Opisy autorskich książek i artykułów umieszcza się pod nazwiskiem pierwszego autora. Opisy prac zbiorowych należy umieszczać pod nazwiskiem redaktora, po którym podaje się skrót *red.* lub *ed.* Jeśli w publikacji nie wskazano autora lub redaktora pracy zbiorowej, jej opis należy umieścić pod pierwszym wyrazem tytułu.

Tytuły książek i czasopism należy zapisać kursywą, tytuły artykułów w czasopismach i artykułów lub rozdziałów w książkach – czcionką prostą.

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Opisy prac tego samego autora powinny być uporządkowane według chronologii wstępującej, a w każdym z nich należy powtórzyć nazwisko i inicjał (inicjały) autora. Prace tego samego autora opublikowane w tym samym roku należy uporządkować w kolejności alfabetycznej tytułów i oznaczać wg zasady:

Dembowska, M. (1976a) ...,
Dembowska, M. (1976b) ..., itd.

2.6.1. Przykłady redagowania opisów bibliograficznych

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Breslin, J.G., Passant, A., Decker, S. (2009). *The Social Semantic Web*. Berlin: Heidelberg: Springer Verlag.
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Aristotle (2009). *Organon.* From 1a to 164 a according to Bekker numbers [online]. Translated under the editorship of W.D. Ross. Internet archive [29.10.2013], http://archive.org/stream/AristotleOrganon/AristotleOrganon-collectedWorks_djvu.txt

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- **the e-mail address of the corresponding author,**
- **address for correspondence,**
- **biographic note (see below),**
- **structured abstract (see below),**
- **keywords (see below),**
- **statement of originality (see below).**

According to the Journal policy against *ghostwriting* and *guest authorship*, authors are requested to list on title page names and affiliations of each person that contributed to the text (author of the idea, methods, etc. used in the submitted manuscript; percentage of contribution to the research process and text compilation). Authors are also requested to describe sources of founding that have supported the work and the financial involvement of research institutes, associations and other entities (*financial disclosure*).

1.4. Author(s) biographic note

Title page should include concise biographic notes (about 70 words) of each author : academic degree or professional position, current place of work and position, area of interest, the most important publications (max. 3).

1.5. Structured abstract

An abstract (about 100 words or 1000 characters) should be included with each submission and placed on the title page. Abstract should be formatted according to categories listed below. Author should identify at least four mandatory sections:

- **Purpose/Thesis** *(mandatory)*
- **Approach/Methods** *(mandatory)*
- **Results and conclusions** *(mandatory)*
- **Research limitations** *(optional)*
- **Practical implications** *(optional)*
- **Originality/Value** *(mandatory)*

1.6. Keywords

Title page should include keywords (4 to 10) as a noun phrases in singular form, where first element is capitalized. Keywords in alphabetical order should be delimited by full stop.

1.7. Statement of originality

Author(s) should include on title page statement that submitted text has not been published before and is not under consideration for publication anywhere else. If the paper was presented at a scientific meeting, provide detailed information about the event and the conference proceedings. If the paper will be the part of the author's book, provide its details and planned publishing date.

2. Manuscript format and preparation

2.1. Body of the paper

The text should be organized into entitled sections and subsections. Text should start with **Introduction**, giving an overview and stating the purpose and end with **Conclusion**, giving the summary of the author contributions to the study.

Author may use three levels of headings. Each heading should have its own title and number according to the following pattern:

1. First-level heading
1.1. Second-level heading
1.1.1 Third-level heading

2.2. References

Bibliographic citations are not allowed in footnotes. The reference list should be prepared according to APA 6-th Edition citation style (see below). Footnotes can be used only to give additional information or commentary. Footnotes to the text are numbered consecutively with Arabic numerals. It is recommended to limit the amount of footnotes per page.

2.3. Titles in the body of the text

Titles of exhibitions, conferences, programmes, etc should be written within double quotation marks. Use italics for publication titles (books, journals, papers, etc.).

2.4. Emphasis

Bold face should be used to emphasize certain words or passages.

2.5. Illustrative content

All illustrations (tables, charts, figures etc.) should be converted to greyscale. All illustrations should be cited in the text properly to their form (Table, Figure, Photograph, etc.) and have title and consecutive number (e.g. Tab. 1. Metadata levels). Use abbreviation in the text when refereeing to the illustrative content (e.g. see Tab. 1, see Fig. 5).

2.6. Citations and reference list

Use APA 6-th Edition as a citation and reference list format. The references list should only include works that are cited in the text.

Cite references in the text by name of the author(s) and year of publication in parentheses: (Name, Year of publication), eg. (Dembowska, 1991). If there are two authors, put their names with ampersand (&) mark

between: (Name & Name, Year of publication), eg. (Cisek & Sapa, 2007). If there are more than two authors, put the name of the first one followed by abbreviation *et al.*: (Name et al., Year of publication), eg. (Berners-Lee et al., 2001). Edited books are cited by the name(s) of the editor(s) followed by abbreviation *ed(s).*: (Name, ed., Year of publication), eg. (Bellardo Hahn & Buckland, eds., 1998). If there is no author or editor information, put the first word from the title and the year of publication : (Word, Year of publication), eg. (Biblioteki, 1976). Use the following pattern when referring to specific pages in the cited publications: (Dembowska, 1991, 15) or (Cisek & Sapa, 2007, 40–42) or (Bellardo Hahn & Buckland, eds., 1998, 18).

Place the reference list at the end of the text under the heading **References**. Reference list should be in alphabetical order without numbering.

List the references (books and journal articles) in alphabetical order by authors' last names. Citations of edited books list under the name of editor followed by abbreviation Ed.. If there is no author or editor information, list the publication under the first word from the title.

Use italics for book titles and regular font for titles of papers and book chapters. Use abbreviation In: when referring to book chapters in citations.

If there are two or more items by the same author(s), list them in order of year of publication (reverse date order). If two or more works are by the same author(s) within the same year, list them in alphabetical order by title and distinguish them by adding the letters a, b, c, … to the year of publication:

Dembowska, M. (1976a) ....

Dembowska, M. (1976b) ...., etc.

2.6.1. References List Examples

BOOK

Breslin, J.G., Passant, A., Decker, S. (2009). *The Social Semantic Web*. Berlin: Heidelberg: Springer Verlag.

Dembowska, M. (1991). *Nauka o informacji naukowej: organizacja i problematyka badań w Polsce*. Warszawa: IINTE.

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Bellardo Hahn, T., Buckland, M., eds. (1998). *Historical Studies in Information Science*. Medford, NJ: Information Today.

Biblioteki (1976). *Biblioteki publiczne województwa toruńskiego: informator*. Toruń: Wojewódzka Biblioteka Publiczna i Książnica Miejska im. M. Kopernika.

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Osińska, V. (2010). Rozwój metod mapowania domen naukowych i potencjał analityczny w nim zawarty. *Zagadnienia Informacji Naukowej*, 96(2), 41–51.

Dervin, B., Nilan, M. (1986). Information Needs. *Annual Review of Information Science and Technology*, 21, 3–31.

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Rayward, W.B. (1998). Visions of Xanadu: Paul Otlet (1868-1944) and Hypertext. In: T. Bellardo Hahn & M. Buckland (eds.). *Historical Studies in Information Science* (65–80). Medford, NJ: Information Today.

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Berners-Lee, T., Hendler, J., Lassila, O. (2001). The Semantic Web. *Scientific American* [online], May, [30.06.2013], http://www.scientificamerican.com/article.cfm?id=the-semantic-web

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Big Data (2013, November 12). *Wikipedia, The Free Encyclopedia* [online] [12.11.2013], http://en.wikipedia.org/w/index.php?title=Big_data&oldid=581347727

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Smith, B. (2004). *Ontology and Information Systems* [online]. The Buffalo University, Department of Philosophy, [15.07.2013], http://ontology.buffalo.edu/ontology.doc

US NLM (2004). *Medical Subject Headings* [online]. US National Library of Medicine. National Institutes of Health, [15.07.2013], http://www.nlm.nih.gov/mesh/meshhome.html