



# Internet use and well-being: A survey and a theoretical framework

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## ABSTRACT

How does Internet use affect well-being? This paper presents a survey of the literature investigating this question, and it develops a framework to analyze both positive effects and potential risks. We point out four distinct channels through which Internet can shape well-being: it changes time use patterns, creates new activities, facilitates access to information, and acts as powerful communication tool. We show how these four channels impact well-being in distinct domains of life. A central point emerging from the literature review is that the effects of Internet on well-being are mediated by a set of personal characteristics that are specific to each individual: psychological functioning, capabilities, and framing conditions (culture and beliefs). Hence, it is the interaction between human beings' activities in distinct domains of life and their own personal characteristics that explains why the use of Internet has stronger positive effects for some individuals and social groups than others.

## 1. Introduction

Since the times of its emergence in the late 1970s, the innovation studies literature has had a predominant interest in how the production and diffusion of new advanced technologies affect economic performance – and in particular economic growth, competitiveness and employment. During the last three decades, innovation studies have developed in a number of different directions, but the key underlying motivation that innovation spurs economic performance has implicitly been a common theme in different strands of research (Fagerberg et al., 2005).

Other potentially relevant impacts of new technologies – and in particular on the users' well-being – have largely been neglected (Castellacci et al., 2005). In a recent appraisal of research in innovation studies, Ben Martin points out twenty challenges for future research, one of them being precisely the need to investigate how advanced technologies affect human well-being:

*“Innovation scholars will need to shift the focus of our empirical work from innovation for wealth to innovation for well-being” (Martin, 2016, 12).*

What is well-being, and why is it important for innovation researchers to study it? A large literature has in recent years investigated the extent to which well-being differs across individuals, social groups and countries, and the set of factors that may explain these differences. Among other factors, these studies have focused on differences in absolute and relative income among individuals, their work life quality,

their social relationships and the characteristics and quality of the physical and socio-institutional environment in which they live (see e.g. the comprehensive overviews in Frey and Stutzer (2002), Dolan et al. (2008), Layard (2011), and MacKerron (2012)).

Interestingly, this literature has flourished independently from innovation studies, and the two strands of research have not interacted with each other. In well-being studies, technological innovation is definitively not one of the many variables that have been studied in the mainstream explanatory framework. Analogously, innovation studies have very seldom investigated whether and how new technologies affect well-being (notable exceptions are the recent works of Dolan and Metcalfe (2012), Binder (2013), and Engelbrecht (2014)). An implicit assumption in innovation research is that new technologies foster economic performance (economic growth and competitiveness), and the latter does in turn lead to increased well-being for individuals. However, the well-being literature shows that this is not necessarily the case, and that the relationship between economic outcomes and individuals' well-being is much more complex. It is therefore crucial to investigate the links between innovation, economic performance and well-being.

Based on this motivation, the present paper focuses on one of the key technological paradigms of our times: Information and Communication Technologies (ICTs). These have in the last few decades transformed substantially several aspects of our everyday life, enabling a terrific progress for human beings both at the workplace and as individual consumers, agents and citizens. Innovation studies have extensively investigated the emergence and diffusion of ICTs, and

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particularly focused on the pervasive economic effects that these general-purpose technologies have on different sectors of the economy (Antonelli, 1998; Dalum et al., 1999; Freeman and Louçã, 2001; Castellacci, 2006, 2008).

One of the key technological trajectories within ICTs is represented by the Internet. This has by now become a fundamental tool in our everyday life. Examples of the pervasiveness of Internet technologies abound. Individuals can now use e-commerce to buy and sell goods and services; carry out financial transactions through online banking; search information, access data and organize databases; and communicate with other friends, family and colleagues through e-mail, Skype, and social media. Despite the widespread diffusion and great relevance of Internet technologies, however, there is still limited knowledge about the impacts that these have on individuals' well-being. What are the effects of Internet use on well-being?

Research on the effects of Internet on well-being is quite fragmented. Several papers in the fields of psychology and computer science have recently investigated how the use of Internet and social networking sites shape human behavior and social interactions (e.g. Valkenburg et al., 2006). Other papers in the economics of happiness have used large-scale survey datasets to study the relationship between ICTs and well-being (Kavetsos and Koutroumpis, 2011; Graham and Nikolova, 2013; Pénard et al., 2013; Ganju et al., 2015). However, many other potentially relevant channels through which Internet use shapes well-being have not been investigated yet. At present, research on this important theme lacks a coherent and holistic framework that may combine insights from different disciplines and guide future research.

The objective of this paper is to carry out a survey of extant literature on the relationships between Internet use and well-being. We argue that the main relevant mechanisms can be summarized and grouped into four distinct channels: Internet can shape well-being by enabling time-saving and changing time use patterns, leading to the introduction of new activities, enabling a greater access to information, and providing new communication tools. By using this typology as a main conceptual device, our literature review leads to the main conclusion that the effects of Internet on well-being are mediated by a set of personal characteristics that are specific to each individual, namely psychological functioning, capabilities, culture and beliefs (see Ryff and Singer, 2008). Hence, the interaction between human beings' activities in distinct domains of life and their individual personal characteristics explains why Internet use has stronger positive effects for some individuals and social groups than others.

The main contribution of the paper is twofold. First, we provide a systematic review of a literature that studies a question of great societal relevance, and which is of high interest to innovation studies research. Second, we build up an interdisciplinary framework that combines insights from different strands of research and various disciplines interested in human well-being such as economics, organizational studies, psychology and information systems research. The framework presented in this paper thus represents an attempt to bring together the heterogeneous and fragmented extant research on this theme and provide a more general structure to foster future research on this topic.

The paper is organized as follows. Section 2 outlines the concept of well-being and the main research traditions that study it. Section 3 provides a general overview of the empirical literature on Internet and well-being, pointing out two main recent strands of research that investigate this new topic. Section 4 puts forward a typology of effects of Internet on well-being, which represents our conceptual device to analyze the relevant literature. Section 5 presents a detailed literature review that is organized by focusing on individuals' different domains of life (private life, work life, external environment). Section 6 shifts the focus to literature that has analyzed the effects of Internet through personal characteristics (psychological functioning, capabilities, culture and beliefs). Section 7 summarizes the main conclusions that emerge from this survey. Section 8 concludes the paper and points out some

possible limitations and related topics for future research on Internet and well-being.

## 2. Well-being: definitions and relevant literature

Two different research traditions have investigated well-being and its determinants: *subjective well-being* (SWB) and *objective well-being* (OWB). The former is called "subjective" because it studies well-being as perceived by each individual, whereas the latter is named "objective" because it focuses on a set of characteristics that are considered to be necessary for individuals to lead a good life (Gasper, 2005; Guillen Royo, 2007).

### 2.1. The SWB approach

The classical philosophical origins of this view are rooted in Aristippus' hedonism in ancient Greek philosophy, which has later been revived and developed further by Jeremy Bentham's utilitarianism, and more recently by hedonic psychology (Kahneman et al., 1999). Empirical studies in the SWB approach typically seek to investigate two distinct aspects of individuals' well-being (Kahneman and Krueger, 2006): (1) *hedonic (or emotional) well-being*, which is focused on experienced happiness and short-run feelings of pleasure, and it can be defined as «*the frequency and intensity of experiences of joy, fascination, anxiety, sadness, anger, and affection that makes life pleasant or unpleasant*» (Kahneman and Deaton, 2010, 16489); (2) *evaluative well-being*, which focuses on long term self-assessment of life satisfaction, and it is defined as «*the thoughts that people have about their life when they think about it*» (Kahneman and Deaton, 2010, 16489).

A large strand of research, rooted at the intersection between economics and psychology, has extensively investigated the factors that explain differences in the SWB reported by individuals in different social groups and in different countries (Frey and Stutzer, 2002; Layard, 2011). In a comprehensive survey of the field, Ryan and Deci (2001) point out that, in spite of the large heterogeneity of focus and approaches that are adopted in this literature, the underlying explanatory model that is typically used by these studies is the so-called "expectancy-value approach" (Oishi et al., 1999), according to which "*well-being is a function of expecting to attain (and/or attaining) the outcomes one values, whatever those might be*" (Ryan and Deci, 2001, 145). Empirical research on the determinants of SWB has been fostered in recent years by the increasing availability of large scale surveys (e.g. World Value Surveys; European Social Surveys; Gallup World Poll), and it has considered a number of distinct dimensions (see reviews in Dolan et al. (2008); and MacKerron (2012)). Specifically, different strands of research have investigated different factors that affect well-being in distinct «domains of life» (Binder, 2013).

In SWB studies, one of the domains of life that has received most scholarly attention is the economic domain. Through their work, individuals earn an income that is spent on consumption items, which make it possible to fulfill their basic needs as well as to finance spare time activities. Further, in addition to absolute income and consumption, SWB is substantially affected by relative income, i.e. the extent to which an individual's income is above, or below, the average of her reference group (e.g. neighbors, family, colleagues; see Clark et al. (2008), Clark and Senik (2010), Easterlin (1995), Senik (2005)). A second relevant domain of life that has been studied in happiness research is the quality of working life. Different jobs are characterized by distinct working tasks, and different degrees of creativity and autonomy, which affect employees' work-life balance and job satisfaction (Dolan and Metcalfe, 2012; Erdogan et al., 2012). Other domains of life that have been found to be crucial for individuals' SWB refer to their social life (e.g. family status; community life; see Layard (2011)), the physical environment in which they live (location, quality, climate); the socio-institutional environment that characterize their country (governance, trust, crime, social capital; MacKerron (2012)); and the social

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