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Review of corporate digital divide research: A decadal analysis (2003-2012)

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Abstract:

The digital divide (DD) refers to the gap between individuals, companies, regions and countries in accessing and using the information and communication technology (ICT). DD research is mainly oriented towards detection of differences in the ICT use among individuals. An important part of DD research refers to the differences in ICT adoption and use among corporations. The goal of this paper is to present a review of published papers on DD among corporations. Papers from the journals indexed in SSCI that investigate corporate DD were examined in order to compare the research on corporate DD in terms of: (1) geographical area, time frame of the study, sampled corporations; (2) phenomena used as the indicators/measure of DD, inequality type, ICT adoption cycle, determinants of DD; and (3) data collection approach, data sources, sample size and methodology used for investigation of DD determinants.

Keywords:

digital divide; corporations; ICT; review; adoption.

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1. Introduction

Developed and developing countries alike are trying to support the development of information societies in which information and communication technologies (ICT) support information sharing, improve the quality of life, and foster the economic development [1]. Differences in ICT use among countries are substantial since social and economic development of countries results in significantly unequal ICT use, both in terms of the number of users and in terms of use sophistication [2]. Individuals in developed and thus richer societies have better access to ICT and use ICT in a more advanced way compared to individuals in developing countries [3].

The above mentioned differences are often referred to as the digital divide (DD), the term that was first introduced in the 1990s when researchers wanted to explain the difference between having or not having, using or not using computers and the Internet [4]. There are many definitions of DD, but the term refers to the gap between individuals, companies, regions and countries in accessing and using ICT [1]. The notion of DD can be also used to explain socioeconomic differences arising from ICT use [5, 6], and demographic and economic characteristics of users [7].

Early research on DD was oriented towards the infrastructure, availability and affordability of computers and the Internet use [6, 8]. Present-day studies measure DD using indicators such as [1]: ICT sector development; ICT market development; ICT penetration and ICT use in households; ICT use in enterprises; ICT education development; and ICT government. Barzilai-Nahon [6] reports on a number of studies dealing with DD and prominent integrated indices for measuring DD, such as DIDIX (Digital Divide Index), and the Digital Access Index (made by the International Telecommunication Union).

DD research is mostly focused on individuals and countries and there are many empirical studies which investigate the existence of DD between countries and within a society [4, 9]. Wang et al. [10] found out that recent DD research focuses mostly on technological diffusion and different cultural practices. To our knowledge, attempts of reviewing articles about DD on the corporate level are rare. The goal of this paper is to assess the level of DD among corporations based on published research papers, according to: (1) geographical area, time frame of the study, sampled corporations; (2) phenomena used as the indicators/measure of DD, inequality type, ICT adoption cycle, determinants of DD; and (3) data collection approach, data sources, sample size and methodology used for investigation of DD determinants.

This paper consists of five sections including the introductory part. The literature review is presented in the next section. The research methodology is explained in the third part of the paper, including the literature-selection process and the analysis process. Results are presented in the fourth section. The discussion part explains our findings. Section six concludes the paper.

2. Literature review

During the last 50 years, technological development has been one of the main factors in shaping modern societies. The increase of competitiveness is supported by availability of effective telecommunications systems, access to the high-speed Internet, and development of mobile telecommunications [11]. ICT is one of the main drivers of changes and innovations in corporations [12], as well as the main driver of the economic development and employment [13, 14]. For example, research indicates that, in the European Union countries, the ICT contribution to Gross Domestic Product (GDP) growth and to the productivity increase amounts to 25% and 40% respectively [15].

ICT has a positive impact on productivity and economic success of corporations [9, 4, 16, 17] and ICT drives positive changes in corporations' structures [18]. Corporations which are not electronically interconnected lag behind. Small and medium enterprises get most benefits from using new technologies because that way they can easily connect with larger corporations and become a part of their business, as well as with other small enterprises which are geographically distant [19].

The above discussed differences in the level of ICT use are referred to as the digital divide (DD). The notion of DD can reveal inequalities across the global information society [8], which affects the economic growth and development of individual countries [20]. DD can be measured using a framework of questions to determine who is connected, with which user characteristics, how and to what [21]. A number of authors have examined the impact of demographic factors on ICT use: gender, income, educational level, age [22], employment [2], ethnicity [9], and urban or rural community as a place of living [23].

The results of the analysis made in 2008 confirm the existence of DD between the EU15 countries and the countries which were candidates in 2004 (Romania, Bulgaria and Turkey) [1]. The same research showed that some of the EU15 countries, e.g. Greece and Portugal had the same Information Society level as the countries which joined the European Union in 2004, e.g. Cyprus and Slovenia. DD has also become an important issue of the EU Digital Agenda for Europe, which aims to maximize the social and the economic impact of information and communication technology, especially in doing business. Specifically, one of the goals of the European Commission is to enable 50% of the population to buy online by 2015 and 33% of SMEs to establish an online shop by 2015 [24]. Such pressure arises from the fact that among the Financial Times Global 500 ICT companies only 10% are European.

Certain percentage of research focuses on the first and the second order of DD [25]. Research on the first order DD is dealing with population groups as characterized by access to ICT and the second order DD refers to inequality in the ability to use ICT among users who have access. Both the first and the second order of DD can be analyzed at three levels: an individual level, an organizational level and the global level. The individual level refers to people who are ready to integrate ICT into their everyday lives and those who lag behind in accessing and using new technologies. The organizational level refers to organizations which gain competitive advantage by implementing ICT into their core business processes and organizations which are left behind because they are not ready to use all of the benefits of ICT. The global level refers to countries which adapt their policies to promote ICT and which invest in it, and countries which still do not realize the positive impact of ICT, so they are left behind.

3. Methodology

In this section we describe data which we have used and how we have analyzed it, keeping in view the goal of the study. Therefore, we present the literature-selection process and the analysis process of the journal articles incorporated in the research. Fig. 1 outlines the literature-selection and the analysis process.

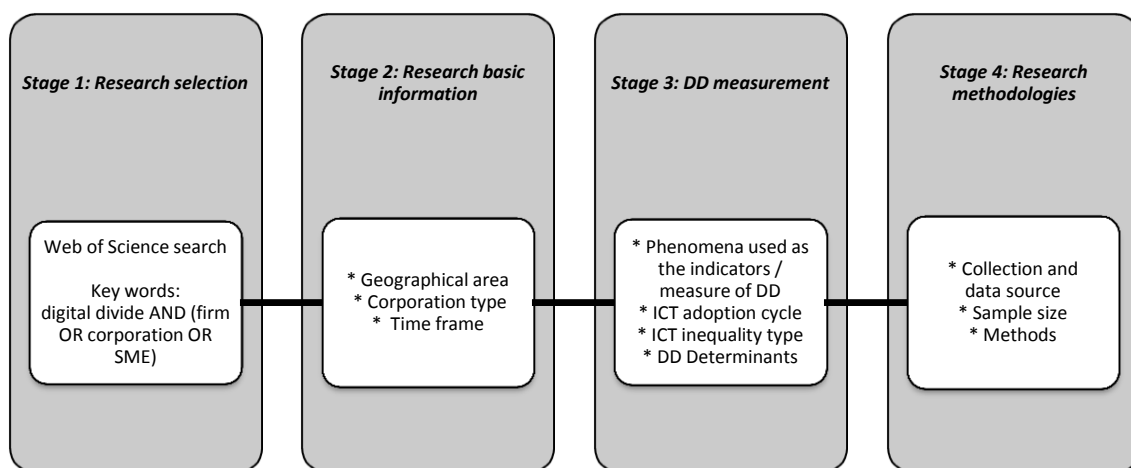


Fig. 1. Literature-selection and analysis process

3.1 Stage 1: Literature selection

Literature selection was performed in several stages. Web of Science was searched using the phrase: “digital divide” AND (firm OR corporation). The period from 2003 to 2012 was set as the time frame for the research. Only articles published in peer-reviewed journals were included in the review. The search also revealed articles on DD at the individual, the household, and the national level. In order to eliminate such articles, additional filtering was applied based on the full-text investigation. This approach resulted in 24 articles, published in a variety of journals, such as: European Planning Studies; Government Information Quarterly; International Small Business Journal; Information Economics and Policy; Information Systems Research; International Journal of Production Economics; International Journal of Information Technology and Management; Internet Research; Information Technology and People; Information Society; Journal of the Association for the Information Systems; Journal of Theoretical and Applied Electronic Commerce Research; Management Science; Journal of Productivity Analysis; Management Research Review; and Online Information Review.

3.2 Stages 2-4: Analysis process

In accordance with the goal of the paper to investigate the levels of DD among corporations, a rigorous analysis process has been applied. In order to analyze papers dealing with DD on the organizational level, we have applied a research framework based on the following characteristics - research basic information; DD measurement; and research methodologies:

- *Research basic information* refers to: geographical area (countries in which the research has been conducted), firm type (according to the size and the industry) and time frame (years when the research was conducted);
- *DD measurement* refers to: phenomenon that was used as a proxy for corporate DD, ICT adoption cycle (ICT Use, ICT Access and ICT Innovations), inequality type (First and Second Order Digital Divide), and determinants of DD (independent variables examined as important factors of DD);
- *Research methodologies* refer to: data collection (e.g. survey, transactions), data sources (primary and secondary data), sample size, and methods (quantitative and qualitative).

All of the papers were examined by two independent researchers, and coded according to the above describe methodology. In only a few cases, differences in coding were found, and in such situations, the differences were discussed by both researchers in order to agree on a common classification. Using this approach, we were able to overcome the limitations of earlier research on DD, i.e. lack of theory, conceptual definition, interdisciplinary approach, qualitative and longitudinal research [8].

4. Results

Table 1 presents the data on geographical area, firm type and time frame. Different types of corporations are included in the studies: small and medium enterprises, small exporting enterprises, manufacturing corporations, small and medium enterprises which are oriented towards tourism, corporations in the insurance industry, corporations in the financial and services sectors and agribusiness.

The majority of studies was conducted after 2000, and the greatest proportion of research was conducted in 2002. Most of the studies were conducted in developed countries such as the USA, Italy, France, New Zealand, and Canada. There were only three international studies (EU, EU-25, global). Researchers mainly focused on specific groups of corporations such as SMEs, manufacturing corporations, tourism corporations, or rural enterprises. Only one research study [43] selected corporations based on the ethnicity of the owner (Hispanic-owned enterprises). The research time frame of most studies was only one year, with only a few studies covering longer periods, which indicates the cross-sectional nature of the studies.

Table 1. Geographical area, type of corporations and time frame

Study	Country	Corporations	Year of study
Arbore et al. [26]	Italy	SME	2003
Arora et al. [27]	USA	>100 employees	1998-2000
Atzeni et al. [28]	Italy	Manufacturing corporations; 11-500 employees; >500 employees	2003
Bapna et al. [29]	Global	Corporations	2005
Billon et al. [30]	EU-25 countries	Corporations	2006
Chong et al. [31]	Malaysia	Manufacturing corporations	2008
El-Gohary [32]	Egypt	Tourism SMEs	N/A
Forman et al. [33]	USA	Corporations in insurance industry	1996, 1998, 2000, and 2002
Forman [34]	USA	Financial and services corporations	1996-1998
Galliano et al. [35]	France	Agribusiness >20 employees	2002
Galliano et al. [36]	France	Manufacturing corporations	2002
Galliano et al. [37]	France	Manufacturing corporations that use Internet	2002
Galve-Górriz et al. [38]	Spain	Manufacturing corporations	2002
Gargallo-Castel et al. [39]	Spain	Manufacturing corporations	2002
Grimes et al. [40]	New Zealand	Corporations	2006
Hinson et al. [41]	Ghana	Exporting SMEs	2005
Ifinedo [42]	Canada	SMEs	2007-2008
Labrianidis et al. [43]	Greece, Portugal, Germany, Poland, UK	Rural innovative enterprises	2004
Lee et al. [44]	Korea	Corporations	2004
Middleton et al. [45]	USA	Hispanic-owned SMEs	N/A
Middleton et al. [46]	USA	SMEs	N/A
Nurmiakso [47]	EU	Corporations	2003-2005
Pighin et al. [48]	Italy	Corporations	N/A
Rodriguez-Ardura et al. [49]	Spain	Corporations	1996-2005

Table 2 presents the data on measurement, impact and order of DD, the ICT adoption cycle and determinants of DD. A number of indicators can be used to measure DD. In the examined studies, DD was measured using the following indicators: broadband adoption; Internet applications; electronic payment systems (EPS); website adoption; adoption of e-Collaboration tools in the supply chain; investments in ICT; e-Government service; and Wi-Fi. In most of the studies, the inequality type refers to the second order, i.e. the differences in the ability to use the information and communication technology among users who have access. Among the examined research, 14 papers investigate the Inequality type of the Second Order, 10 papers of the First Order, and one paper both studies. According to the ICT adoption cycle, 6 papers investigate ICT Access, 16 papers investigate ICT Use, but only 2 papers investigate ICT Innovation.

Determinants of DD are different for each study included in our analysis, but can be classified into five groups. The first group refers to external determinants which include: geographical area; population density; public assistance; and the level of economic development. The second group refers to firm specific factors which include: size; industry type; group; foreign owner; and the level of competition. The third group refers to business-specific factors which include: trust; product complexity and volume; vertical integration; suppliers; and customers push. The fourth group refers to ICT investments which foster implementation of new technologies: investments in servers; e-business investments; ERP use; CRM use; and technological readiness. The fifth group stems from human resources factors such as: trained workers; wages; higher employee qualification; knowledge management; and participative management.

Table 2. Measurement, impact and order of DD, ICT adoption cycle and determinants of DD

Study	Phenomena used as the indicators/measure of DD	Inequality type / ICT adoption cycle	Determinants of DD
Arbore et al. [26]	Broadband adoption	First Order / ICT Access	Size, geographical area, and ICT strategies
Arora et al. [27]	Internet / LAN	Second Order / ICT Use	Internet and LAN adoption are complimentary
Atzeni et al. [28]	Adoption of ICT	First Order / ICT Use	Public assistance
Bapna et al. [29]	Electronic payment (EPS)	First Order / ICT Use	Firm size, region and industry type
Billon et al. [30]	Website adoption	Second Order / ICT Use	GDP per capita, population density, sectoral composition and education
Chong et al. [31]	E-Collaboration in supply	Second Order/ ICT Access	Trust, product complexity and product volume
El-Gohary [32]	Electronic marketing	Second Order/ICT Innovation	Both external and internal factors
Forman et al. [33]	ICT for distribution & communications	First Order/ ICT Access	Vertical integration enforces Internet applications
Forman [34]	Internet access	First Order/ ICT Access	Prior investments in client/server networks
Galliano et al. [35]	Electronic traceability systems (ETS)	Second Order / ICT Use	Firm size, group, e-business, contracts with suppliers/customers, industrialization
Galliano et al. [36]	Internet adoption; intensity of Internet use	First Order / Second order / ICT Use	Spatial disparities affect intensity of Internet use
Galliano et al. [37]	Intensity of use of ICT	First Order / ICT Use	Geographical dispersion of the firm, belonging to a group, and the competition
Galve-Górriz et al. [38]	Investments in ICT	First Order / ICT Use	Educated and trained workers, specific training and higher wages
Gargallo-Castel et al. [39]	Adoption of ICT	Second order/ ICT Access	Higher employee qualifications, related technology and firm size
Grimes et al. [40]	Internet access	Second order / ICT Use	Firm size, management, foreign owner, knowledge intensity, R&D, industry, firm age
Hinson et al. [41]	E-business	Second Order / ICT Use	Perception of the strategic value of e-business
Ifinedo [42]	Internet and e-business	Second Order / ICT Use	Relative advantage, management, competitors
Labrianidis et al. [43]	Use of ICT	First Order/ ICT Access & ICT Use	Geographical position of the firm, industry, firm size, network intensity
Lee et al. [44]	e-Government service	Second Order / ICT Use	Timeliness, responsiveness, service quality
Middleton et al. [45]	ICT adoption and use	Second Order / ICT Use	Non-Hispanic ethnicity
Middleton et al. [46]	WiFi	Second Order / ICT Use	Non-Hispanic ethnicity and age
Nurmilaakso [47]	E-business	Second Order / ICT Use	Number of subsidies, use of ERP, SCM and CRM, exchanging standardized data
Pighin et al. [48]	ICT use	Second Order / ICT Innovation	Knowledge, training, participation
Rodriguez-Ardura et al. [49]	E-commerce	Second Order / ICT Use	Consumer and competitive pressure, technological readiness, innovations

Table 3 presents data collection, data sources, the sample size and methods. The data were mostly collected through surveys. Exceptions are two studies in which data were collected by in-depth interviews and from transactions recorded in the database. Different data sources were used. Most authors collected data, but some authors also used data collected by institutions, e.g. 2002 ICT Survey/French National Institutes of Statistics, Spanish Survey on Business Strategies and Harte Hanks CI Technology Database.

The sample size varied from 100 to 30,000. Methods used are as follows: regression (multiple regression, logit model and binomial-logistic regression); multivariate (Mann-Whitney, Wilcoxon tests); and machine learning models (structural equations modelling, continuous-time survival model, discrete choice model and tree-based technique).

Table 3. Data collection, data source, sample size and methods

Study	Data collection	Data source	Sample size	Methods
Arbore et al. [26]	Survey	Author	920	Tree-based technique, binomial-logistic regression
Arora et al. [27]	Survey	Harte Hanks CI Technology Data	19860	Discrete-choice model
Atzeni et al. [28]	Survey	Survey of Manufacturing Corporations (SMF) carried out by Area Study of Capitalia Bank	2290	Matching estimator
Bapna et al. [29]	Transactions	The billing data from one of the top Fortune 100 companies	4,922 transactions	Finite mixture model
Billon et al. [30]	Survey	ESPON Project Indicators	N/A	Econometric methods
Chong et al. [31]	Survey	Authors	109	Correlation and multiple regression analysis
El-Gohary [32]	Survey	Authors	163	Structural equations modelling
Forman et al. [33]	Survey	Harte Hanks CI Technology Database	100	Continuous-time survival model
Forman [34]	Survey	Harte Hanks CI Technology Database	6156	Discrete choice model
Galliano et al. [35]	Survey	2002 ICT Survey / French National Institutes of Statistics	2821	Probit model
Galliano et al. [36]	Survey	2002 ICT Survey / French National Institutes of Statistics	5200	Probit model
Galliano et al. [37]	Survey	2002 ICT Survey / French National Institutes of Statistics	4434	
Galve-Górriz et al. [38]	Survey	Spanish Survey on Business Strategies	1296	Mann-Whitney, Wilcoxon tests
Gargallo-Castel et al. [39]	Survey	Spanish Survey on Business Strategies	1685	Probit model
Grimes et al. [40]	Survey	Statistics New Zealand's Business Operations Survey 2006 (BOS06)	6051	Propensity score matching
Hinson et al. [41]	Survey, in-depth interviews	Author	60	Descriptive, ANOVA
Ifinedo [42]	Survey	Author	214	Partial Least Squares
Labrianidis et al. [43]	Survey	Future of Europe's Rural Peripheries	996	Logit model
Lee et al. [44]	Survey	Korean e-Government research project	836	Logit model
Middleton et al. [45]	Survey	Author	158	Principal components analyses
Middleton et al. [46]	Survey	Author	158	Principal components analyses
Nurmilaakso [47]	Survey	e-Business W@tch	4570	Linear regression model
Pighin et al. [48]	Survey	Author	58	Descriptive statistics
Rodriguez-Ardura et al. [49]	Survey	Survey on the Use of ICT and E-commerce in Spanish Companies	28880	Multiple regression

5. Discussion

5.1 Research basic information: time, place and corporation type

Geographical distribution of the examined research is represented in Fig. 2, and it is evident that most of the research has been conducted in European countries, followed by the North American countries (the USA and Canada). European countries are the most researched, including Italy, France, Spain, Greece, Portugal, Germany, Poland and the UK. Other regions and continents are represented by only one country in the research examined in our analysis.

Although we have focused only on the sample of journal articles, we believe that the conclusion reached based on a few instances of research in developing countries is valid. Surprisingly, articles that use the term DD and are focused on different levels of ICT use in corporations mostly deal with developed countries, and less with developing countries, while the conducted research indicates that corporate DD is present in developing countries more than in developed countries and it thus further fosters their further lagging behind developed countries.

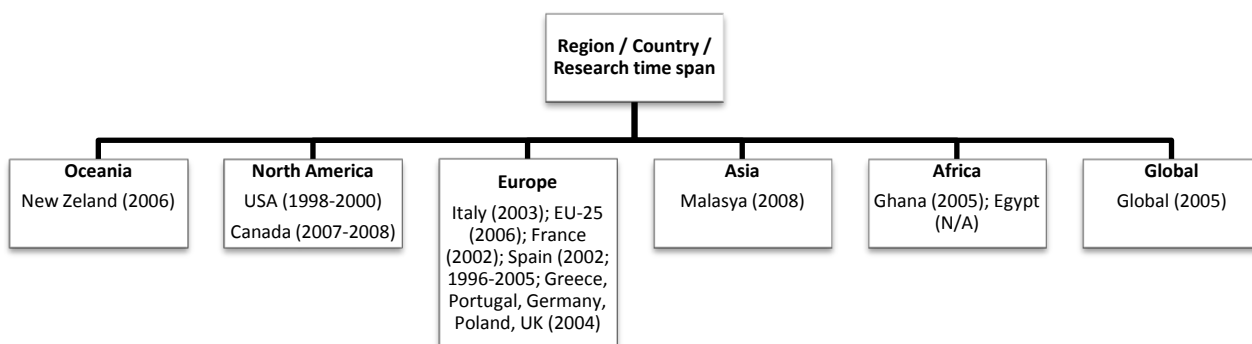


Fig. 2. Geographical distribution of corporate DD research

Fig. 3 represents different types of corporations examined in researched articles. Authors of the papers examined corporations of different sizes, including both SMEs, and large corporations with more than 100 or even 500 employees. According to the industry types, corporations included in the analysis were: manufacturing, finance, insurance, service-oriented, tourism and agricultural corporations. Several researchers have focused their research on specific types of corporations, such as rural, export SMEs, and corporations owned by the Hispanic owner. However, the largest number of research was conducted on the sample of corporations of different sizes and of different industries.

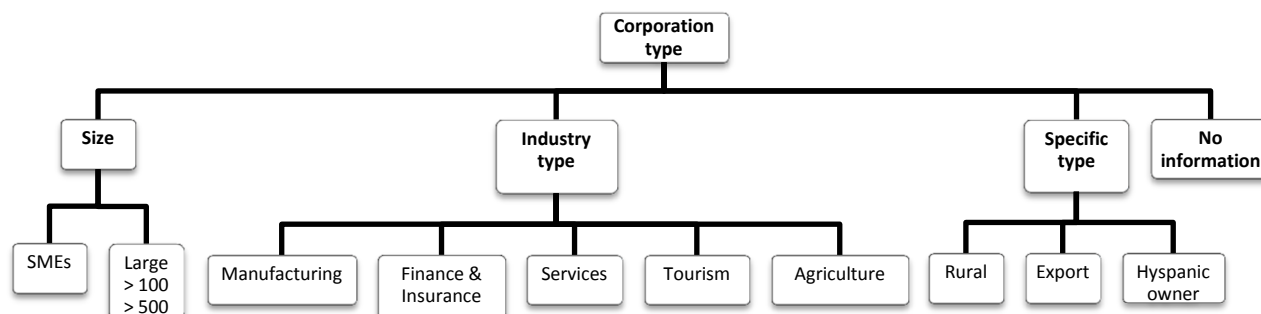


Fig. 3. Corporations examined by the corporate DD research

5.2 DD Measurement: ICT inequality types and adoption cycle, DD determinants

The phenomena used as measures of DD could be divided into three groups. The first group includes the general ICT use, such as the adoption of ICT [28], intensity of use of ICT [35], and investments in ICT [38]. Within that group, most researchers found the First Order DD, and focused on ICT use. The second group of measures includes the adoption of the Internet [34, 36] and broadband adoption [26]. Researchers in this group predominantly investigated the First Order DD and ICT Use. The third group investigated ICT use for specific business purposes, e.g. e-collaboration [31], electronic marketing [32], and e-Government services [44]. The authors proved that the Internet and e-business activities improve business processes in several ways: (1) automated transactions enhance the efficacy; (2) reducing the number of intermediaries' results in an increased economic growth; (3) demand and supply processes are connected; and (4) production results improved [42].

Fig. 4 presents the timeline distribution of the research according to the inequality type, revealing that research on the first order corporate DD was examined mainly in the surveys conducted from 1996 to 2003. After that period, research is mainly focused on the second order corporate DD. Therefore, we conclude that research on the mere presence of ICT will be less and less conducted, since the ICT infrastructure becomes developed in most of the countries of the world. On the other hand, research on inequality in the ability to use ICT among users will be the focus of the future research, especially in developing countries.

Study	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	N/A
Arbore et al. [26]	FO		FO		FO		FO							
Arora et al. [27]	FO		FO											
Atzeni et al. [28]	SO	SO	SO	SO	SO	SO	SO	SO	SO	SO				
Bapna et al. [29]			SO	SO	SO									
Billon et al. [30]							SO							
Chong et al. [31]							FO							
El-Gohary [32]							FO							
Forman et al. [33]							FO							
Forman [34]							SO							
Galliano et al. [35]								FO						
Galliano et al. [36]								FO						
Galliano et al. [37]								SO	SO	SO				
Galve-Górriz et al. [38]												SO	SO	
Gargallo-Castel et al. [39]									FO					
Grimes et al. [40]									SO					
Hinson et al. [41]										FO				
Ifinedo [42]										SO				
Labrianidis et al. [43]											SO			
Lee et al. [44]											SO			
Middleton et al. [45]													SO	
Middleton et al. [46]														SO
Nurmilaakso [47]														SO
Pighin et al. [48]														SO
Rodríguez-Ardura et al. [49]														SO

Fig. 4. Timeline of the research according to inequality type

Notes: FO – First order digital divide, SO – Second order digital divide

Fig. 5 represents the timeline of the research according to the ICT adoption cycle: ICT Access, ICT Use and ICT-based Innovations. Research on ICT Access was conducted mainly from 1996 to 2002. Most research focused on the ICT Use, mainly based on the technology adoption model, and only two papers examine ICT-based innovations. Our conclusion is that future research should be dedicated to the ICT-based innovations more than to the ICT Use.

Study	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	N/A
Arbore et al. [26]	ACC		ACC				ACC							
Arora et al. [27]	ACC		ACC											
Atzeni et al. [28]	USE	USE	USE	USE	USE	USE	USE	USE	USE	USE				
Bapna et al. [29]			USE	USE	USE									
Billon et al. [30]							USE							
Chong et al. [31]							USE							
El-Gohary [32]							USE							
Forman et al. [33]							USE							
Forman [34]							ACC							
Galliano et al. [35]								ACC						
Galliano et al. [36]								USE						
Galliano et al. [37]								USE	USE	USE				
Galve-Górriz et al. [38]												USE	USE	
Gargallo-Castel et al. [39]									ACC& USE					
Grimes et al. [40]									USE					
Hinson et al. [41]										USE				
Ifinedo [42]										USE				
Labrianidis et al. [43]											USE			
Lee et al. [44]											USE			
Middleton et al. [45]													ACC	
Middleton et al. [46]														INNO
Nurmilaakso [47]														USE
Pighin et al. [48]														USE
Rodríguez-Ardura et al. [49]														INNO

Fig. 5 Timeline of the research according to ICT adoption cycle
 Notes: ACC- ICT Access, USE-ICT Use, INNO – ICT Innovations

Determinants of the corporate DD could be divided into external and internal factors. External factors include corporations’ characteristics such as size, geographical area, region and industry. Internal factors involve specific actions of the firm management, e.g. vertical integration, education of employees, and use of other technologies. In addition, when examining the timeline of the research according to the determinants of the corporate DD, more research has been conducted on internal factors that increase adoption and ICT use, especially in accordance with the corporate strategy. Many national and international corporations and governments have developed strategies, initiatives and programs in order to improve and enhance ICT use [50]. Our research, however, revealed that the ICT strategy was found to be a determinant of the DD level in only one case [26].

The general conclusion of our research is similar to the conclusion of Forman and Goldfarb [19], i.e. that the adoption of ICT in corporations depends upon several factors: the location size; ICT complexity; the importance of the technology in business processes; the strategy of the corporation; and demographic characteristics of the employees (age and educational level).

5.3 Research methodologies: Sample, Source, Methods

In most cases the data were collected by questionnaire surveys on samples of varying sizes, ranging from 58 corporations in one in-depth study [48] to 28,880 corporations that participated in one large national study [49]. Secondary surveys were used as a data source in approximately half of the papers, while the rest used the data collected by authors. The used research methods included linear and multivariate regression, structural equation modeling, and machine learning models such as the continuous-time survival model. Most of the research was cross-sectional, based on the survey conducted by the author. Panel research is more difficult to conduct in the corporate research area, due to

the unpredictable “lifetime” of corporations, but it should be attempted since it would shed some light in the area of ICT adoption and use over time, especially in the field of ICT-based innovations.

6. Conclusion

The rapid growth of information and communication technology plays an important role in everyday life, politics, the economy and the society [51]. Since access to and the use of ICT have positive effects on global interaction, commerce, economic growth and social welfare, DD shrinkage is of the highest importance [25, 52, 53]. The main goal of the paper was to review papers dealing with the level of the corporate DD. In order to accomplish that goal, we examined articles retrieved from Web of Science. However, when considering the results of our research one should be aware that only Web of Science database was used as the source of papers dealing with the corporate DD. Furthermore, a large number of papers reported on the determinants of ICT adoption in corporations, but did not use the term “digital divide” to refer to the phenomenon. Such papers were not included in the sample, and only a limited number of articles were examined in depth.

Our research revealed that most of the papers on corporate DD investigate the first order corporate DD and ICT use in developed countries, using a large number of phenomena as a proxy for corporate DD, ranging from the general ICT use, the Internet use and the specific ICT use such as e-business. Most of the research revealed that internal factors in corporations are crucial for adopting and using ICT in order to increase business performance and competitiveness. However, in most of the cases, research has been conducted based on the cross-sectional survey carried out by the author.

Future research should focus on ICT access and use in developing countries and especially on the ICT-based innovations. We should see more research conducted by using secondary data such as transactional data or national data, since it allows larger samples, and a broader scope of corporations to be investigated. Panel survey should also be considered as an important source of investigation of development of ICT use. Further studies should also take into account qualitative studies, which could provide additional information on internal determinants of DD in corporations, especially in SMEs. Future research in the area of DD in corporations should also be oriented towards active policies for the elimination of the DD gap. Such policies could be undertaken by corporations themselves and/or by governments and even the European Commission, which would consequently broaden the scope of future research.

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