Digital Wellbeing in the Context of Decision Support Systems

Sarah Aragon Bartsch
LMU Munich
Munich, Germany
sarah.aragon.bartsch@ifi.lmu.de

ABSTRACT

In this paper, digital wellbeing is defined as an umbrella term for a state of individual wellbeing that is supported by digital technologies. The importance of digital wellbeing in the context of Decision Support Systems (DSS) is discussed. Technical solutions to support important, possibly life-changing decisions can have a major impact on our wellbeing. Career decision making presents a key application case to discuss opportunities for improving the design of current systems. A main research goal is derived from the discussion: to increase digital wellbeing by supporting self-reflection and fostering decision-making skills rather than giving the user concrete recommendations based on criteria limited to what is technically accessible.

KEYWORDS

digital wellbeing, decision making, decision support systems

INTRODUCTION

In the era of ubiquitous computing, digital systems have become a large part of our everyday lives. We use technology to support us in our daily tasks, for entertainment, to communicate with others or to monitor and improve our health. We, as HCI researchers, have the responsibility to design such systems in a way that benefits the users' wellbeing. However, it is not clearly defined what "digital wellbeing" means and which aspects the term comprises.

This paper defines digital wellbeing in a way that facilitates discussing its role and importance in the context of decision support systems. This leads to a research agenda with a focus on re-thinking the design of digital career choice systems.

DEFINITION OF DIGITAL WELLBEING

To better understand the term "digital wellbeing", I would like to consider the noun "wellbeing" and the adjective "digital" independently. According to the Cambridge Dictionary, wellbeing is defined as "the state of feeling healthy and happy" [1]. Moreover, one of the three definitions of the adjective "digital" is "using or relating to digital signals and computer technology" [2]. If we combine both parts, we can derive that **digital wellbeing is a state of feeling healthy and happy using or relating to computer technology**.

   This definition implies four research goals, that could be pursued when designing for digital wellbeing. First, the user should feel *healthy using* computer technology. This is clearly a design goal of ergonomics and e-health research. Second, the user should feel *happy using* computer technology. User happiness and satisfaction play an important role in User Experience (UX) design and research. Third, the user should feel *healthy relating to* computer technology. This includes research on how to prevent technology addiction and harmful device use. Fourth, the user should feel *happy relating to* computer technology. This topic can, for example, be found in affective computing.

   However, there is more to digital wellbeing than just this literal interpretation of the term. The general concept of wellbeing is complex. It includes factors such as physical, psychological, emotional, and social wellbeing. Research in the field of *Positive Psychology* indicates that wellbeing is related to leading a meaningful, purposeful life [5, 6]. These factors mostly depend on internal processes and subjective criteria, that are strongly linked to a person's self-image. A generalized definition of digital wellbeing could therefore be as follows: **"Digital wellbeing" is an umbrella term for a state of individual wellbeing that is supported by digital technologies**. The main research goal therefore becomes designing technology in a way that renders it beneficial for users' quality of life. In the following, I will put this rather broad definition into the context of decision support and recommender systems and discuss potential improvements in the design of such tools.

DIGITAL WELLBEING IN THE CONTEXT OF DECISION SUPPORT SYSTEMS

Decision-making is an essential process in our everyday life. The decisions we have to make range from rather small ones, like which movie to watch or what product to buy, to bigger, possibly life-changing decisions like how often to go to the gym or which career to choose. Each of our decisions has an indirect or direct influence on our wellbeing. A lot of people tend to struggle with the decision-making process and find it hard to choose among their options. In order to help us in making more considered decisions, a large number of Decision Support Systems (DSS) have been developed over the last decades [3, 4]. These systems have the potential to facilitate decision making in our lives and thereby contribute to our wellbeing. However, there are also some risks in the current design of DSS, which could lead to opposite effects. The majority of DSS use specific criteria to give users concrete

recommendations on what to do and what not to do. If we perceive the advice as a satisfactory solution, a DSS can have a positive effect on our digital wellbeing. However, especially for complex decisions, it cannot always be guaranteed that the system's output is a good solution. If a DSS only considers a subset of criteria, users are likely to miss better alternatives or might not get an advisable result at all.

Up-to date decision support tools work quite well for decisions that depend on clearly defined objective criteria. For example, if I want to decide which coffee machine to buy, these criteria could be technical facts, price, visual design, customer ratings and other external factors. A DSS could provide me with a product catalogue and help me find the most suitable machine by weighing the factors according to my needs. The chance of deciding for a well-suited coffee machine is relatively high and the worst case consequences of following a bad recommendation are quite easy to rectify.

In contrast, if the decision mainly depends on internal subjective criteria, it is more challenging to provide a good recommendation. Career choice, for example, depends on many internal and external factors and is a very complex decision for most people. However, common career choice tools mainly focus on observable, external criteria and provide the user with a concrete job recommendation after one or two hours of answering questionnaires. There is a high chance that the system's output is not the best solution. Recommendations considered as "nonsense" lead to user dissatisfaction. Accepting a bad recommendation without being aware of a better alternative might even have major consequences on one's life. Having regrets about a career decision could be associated with concerns about the individual's purpose of life. This bears serious risks for the user's digital wellbeing. Therefore, the following research agenda focuses on suggestions for the improvement of DSS for career choice. Nevertheless, the discussion can also be transferred to other important, life-changing decisions.

RESEARCH AGENDA

A meaningful career-decision needs to be in line with the self-perception and personality of the user. Instead of giving recommendations solely based on objective, measurable criteria, we should rather provide tools to support self-reflection and foster personal decision-making skills.

An important research question is how to design such tools in the context of career decision making. In future work, I plan to investigate the following aspects:

- How can self-reflection be fostered by the help of digital tools?
- To what extent can we integrate crucial criteria for career decision-making into a DSS?
- How can we better support decision-making as a process? How to design for long-term support?
- How can subjective decision criteria such as self-reflection be measured and evaluated?

As a step towards addressing these problems we focus on job prospects in a current project. We try to give users insights into the working lives of different personas by sending them text messages about
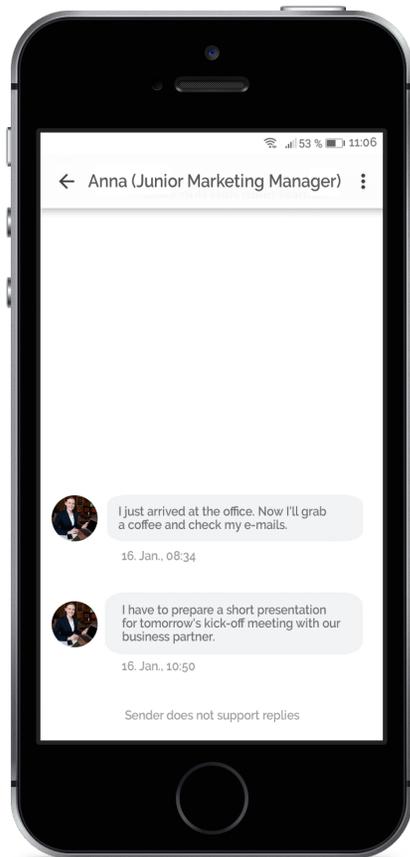
what the persona is currently doing. For example, users could get chat messages from Anna, a Junior Marketing Manager, telling them that she is checking e-mails or preparing slides for a presentation (see figure 1). By creating a temporal link between the user and the persona, we hope to provide an improved awareness about the job's characteristics and trigger self-reflection on whether the users can see themselves in the same situation. As the application is designed for a longer period of usage, it leaves space for critically reflecting on one's own preferences. With this project, we plan to investigate a first idea of what career decision support features could look like in the future.

OUTLOOK

The impact of technology on our wellbeing will continue to grow in the following years, as we engage more and more with digital systems. They have already found their way into our daily lives and start to be seamlessly integrated in our workplaces, our homes or even our bodies. There is a great potential for technical tools to facilitate our lives and contribute to our overall wellbeing. However, we have to bear in mind the risks of this development, in order to ensure digital wellbeing. Starting from the rather broad definition of digital wellbeing given in this paper, I would like to encourage other researchers to define what the term means in their specific field of research. For the application case discussed in the previous section, addressing digital wellbeing means fostering users' own decision-making skills and processes, instead of replacing them with a technical recommendation system.

CONCLUSION

In this paper, digital wellbeing is defined as a state of individual wellbeing that is supported by digital technologies. It is suggested as a design goal for any kind of HCI research. In the field of DSS for career choice, this means that digital tools should not be restricted to recommendations based on external, objective criteria, but rather empower the users to consider personal factors such as life-goals and self-image to make a final decision on their own.

REFERENCES

[1] Cambridge Dictionary. 2019. Retrieved 2/2/2019 from https://dictionary.cambridge.org/dictionary/english/well-being
[2] Cambridge Dictionary. 2019. Retrieved 2/2/2019 from https://dictionary.cambridge.org/dictionary/english/digital
[3] Eyong B Kim and Sean B Eom. 2016. Decision Support Systems Application Development Trends (2002–2012). *International Journal of Information Systems in the Service Sector (IJISSS)* 8, 2 (2016), 1–13.
[4] Jie Lu, Dianshuang Wu, Mingsong Mao, Wei Wang, and Guangquan Zhang. 2015. Recommender System Application Developments: A Survey. *Decision Support Systems* 74 (2015), 12–32.
[5] Carol D Ryff. 1989. Happiness Is Everything, or Is It? Explorations on the Meaning of Psychological Well-Being. *Journal of Personality and Social Psychology* 57, 6 (1989), 1069.
[6] Martin EP Seligman and Mihaly Csikszentmihalyi. 2000. *Positive Psychology: An Introduction.* Vol. 55. American Psychological Association.

Figure 1: Mock-up of a career decision aid application, focusing on job prospects: A persona called Anna sends the user text messages about her work day as a Junior Marketing Manager.