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## THEORETICAL INVESTIGATION OF EHEALTH VALUE PERCEPTION

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*DOI: 10.13165/PSPO-19-23-08*

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**Annotation.** Broadly looking when citizens are in a good health they are still socially and economically productive and also have their socio economic status. Hence, the essential goal of any healthcare system is the only one – to enhance value for patients. And since digital revolution impacts all domains of society it is significant to recognize the importance of eHealth. The digital revolution impacts all domains of society. And nowadays ubiquitous Internet access stimulates the conventional healthcare towards modern one. Hence, there is a lot of avenue for future investigation of value perception in the context of eHealth. The object of this particular study is eHealth value. And there are three-fold objectives: 1) to analyze eHealth from the theoretical point of view, 2) to examine the values of eHealth, 3) to investigate the opportunities for European eHealth system. Additionally, the methods that have been incorporated in this study paper: 1) logical and comparative analysis of literature, 2) academic literature synthesis

**Keywords:** value, eHealth, healthcare system, digitalization

### INTRODUCTION

Now it is obvious that good health is the value per se, but it is important to note that it also fosters economic value. And now „...Europe cannot from both an economic and social standpoint afford not to have its inhabitants in good health“<sup>1</sup>(MedTech Europe, 2016, p.3). Hence, taking into consideration the individual perspective being in good health is the benefit for an individual solely. But broadly looking when citizens are in a good health they are still socially and economically productive and also have their socio economic status. Hence, the essential goal of any healthcare system is the only one – to enhance value for patients. And

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<sup>1</sup> MedTech Europe MedTech (2016). Economic Value as a guide to invest in Health and Care — Concept Framework. On World Wide Web: <https://www.medtecheurope.org/resource-library/economic-value-as-a-guide-to-invest-in-health-and-care-concept-framework/>

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since the digital revolution impacts all domains of society it is significant to recognize the importance of eHealth. So, nowadays ubiquitous Internet access stimulates the conventional healthcare towards modern one. Therefore, it is vital important to communicate the values of eHealth in order to reach the higher prevalence of it. And this article aims to emphasize the importance of eHealth value in a nutshell.

The novelty of the study: this research study aims to identify that the gap between the concepts of eHealth and value should be closed.

The object of the study: eHealth value

The objectives of the study:

- 1) to analyze eHealth from the theoretical point of view
- 2) to examine the values of eHealth
- 3) to investigate the opportunities for European healthcare system

The methods applied:

- 1) logical and comparative analysis of literature,
- 2) academic literature synthesis

## **PERVEIVED VALUE OF EHEALTH**

Spanò, Di Paola, Bova and Barbarino (2018) provided a modern definition: “Value is a chameleon concept that over the last 30 years has constantly evolved, increasingly enlarging its boundaries and content”<sup>2</sup>. While Pura (2005) reported that existing academic literature regarding Technology Acceptance Model the construct of perceived usefulness is closely linked to perceived value. Regarding Zeithaml (1988) people tend to associate perceived value with the overall evaluation of product utility, by “specifically evaluating the give and take involved in the process” (El-Haddadeh, Weerakkody, Osmani, Thakker and Kapoor, 2018). The element of give can be connected with the non-monetary and asses in terms of effort and time invested in product or service use (Dodds, Monroe, & Grewal 1991). Academic documents also announce the positive linkage between two factors: continued use intentions and perceived value (Chen & Chen 2010; Hajli, Shanmugam, Powell & Love 2015).

Healthcare system is transferring towards enhancing value (Spanò, Di Paola, Bova and Barbarino, 2018). According to the report by MedTech Europe (2016, p.3): “Good health and good health outcomes are of course important factors of value per se and important pre-

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<sup>2</sup> Spanò, R., Di Paola, N., Bova, M., Barbarino, A. (2018), Value co-creation in healthcare: evidence from innovative therapeutic alternatives for hereditary angioedema, BMC Health Services Research

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requisites for enabling economic value...// Europe cannot – from both an economic, social and equity point of view – afford not to have its citizens in good health”<sup>3</sup>. Though, taking from the individual perspective being in good health is the advantage for a person solely. But broadly, since citizens are in good health they are still socially and economically productive and retain their socioeconomic status. Further, if patients are in good health, the need for social care of those who are economically active diminishes.

Hence, the essential goal of any healthcare system is the only one – to enhance value for patients (Kaplan and Porter, 2011). Regarding Bergmo (2015): “An intervention provides high value if its health benefits justify its costs”<sup>4</sup>. Due to the efficiency and cost-saving potential of eHealth, it is becoming a central field of economic evaluation (Wade, Karnon, Elshaug and Hiller, 2010). Porter and Teisberg (2006) discussed the patient value as a healthcare overarching goal and a tool to advance it. According to Lau and Kuziemyky (2017): “Value can be in the form of improved care quality, better access, and increased productivity affecting care processes, health outcomes, and economic return”<sup>5</sup>. While discussing about eHealth values the distinguishing factors are privacy, effectiveness and security (Krupinski and Bernard, 2014).

In relation with this, the demand for health information sources is obviously growing (Damman, 2010). The same author postulated that such information sources are essential to foster the healthcare sector in order to enhance the “value for money” of their services and products. However there are academic studies which declared the characteristic of health information sources introducing little value to its’ clients (Lako, 2009). Delivering healthcare information is a delicate practice since individuals are overloaded of by a huge amount of new information (Damman, 2010). Moreover, when patients found the presented information incomprehensible they might feel unconfident to adopt it (Hendriks, Pippel, Wetering and Batenburg, 2013).

According to Goetzinger, Jungkun Park, Lee and Widdows, (2007): “The health-related information obtained by consumers brings value to them by helping them understand what to expect about symptoms, treatments, experiences and numerous other related circumstances”. In addition to this, patients who find out the relevant information are more knowledgeable and

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<sup>3</sup> MedTech Europe MedTech (2016). Economic Value as a guide to invest in Health and Care — Concept Framework. On World Wide Web: <https://www.medtecheurope.org/resource-library/economic-value-as-a-guide-to-invest-in-health-and-care-concept-framework/>

<sup>4</sup> Bergmo T. S. (2015). How to Measure Costs and Benefits of eHealth Interventions: An Overview of Methods and Frameworks. *Journal of medical Internet research*, 17(11), e254. doi:10.2196/jmir.4521

<sup>5</sup> Lau, F. and Kuziemyky, F. (2017). *Handbook of eHealth Evaluation: An Evidence-based Approach*, Victoria (BC): University of Victoria. ISBN-13: 9781550586022

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can waste less time consulting with their health specialists about basic issues. The information obtained from online resources results with a well-informed patient and time saving for both sides. While, the health specialists “have to exchange relationships, improving the adaptability and survivability of all service systems engaged in exchange, by allowing integration of resources that are mutually beneficial”<sup>6</sup> as stated by Vargo, Maglio and Akaka (2008).

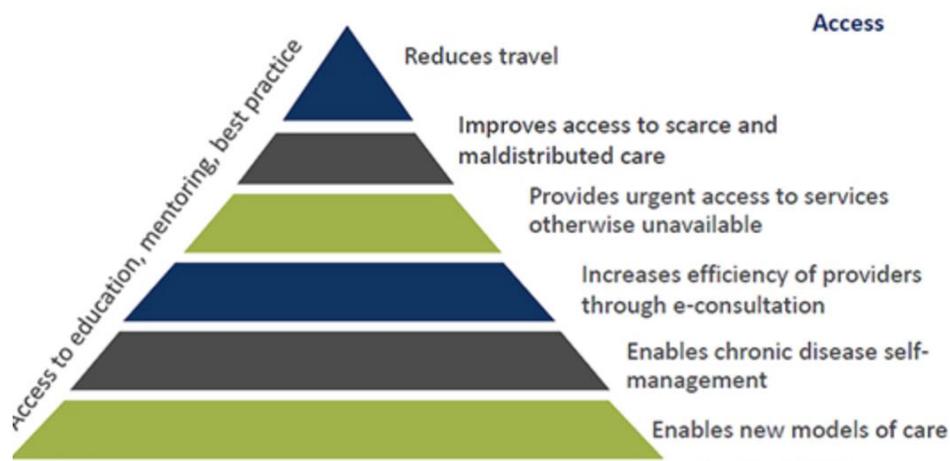
What is interesting, Hamprecht and Brunier (2011) highlighted that clients nevertheless from which generation search for services which are customized and useful, and this understanding impacts their value perception. Moreover, the scholars Hamid, (2012), Wachter, Kim and Kim, (2012). Hung, Chang, Eng and Woing, (2013), Loureiro, Kaufmann and Rabino, (2013) unveiled the important role of technology adoption decision and such determinants like optimism or understanding of usefulness on the value perception. Similarly, authors Yieh, Chen, and Wei (2012) also highlighted a meaningful linkage between two factors: customer value and technology readiness.

Pura (2005) stated that smart devices obviously are advantageous for citizens and moreover “greatly enhance their perceived value”<sup>7</sup>(El-Haddadeh, Weerakkody, Osmani, Thakker, Kapoor, 2018). What is interesting, Ontario (2015) published the pyramid (Picture 1) with the practical benefits that stem from eHealth implementation. As it is displayed in the visualization there is a great variety of values such as: new models of care, chronic disease management, efficiency increase of providers through e-consultation, urgent access to scarce and maldistributed care, travel costs reduction.

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<sup>6</sup> Goetzinger, L., Park, J., Jung Lee, Y. , Widdows, R. (2007) "Value-driven consumer e-health information search behavior", International Journal of Pharmaceutical and Healthcare Marketing, Vol. 1 Issue: 2, pp.128-142

<sup>7</sup> El-Haddadeh, R., Weerakkody, V. , Osmani, M., Thakker, D., Kaur Kapoor, K. (2018) Examining citizens' perceived value of internet of things technologies in facilitating public sector services engagement, Government Information Quarterly



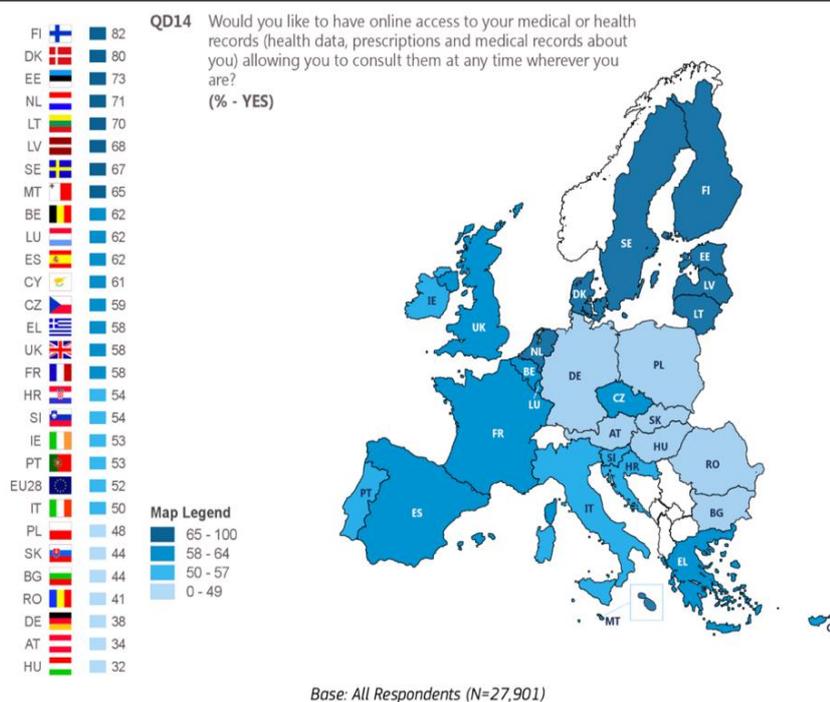
**Picture 1.** Value pyramid (Ontario, 2015)

## ATTITUDES TOWARDS THE IMPACT OF DIGITIZATION

The most recent report “Attitudes towards the impact of digitization and automation on daily life” (2017) by EU displayed the findings of the base 27 901 respondents from all EU. What is interesting to note, that: “Respondents in northern areas of the EU are the most likely to say they would like online access to the medical and health records, while those in eastern areas are the least likely to do so”<sup>8</sup>.

Generally, after questioning 21 countries’ citizens at least half of them preferred the online access to their health status reports (Picture 2). The higher numbers were calculated for Finland (82%), Denmark (80%) and Estonia (73%), while the lowest for Hungary (32%) Austria (34%) and Germany (38%). But it is worth noting that Estonia, Finland and Denmark citizens had the highest proportion of respondents who adopted online healthcare services over the last 12 months.

<sup>8</sup> Europe Union (2017), Attitudes towards the impact of digitization and automation on daily life. <https://ec.europa.eu/digital-single-market/en/news/attitudes-towards-impact-digitisation-and-automation-daily-life>.



**Picture 2.** Attitudes towards the impact of digitization and automation on daily life (European Commission, 2017)

In this particular case there is a signal that in the countries where the eHealth use is very low the value of digital technologies should be stressed in order to emphasize about the benefits of it. Moreover, the good practice from northern countries should be taken into account.

## OPPORTUNITIES FOR EUROPEAN EHEALTH

In 2017 the global eHealth market size was valued at 40.82 Billion USD and it is projected to reach USD 132.35 Billion by 2023 (Market Research Report, 2018). The same report announces the factors which drive the growth of eHealth market and these cover: growing government initiatives contributing the adaptation of eHealth services and solutions, demand to curtail the rising healthcare costs, shortage of healthcare professionals, high morbidity of chronic diseases, transfer towards patient-centric healthcare service, increasing need to control regulatory compliance adopting eHealth solutions. One EU survey among Germany, Netherlands and United Kingdom illustrated that adapting home telemonitoring systems could diminish the hospital stay averagely by 26 days, which accounts for 10% overall cost savings, while using information and communication technology generated the savings of €12.4 Bn in Italy, and €2 Bn regarded to digital prescriptions solely (Econocom, 2013).

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The conclusions of another European Union survey conducted in 2010 among private, public, university hospitals in Europe revealed that nevertheless digital solutions prevail widely, they are not popular as services for healthcare specialist and patients in order to exchange information. The data justifying the argument presented below (Econocom, 2013):

- ✓ 71% adopt eBooking systems for patients' visits, and only 8% grant patients with access for making appointment online
- ✓ 81% of hospitals have digital patient records and only 4% give patients online access to those records
- ✓ 30% issue ePrescriptions.
- ✓ 43% share radiology reports electronically
- ✓ 8% telemonitor patients at home
- ✓ 5% electronically exchange information with healthcare providers in other EU countries.

But what is interesting, the document the European Commission report “Digital Health and care” (2018) publishes the expectations of EU citizens:

- ✓ 80% agree to give feedback regarding quality of treatment
- ✓ 90% agree to have access to their own health data
- ✓ 80% agree to share the health data, if security is guaranteed

In addition to this, the same document presents three-fold initiatives how to improve health via digital applications and data, and these include:

1. Effective and consolidated health care systems
2. Patient centered health services and prevention.
3. Personalised health diagnosis, research and treatment

It is obvious that investing in eHealth infrastructure ensures stakeholders with equitable access to qualitative and comprehensive health care. And nevertheless there are national policies Europe Union also has impact on emphasizing the importance of eHealth investments. Hence, highlighting the eHealth value ensures not only faster eHealth implementation but also serves as a help to gain patient centered health services and qualitative treatment.

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## CONCLUSIONS

Now it is obvious that good health is the value per se, but it is important to note that it also enables economic value. Looking from the individual perspective being in good health is the benefit for an individual solely. But broadly looking when citizens are in a good health they are still socially and economically productive and also have their socio economic status. Hence, the essential goal of any healthcare system is the only one – to enhance value for patients. And the modern intervention of eHealth provides high value for individuals. The values can be extracted in practical solutions such: saving travel costs, improves productivity of healthcare workers, improves health services access, enables chronic disease management. In this particular case, countries with a low implementation of eHealth should pay more attention to these beneficial issues and communicate about them for society.

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## TEORINĖ E. SVEIKATOS VERTĖS SUVOKIMO APŽVALGA

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### Santrauka

Sveiki valstybės piliečiai yra socialiai ir ekonomiškai aktyvūs. Svarbu tai, jog tuo pačiu jie geba išlaikyti socioekonominį statusą. Taigi, kiekvienos šalies sveikatos apsaugos tikslas turėtų būti – kelti pacientams gaunamą vertę. Šiais laikais skaitmeninė revoliucija liečia visas socialines sritis. Taigi, skaitmenizacija stimuliuoja pokytį: iš tradicinės į modernią sveikatos apsaugos sistemą. Remiantis šia paradigma, galima teigti, kad šiuo metu e.sveikatos vertės suvokimo analizė yra aktuali tema, todėl šio straipsnio objektas yra e.sveikatos vertė. Darbe iškeliami trys tikslai: 1) išanalizuoti e.sveikatą teoriniu aspektu 2) pristatyti e.sveikatos teikiamas vertes 3) išnagrinėti Europos e.sveikatos galimybes. Tikslams pasiekti naudojami šie metodai: 1) Mokslinės literatūros analizė ir palyginimas 2) Mokslinės literatūros sintezė

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**Raktiniai žodžiai:** vertė, eSveikata, sveikatos apsaugos sistema, skaitmenizavimas.

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