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The Impact of Digitalization on Happiness: A European Perspective

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Abstract: One of the most important goals of humanity has always been happiness. In our daily life, happiness is conditioned by different variables, such as relationships with certain groups of individuals, health, security values, expectations, etc. Over the years, technology, especially digitalization, has revolutionized the world and changed our lives. In this context, empirical research on digitalization has grown enormously during the last decade; however, studies on the relationship between digitalization and happiness remain limited. As such, the objective of the present paper is to present an empirical investigation on the relationship between digitalization and happiness in the European Union (EU) during the period 2019–2021, before and during the COVID-19 pandemic. In this context, the link between the Digital Economy and Society Index (DESI) and World Happiness Index (WHI) globally for all EU countries, at the level of each WHI variable and at the level of geographical groups in the EU was analyzed using correlations. While the DESI indicator acts as a basis for policymakers, governments, regional administrators and public officials to invest in areas of priority with an evidence-based approach, the WHI indicator can be an important tool for guiding public policy and measuring its effectiveness. The results show that there was a positive and significant relationship between the two indicators at the level of EU countries in all three years. The results also show that in the Western and Northern regions of the EU, the relationship between the two indicators was stronger compared to the other regions. Thus, our study offers supporting arguments for the digital transformation of happiness and provides alternate methodologies and perspectives on the interactions between digitalization and happiness. Moreover, it can help policymakers direct their attention to the importance of digitalization for people's happiness.

Keywords: digitalization; happiness; Digital Economy and Society Index (DESI); World Happiness Index (WHI); EU countries

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1. Introduction

Happiness has been and remains one of the most important objectives of humanity. It is described as a general state of well-being, satisfaction and accomplishment, generated by positive aspects of social, spiritual, economic, psychological and physiological life [1].

In other words, happiness is conditioned by variables such as relationships with family and friends, professional activity, personality traits, the use of free time, the macroeconomic environment, income, parental conditions, home, security, health, values, expectations, etc. Although the meaning of happiness in everyday life seems very evident [2] its definition represents a huge challenge for researchers. Previous studies were heterogeneous in terms of formulating the question used to define happiness [3,4]. Authors have used happiness as a synonym for life satisfaction or well-being [5,6] or they investigated happiness sources

and vaguely described them as definitions of happiness [7]. In addition, cultural differences lead to differences in the understanding of happiness, its predictors and its relationship with social change [8]. Such a heterogeneous use of a single term leads to conceptual ambiguity, which can affect the credibility of the field of happiness research.

Many studies have focused on measuring happiness. According to [2], collecting data about people's perceptions of measuring happiness may not be a reliable way to identify what leads to happiness. For this reason, surveys have been most frequently used to ask people to answer closed questions about happiness or to indicate their happiness on a verbal or numerical scale. Happiness can be measured at two levels, the individual one and the collective one, and this distinction has consequences on how the measured responses are treated in the subsequent analysis. Thus, while in the individual analysis, the researcher links the answers about happiness to the study of each respondent separately, measuring happiness at a collective level involves measuring the statistical distribution of individual responses of a community's members and characterizing this distribution using one or more indices.

The idea of measuring happiness to show the success of a collective should not be exclusively associated with Bhutan. It has also been the basis for other initiatives, such as: the Good Country Index, which measures how much each country contributes, through policies and behavior, to the common good of the planet; the Human Development Index (HDI), which takes into account, in addition to per capita income, factors such as life expectancy and education; and the World Happiness Index (WHI), which uses data from global surveys to identify how people rate their own lives in different countries around the world.

In the last decade, technological advancement has influenced all areas of activity, contributing to an increase in individuals' well-being, to education development, and to strengthening the feeling of freedom. The COVID-19 pandemic induced the rapid implementation of some radical changes that led to the large-scale growth of digital transformation. Efforts have been made to adopt emerging digital technologies, such as mobile and visual connectivity, cloud computing, blockchain, smartphones, Internet of Things (IoT), robotics, artificial intelligence (AI), etc. [9]. Digitalization created new opportunities for spending free time during the period of successive shutdowns imposed by the pandemic and made social distancing easier. Without digitalization, "telemedicine", "home office", mobile health applications, virtual trainers and support from online communities would not exist. Obviously, digitalization also has negative effects, such as dependence on social media, the loss of confidentiality, and exposure to cybernetic crimes, but they can be attenuated through appropriate regulations, education for the healthy use of technological innovations and technological improvements.

Although the benefits of implementing digital solutions are obvious, they need to be properly measured. Over time, several indices were developed to measure progress in a so-called field of application, such as internet access or broadband adoption. However, it is considered that the transition to a digital society should not be associated only with the adoption of technology. It is necessary to identify factors with a high impact on the competitiveness of local economies in the global context. To address this need, complex indices, such as the Digital Density Index (DDI), which measures how digital technologies influence economic growth, and the Digital Economy and Society Index (DESI), which summarizes indicators related to digital performance and competitiveness of the EU member states, have been created [10]. Unlike other indices that are more general in nature, DESI shows the specific values of each country regarding the impact of ICT on its economic development and how much the government invests in the digitization of the economic activities of market players. In other words, it plays a central role in analyzing how digital recommendations, specific reforms and investments are implemented in each country, with the level reached being a benchmark for future actions and access to some financial facilities.

The objective of the present study was to analyze the relationship between digitalization and the level of happiness in as many countries as possible during the period

2019–2021. Because DESI values are only available for EU member countries, we analyzed the link between DESI and WHI globally for all of these countries. Although empirical research on digitalization has grown enormously during the last decade, studies on the relationship between digitalization and happiness remain limited. To the best of our knowledge, there have been no other studies that made a link between DESI and WHI at the EU level. Given that there is considerable variability across EU countries, it is necessary to group them by region. There are several different methods of grouping them, for example, based on welfare state regimes, cultural, historical, geographical contexts, etc. Usually, the number of groups identified ranges from three to five. Considering previous classifications, we grouped countries included in the analysis into three categories. These categories comprise Central and Eastern Europe, Western and Northern Europe and Southern Europe, given that other studies found different digitalization levels in countries belonging to these regions [11,12].

The findings show that there was a significant and positive relationship between the DESI index and WHI at the level of EU countries in all three years and between the DESI index and the majority of the WHI components. The results also show that in the Western and Northern region of the EU, the relationship between the two indicators was stronger compared to the other regions. These findings are in line with institutional theory [13]. The digital performance of a country is linked to a large and complex sociotechnical system, in which multiple logics are present. As a result, by investigating the evolution of digital performance in different countries, we obtained an alternative explanation for the mechanisms behind changes in peoples' happiness, as well as the diffusion of institutional logic through a field.

This paper is structured as follows. The first section is dedicated to the relevant literature review. In the next section, the research methodology is presented, followed by the results analysis. The last section presents the main conclusions of the paper, implications and future research paths.

2. Literature Review

2.1. The Light Side and the Dark Side of Digitization from the Perspective of Human Quality of Life

The quality of life is determined by the ability of individuals to build social capital, to achieve their professional goals, to receive a quality education and to develop interpersonal relationships and connections [14]. In this paradigm, digitalization is perceived as a key factor of human development that acts simultaneously on the objective elements of quality of life in all its spheres and on how it is perceived. It is revolutionizing business, consumer, civic and personal logistics, opening a wide range of opportunities and options. Thus, digitalization has been shown to contribute to economic growth and to the well-being of individuals and local and global communities, to save time and increase productivity, to facilitate trade and access to finance, and to improve transparency and governance [15]. The implementation of digital technologies contributes to the development of social capital through the access it provides to a large amount of information related to education, health, medical services and entertainment and creates unlimited opportunities to improve scientific progress through quick access to scientific publications, scientific data and resources [16].

In addition, digitalization connects people to people and transforms the way people interact with the world around them, increasing the availability of communications through access to social networks and responding to people's innate desire for acceptance and belonging [17]. Digitalization increases the inner world of each person, with new digital technologies offering opportunities for self-development and the manifestation of creativity and influencing the self-esteem of individuals, their social integration in communities, and the way they perceive reality and interact with that reality [18]. In other words, access to digital technologies allows people to remove certain barriers and improve or reinvent their lives through self-actualization, goal achievement, networking and communication with others.

However, digitalization also has negative economic, social and psychological effects on the individual and on society in general. These effects are especially related to cybersecurity risks and data, financial resources and personal life insecurity [19]. There are also sustainability issues, driven by the automation of service provision and data processing [20], but also the increase in unemployment and wage inequality generated by structural changes in the economy [21].

Digital technologies create conditions for intrusive connectivity that has detrimental cognitive and emotional consequences for some individuals because it affects their ability to think analytically and their creativity, memory and concentration. Many organizations use dopamine-dosing tools designed specifically to capture the public's attention and cause addictive effects in people by overloading them with information or sending notifications, fake news, captivating headlines, games or personalized news [22]. In addition, some people do not have access to the Internet or digital skills that allow them to adapt to rapid technological change and the digitization of services, which makes them vulnerable, lowers their self-confidence and increases their feelings of stress, anxiety, depression and insomnia [23,24]. People who, through their structure and behavior, fail to make connections or to feel accepted and integrated face the same feelings, falling into the traps of isolation or social comparison in the context of the explosive development of social networks [17].

The negative effects of digitalization are sometimes enhanced by economic, social and political contexts. Thus, in the context of different levels of economic development, significant gaps appear between countries, social classes and individuals regarding scientific and technological potential, access to information and communication technologies, and the development of digital competence opportunities, which lead to true digital inequality [25,26]. The political regime of each country, the civic culture of the members of the respective community and the degree of spread of democracy also contribute to this inequality [27,28].

However, experts in technology, education and health believe that, globally, digitalization has a rather positive effect on people's overall physical and mental well-being, even with the most reserved recognizing that digital tools will continue to improve various aspects of life [22]. In order for digitalization to have a major impact on well-being, measures are, however, needed to combat the problems caused by digital technologies. The most important measure in this regard would be digital literacy [29]. This requires people, regardless of age, to be educated about how technological systems work, their impact on well-being, the importance of their proper and healthy use, and the avoidance of possible pitfalls and threats. In addition, companies should design people-centered technologies that serve their interests and improve their experiences and outcomes, and governments should take steps to reduce security and privacy concerns in the context of increased digitalization. Civic and cultural actions can be added to these measures to make individuals aware of the proper use of digital tools [30].

2.2. Happiness and Digital Technologies

Today, digital technologies are part of our daily lives, meaning that they are inevitably closely linked to happiness. Although happiness involves a balance between material prosperity and subjective well-being, researchers pay special attention to the impact that digitalization has on the second component [31]. Explanations for variations in happiness usually involve social relationships, health and work [32].

The results of studies on the relationship between digitization and happiness are far from convergent because they depend on how the two concepts are defined and operationalized. Thus, starting from the premise that digital technologies have a beneficial impact on people's sociability, their connections with other people and their well-being, ref. [33] analyzed the impact of social networks on happiness and found that, regardless of age, individuals who used social networks were, on average, more satisfied with their lives than those who did not use them. This satisfaction stems from the fact that digital networks offer the opportunity to communicate and share messages, images, videos, etc.,

with other people. In addition, he noted that satisfaction was higher among people over the age of 65 because social networks seem to contribute to combating loneliness. Similarly, shy, anxious, lonely people who lack direct communication skills use digital technologies to create and develop virtual relationships, which sometimes prove to be at least as intimate as face-to-face ones [34–36]. Even young people use digital technologies in their daily work to develop social relationships [37]. Ref. [38] showed that social media has both positive (affirmation and fun) and negative effects (isolation and envy) on American teenagers. Conversely, ref. [39], who studied the use of social networks based on simple clicks on links and the Like button on Facebook, showed that digitalization has only negative effects on subjective well-being. Other studies have highlighted negative effects, especially on adolescents [40,41]. However, some psychological research aimed at linking time spent by adolescents on screen with depression or anxiety has indicated clinically insignificant relationships [42]. In addition, person-centered research has shown that while technology is ubiquitous, screen time does not induce uniform effects on subjective well-being because feelings, motivations and uses vary from individual to individual [43].

At the same time, digital technologies contribute to reducing the effort that employees make to solve work problems, which has beneficial effects on their physical and mental health [44]. In addition, these technologies can increase people's professional motivation and job satisfaction. Thus, digital technologies help to increase productivity, quality and efficiency in production activities and allow for monitoring and risk reduction [45]. Similarly, they increase performance in marketing activities by enabling efficient product placement and reducing price dispersion [46] and they improve quality of services in hospitals [47]. In education, digital technologies help teachers improve their performance by creating creative and interactive materials for students, support research and administrative activities, and especially change behaviors [48]. Such achievements provide professional satisfaction. Job satisfaction is a positive emotional state that results from the evaluation of one's work and work experiences and is often associated with happiness [49]. Thus, in higher education institutions, digital technology is implicitly associated with increased happiness, which leads to increased performance in the workplace [50].

Previous studies have highlighted both negative and positive effects that digitalization has on happiness and the fact that the respective results do not have a generalizable impact. In addition, there have been no studies that measure intra- and inter-individual effects over time. As a result, to obtain generalized knowledge, continuous conceptual work is necessary to identify, formalize, develop and assess the research on this topic. Given the above arguments, we stated the following two hypotheses to analyze the relationship between digitization and the level of happiness in European Union countries:

H_1: *There is a positive relationship between DESI and WHI.*

H_2: *There is a positive relationship between DESI and the variables of WHI.*

According to [11,12] countries from Western and Northern Europe generally reached the highest score of digitalization in 2018, while countries from Central and Eastern and Southern Europe obtained the lowest score of digitalization. As such, a third hypothesis was stated to assess the relationship between digitalization and happiness in the three European regions in 2019, 2020 and 2021:

H_3: *There is a positive relationship between DESI and WHI for each geographical group in the EU.*

3. Materials and Methods

The present research performed an analysis of the relationship between digitalization and the level of happiness in European Union countries.

For the digitization component, we decided to use the Digital Economy and Society Index (DESI). The decision to use the DESI indicator was based on the structure and methodology used for its calculation, which shows that the indicators were carefully chosen so that they were appropriate for the phenomenon that they measure. Additionally,

the indicators are quantitative and provide objective measures of performance regarding the level of digitization achieved. Moreover, DESI considers the different significance of certain aspects of digitization, removing the shortcoming of most methodologies related to global indices that use an equal weighting system [51]. This index, composed of a set of indicators related to the digital policy mix, was first calculated in 2014 to monitor the digital progress of the EU member states [10]. In 2021, DESI was adjusted to reflect the provisions of the Recovery and Resilience Facility (RRF) and the Digital Decade Compass. The indicators are structured in four dimensions to reflect the four cardinal points of the Digital Compass and the corresponding targets for 2030. Each component has a score calculated in the range of 0–100 with the same degree of coverage. Details on the four major components of DESI are presented in Table 1.

Table 1. DESI description.

Dimensions	Description of Dimensions	Degree of Coverage
Human capital (HC)	Assesses the Internet use skills of citizens and the advanced skills of specialists	25%
Connectivity (con)	Analyzes fixed broadband and mobile broadband with indicators that measure supply, demand and retail prices	25%
Integration of digital technology (IDT)	Includes digital intensity and the adoption of selected technologies by businesses and e-commerce	25%
Digital public services (DPS)	Describes the demand for and supply of e-government, as well as open data policies	25%

Source: Authors, based on DESI Index data [10].

In our research, we decided to analyze the period 2019–2021 to capture the evolution of this index before and during the COVID-19 pandemic. Thus, the DESI 2021 reports are based on 2020 data and present the state of the digital economy and society in the first year of the pandemic. The main characteristics of the analyzed variables are presented in Table 2 and in Appendix A.

Table 2. Descriptive statistics of the DESI variables for the period 2019–2021.

Variable	Min	Max	Mean	St. Dev.
Year		2019		
DESI	33.80	68.10	50.13	9.49
HC	28.50	77.50	47.78	12.52
con	29.50	60.10	46.83	7.78
IDT	16.90	69.10	40.84	13.97
DPS	45.00	85.00	67.52	12.26
Year		2020		
DESI	36.40	72.30	53.48	9.84
HC	32.50	78.40	49.30	12.73
con	33.40	64.40	51.65	8.26
IDT	17.90	74.30	43.30	15.25
DPS	48.40	89.30	72.17	11.76
Year		2021		
DESI	32.90	70.10	51.15	9.96
HC	32.70	71.10	48.47	9.67
con	37.70	74.00	51.14	8.75
IDT	20.50	59.50	39.01	10.82
DPS	21.50	91.80	64.47	16.33

Source: Authors, based on DESI Index data [10].

Table 2 presents the descriptive statistics of the DESI index and its four dimensions (as variables). The highest value of the DESI indicator was obtained by Finland in 2019 and 2020 and by Denmark in 2021, while the lowest value was obtained by Bulgaria in 2019 and 2020 and by Romania in 2021. The country with the highest human capital index in 2019, 2020 and 2021 was Finland, while the country with the lowest human capital index was Bulgaria in 2019, Italy in 2020 and Bulgaria in 2021. In terms of connectivity, Sweden achieved the largest value of this indicator in 2019 and 2020, whilst in 2021, Denmark was situated at the top of the list. The lowest value of this indicator belonged to Greece in all three years. With respect to the integration of the digital technology index, the highest value was obtained by Ireland in 2019 and 2020 and Finland in 2021, whereas Bulgaria was the country with the lowest value of this indicator in all three years. The last component, the digital public services index, had the highest value in Estonia in the three years analyzed and the lowest value in Romania every year in the analysis.

For the happiness component, we use the World Happiness Index (WHI), given that this is the only index published on an annual basis. WHI indicates the level of happiness and satisfaction among the inhabitants of a certain country. It is published annually by the Sustainable Development Solutions Network and is based on comprehensive data from Gallup World surveys in 149 countries. Surveys specifically monitor performance in six categories, described in Table 3 [52]. To correctly compare each country's data, the researchers created a fictional country called Dystopia, where the world's unhappiest people live; Dystopia was considered a benchmark for each of the six categories, and the scores of real-world countries were measured in relation to this value. The six variables were then combined to create a single combined score for each country.

Table 3. World Happiness Index (WHI) description.

Dimensions	Description of Dimensions
Gross domestic product per capita (GDPC)	Represents the total value of goods and services produced in a country over a period of time, divided by the population of that country.
Social support (SS)	Represents the national average of binary answers to the question, "Do you have relatives or friends you can rely on to help you in case you have problems?"
Healthy life expectancy (HLE)	Refers to the average number of years an individual is expected to live in at least good health, taking into account current mortality rates and the prevalence of good or very good health.
Freedom to make your own life choices (FMLC)	Represents the national average of binary answers to the question, "Are you satisfied or dissatisfied with your freedom to choose what to do with your own life?"
Generosity of the general population (GGP)	Represents the remnant of the regression of the national average of the answers to the question, "Have you donated money to a charity in the last month?" in GDP per capita.
Perceptions of internal and external corruption levels (PC)	Represents the average of binary answers to two questions: "Is corruption prevalent in government structures or not?" and "Is corruption prevalent in business or not?" Where data on government corruption were lacking, the perception of corruption in business was used as a general measure of the perception of corruption.

Source: Authors, based on World Happiness Report [53]. The questions in Table 3 are addressed to respondents in the Gallup World Poll [52].

Table 4 shows the descriptive statistics of the World Happiness Index and its components. The highest value of this indicator was obtained by Finland in all three years, while the lowest value of this indicator was obtained by Bulgaria in all three years. The country

with the largest value of gross domestic product per capita was Luxembourg in 2019, 2020 and 2021, whereas the country with the smallest value of this indicator was Bulgaria in all three years. The social support index was the highest in Finland in 2019 and Denmark in 2020 and 2021, whilst the lowest was obtained by Greece in 2019 and Cyprus in 2020 and 2021. The third component, healthy life expectancy, had the largest value in Spain in 2019, 2020 and 2021 and the smallest one in Latvia in 2019 and Bulgaria in 2020 and 2021. With respect to the freedom to make your own life choices indicator, the highest value was obtained by Finland in 2019, Denmark in 2020 and Finland in 2021, while Greece had the lowest value in 2019, 2020 and 2021. The generosity of the general population index had the largest value in Malta in 2019 and 2020 and in the Netherlands in 2021 and the lowest value in Greece in 2019, 2020 and 2021. The last component of the World Happiness Index, the perceptions of internal and external corruption levels, was the highest in Denmark in 2019, Bulgaria in 2020 and Croatia in 2021. Bulgaria was situated at the bottom of the list in 2019, and Denmark was at the bottom in 2020 and 2021.

Table 4. Descriptive statistics of the WHI variables for the period 2019–2021.

Variable	Min	Max	Mean	St. Dev.
Year		2019		
WHI	5.01	7.77	6.44	0.73
GDPC	1.09	1.61	1.29	0.11
SS	1.16	1.59	1.46	0.11
HLE	0.81	1.06	0.95	0.08
FMLC	0.07	0.60	0.43	0.14
GGP	0.00	0.38	0.16	0.09
PC	0.00	0.41	0.14	0.14
Year		2020		
WHI	5.10	7.81	6.53	0.70
GDPC	9.87	11.45	10.49	0.34
SS	0.81	0.96	0.91	0.04
HLE	66.8	74.40	71.03	2.37
FMLC	0.54	0.95	0.82	0.10
GGP	−0.30	0.21	−0.07	0.14
PC	0.17	0.94	0.66	0.25
Year		2021		
WHI	5.27	7.84	6.58	0.64
GDPC	10.02	11.65	10.63	0.35
SS	0.80	0.95	0.92	0.04
HLE	67.00	74.70	71.28	2.31
FMLC	0.58	0.95	0.83	0.09
GGP	−0.29	0.18	−0.08	0.12
PC	0.18	0.94	0.66	0.25

Source: Authors, based on World Happiness Data [52].

The three hypotheses were tested using Pearson correlation analysis in SPSS software for each of the three years. This analysis helps in understanding the evolution of the relationship between the DESI index and the World Happiness Index between 2019 and 2021 (before the COVID-19 pandemic and during the COVID-19 pandemic) in EU countries.

4. Results

The correlation analysis between the DESI index and World Happiness Index in the EU for the period 2019–2021 is presented in Table 5.

Table 5. Correlations between DESI index and World Happiness Index.

Var	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDPC	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
Year						2019						
DESI	1											
DESI HC	0.923 **	1										
DESI con	0.653 **	0.513 **	1									
DESI IDT	0.841 **	0.733 **	0.265	1								
DESI DPS	0.806 **	0.606 **	0.583 **	0.613 **	1							
WHI	0.814 **	0.794 **	0.518 **	0.733 **	0.535 **	1						
WHI GDPC	0.660 **	0.640 **	0.400 *	0.639 **	0.428 *	0.804 **	1					
WHI SS	0.644 **	0.551 **	0.511 **	0.500 **	0.647 **	0.547 **	0.436 *	1				
WHI HLE	0.380	0.327	0.073	0.485 *	0.299	0.498 **	0.612 **	0.057	1			
WHI FMLC	0.680 **	0.668 **	0.459 *	0.578 **	0.524 **	0.726 **	0.566 **	0.519 **	0.341	1		
WHI GGP	0.601 **	0.593 **	0.246	0.577 **	0.422 *	0.683 **	0.658 **	0.382 *	0.518 **	0.625 **	1	
WHI PC	0.866 **	0.875 **	0.519 **	0.748 **	0.581 **	0.867 **	0.802 **	0.504 **	0.479 *	0.673 **	0.675 **	1
Year						2020						
DESI	1											
DESI HC	0.917 **	1										
DESI con	0.539 **	0.422 *	1									
DESI IDT	0.861 **	0.759 **	0.203	1								
DESI DPS	0.770 **	0.599 **	0.401 *	0.576 **	1							
WHI	0.825 **	0.761 **	0.440 *	0.758 **	0.531 **	1						
WHI GDP	0.672 **	0.617 **	0.385 *	0.629 **	0.468 *	0.822 **	1					
WHI SS	0.646 **	0.594 **	0.358	0.502 **	0.626 **	0.477 *	0.360	1				
WHI HLE	0.374	0.331	0.030	0.435 *	0.309	0.511 **	0.578 **	−0.024	1			
WHI FMLC	0.702 **	0.709 **	0.423 *	0.579 **	0.496 **	0.703 **	0.563 **	0.480 *	0.257	1		
WHI GGP	0.649 **	0.622 **	0.300	0.590 **	0.459 *	0.663 **	0.669 **	0.348	0.536 **	0.582 **	1	
WHI PC	−0.863 **	−0.837 **	−0.389 *	−0.732 **	−0.630 **	−0.872 **	−0.787 **	−0.503 **	−0.443 *	−0.679 **	−0.657 **	1

Table 5. *Cont.*

Var	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDPC	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
Year						2021						
DESI	1											
DESI HC	0.881 **	1										
DESI con	0.708 **	0.626 **	1									
DESI IDT	0.841 **	0.840 **	0.544 **	1								
DESI DPS	0.908 **	0.734 **	0.467 *	0.702 **	1							
WHI	0.774 **	0.832 **	0.699 **	0.784 **	0.579 **	1						
WHI GDP	0.657 **	0.650 **	0.619 **	0.600 **	0.569 **	0.812 **	1					
WHI SS	0.583 **	0.518 **	0.385 *	0.443 *	0.590 **	0.397 *	0.229	1				
WHI HLE	0.388 *	0.401 *	0.325	0.515 **	0.361	0.522 **	0.557 **	−0.114	1			
WHI FMLC	0.626 **	0.672 **	0.604 **	0.593 **	0.529 **	0.647 **	0.513 **	0.481 *	0.161	1		
WHI GGP	0.643 **	0.546 **	0.634 **	0.575 **	0.581 **	0.608 **	0.602 **	0.314	0.416 *	0.553 **	1	
WHI PC	−0.841 **	−0.891 **	−0.694 **	−0.750 **	−0.704 **	−0.865 **	−0.762 **	−0.410 *	−0.426 *	−0.649 **	−0.655 **	1

Source: Authors, based on DESI and WHI indicators [10,52]. Notes. * $p < 0.05$; ** $p < 0.01$.

The results show that, in 2019, there was a positive and significant relationship between the DESI index and the World Happiness Index, thus providing support for our first hypothesis. Similar results were obtained when correlating the DESI index with each component of the World Happiness Index, except for healthy life expectancy, where the correlation was positive but not significant. Therefore, the second hypothesis is partially supported. In 2020, the results show that there was a higher positive and significant correlation between the DESI index and World Happiness Index compared to 2019. Except for the perceptions of internal and external corruption component, which was negatively and significantly correlated with the DESI index, and the healthy life expectancy component, which was positively but not significantly correlated with the DESI index, all other components of the World Happiness Index were positively and significantly correlated with the DESI index. The results for 2020 provide support for the first hypothesis, but they only partially support the second hypothesis. A lower correlation, though positive and significant, between the DESI index and World Happiness Index was obtained in 2021 compared to the previous years. Additionally, in 2020, the perceptions of internal and external corruption indicator were negatively and significantly correlated with the DESI index, and all other components had a positive and significant correlation with the DESI index. For 2021, again, the first hypothesis is supported, but the second hypothesis is only partially supported.

The third hypothesis of the present study refers to the relationship between the DESI index and the World Happiness Index at the level of geographical groups in the EU. To identify whether there were differences between EU regions at the level of each indicator, we first performed a one-way ANOVA analysis in SPSS and then a correlation analysis for each group of countries.

Table 6 shows that there were significant differences between the three groups of countries with respect to the DESI index and the World Happiness Index in every year of the analysis. Additionally, significant differences were observed at the level of DESI and World Happiness Index components, except for DESI connectivity, DESI digital public components, the generosity of the general population in 2019, DESI connectivity and DESI generosity of the general population in 2020 and DESI connectivity, healthy life expectancy and the generosity of the general population in 2021.

Table 7 presents the correlation analyses between the DESI index and World Happiness Index for each EU region in the period 2019–2021. The first analysis refers to the Central and Eastern EU region. As can be seen, in 2019, the only positive and significant relationships were represented by the DESI index and social support component of the World Happiness Index and the DESI index and the perception of corruption component. In 2020, significant relationships existed between the DESI index and gross domestic product per capita component of the World Happiness Index, between the DESI index and the generosity of the general population component, and between the DESI index and the perception of corruption component, but the last relationship was a negative one. In 2021, there were only two significant relationships, as follows: between the DESI index and the generosity of the general population component and between the DESI index and the perception of corruption component, which again was a negative relationship.

Table 6. Group tests on EU regions (one-way ANOVA).

Indicators	Central and Eastern (n = 10)		Southern (n = 9)		Western and Northern (n = 8)		One-Way ANOVA F
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	
Year				2019			
DESI	49.80	6.82	43.19	7.70	59.56	7.57	9.89 **
DESI HC	48.30	8.84	37.82	8.87	59.77	11.25	10.51 **
DESI con	47.16	5.28	42.71	8.51	51.61	8.18	2.99
DESI IDT	37.46	11.47	33.63	10.34	55.41	11.71	8.34 *
DESI DPS	67.87	12.55	61.76	13.05	74.39	7.56	2.31
WHI	6.44	0.60	5.87	0.56	7.19	0.41	11.77 **
WHI GDPC	1.27	0.07	1.22	0.07	1.41	0.10	11.68 **
WHI SS	1.48	0.04	1.37	0.15	1.52	0.05	6.53 **
WHI HLE	0.91	0.07	0.97	0.09	1.00	0.02	4.19 *
WHI FMLC	0.42	0.13	0.36	0.15	0.53	0.06	3.89 *
WHI GGP	0.14	0.09	0.13	0.11	0.21	0.07	1.35
Year				2020			
DESI	53.05	6.80	46.52	8.93	63.10	7.43	9.10 **
DESI HC	49.15	10.59	40.73	10.01	60.54	11.12	6.96 **
DESI con	53.02	6.13	47.91	10.15	54.31	7.95	1.49
DESI IDT	39.93	12.03	35.02	10.99	59.23	13.62	8.57 **
DESI DPS	72.55	11.54	66.06	12.92	79.44	6.02	2.95 *
WHI	6.52	0.55	5.99	0.53	7.26	0.42	11.99 **
WHI GDPC	10.44	0.22	10.26	0.23	10.86	0.32	11.77 **
WHI SS	0.92	0.02	0.88	0.05	0.93	0.02	6.91 **
WHI HLE	69.74	2.16	71.44	2.78	72.52	0.63	3.80 *
WHI FMLC	0.82	0.09	0.76	0.12	0.90	0.06	4.11 *
WHI GGP	−0.09	0.15	−0.09	0.15	0.01	0.10	1.24
Year				2021			
DESI	52.04	8.05	45.42	9.12	60.99	7.21	7.05 **
DESI HC	48.37	7.68	57.91	8.27	41.26	6.52	9.80 **
DESI con	50.86	7.50	47.02	8.16	56.87	9.23	2.86
DESI IDT	36.06	8.64	34.54	9.55	49.39	9.46	6.13 **
DESI DPS	69.20	13.71	58.87	19.29	79.66	7.76	3.94 *
WHI	6.57	0.54	6.08	0.43	7.25	0.41	12.00 **
WHI GDPC	10.56	0.23	10.41	0.22	11.01	0.35	11.05 **
WHI SS	0.93	0.02	0.88	0.05	0.93	0.02	7.27 **
WHI HLE	70.10	2.11	71.66	2.78	72.66	0.65	3.30
WHI FMLC	0.84	0.071	0.78	0.10	0.89	0.07	3.51 *
WHI GGP	−0.09	0.12	−0.08	0.12	−0.03	0.10	0.92

Source: Authors, based on DESI and WHI indicators [10,52]. Notes. * $p < 0.05$; ** $p < 0.01$.

Table 7. Correlations between DESI index and World Happiness Index on EU regions.

Var	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDPC	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
Region						Central and Eastern						
Year						2019						
DESI	1											
DESI HC	0.837 **	1										
DESI con	0.456	0.118	1									
DESI IDT	0.795 **	0.633 *	0.011	1								
DESI DPS	0.770 **	0.474	0.588	0.409	1							
WHI	0.479	0.552	−0.161	0.618 *	0.141	1						
WHI GDPC	0.577	0.726 *	−0.138	0.648 *	0.162	0.931 **	1					
WHI SS	0.632 *	0.481	0.058	0.704 *	0.525	0.169	0.240	1				
WHI HLE	0.389	0.630 *	−0.217	0.470	0.022	0.855 **	0.906 **	0.208	1			
WHI FMLC	0.449	0.600	−0.108	0.464	0.238	0.619 *	0.652 *	0.434	0.843 **	1		
WHI GGP	0.523	0.682 *	0.027	0.462	0.135	0.780 **	0.889 **	0.107	0.850 **	0.633 *	1	
WHI PC	0.748 **	0.845 **	0.207	0.547	0.426	0.760 **	0.875 **	0.184	0.754 **	0.621 *	0.895 **	1
Year						2020						
DESI	1											
DESI HC	0.859 **	1										
DESI con	0.309	0.012	1									
DESI IDT	0.793 **	0.661 *	−0.106	1								
DESI DPS	0.651 *	0.421	0.168	0.357	1							
WHI	0.538	0.585	−0.052	0.676 *	0.037	1						
WHI GDP	0.657 *	0.718 *	0.070	0.650 *	0.147	0.943 **	1					
WHI SS	0.514	0.465	−0.026	0.502	0.374	0.118	0.201	1				
WHI HLE	0.432	0.618 *	−0.109	0.478	−0.007	0.891 **	0.900 **	0.085	1			
WHI FMLC	0.477	0.691 *	−0.236	0.465	0.182	0.586	0.644 *	0.119	0.825 **	1		
WHI GGP	0.705 *	0.711 *	0.301	0.537	0.252	0.801 **	0.924 **	0.300	0.828 **	0.616 *	1	
WHI PC	−0.765 **	−0.727 *	−0.329	−0.499	−0.473	−0.718 *	−0.837 **	−0.016	−0.719 *	−0.632 *	−0.869 **	1

Table 7. *Cont.*

Var	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDPC	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
Year						2021						
DESI	1											
DESI HC	0.767 **	1										
DESI con	0.566	0.608 *	1									
DESI IDT	0.701 *	0.836 **	0.412	1								
DESI DPS	0.895 *	0.658 *	0.201	0.635 *	1							
WHI	0.473	0.720 *	0.646 *	0.676 *	0.216	1						
WHI GDP	0.570	0.803 **	0.696 *	0.706 *	0.373	0.945 **	1					
WHI SS	0.201	0.218	0.022	0.409	0.168	0.012	−0.055	1				
WHI HLE	0.306	0.618 *	0.594	0.582	0.094	0.904 **	0.884 **	−0.083	1			
WHI FMLC	0.399	0.695 *	0.415	0.730 *	0.338	0.615 *	0.658 *	0.118	0.792 **	1		
WHI GGP	0.657 *	0.786 **	0.879 **	0.605 *	0.406 *	0.796 **	0.864 **	−0.042	0.755 **	0.580	1	
WHI PC	−0.720 *	−0.845 **	−0.709 *	−0.598	−0.605 *	−0.696 *	−0.833 **	0.210	−0.652 *	−0.624 *	−0.883 **	1
Region						Western and Northern						
Year						2019						
DESI	1											
DESI HC	0.912 **	1										
DESI con	0.645	0.661	1									
DESI IDT	0.508	0.269	−0.283	1								
DESI DPS	0.858 *	0.670	0.399	0.635	1							
WHI	0.906	0.837 *	0.199	0.390	0.819 *	1						
WHI GDPC	−0.200	−0.105	0.198	−0.263	−0.273	0.016	1					
WHI SS	0.535	0.393	−0.476	0.475	0.930 **	0.561	−0.424	1				
WHI HLE	−0.632	−0.503	−0.106	−0.697	−0.256	−0.577	−0.113	−0.057	1			
WHI FMLC	0.861 *	0.850 *	0.328	0.254	0.766 *	0.933 **	0.153	0.488	−0.374	1		
WHI GGP	0.474	0.311	−0.051	0.503	0.321	0.380	0.440	0.171	−0.309	0.551	1	
WHI PC	−0.879 **	−0.827 *	−0.210	−0.350	−0.827 *	−0.945 **	−0.122	−0.574	0.407	−0.991 **	0.585	1

Table 7. *Cont.*

Var	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDPC	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
Year						2020						
DESI	1											
DESI HC	0.904 **	1										
DESI con	0.238	0.548	1									
DESI IDT	0.616	0.353	−0.369	1								
DESI DPS	0.771 *	0.653	−0.212	0.482	1							
WHI	0.906 **	0.837 *	0.199	0.390	00.819 *	1						
WHI GDPC	−0.200	−0.105	0.198	−0.263	−0.273	0.016	1					
WHI SS	0.535	0.393	−0.476	0.475	0.930 **	0.561	−0.424	1				
WHI HLE	−0.632	−0.503	−0.106	−0.697	−0.256	−0.577	−0.113	−0.057	1			
WHI FMLC	0.861 *	0.850 *	0.328	0.254	0.766 *	0.933 **	0.153	0.488	−0.374	1		
WHI GGP	0.474	0.311	−0.051	0.503	0.321	0.380	0.440	0.171	−0.309	0.551	1	
WHI PC	−0.879 **	−0.827 *	−0.210	−0.350	−0.827 *	−0.945 **	−0.122	−0.574	0.407	−0.991 **	−0.585	1
Year						2021						
DESI	1											
DESI HC	0.874 *	1										
DESI con	0.722	0.341	1									
DESI IDT	0.840 *	0.813 *	0.387	1								
DESI DPS	0.883 **	0.775 *	0.641	0.562	1							
WHI	0.919 **	0.938 **	0.550	0.744	0.849 *	1						
WHI GDPC	0.012	−0.123	0.341	−0.327	0.169	0.067	1					
WHI SS	0.527	0.426	0.253	0.412	0.704	0.436	−0.366	1				
WHI HLE	−0.490	−0.562	−0.124	−0.675	−0.249	0.557	−0.224	0.129	1			
WHI FMLC	0.915 **	0.864 *	0.658	0.600	0.949 **	0.905 **	0.162	0.512	−0.294	1		
WHI GGP	0.630	0.354	0.677	0.376	0.668	0.374	0.410	0.315	−0.191	0.637	1	
WHI PC	−0.960 **	−0.878 **	−0.663	−0.704	−0.971 **	−0.919 **	−0.072	−0.621	0.350	−0.980 **	−0.646	1

Table 7. *Cont.*

Var	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDPC	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
Region						Southern						
Year						2019						
DESI	1											
DESI HC	0.853 **	1										
DESI con	0.528	0.174	1									
DESI IDT	0.913 **	0.854 **	0.231	1								
DESI DPS	0.837 **	0.493	0.522	0.690 *	1							
WHI	0.726 *	0.546	0.608	0.577	0.593	1						
WHI GDPC	0.725 *	0.465	0.427	0.686 *	0.711 *	0.865 **	1					
WHI SS	0.498	0.262	0.544	0.237	0.677 *	0.320	0.308	1				
WHI HLE	0.580	0.330	0.139	0.670 *	0.639	0.516	0.863 **	0.107	1			
WHI FMLC	0.562	0.411	0.509	0.409	0.530	0.553	0.275	0.370	−0.065	1		
WHI GGP	0.685 *	0.726 *	0.200	0.575	0.547	0.770 *	0.636	0.452	0.306	0.558	1	
WHI PC	0.812 **	0.827 **	0.188	0.777 *	0.650	0.723 *	0.691 *	0.404	0.507	0.409	0.838 **	1
Year						2020						
DESI	1											
DESI HC	0.875 **	1										
DESI con	0.717 *	0.441	1									
DESI IDT	0.929 **	0.871 **	0.514	1								
DESI DPS	0.786 *	0.491	0.578	0.617	1							
WHI	0.723 *	0.453	0.747 *	0.644	0.581	1						
WHI GDPC	0.712 *	0.416	0.553	0.683 *	0.703 *	0.922 **	1					
WHI SS	0.503	0.487	0.444	0.287	0.588	0.104	0.094	1				
WHI HLE	0.504	0.234	0.169	0.561	0.638	0.566	0.826 **	−0.064	1			
WHI FMLC	0.570	0.438	0.668 *	0.480	0.484	0.465	0.259	0.330	−0.143	1		
WHI GGP	0.690 *	0.656	0.380	0.623	0.585	0.699 *	0.682 *	0.374	0.341	0.489	1	
WHI PC	−0.841 **	−0.787 *	−0.493	−0.773 *	−0.680 *	−0.732 *	−0.752 *	−0.373	−0.556	−0.320	−0.749 *	1

Table 7. *Cont.*

Var	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDPC	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
Year							2021					
DESI	1											
DESI HC	0.838 **	1										
DESI con	0.622	0.525	1									
DESI IDT	0.871 **	0.743 *	0.446	1								
DESI DPS	0.913 **	0.655	0.357	0.712 *	1							
WHI	0.653	0.407	0.652	0.730 *	0.458	1						
WHI GDPC	0.701 *	0.438	0.463	0.733 *	0.616	0.930 **	1					
WHI SS	0.569	0.405	0.371	0.443	0.565	0.024	−0.065	1				
WHI HLE	0.641	0.573	0.203	0.615	0.627	0.621	0.788 *	−0.097	1			
WHI FMLC	0.407	0.255	0.536	0.284	0.315	0.247	0.192	0.356	−0.249	1		
WHI GGP	0.611	0.299	0.264	0.573	0.657	0.523	0.535	0.423	0.213	0.420	1	
WHI PC	−0.769 *	−0.623	−0.481	−0.663	−0.708 *	−0.649	−0.719 *	−0.241	−0.574	−0.184	−0.611	1

Source: Authors, based on DESI and WHI indicators [10,52]. Notes. * $p < 0.05$; ** $p < 0.01$.

The second analysis refers to the Western and Northern EU region. As can be seen, in 2019, there was no significant relationship between the DESI index and World Happiness Index, but there was a significant and positive relationship between the DESI index and the freedom to make your own life choices component of the World Happiness Index and a significant and negative relationship between the DESI index and the perception of corruption component. In 2020 and 2021, the situation looks different for this region. There was a positive and strongly significant relationship between the DESI index and the World Happiness Index but also a positive and significant relationship between the DESI index and the freedom to make your own life choices component of the World Happiness Index. Moreover, the results show that a negative and significant relationship existed between the DESI index and the perception of corruption.

The third analysis refers to the Southern EU countries. As reported in the table, in 2019 and 2020, there was a significant and positive relationship between the DESI index and World Happiness Index, but there was no significant relationship between the two indicators in 2021. In 2019, significant and positive relationships existed between the DESI index and the following indicators: gross domestic product per capita, generosity of the general population and the perception of corruption. Similar relationships existed in 2020, except for the relationship between the DESI index and the perception of corruption indicator, which was negative. In 2021, the only positive and significant relationship existed between the DESI indicator and gross domestic product per capita, and a negative and significant relationship existed between the DESI indicator and the perception of corruption indicator.

In summary, the Western and Northern EU region had the strongest relationship between the DESI index and World Happiness Index, but only in 2020 and 2021, followed by the Southern region, where the relationship was not that strong, and it existed only in 2019 and 2020. In Central and Eastern EU countries, the DESI and World Happiness indicators were not significantly correlated.

5. Conclusions

Digital technologies can have a significant impact on people's happiness. Digitalization connects people and changes the way that they interact with each other [17]. As previous studies found, people, especially older individuals, are more satisfied with their lives when using digital networks due to the opportunity for communication and sharing messages, images, videos, etc., with other people [33]. Studies have identified both negative and positive effects of digitalization on happiness and the fact that the obtained results do not have a generalizable impact. Although empirical research on digitalization has grown enormously during the last decade, studies on the relationship between digitalization and happiness remain limited. As such, the objective of the present study was to analyze the relationship between digitalization and the level of happiness in European Union countries during the period 2019–2021. In this context, the link between DESI and WHI globally for all EU countries, at the level of each WHI variable and at the level of geographical groups in the EU was analyzed using correlations.

The results show that there was a significant and positive relationship between the DESI index and WHI at the level of EU countries in each year of the analysis and between the DESI index and WHI components, except for healthy life expectancy in 2019, the perceptions of internal and external corruption component, which is negatively and significantly correlated with the DESI index, the healthy life expectancy component, which was positively but not significantly correlated with the DESI index in 2020, and the perceptions of internal and external corruption indicator, which was negatively and significantly correlated with DESI in 2021. The results also show that in the Western and Northern region of the EU, the relationship between the two indicators was stronger compared to the other EU regions. The findings of the present paper are generally in line with the findings of some previous studies that showed a positive relationship between digital technologies and people's satisfaction and well-being [33,45], but it must be specified that no other study

has made a link between DESI and WHI at the EU level. Overall, the relationship between DESI and WHI appears to have been stronger in 2020 compared to 2019 but weaker in 2021 compared to 2020 and 2019. These results show that, in the year that the COVID-19 pandemic started and social and professional lives moved online to a larger extent than ever before, people started to feel happier with technology, but as time passed, they realized that technology is not beneficial for their well-being.

Our research offers an optimistic outlook for the impact of digitalization on happiness in the EU. The results could be of interest to researchers, as they provide a starting point in studying people's happiness in relation to digitalization. The results could also be of interest to people in general, as they show the evolution of the relationship between digitalization and happiness one year before and during the COVID-19 pandemic. In these periods, countries made efforts related to digitalization and allocated increasing budgets for this activity. The effect of digitalization on countries' happiness will become more pronounced if people and policymakers learn to harmonize these two aspects. Therefore, our study is a signal that everyone must understand digitalization and act so that this factor has a discernible impact on the happiness of nations.

However, this study has several limitations, mainly determined by the analyzed period, which covers only three years, and by the variables for DESI and WHI, which were only set at the level of their dimensions. Despite these limitations, we consider that this work is a challenge for future research regarding the link between digitalization and happiness. Thus, it would be interesting to see how the DESI vs. WHI clusters change in the post-pandemic period and to what extent the change at the level of sub-dimensions and indicators is in line with the change at the global level of the two indices. Future studies could also analyze this relationship at a global level and compare the results with those at the EU level, identifying the factors that drive the positive or negative relationships between the two indicators.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A. Database

Ref. No	Year	Country	Region	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDP	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
1	2021	Austria	Central and Eastern	56.9	53.3	53	41.3	79.8	7.27	10.91	0.93	73.30	0.91	0.04	0.48
2	2021	Belgium	Western and Northern	53.7	50.8	48.4	49.8	65.8	6.83	10.82	0.91	72.20	0.78	(0.15)	0.65
3	2021	Bulgaria	Southern	36.8	32.7	38.1	20.5	56	5.27	10.02	0.93	67.00	0.79	(0.10)	0.93
4	2021	Croatia	Southern	46	46.7	45.4	40	52	5.88	10.22	0.92	70.80	0.75	(0.12)	0.94
5	2021	Cyprus	Southern	43.5	39.7	41.8	30.5	61.8	6.22	10.58	0.80	73.90	0.76	(0.01)	0.84
6	2021	Czech Republic	Central and Eastern	47.4	47.2	44.6	39.1	58.6	6.97	10.56	0.95	70.81	0.86	(0.21)	0.87
7	2021	Denmark	Western and Northern	70.1	61.2	74	57.9	87.1	7.62	10.93	0.95	72.70	0.95	0.03	0.18
8	2021	Estonia	Central and Eastern	59.4	57.9	46.6	41.5	91.8	6.19	10.48	0.94	68.80	0.91	(0.11)	0.53
9	2021	Finland	Western and Northern	67.1	71.1	51.3	59.5	86.7	7.84	10.78	0.95	72.00	0.95	(0.10)	0.19
10	2021	France	Western and Northern	50.6	47.4	47.4	34.8	73	6.69	10.70	0.94	74.00	0.82	(0.15)	0.57
11	2021	Germany	Central and Eastern	54.1	55.2	58	35.5	67.5	7.16	10.87	0.90	72.50	0.88	0.01	0.46
12	2021	Greece	Southern	37.3	41	37.7	28.5	41.9	5.72	10.28	0.82	72.60	0.58	(0.29)	0.82
13	2021	Hungary	Central and Eastern	41.2	40.5	52	23.3	49.2	5.99	10.36	0.94	68.00	0.75	(0.19)	0.88
14	2021	Ireland	Western and Northern	60.3	54.1	56.4	48	82.6	7.09	11.34	0.95	72.40	0.88	0.08	0.36
15	2021	Italy	Southern	45.5	35.1	42.4	41.4	63.2	6.48	10.62	0.88	73.80	0.69	(0.08)	0.87
16	2021	Latvia	Central and Eastern	59.5	41.1	50.4	26.8	79.6	6.03	10.31	0.93	67.10	0.71	(0.16)	0.80
17	2021	Lithuania	Central and Eastern	51.8	46.1	41.7	41.2	78	6.26	10.50	0.94	67.91	0.77	(0.20)	0.83
18	2021	Luxemburg	Western and Northern	59	56.2	61	39.4	79.4	7.32	11.65	0.91	72.60	0.91	(0.03)	0.39
19	2021	Malta	Southern	59.6	49.1	54.1	50.8	84.2	6.60	10.67	0.93	72.20	0.93	0.13	0.65
20	2021	Netherlands	Western and Northern	65.1	61.5	68.4	50.7	79.9	7.46	10.93	0.94	72.40	0.91	0.18	0.34
21	2021	Poland	Central and Eastern	41	37.7	45.3	25.9	55.1	6.17	10.38	0.90	69.70	0.84	(0.16)	0.74
22	2021	Portugal	Southern	49.8	45.6	48.5	36.6	68.5	5.93	10.42	0.88	72.60	0.89	(0.24)	0.89
23	2021	Romania	Southern	32.9	33.1	53.2	23.8	21.5	6.14	10.28	0.83	67.36	0.85	(0.22)	0.94
24	2021	Slovakia	Central and Eastern	43.2	43.8	46.3	29.1	53.7	6.33	10.37	0.94	69.20	0.77	(0.12)	0.91
25	2021	Slovenia	Central and Eastern	52.8	47.8	53.2	42.3	68	6.46	10.53	0.95	71.40	0.95	(0.10)	0.81
26	2021	Spain	Southern	57.4	48.3	62	38.8	80.7	6.49	10.57	0.93	74.70	0.76	(0.08)	0.75
27	2021	Sweden	Western and Northern	66.1	64.6	59.6	56.3	83	7.36	10.87	0.93	72.70	0.94	0.09	0.24
1	2020	Austria	Central and Eastern	54.3	56.7	47.2	40.6	80.8	7.29	10.74	0.93	73.00	0.90	0.09	0.50
2	2020	Belgium	Western and Northern	58.7	50.4	52	65.9	71.7	6.86	10.67	0.91	72.00	0.81	(0.08)	0.61
3	2020	Bulgaria	Southern	36.4	33.9	38.5	17.9	61.8	5.10	9.87	0.94	66.80	0.75	(0.14)	0.94
4	2020	Croatia	Southern	47.6	49.2	41.2	41.5	55.8	5.51	10.07	0.87	70.21	0.71	(0.13)	0.92
5	2020	Cyprus	Southern	44	35.8	38.5	34.5	69	6.16	10.41	0.81	73.70	0.78	0.04	0.86
6	2020	Czech Republic	Central and Eastern	50.8	48.6	44.9	49.6	62.4	6.91	10.40	0.91	70.05	0.82	(0.23)	0.86
7	2020	Denmark	Western and Northern	69.1	61.3	45.8	65.1	87.1	7.75	10.77	0.96	72.40	0.95	0.07	0.17

Ref. No	Year	Country	Region	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDP	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
8	2020	Estonia	Central and Eastern	61.1	66.7	51.9	41.1	89.3	6.02	10.34	0.93	68.60	0.88	(0.11)	0.62
9	2020	Finland	Western and Northern	72.3	78.4	59.2	67	87	7.81	10.64	0.95	71.90	0.95	(0.06)	0.20
10	2020	France	Western and Northern	52.2	47.4	49.8	42	76.7	6.66	10.58	0.94	73.80	0.83	(0.13)	0.58
11	2020	Germany	Central and Eastern	56.1	56.4	59.4	39.5	66.4	7.08	10.73	0.90	72.20	0.87	0.08	0.46
12	2020	Greece	Southern	37.3	34.8	33.4	28.2	51.5	5.52	10.13	0.81	72.41	0.54	(0.30)	0.86
13	2020	Hungary	Central and Eastern	47.5	41.8	59.8	25.3	57.8	6.00	10.25	0.92	67.61	0.72	(0.19)	0.89
14	2020	Ireland	Western and Northern	61.8	56.4	45.7	74.3	80.6	7.13	11.16	0.94	72.30	0.89	0.15	0.36
15	2020	Italy	Southern	43.6	32.5	50	31.2	67.5	6.39	10.48	0.89	73.60	0.66	(0.04)	0.87
16	2020	Latvia	Central and Eastern	50.7	35	61.8	28.3	85.1	5.95	10.18	0.92	66.81	0.67	(0.19)	0.80
17	2020	Lithuania	Central and Eastern	53.9	43.8	48.9	49.5	81.4	6.22	10.34	0.93	67.29	0.75	(0.22)	0.81
18	2020	Luxemburg	Western and Northern	57.9	58.2	63.3	38.2	73.7	7.24	11.45	0.91	72.60	0.91	(0.00)	0.37
19	2020	Malta	Southern	62.7	61.8	58.7	54.9	78.1	6.77	10.53	0.93	72.20	0.92	0.21	0.66
20	2020	Netherlands	Western and Northern	67.7	64.2	60.3	65.7	81	7.45	10.81	0.94	72.30	0.91	0.21	0.36
21	2020	Poland	Central and Eastern	45	37.3	51.3	26.1	67.4	6.19	10.27	0.87	69.31	0.86	(0.21)	0.69
22	2020	Portugal	Southern	49.6	37.8	53.9	40.9	75.1	5.91	10.26	0.89	72.40	0.89	(0.22)	0.89
23	2020	Romania	Southern	40	33.2	56.2	24.9	48.4	6.12	10.11	0.83	67.21	0.84	(0.20)	0.93
24	2020	Slovakia	Central and Eastern	45.2	41.8	47.5	32.6	55.6	6.28	10.35	0.92	68.91	0.75	(0.12)	0.92
25	2020	Slovenia	Central and Eastern	51.2	48.3	50.2	40.9	70.8	6.36	10.39	0.94	71.10	0.94	(0.08)	0.82
26	2020	Spain	Southern	57.5	47.6	60.8	41.2	87.3	6.40	10.46	0.92	74.40	0.75	(0.05)	0.77
27	2020	Sweden	Western and Northern	69.7	71.7	64.4	62.1	79.3	7.35	10.76	0.93	72.60	0.94	0.11	0.25
1	2019	Austria	Central and Eastern	51.1	55.7	43.5	34.8	76.3	7.25	1.38	1.48	1.02	0.53	0.24	0.23
2	2019	Belgium	Western and Northern	53	49.6	39.9	61.4	65.8	6.92	1.36	1.50	0.99	0.47	0.16	0.21
3	2019	Bulgaria	Southern	33.8	28.5	37.2	16.9	56.5	5.01	1.09	1.51	0.81	0.31	0.08	0.00
4	2019	Croatia	Southern	44.3	46.8	37.2	38.5	50.8	5.43	1.15	1.27	0.91	0.30	0.12	0.02
5	2019	Cyprus	Southern	41.5	34.6	34.6	33.5	65.7	6.05	1.26	1.22	1.04	0.41	0.19	0.04
6	2019	Czech Republic	Central and Eastern	47.3	44.8	43.5	42.7	59.9	6.85	1.27	1.49	0.92	0.46	0.05	0.04
7	2019	Denmark	Western and Northern	66	61.1	59.2	61.2	82.7	7.60	1.38	1.57	1.00	0.59	0.25	0.41
8	2019	Estonia	Central and Eastern	58.3	62.4	49.9	39.8	85	5.89	1.24	1.53	0.87	0.50	0.10	0.16
9	2019	Finland	Western and Northern	68.1	77.5	54.5	60.1	82	7.77	1.34	1.59	0.99	0.60	0.15	0.39
10	2019	France	Western and Northern	49.8	47	48	40.8	69.3	6.59	1.32	1.47	1.05	0.44	0.11	0.18
11	2019	Germany	Central and Eastern	51.2	54.4	47.7	39.2	58.8	6.99	1.37	1.45	0.99	0.50	0.26	0.26
12	2019	Greece	Southern	35.1	32.7	29.5	30.2	46.4	5.29	1.18	1.16	1.00	0.07	-	0.03
13	2019	Hungary	Central and Eastern	42.3	42.1	45.9	24.9	50.7	5.76	1.20	1.41	0.83	0.20	0.08	0.02
14	2019	Ireland	Western and Northern	58	54.2	42.5	69.1	78.1	7.02	1.50	1.55	1.00	0.52	0.30	0.31
15	2019	Italy	Southern	41.6	32	48.2	30	61.9	6.22	1.29	1.49	1.04	0.23	0.16	0.03

Ref. No	Year	Country	Region	DESI	DESI HC	DESI con	DESI IDT	DESI DPS	WHI	WHI GDP	WHI SS	WHI HLE	WHI FMLC	WHI G	WHI PC
16	2019	Latvia	Central and Eastern	49.9	40.4	59.8	24.7	80.2	5.94	1.19	1.46	0.81	0.26	0.07	0.06
17	2019	Lithuania	Central and Eastern	51.8	42.2	46	47.6	79.4	6.15	1.24	1.52	0.82	0.29	0.04	0.04
18	2019	Luxemburg	Western and Northern	54.5	57.4	57.1	37.4	64.9	7.09	1.61	1.48	1.01	0.53	0.19	0.32
19	2019	Malta	Southern	55.3	55	43.9	49.6	75.2	6.73	1.30	1.52	1.00	0.56	0.38	0.15
20	2019	Netherlands	Western and Northern	63.6	62	50.5	62.6	79.6	7.49	1.40	1.52	1.00	0.56	0.32	0.30
21	2019	Poland	Central and Eastern	40.7	36.8	43.8	23.5	61.5	6.18	1.21	1.44	0.88	0.48	0.12	0.05
22	2019	Portugal	Southern	47	35.2	48.4	41.4	73.4	5.69	1.22	1.43	1.00	0.51	0.05	0.02
23	2019	Romania	Southern	36.5	31.1	50	21.3	45	6.07	1.16	1.23	0.82	0.46	0.08	0.00
24	2019	Slovakia	Central and Eastern	42.9	44.2	39.6	33.1	50.7	6.20	1.25	1.50	0.88	0.33	0.12	0.01
25	2019	Slovenia	Central and Eastern	48.7	46.3	48.6	39.1	64.5	6.12	1.26	1.52	0.95	0.56	0.14	0.06
26	2019	Spain	Southern	53.6	44.5	55.4	41.3	80.9	6.35	1.29	1.48	1.06	0.36	0.15	0.08
27	2019	Sweden	Western and Northern	67.5	71.6	60.1	57.9	77.9	7.35	1.39	1.49	1.01	0.57	0.27	0.37

References

1. Choudhury, S.R.; Barman, A. Technology and well-being—An evocative essay. *Postmod. Open.* **2014**, *5*, 15–37. [CrossRef]
2. Bartram, D. Elements of a sociological contribution to happiness studies. *Soc. Compass.* **2012**, *6*, 644–656. [CrossRef]
3. Pflug, J. Folk theories of happiness: A cross-cultural comparison of conceptions of happiness in Germany and South Africa. *Soc. Ind. Res.* **2009**, *92*, 551–563. [CrossRef]
4. Delle Fave, A.; Brdar, I.; Freire, T.; Vella-Brodrick, D.; Wissing, M.P. The eudaimonic and hedonic components of happiness. *Soc. Ind. Res.* **2011**, *100*, 158–207. [CrossRef]
5. Veenhoven, R. Happiness, also known as 'life satisfaction' and 'subjective well-being. In *Handbook of Social Indicators and Quality of Life Research*; Land, K.C., Michalos, A.C., Sirgy, M.J., Eds.; Springer: Dordrecht, The Netherlands, 2012; pp. 63–77.
6. Diener, E.; Oishi, S.; Ryan, K.L.B. Universals and cultural differences in the causes and structure of happiness: A multilevel review. In *Mental Well-Being: International Contributions to the Study of Positive Mental Health*, 2013th ed.; Keyes, C.L.M., Ed.; Springer: Dordrecht, The Netherlands, 2013; pp. 153–176.
7. Sotgiu, I.; Galati, D.; Manzano, M.; Rognoni, E. Happiness components and their attainment in old age: A cross-cultural comparison between Italy and Cuba. *J. Happiness Stud.* **2011**, *12*, 353–371. [CrossRef]
8. Uchida, Y.; Ogihara, Y. Personal or interpersonal construal of happiness: A cultural psychological perspective. *Int. J. Well Being* **2012**, *2*, 354–369. [CrossRef]
9. Soto-Acosta, P. COVID-19 Pandemic: Shifting Digital Transformation to a High-Speed Gear. *Inf. Syst. Manag.* **2020**, *37*, 260–266. [CrossRef]
10. European Commission, DG Connect. Digital Economy and Society Index. 2022. Available online: https://digital-agenda-data.eu/datasets/desi/visualizations (accessed on 10 January 2022).
11. Androniceanu, A.; Georgescu, I.; Kinnunen, J. Digitalization clusters within the European Union. In Proceedings of the 33rd International Business Information Conference (IBIMA), Granada, Spain, 10–11 April 2019; pp. 1321–1331.
12. Brodny, J.; Tutak, M. Assessing the level of digitalization and robotization in the enterprises of the European Union Member States. *PLoS ONE* **2021**, *16*, e0254993. [CrossRef]
13. DiMaggio, P.J.; Powell, W.W. The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *Am. Sociol. Rev.* **1983**, *48*, 147–160. [CrossRef]
14. Osipova, I.M.; Naumova, T.A. Analysis of the relationship between the level of digitalization and the level of quality of life: A regional aspect. In Proceedings of the IOP Conference Series: Earth and Environmental Science, Changchun, China, 21–23 August 2020.
15. Aitken, A. Measuring Welfare Beyond GDP. *Natl. Inst. Econ. Rev.* **2019**, *249*, R3–R16. [CrossRef]
16. Ganju, K.K.; Pavlou, P.A.; Banker, R.D. Does information and communication technology lead to the well-being of nations? A countrylevel empirical investigation. MIS Q. *Manag. Inf. Syst.* **2016**, *40*, 417–430. [CrossRef]
17. Clark, J.L.; Algoe, S.B.; Green, M.C. Social Network Sites and Well-Being: The Role of Social Connection. *Curr. Dir. Psychol. Sci.* **2018**, *27*, 32–37. [CrossRef]
18. Floridi, L.B. *The Onlife Manifesto: Being Human in a Hyperconnected Era*, 2015th ed.; Springer International Publishing: New York, NY, USA, 2015; ISBN 9783319040936.
19. Gaspareniene, L.; Remeikiene, R. Digital Shadow Economy: A Critical Review of the Literature. *Mediterr. J. Soc. Sci.* **2015**, *6*, 402. [CrossRef]
20. Linkov, I.; Trump, B.D.; Poinsatte-Jones, K.; Florin, M.V. Governance strategies for a sustainable digital world. *Sustainability* **2018**, *10*, 440. [CrossRef]
21. Frey, C.B.; Osborne, M.A. The future of employment: How susceptible are jobs to computerisation? *Technol. Forecast. Soc. Chang.* **2017**, *114*, 254–280. [CrossRef]
22. Anderson, J.; Rainie, L. The Future of Well-Being in a Tech Saturated World. Pew Research Center. *Internet Technol.* 17 April 2018. Available online: http://www.pewinternet.org/2018/04/17/the-future-of-well-being-in-atech-saturated-world/ (accessed on 10 January 2022).
23. Pfaffinger, K.F.; Reif, J.A.; Spieß, E.; Berger, R. Anxiety in a digitalised work environment. *Gruppe. Interaktion. Organ. Z. Für Angew. Organ. (GIO)* **2020**, *51*, 25–35. [CrossRef]
24. Vilpponen, H.; Leikas, J.; Saariluoma, P. Designing digital well-being of senior citizens. In Proceedings of the International Conference on Human System Interaction, HSI, Tokyo, Japan, 6–8 June 2020; pp. 40–44.
25. Ono, H.; Zavodny, M. Digital inequality: A five country comparison using microdata. *Soc. Sci. Res.* **2007**, *36*, 1135–1155. [CrossRef]
26. Pick, J.B.; Azari, R. Global digital divide: Influence of socioeconomic, governmental, and accessibility factors on information technology. *Inf. Technol. Dev.* **2008**, *14*, 91–115. [CrossRef]
27. Borgida, E.; Sullivan, J.L.; Oxendine, A.; Jackson, M.S.; Riedel, E.; Gangl, A. Civic culture meets the digital divide: The role of community electronic networks. *J. Soc. Issues* **2002**, *58*, 125–141. [CrossRef]
28. Milner, H.V. The digital divide: The role of political institutions in technology diffusion. *Comp. Polit. Stud.* **2006**, *39*, 176–199. [CrossRef]
29. Maurseth, P.B. ICT, growth and happiness. *Digit. Dev.* **2020**, 31–86. [CrossRef]
30. Gui, M.; Fasoli, M.; Carradore, R. Digital well-being. Developing a new theoretical tool for media literacy research. *Ital. J. Sociol. Educ.* **2017**, *9*, 155–173.

31. Surowiecki, J. REVIEWS-Technology and Happiness-Why getting more gadgets won't necessarily increase our well-being. *Technol. Rev. -Palm Coast* **2005**, *108*, 72–77.
32. Diener, E.; Oishi, S.; Tay, L. Advances in subjective well-being research. *Nat. Hum. Behav.* **2018**, *2*, 253–260. [CrossRef]
33. Mochón, F. Happiness and technology: Special consideration of digital technology and internet. *Int. J. Interact. Multimed. Artif. Intell.* **2018**, *5*, 162. [CrossRef]
34. Brannan, D.; Mohr, C.D. Love, friendship, and social support. In *Noba Textbook Series: Psychology*; Biswas-Diener, R., Diener, E., Eds.; DEF Publishers: Champaign, IL, USA, 2018.
35. Bargh, J.A.; McKenna, K.Y.A.; Fitsimons, G.G. Can you see the real me? Activation and expression of the true self on the Internet. *J. Soc. Issues* **2002**, *58*, 33–48. [CrossRef]
36. McKenna, K.Y.A.; Green, A.S.; Gleason, M.E.J. Relationship formation on the Internet: What's the big attraction? *J. Soc. Issues* **2002**, *58*, 9–31. [CrossRef]
37. Hynan, A.; Murray, J.; Goldbart, J. Happy and Excited': Perceptions of Using Digital Technology and Social Media by Young People Who Use Augmentative and Alternative Communication. *Child Lang. Teach. Ther.* 27 January 2014. Available online: https://journals.sagepub.com/doi/abs/10.1177/0265659013519258 (accessed on 10 January 2022).
38. Weinstein, E. The social media see-saw: Positive and negative influences on adolescents' affective well-being. *New Media Soc.* **2018**, *20*, 3597–3623. [CrossRef]
39. Shakya, H.B.; Christakis, N.A. Association of Facebook use with compromised well-being: A longitudinal study. *Am. J. Epidemiol.* **2017**, *185*, 203–211. [CrossRef] [PubMed]
40. Liu, D.; Baumeister, R.F.; Yang, C.; Hu, B. Digital communication media use and psychological well-being: A meta-analysis. *J. Comput.-Mediat. Commun.* **2019**, *24*, 259–273. [CrossRef]
41. Dienlin, T.; Johannes, N. The impact of digital technology use on adolescent well-being. *Dialogues Clin. Neurosci.* **2020**, *22*, 135–142. [CrossRef] [PubMed]
42. Odgers, C.L.; Jensen, M.R. Annual research review: Adolescent mental health in the digital age: Facts, fears, and future directions. *J. Child Psychol. Psychiatry* **2020**, *61*, 336–348. [CrossRef]
43. Griffioen, N.; Scholten, H.; Lichtwarck-Aschoff, A. Everyone does it–differently: A window into emerging adults' smartphone use. *Humanit. Soc. Sci. Commun.* **2021**, *8*, 1–11. [CrossRef]
44. Watson, J. *Media Communication: An Introduction to Theory and Process*; Macmillan International Higher Education: New York, NY, USA, 2008.
45. Jose, S.; Sookdeo, T.; Says, I.; Carreno, Y.; Ferrero, R. The smart digital platform for effective well control management. In Proceedings of the Society of Petroleum Engineers—SPE Intelligent Energy International Conference and Exhibition, (Aberdeen), Aberdeen, UK, 6–8 September 2016.
46. Jensen, R. The digital provides information (technology), market performance, and welfare in the south Indian fisheries sector. *Q. J. Econ.* **2017**, *122*, 879–924. [CrossRef]
47. Devaraj, S.; Kohli, R. Performance impacts of information technology: Is actual usage the missing link? *Manag. Sci.* **2003**, *49*, 273–289. [CrossRef]
48. Underwood, J.B. *The Impact of Digital Technology: A Review of the Evidence of the Impact of Digital Technologies on Formal Education*; BECTA: Coventry, UK, 2009.
49. Tang, Y.; Shao, Y.F.; Chen, Y.J. Assessing the mediation mechanism of job satisfaction and organizational commitment on innovative behavior: The perspective of psychological capital. *Front. Psychol.* **2019**, *8*, 1280. [CrossRef]
50. Ginting, H.; Bangun, Y.R.; Budyanto, F.; Wisesa, A.; Pritasari, A.; Wirawan, C. Happiness and its determinants: Preliminary findings among lecturers in an Indonesian university. *J. Sosioteknol.* **2020**, *19*, 351–362. [CrossRef]
51. Jovanovic, M.; Rakicevic, J.; Jaksic, M.L.; Petkovic, J.; Marinkovic, S. Composite indices in technology management: A critical approach. *Emerg. Trends Dev. Appl. Compos. Indic.* **2017**, 38–71. [CrossRef]
52. Helliwell, J.F.; Layard, R.; Sachs, J.D.; Neve, J.E.D. *World Happiness Report 2021*; Sustainable Development Solutions Network: New York, NY, USA, 2021.
53. Sustainable Development Solutions Network, World Happiness Report. Available online: https://worldhappiness.report/ (accessed on 11 January 2022).