

Happiness and Technology: Special Consideration of Digital Technology and Internet

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ABSTRACT

This research paper can be considered a survey about the impact of technology in happiness. The article points out that the scientific approach of happiness states that happiness can be measured and explanatory factors of well-being must be searched empirically. The analysis of technology impact on happiness starts with the opinion of philosophers and social thinkers, and then focus on the revision of empirical research works. The paper concludes highlighting that technology, being the motor of economic well-being, has positive and negative effects on the subjective well-being of individuals. Therefore it is essential to undertake an adequate regulation that promotes positive effects and mitigates the possible harm.

KEYWORDS

Happiness, Subjective Well-Being, Technology, Digital Technology, Internet, Social Networks.

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I. INTRODUCTION

HAPPINESS is important because it constitutes a final goal for human beings. Happiness is something to which one aspires and its search motivates human action. An example of this is that a resolution of the United Nations of 2012 states that “the pursuit of happiness is a fundamental human objective” [1].

For centuries the study of happiness has been dominated by non-scientific traditions that are based on the idea that it is up to experts to judge the happiness of human beings [2]. Thus, the tradition of imputation is inspired by the work of philosophers, social thinkers and academics, and it is based on the fact that it is a third party who defines what is the good life [3] [4]. Experts propose criteria for making a judgment and make a list of observable attributes. Based on these observable attributes, the expert imputes the happiness - or well-being - of the people [5].

The tradition of presumption recognizes that happiness is something that people experience. However, instead of inquiring directly and asking people about their welfare state, the tradition uses theories about nature and human behavior. In this way, lists of factors that are presumed to be closely related to a satisfactory life experience are obtained. Within this tradition, happiness is associated with achieving a set of factors that are believed to be relevant to achieve happiness.

Both the tradition of imputation and that of presumption are based on measuring the well-being of people through a judgment made by a third person who considers variables or attributes that are observable. This has led to the conception of well-being as a list of attributes (possessions, deficiencies, and actions) and not as an experience of the people [6] [7].

II. THE SCIENTIFIC STUDY OF HAPPINESS

In the second half of the 20th century, the scientific study of happiness is born. Pioneering works arise from different disciplines: sociology [8] [9] [10], economics [11] [12]; [13] [14], psychology [15] [16] and political science [17]. In these works it is evident that it is possible to study happiness scientifically based on its direct measurement.

The scientific study of happiness is based on a conception of happiness as a human experience and on the measurement of happiness by asking directly those who experience it. Under the new approach, the information that people provide about their well-being experience is valuable both for knowing their welfare situation and for studying the importance that different personal and social environment factors have for their happiness [18].

Happiness is a human experience so it cannot be conceived in the absence of human beings who experience it. Happiness is neither an academic creation nor an invention of philosophers, but an experience that happens to human beings. Consequently, the work of academics should consist in investigating it in order to understand what their explanatory factors are. The starting point is that happiness refers to people’s experience of well-being, and that each subject is the one who can best report this experience because he or she is who experience it. Logically, happiness is inherently subjective, since it is an experience of the subject and this experience cannot exist without the person [19].

Happiness research requires high-level techniques to deal with large information sets in order to extract the relevant information. In the study of happiness there are many observations –as many as persons in the world-, there are many variables, and there are many interrelations and synergies to take account of. In consequence, happiness research benefits from sophisticated models that allow for a better understanding of people’s happiness. Without losing contact with what real human beings experience, it is important to use techniques that allow researchers to process all the information to reach valuable conclusions. With this purpose, Computer Science has joined the other disciplines providing its powerful calculation tools to advance the study of happiness [20].

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III. GLOBAL SYNTHESIS OF LIFE: LIFE SATISFACTION AND HAPPINESS

People have wellness experiences and can make a global synthesis of them. This synthesis constitutes a global appreciation of how happy they are. This global synthesis of life, as well as the essential experiences of well-being, constitutes the object of the scientific study of happiness. The overall synthesis of life is usually made with phrases such as “I am happy”, “I am satisfied with my life”, “my life is going well”, and “I feel good about myself”. The term happiness is used as a concept that refers to the overall synthesis of satisfaction with life. In other words, happiness refers to how the individual evaluates the overall quality of her or his life [21]. As such, the happiness of individuals will depend entirely on an individual perception and it will be linked to concepts of quality of life and well-being.

The happiness of human beings depends on many factors, some of personal nature and others related to the conditions of their physical and social environment. In this sense, happiness is conditioned by a wide group of variables, among which the following stand out; social relations (family, friends and colleagues), nature of work activities, parenting conditions, personality traits, availability and use of free time, the place where one lives, safety, the existence of children and their ages, couple’s relationship, household income, macroeconomic environment, economic occupation, unemployment, health, values, expectations, and the possibility of participation in political decisions [22] [23] [24] [25] [26] [27] [28].

IV. THE MEASUREMENT OF HAPPINESS: THE USE OF SOCIAL NETWORKS AS A POSSIBILITY

Ed Diener and his collaborators presented a method to measure happiness based on the idea that individuals can consistently identify their level of satisfaction with life on a scale and, as such, what must be done to ask people questions [21] [30] [31]. This way of measuring happiness is the one that justifies conducting surveys like the World Values Survey, and it is the most widely-used method. A numerical response scale is usually used (for example, in the range of 0 to 10), where 0 represents the lowest satisfaction (lowest happiness) and 10, the highest satisfaction (greatest happiness). In addition to the question about the global synthesis of life, one can also ask people about their satisfaction in different domains of life.

As a result of the growth of social networks, a new possibility has emerged to measure happiness. This new approach consists of inferring the feelings of social network users on the basis of a semantic analysis of the words used in their communications and messages. Likewise, a study done by the Vermont Complex Systems Center uses information from Twitter to infer how happy or unhappy people in different states of the United States feel. Specifically, the researchers Dodds and Danforth have developed a method that, by incorporating the direct human evaluation of words, allows to quantify levels of happiness on a continuous scale from a diverse collection of texts [32] [33]. In the study carried out by Dodds and Danforth, on the basis of ten million “tweets”, a code for determining to what extent each analyzed message can be catalogued as happy or sad was developed. The study focused on certain key words that were deemed to be indicative. Following this approach, in the article by Mochón and Sanjuan, the happiness of a large group of Latin American countries is measured through the use of social networks. Specifically, the social network used is Twitter. The paper shows that it is possible to calculate, via objective and empirical means, factors that allow to measure happiness through the use of social networks [34].

V. HAPPINESS AND SOCIAL RELATIONS

The idea that the welfare of individuals is conditioned by their social relationships and social context is something generally accepted. It is argued that there is an important interaction between the social context and the attitude of individuals to their environment, which has a notable impact on the subjective satisfaction of people [35] [36] [37]. It has been pointed out that relationships that people cultivate in their lives, are some of the most valuable treasures a person can own. Given that several researchers have dealt with the impact of technology on social relationships and consequently on happiness, we should highlight the social component of subjective well-being.

In the literature on happiness a group of socio-economic determinants of the subjective well-being of individuals has been identified, among which is the network of social relationships; this is social capital and relational goods [37] [38] [39] [40] [41] [42] [43] [44] [45].

The network of social relationships is the result of situations as varied as family and marriage, relationships with friends and neighbors, relationships in the workplace, or the use of new technologies related to the Internet; email, social networks, sms, whatsapp ... The key is that this type of relationships affects happiness and also promotes integrity and trust in others [46].

New technologies have introduced a new way of relating among friends, family and co-workers. Social networks allow people to interact daily with all their friends by sending messages, photos and videos; which makes it easy to share experiences and keep the relationships alive. In this sense, it is worth highlighting the growing importance of Whatsapp as a communication tool. Thus, among the young, Whatsapp is used not only to exchange messages but as a tool to discuss the doubts of class and solve problems that may arise from the duties. In this sense it can be affirmed that social networks have contributed to create new links between people. In any case, its impact on happiness is a controversial issue that requires careful analysis, as we will see in the following epigraphs.

VI. TECHNOLOGY AND HAPPINESS

In a historical perspective, the relationship between technology and happiness has been a constant object of study by economists and social scientists since the advent of the Industrial Revolution. Generally, attention has focused on the relationship between material prosperity and well-being. In this sense, Gregg Easterbrook in his book *The Progress Paradox* said that although thanks to advances in technology almost all aspects of Western life have vastly improved in the past century— and in the present -, surprisingly most men and women feel less happy than in previous generations [47].

In any case, the key work to analyze the relationship between prosperity (caused by technological progress) and well-being was made by Professor Richard Easterlin [12] [48] [49] [50], who showed that in developed countries there was no real correlation between a nation’s income level and its citizens’ happiness. The results of Easterlin’s work, known as *The Easterlin’s Paradox*, state that at a point in time happiness varies directly with income both among and within nations, but over time happiness does not trend upward as income continues to grow. The original conclusion for the United States was based on data from 1946 (when formal surveys of happiness started) to 1970; later evidence through 2014 confirmed the initial finding. The trend in United States happiness has been flat or even slightly negative over a roughly seven decades stretch in which real incomes more than tripled.

Therefore, from Easterlin’s research work it is inferred that you could give people more income -and consequently more choice possibilities- and would not have much impact on their sense of well-being. In other words, it seems as if from a certain level of income, people get used to

high levels of income and value less and less the increases in income.

We find this same idea if we refocus the analysis on the relationship between happiness and technology and leave income aside. It seems as if people adapt very easily to the advantages that technology brings and no longer make them happy. So, let's imagine that at the end of the 19th century we asked anyone if they would be happier if they could have a vehicle that would allow them to travel in a day hundreds of kilometers, or if they could cross the Atlantic in a few hours or talk to a person who is located thousands of kilometers away. It is very likely that this person would say yes. However, few people today associate their happiness with having cars, traveling by plane or talking by phone with a relative who lives in another continent. The usefulness of advances in technology is recognized, but we quickly become accustomed to these advantages. Moreover, it is even considered that these advances can be a source of stress and frustration. Therefore, it is not clear that advances in technology make us happier [51].

This facility to adapt to the advantages of new technology coincides with one of the conclusions obtained by research in happiness; that people adapt very quickly to the good news. Thus, for example, it has been shown that if a person wins the lottery, at that time he will feel euphoric and very happy, but after a reasonable time he will return to his habitual levels of happiness [52].

The fact that we adapt very quickly to advances in technology does not mean that technology does not have positive or negative effects on our quality of life and consequently on happiness. The relevant thing is that its net impact is not always easy to determine. We will start with the positive effects of technology on happiness and later we will comment on the negative effects.

VII. POSITIVE EFFECTS OF TECHNOLOGY ON HAPPINESS

The theory of economic growth has shown with clear clarity that the main driver of growth and improvement of living conditions has been technological progress. In this sense, it would seem logical to think that new technologies not only make people live better but also happier.

In this sense, new technologies, as consumers, have a positive effect at least during certain periods of time by providing us with a wide range of new products, such as cars or household appliances and by improving the quality of them.

Technology can also be used to communicate with one another. Thus, for example, the Internet or a mobile phone are communication tools that can be used to enrich social relationships. As a communication tool, technology can be used as a means to connect, to share knowledge or to empower people. In this sense, its impact on happiness is positive. But the relationship between happiness and technology, when it is used as a tool to communicate, is, as we will see, quite complex.

Technology has also radically changed the nature of work for most workers. This matters because the workplace is very important to people sense of well-being. With the industrial revolution, mechanization allowed workers to escape from agriculture. Although they were often thrown initially into hard industrial jobs, over time, and thanks to the significant increases in productivity, very substantial improvements in working conditions and wages have taken place. More recently, the appearance of the digital society, and the advent of knowledge-based businesses, means that workplaces have become less formal and more open, often creating a really nice work environment [53][51]. Thanks to technology, we have become globalized, becoming individuals without borders, overcoming the limitations of place and space. Some people work in offices while others do it from their homes, or even in a cafeteria. We move fluidly in and out of the hazy world of the internet-based "cloud" with part of our belongings in the physical world and other part in the virtual world.

In any case, where technology has had a more significant impact on the well-being of people is in the health field. An example of this is the considerable increase in life expectancy that has taken place in the vast majority of countries in the last hundred years. The highlight is that the majority of people are happy to be alive, and if they live longer they will feel happier.

VIII. NEGATIVE EFFECTS OF TECHNOLOGY ON HAPPINESS

The origin of criticism of technology has focused on what Heidegger's terminology is known as the question of technology – that is, the impact of technology on our humanity [54]. In this sense, it has been questioned people's ability to use technology to their own ends. Heidegger highlights the role of technology in bringing about the decline of human beings by constricting our experience of things as they are. He argues that we increasingly view human beings, only technologically — that is, we view people only as raw material for technical operations. We treat even human capabilities as though they were only means for technological procedures. People are mere human resources to be arranged, rearranged, and disposed of [55]. We tend to believe that technology is a means to our ends and a human activity under our control.

But in truth we now conceive of means, ends, and ourselves as fungible and manipulable. For these reasons, Heidegger denounces technology harmful effects and the view that technology is a neutral tool to be wielded either for good or evil.

Following the contribution of Heidegger, the two main criticisms of technology for its impact on happiness have a somewhat contradictory meaning. On the one hand, it is pointed that technological progress is leading to an ever more rigid, controlled, soulless society, in which it is easier for people to be manipulated and monitored. In this sense Jacques Ellul shows his concern for the emergence of a technological tyranny over humanity [56]. On the other hand, it has been criticized, referring especially to the role of television, how the most popular media of a time in history shapes the discourse of the world [57]. From a different perspective, Putman has pointed out that technology is contributing to the reduction in all the forms of in-person social intercourse. The consequence of this is a fragmented society, in which traditional relationships are harder to sustain, and a reduction of the social capital [58].

From these pioneering contributions, the idea that technology disrupts social relationships and fractures the community has gained followers and, as it will be seen later, has become central to the critique of the Internet. From this perspective, technology, and more specifically the Internet, supposedly isolates people from what critics always call the real world. One of the first times this criticism was pointed out was in a famous study conducted among the residents of the city of Pittsburgh (US), published in September 1998 [59]. This article points out that the Internet, being a communication tool, instead of allowing people to connect with a much wider set of potential friends and exposing them to information they might otherwise never have come across, the Internet makes people more depressed and lonely than they would otherwise have been. According to the authors of this work, the Internet could change the lives of average citizens as much as did the telephone in the early part of the 20th century and television in the 1950s and 1960s. For this reason, it is interesting to try to find out whether the Internet is improving or harming participation in community life and social relationships. According to the results of this research work the Internet was used extensively for communication. Nonetheless, greater use of the Internet was associated with declines in participants' communication with family members in the household, declines in the size of their social circle, and increases in their depression and loneliness. The authors described this result as

a paradox, since the Internet, as a communication tool, should improve the subjective well-being of individuals.

Although this research work had a great impact, its statistical support is not very solid, only 169 people from 73 households were interviewed. In fact, a few years later, some of the authors re-analyzed the issue and found that negative effects of Internet dissipated [60]. In the new research work the authors report that the people investigated generally experienced positive effects of using the Internet on communication, social involvement, and well-being. However, using the Internet predicted better outcomes for extroverts and those with more social support but worse outcomes for introverts and those with less social support.

The criticism of technology, and particularly the Internet, for its impact on social relations, is especially relevant from the perspective of happiness and deserves special attention. Keep in mind that one of the main conclusions of the scientific study of society is the existence of a high correlation between happiness and social relations. Logically a tool as broad and ubiquitous as the Internet will have a multitude of effects, some may be negative but others not. In addition, in essence, the Internet is a communications technology that, like the telephone, allows people to expand their affective and informational networks and this is something that people value positively. Obviously, the Internet is not the ideal place to establish all kinds of communications, but in any case it is a public communication area that works openly and without gatekeepers. Therefore, criticizing technology and, in particular, the Internet in a generalized manner due to its alleged negative effects on subjective well-being may be excessive [51].

A less controversial way in which technology can negatively affect people's happiness is in its relentless generation of newness [51]. One of the implications of studies on happiness is that people have a hard time being happy with what they have when they know that others have more or have better things [61] [62]. Nowadays technological change takes place so quickly that if we buy any technological product (a mobile phone, a computer, a television,...), we know that in a few months there is going to be a better, faster version of the products. We will be left with obsolete products while other people will have new and more technologically advanced products, which will negatively affect our well-being. There is no way to avoid this feeling that is in the heart of the modern consumer.

And then there are the worries about AI [artificial intelligence] and the technological displacement of labor. Simply by focusing on robotics, it has the potential to transform lives and work practices. Its impact will be increasing, as the interactions between robots and people multiply. Although there is no consensus on the effects that this will have on employment, what is indisputable is that its impact will be very important and difficult doubts arise. How should the benefits of robotics be distributed? The universal basic income will no longer be a possibility and will become an obligation and, given the important effect that employment has on subjective well-being, how will all this affect the happiness of the individual? [63].

IX. DIGITAL TECHNOLOGY AND HAPPINESS

We are going to focus the analysis on the incidence of digital technology and, in particular, of Internet. In a recent research carried out in Spain [37], the incidence of social networks on happiness is analyzed. It is observed that individuals, regardless of their age, who use social networks have, on average, a greater life satisfaction than those who do not use them. The results of the survey show that, in addition, those with more than 65 years of age who use social networks feel more satisfied even than those of mature age. It seems that social networks can be a good way to combat loneliness. The feeling of being communicated at any time of the day with your friends and family and

being able to share images, videos, etc. with them, makes individuals more satisfied.

In some other research works it has also been found that virtual relationships can be as intimate as in-person relationships [64]. In fact, Bargh and colleagues found that online relationships are sometimes more intimate [65]. This can be especially true for those individuals who are more socially anxious and lonely—such individuals who are more likely to turn to the Internet to find new and meaningful relationships [66] [67]. In other words, these research works suggest that for people who have a hard time meeting and maintaining relationships, due to shyness, anxiety, or lack of face-to-face social skills, the Internet can offer a safe, nonthreatening place to develop and maintain relationships. Likewise, some researchers have shown that young people are using digital technology and online social media within their everyday lives to enrich their social relationships [68].

In any case, the effects are not always positive; depending on how the Internet is used and, in particular, the social networks, these can be beneficial or harmful [69] [70] [71]. In this sense, one reason why Internet technology can have negative effects on happiness is due to the corporate and governmental power to surveil users (attendant loss of privacy and security). To this we must add the effect of the addictive technologies that have captured the attention and mindspace of the youngest generation [72].

Thus, although until recently social networks were presented as an instrument of socialization because they allow sharing ideas, connecting with friends and alleviating the isolation that the Internet could generate, and even promoting social change and the empowerment of citizens, in recent dates doubts have grown. Especially since 2017, criticism of the networks has proliferated, largely due to the scandals related to Facebook [73]. It has been argued that the platforms are designed to hook the users and get them to spend as much time as possible in them creating addiction, which tightens the debate as they filter the information showing only a view of the facts and contaminate it with false information, and that even they can be a tool to manipulate democratic electoral processes.

X. THE EXPERT'S OPINION

As a final balance on the impact of digital technology on happiness, we will analyze the results of research that adopts a similar approach as that used by researchers to measure happiness: ask the interested parties [72]. In this sense, Pew Research Center and Elon University's Imagining the Internet Center decided queried 1,150 technology experts, scholars and health specialists on the following question: Over the next decade, how will changes in digital life impact people's overall well-being physically and mentally?

The conclusions of this investigation can be summarized by saying that 47% of those queried predict that individuals' well-being will be more helped than harmed by digital life in the next decade, while 32% say people's well-being will be more harmed than helped, and the remaining 21% predict there will not be much change in people's well-being compared to now [72].

As a general comment, it can be said that many of those who argue that human well-being will be harmed also acknowledge that digital tools will continue to enhance various aspects of life. They also note that there is no turning back in the sense that new technologies are here to stay. At the same time, hundreds of them suggested interventions in the coming years that they feel could mitigate the problems and emphasize the benefits. Moreover, many of the hopeful respondents also agree that some harm will arise in the future, especially to those who are vulnerable.

To analyze the answers of the interviewees in a systematic way,

these can be classified into three categories: 1) The positive effects of digital technology. 2) The negative effects of digital technology. 3) Remedies to mitigate the possible negative effects.

1) The Positive Effects Of Digital Technology

The benefits of digital life on happiness are analyzed in terms of the following four factors [72]:

- *Connection.* Digital life links people to people, contributing to spread the knowledge, facilitating education and supplying entertainment anywhere globally at any time in an affordable manner. People need to be connected and the Internet is a communication tool par excellence. In subjects specific to society, science, education or politics, the Internet connects people by facilitating rewarding information and relationships.
- *Commerce, government and society.* Digital life revolutionizes civic, business, consumer and personal logistics, opening up a world of opportunity and options. To show the advantages of a hyperconnected society, let's think about the massive benefits to life from access to finance, to online shopping, to limitless free research opportunities, to keeping in touch with loved ones in far-away places.
- *Crucial intelligence.* Digital life is essential to tapping into an ever-widening array of health, safety, and science resources, tools and services in real time. Advances in computer science have meant that information is increasingly distributed globally and openly. For example the relatively recent trends towards openness in scientific publications, scientific data and educational resources are likely to make people across the world better off by expanding individuals' access to a broad set of useful information, by decreasing barriers to education and by enhancing scientific progress.
- *Contentment.* Digital life empowers people to improve, advance or reinvent their lives, allowing them to self-actualize and meet soul mates. The internet helps to break down barriers and supports people in their ambitions and objectives. Internet helps people achieve their desire to improve their education, to communicate with others, to share their experiences, to create networks of enterprise, commerce, culture, sports... All these are supported by digital technologies.
- *Continuation toward quality.* Emerging tools will continue to expand the quality and focus of digital life; the big-picture results will continue to be a plus overall for humanity. The future artificial intelligence (AI) will enhance human well-being. Throughout history it has been shown that human beings need tools and want improvements, and AI is facilitating them and will continue to do so. And as the saying goes 'First we make our tools, then our tools form us.'

2) The Negative Effects Of Digital Technology

The negative impact of digital technology on happiness is analyzed in terms of the following five factors [72]:

- *Digital deficits.* People's cognitive capabilities will be challenged in multiple ways, including their capacity for analytical thinking, memory, focus, creativity, reflection and mental resilience. The digital society is characterized by an intrusive connectivity that has harmful cognitive and emotional consequences.
- *Digital addiction.* Internet businesses are organized around dopamine-dosing tools designed to hook the public. The current generation of tools for consuming attention is very effective and can cause addictive effects. Network effects and economies of scale have placed control of these tools in a very small number of very powerful companies.
- *Digital distrust/divisiveness.* Personal agency will be reduced

and emotions such as shock, fear, indignation and outrage will be strengthened. Although technologies are created with a sincere desire to advance understanding of mood, cognition, etc., or with the pretension of facilitating the control of our response, the actual implementation of these techniques and devices is likely to be quite different. It is possible that they may finally be used to reduce well-being because a population in a state of fear and anxiety is far more malleable and profitable.

- *Digital duress.* Information overload + declines in trust and face-to-face skills + poor interface design = rises in stress, anxiety, depression, inactivity and sleeplessness. There are organizations that are actively vying people's attention, distracting them with smartphone notifications, highly personalized news, addictive games, BuzzFeed-style headlines and fake news.
- *Digital dangers.* The structure of the internet and pace of digital change invite ever-evolving threats to human interaction, security, democracy, jobs, privacy,... In addition, many people are unable to adapt to the behaviors and needs that digital technology requires.

3) Remedies to Mitigate the Possible Negative Effects

Five possible lines of action are presented to combat the possible problems that digital technologies may cause [72]:

- *Reimagine systems.* Societies can revise both tech arrangements and the structure of human institutions – including their composition, design, goals and processes. The challenge to be overcome is neither more nor less than simply learning to call what we have created what it really is, and then regulate and manage it accordingly.
- *Reinvent tech.* Things can change by reconfiguring hardware and software to improve artificial intelligence (AI), virtual reality (VR), augmented reality (AR) and mixed reality (MR). We can resort to human-centered technology design to improve our experiences and outcomes, to better serve us.
- *Regulate.* Governments and/or industries should create reforms through agreement on standards, guidelines, codes of conduct, and passage of laws and rules. Security and privacy cause great concern for what is necessary to come to some kind of detente.
- *Redesign media literacy.* Formally educate people of all ages about the impacts of digital life on well-being and the way tech systems function, as well as encourage appropriate, healthy uses. The primary change needs to come in education. From a very early age, people need to understand how to interact with networked, digital technologies.
- *Recalibrate expectations.* People must gradually evolve and adjust to digital changes. People must learn how to reign over the pitfalls, threats, bad guys and ill-meaning uses.

VII. FINAL REFLECTIONS

Does technology make us less happy or happier? This is the question we have tried to answer throughout this article. From the analysis made in previous pages, it is inferred that the most objective analysis is not the one made by social thinkers or philosophers. The studies of this type of authors are interesting to become aware of trends and anticipate possible future issues. However, they are not usually the most appropriate way to obtain the specific response to an issue, as in our case, to know the incidence of technology on the subjective well-being of individuals.

The most reliable results are obtained when research work is carried out on the impact of technology in specific cases. From them it is evident that technology tends to have a positive impact on the subjective wellbeing of individuals but it can also generate negative

effects. On the other hand, it should not be forgotten that technology, in many cases, offers tools; and the impact of these on happiness to a large extent will depend on how we use them. Technology can be a very important source of well-being, although it is essential to learn to ration its use. You have to know how to discriminate between its possible uses and discern those platforms that are worth getting involved with and those in which we should not enter.

A similar conclusion is reached when analyzing the opinion of the technology experts, scholars and health specialists. They affirm that technology will continue to improve many aspects of our life but in certain aspects it may harm the subjective well-being of the individuals, especially those who are vulnerable.

In any case, and given that progress and technological innovation is essential for the advancement of society, it is necessary to pay special attention to regulation. Only through proper regulation we can mitigate the possible damages derived from technology and emphasize its benefits.

REFERENCES

- [1] Rojas, M. and Martínez, I. (coords.) (2012) *La Medición, Investigación e Incorporación en Política Pública del Bienestar Subjetivo: América Latina*. Reporte de la Comisión para el Estudio y Promoción del Bienestar en América Latina, Foro Consultivo Científico y Tecnológico, México.
- [2] Rojas, M. (2014) *El Estudio Científico de la Felicidad*, Fondo de Cultura Económica.
- [3] McMahon, D. (2006) *Una Historia de la Felicidad*, Taurus.
- [4] Tatariewicz, W. (1976) *Analysis of Happiness*, Martinus Nijhoff.
- [5] Rojas, M. (2017) *El estudio de la felicidad*. In *La felicidad de los españoles*. Iglesias, J. and De Juan, R. (coords.) Tecnos.
- [6] Rojas, M. (2006) *Life Satisfaction and Satisfaction in Domains of Life: Is it a Simple Relationship?* *Journal of Happiness Studies*, 7(4), 467-497.
- [7] Rojas, M. (2007) *The Complexity of Well-Being: A Life-Satisfaction Conception and a Domains-of-Life Approach*. En I. Gough y A. McGregor (eds.). *Researching Well-Being in Developing Countries*. Cambridge University Press.
- [8] Veenhoven, R. (1984) *Conditions of Happiness*. Kluwer Academic.
- [9] Campbell, A. (1976) *Subjective Measures of Well-Being*, *American Psychologist*, 31, 117-124.
- [10] Campbell, A. Converse, P.E. and Rodgers, W.L. (1976) *The Quality of American Life. Perceptions, Evaluations and Satisfaction*, Russel Sage Foundation.
- [11] Easterlin, R. (1973) *Does Money Buy Happiness?* *The Public Interest*, 30, 3-10.
- [12] Easterlin, R. (1974) *Does Economic Growth Improve the Human Lot? Some Empirical Evidence*, in David, P.A. and Reder, M.W. (eds.), *Nations and Households in Economic Growth*, Academic Press, 89-125.
- [13] Praag, BMS van (1968) *Individual Welfare Functions and Consumer Behavior*, North Holland.
- [14] Praag, BMS van (1971) *The Welfare Function of Income in Belgium: An Empirical Investigation*, *European Economic Review*, 2, 337-369.
- [15] Diener, E. (1984) *Subjective well-being*, *Psychological Bulletin*, 95, 542-575.
- [16] Andrews, F.M. and Withey, S.B. (1976) *Social Indicators of Well-Being*. Plenum Press, New York.
- [17] Lane, R. (1991) *The Market Experience*, Cambridge University Press.
- [18] Layard, R. (2006) *Happiness: Lessons from a New Science*. Penguin.
- [19] Ferrer-i-Carbonell, A. (2002) *Subjective Questions to Measure Welfare and Well-Being*, Discussion paper TI 2002-020/3. Tinbergen Institute.
- [20] Mochón, F. and Rojas, M. (2014) *Editor's Note*. *International Journal of Interactive Multimedia and Artificial Intelligence*. (Special Issue on AI Techniques to Evaluate Economics and Happiness), 2(5).
- [21] Diener, E. Emmons, R.A. Larsem, R.J. and Griffin, S.A. (1985) *The Satisfaction With Life Scale*. *Journal of Personality Assessment*, 49(1), 71-75.
- [22] Frey, B. and Stutzer, (2001) *Happiness and Economics: How the Economy and Institutions Affect Human Well-Being*. Princeton University Press.
- [23] Ahn, N. and Mochón, F. (2010) *La felicidad de los españoles: Factores explicativos*. *Revista de Economía Aplicada*, XVIII, 54, 5-31.
- [24] Praag, BMS van and Ferrer-i-Carbonell, A. (2004) *Happiness Quantified: A Satisfaction Calculus Approach*. Oxford University Press.
- [25] Rojas, M. (ed.) (2016) *Handbook of Happiness Research in Latin America*, Springer.
- [26] De Juan, R. Mochón, F. and Rojas, M. (2014) *Expectations and Happiness: Evidence from Spain*. *Journal of Social Research & Policy*, 5(2), pp. 89-102.
- [27] Ahn, N. Mochón, F. and De Juan, R. (2012). *La felicidad de los jóvenes*. *Papers Revista de Sociología*. 97/2, 407-430.
- [28] Argyle, M. (2002) *The Psychology of Happiness*. Routledge.
- [29] Cummins, R. A. (1996) *The Domains of Life Satisfaction: An Attempt to Order Chaos*. *Social Indicators Research*, 38, 303-332.
- [30] Crooker, K. y Near, J. (1998) *Happiness and Satisfaction: Measures of Affect and Cognition?* *Social Indicators Research*, 44, 195-224.
- [31] Grinde, B. (2002) *Happiness in the Perspective of Evolutionary Psychology*. *Journal of Happiness Studies*, 3, 331-354.
- [32] Dodds, P. and Danforth, C. (2009) *Measuring the Happiness of LargeScale Written Expression: Songs, Blogs, and Presidents*. *Journal of Happiness Studies*, 11(4), 441-456.
- [33] Frank, M. Mitchell, L. Dodds P. and Danforth, C. (2013) *Happiness and the Patterns of Life: A Study of Geolocated Tweets*. *Scientific Reports* 2013. Vol. 3, No: 2625.
- [34] Mochón, F. and Sanjuán, O. (2014) *A First approach to the implicit measurement of happiness in Latin America through the use of social networks*. *International Journal of Interactive Multimedia and Artificial Intelligence*, 2(5), 17-23.
- [35] Diener, E. Seligman, M. Choi, H. and Oishi, S. (2018) *Happiest People Revisited*. *Perspectives on Psychological Science*. March 29. <https://journals.sagepub.com/doi/abs/10.1177/1745691617697077>
- [36] Mochon, F. and De Juan, R. (2015) *Happiness and Social Capital: Evidence from Latin American Countries*. *Handbook of Happiness Research in Latin America*. Editorial Springer.
- [37] Mochón, F. y R. de Juan. (2017) *Capital social y bienes relacionales*. In *La felicidad de los españoles*. Iglesias, J. and De Juan, R. (coords.) Tecnos.
- [38] Frey, B. and Stutzer, A. (2000) *Happiness, Economy and Institutions*. *Economic Journal*, 110, 918-938.
- [39] Frey, B. and Stutzer, A. (2002) *What can Economists Learn from Happiness Research?* *Journal of Economic Literature*, 40, 402-435.
- [40] Layard, R. (2003) *Happiness: Has social science a clue? Three Lectures*. First lecture: what is Happiness?; second lecture: income and Happiness: rethinking economic Policy; third lecture: what would make a Happier society. Lionel Robbins memorial lectures. Londres: London school of economic.
- [41] Veenhoven, R. (1993) *Happiness in Nations: Appreciation of Life in 56 Nations*. Rotterdam: Erasmus.
- [42] Veenhoven, R. (2000) *The Four Qualities of Life. Ordering Concepts and Measures of the Good Life*. *Journal of Happiness Studies*, 1, 1-39.
- [43] Veenhoven, R. (2001) *What we do Know about Happiness?* Working Paper. Rotterdam: Erasmus University.
- [44] Iglesias, E. Pena, A and Sánchez, JM. (2013) *Bienestar subjetivo, renta y bienes relacionales. Los determinantes de la felicidad en España*. *Revista Internacional de Sociología*, 71(3), 567-592.
- [45] Gui y Sugden, (2005). Gui, B. and Sugden, R. (2005) *Why Interpersonal Relations Matter for Economics*. In Gui, B. and Sugden, R. (Eds.) *Economics and Social Interaction Accounting for Interpersonal Relations*. Cambridge (Mass.): Cambridge University Press, 1-22.
- [46] Nussbaum, M. C. and Sen, A. K. (1993) *The Quality of Life*. Oxford: Clarendon Press.
- [47] Easterbrook, G. (2004) *The Progress Paradox: How Life Gets Better While People Feel Worse*. Random House.
- [48] Easterlin, R. (2017) *Paradox Lost?*. *Review of Behavioral Economics*. 4 (4): 311-339.
- [49] Easterlin, R. A. and Angelescu, L. (2009) *Happiness and Growth the World Over: Time Series Evidence on the Happiness-Income Paradox*, IZA Discussion Paper, num. 4.060.
- [50] Easterlin, R. A., Angelescu, L., Switek, M., Sawangfa, O. y Zweig, J.S. (2010) *The Happiness-Income Paradox Revisited*. *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*.
- [51] Surowiecki, J. (2005) *Technology and Happiness*. MIT Tecnology Review.

January 1. <https://www.technologyreview.com/s/403558/technology-and-happiness/>

- [52] Rojas, M. (2009) Consideraciones sobre el Concepto de Progreso. In M. Rojas (coord.). *Midiendo el progreso de las sociedades: reflexiones desde México*. México, Foro Consultivo Científico y Tecnológico, 71-78.
- [53] Hochschild, R. A. (1997) *The time bind: when work becomes home and home becomes work*. Metropolitan Books.
- [54] Heidegger, M. (1977) *The Question Concerning Technology, and Other Essays*. Garland Publishing.
- [55] Blitz, M. (2014) Understanding Heidegger on Technology. *The New Atlantis*. Number 41, Winter 2014, pp. 63-80. <https://www.thenewatlantis.com/publications/understanding-heidegger-on-technology>
- [56] Ellul, J. (1964) *The Technological Society*. John Wilkinson.
- [57] Postman, N. (1985) *Amusing Ourselves to Death: Public Discourse in the Age of Show Business*. Penguin.
- [58] Putnam, Robert D (1995) *Bowling Alone: America's Declining Social Capital*. *Journal of Democracy*. 6 (1): 65-78.
- [59] Kraut R, Patterson M, Lundmark V, Kiesler S, Mukopadhyay T and Scherlis W. (1998) Internet paradox. A social technology that reduces social involvement and psychological well-being? *American Psychologist*, Vol 53(9), Sep, 1017-1031.
- [60] Kraut, R, Kiesler, S, Boneva, B, Cummings, J, Helgeson, V and Crawford, A. (2001) Internet Paradox Revisited. *Journal of Social Issues*. October 12. Version 16.2 <http://kraut.hciresearch.org/sites/kraut.hciresearch.org/files/articles/kraut02-paradox-revisited-16-20-2.pdf>
- [61] Buss, D. (2000) The Evolution of Happiness. *American Psychologist*, 55(1), 15-23.
- [62] Praag, BMS van, Frijters, P. and Ferrer-i-Carbonell, A. (2003) The Anatomy of Subjective Well-being. *Journal of Economic Behavior and Organization*, 51, 29-49.
- [63] Mercader, J.R. (2017). Robotización mecanización pérdida de empleo. *Trabajo y Derecho*, 27, 13-24.
- [64] Brannan, D. and Mohr, C. D. (2018) Love, friendship, and social support. In R. Biswas-Diener & E. Diener (Eds), *Noba textbook series: Psychology*. Champaign, IL: DEF publishers.
- [65] Bargh, J. A, McKenna, K. Y. A. and Fitsimons, G. G. (2002) Can you see the real me? Activation and expression of the true self on the Internet. *Journal of Social Issues*, 58, 33-48.
- [66] McKenna, K. Y. A. Green, A. S. and Gleason, M. E. J. (2002) Relationship formation on the Internet: What's the big attraction? *Journal of Social Issues*, 58, 9-31.
- [67] McKenna, K. A. (2008) MySpace or your place: Relationship initiation and development in the wired and wireless world. In S. Sprecher, A. Wenzel, & J. Harvey (Eds.), *Handbook of relationship initiation* (pp. 235-247). New York, NY: Psychology Press.
- [68] Hynan, A. Murray, J. and Goldbart, J. (2014) Happy and excited': Perceptions of using digital technology and social media by young people who use augmentative and alternative communication. *Child Language Teaching and Therapy*. January 27. <https://journals.sagepub.com/doi/abs/10.1177/0265659013519258>
- [69] Pénard, T. Poussing, N. and Suire, R. (2013) Does the Internet make people happier?. *Journal of Socio-Economics*, Elsevier, 46, 105-116.
- [70] Holsten, H. (2018) How does internet use affect well-being? February 26. <https://phys.org/news/2018-02-internet-affect-well-being.html>
- [71] Zhan, G. and Zhou, Z. (2018) Mobile internet and consumer happiness: the role of risk, *Internet Research*, 28(3), 785-803. <https://doi.org/10.1108/IntR-11-2016-0340>
- [72] Anderson, J. and Rainie, L. (2018) *The Future of Well-Being in a Tech-Saturated World*. Pew Research Center. *Internet & Technology*. April 17. <http://www.pewinternet.org/2018/04/17/the-future-of-well-being-in-a-tech-saturated-world/>
- [73] Carmody, T. (2018) Facebook is in a Trust Crisis. *Adweek*. January 23. <https://www.adweek.com/digital/facebook-is-in-a-trust-crisis/>



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