Guest Editorial Preface

Special Issue of E-Health and M-Health Management

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MOTIVATION

Recently, machine learning, internet of things (IoT), and artificial intelligence (AI) have emerged as key technologies to implement e-health and m-health management in organizations (Agarwal et al., 2010; Fichman et al., 2011; Haddad et al., 2019). Some early evidence shows that e-health and m-health, in isolation and in combination, benefit healthcare organizations and healthcare users in an increasing variety of aspects, such as care provision, chronic disease management, patient empowerment, and information sharing across organizational boundaries (e.g., Free et al., 2013; Huang et al., 2019). For instance, e-health and m-health services powered with AI technologies have achieved primary effects in combatting the Covid-19 pandemic (Time, 2020). However, the increasing use in e-health and m-health comes with increased uncertainties and risks. How to make full use of e-health and m-health in an efficient, economical, and privacy-preserving manner is still a fundamental challenge for the academia and industry. Thus, this special issue of E-health and M-health Management aims to present ideas, innovations, and applications of utilizing e-health and m-health technologies for improving the efficiency, sustainability, and reliability of healthcare and shed light on how the value of e-health and m-health technologies can be captured and amplified.

We are grateful for all submitting authors and to all the reviewers who supported us with their insightful reviews and constructive comments. We would also like to express our gratitude to Professor Sang-Bing Tsai, the editor-in-chief of the Journal of Organizational and End User Computing (JOEUC), for facilitating this special issue on E-health and M-health Management. The 12 papers included this special issue cover a range of aspects across multiple contexts, through distinctive theoretical lenses, and from a myriad of methodological approaches of E-health and M-health management. Each of these revised and extended papers has undergone full double blind peer review prior to being selected for this special issue.

Song et al. attempts to bridge the gap between simply providing mobile health information (MHI) and persuading users to employ the MHI for health self-management. To achieve this goal, this study extends the Elaboration Likelihood Model and identifies the important central and peripheral cues (i.e., information matching and M-health platform credibility) of MHI across individual differences. In addition, the moderating effect of health concerns is examined. The results confirm that (1) information matching and platform credibility have significant positive effects on attitudes toward MHI, but only information matching could affect health behavior changes directly; and (2) health concern significantly moderates the link between information matching and cognitive attitude and

only marginally moderates the link between platform credibility and attitudes. The findings provide fresh insights that are applicable to the information recommendation design in M-health.

Ngassam et al. provide actionable knowledge for the development and promotion of digital allergy card (DAC), a kind of Personal Health Records. Based on the action research method, this study identifies the barriers to DAC adoption and proposes suggestions along with these barriers for DAC development. Specifically, the study indicates that accessibility is the main barrier to DAC use, and developers can improve DAC by enhancing the classification and visibility of allergy information.

Qin et al. establish an early warning model to test cerebrovascular disease (CVD). First, information entropy algorithm of rough set theory was used to build the index system. Then, limited Boltzmann machine and direction propagation algorithm were employed to build and stack RBM, and the depth trust network and backpropagation was employed to fine-tune the parameters of the network at the top layer. Compared with traditional models, the proposed deep confidence network model is more effective in identifying the risk of CVD in advance and promote the primary prevention.

Liu et al. investigate how the extrinsic factors influence people's attitude and intention towards donating to medical crowdfunding projects on mobile social networking sites (MSNS) by extending the theory of planned behavior. Through surveying 356 Chinese users, this study indicates that project information, retweeter information and MSNS information all have significant effects on the general attitude towards donating to medical crowdfunding projects, and general attitude positively affects people's donation intention. In addition, perceived behavioral control has a positive effect on people's donation intention, while experienced donating to medical crowdfunding projects has a reverse effect. This study provides references to medical crowdfunding literature and practical guidance for the founders, retweeters and crowdfunding platforms.

Xu et al. examine the factors influencing patients' satisfaction with doctors and predicting their satisfaction in online medical communities by using 6933 satisfactory samples and 77 unsatisfactory samples collected from the "Good Doctor" website. Given the imbalanced feature of the dataset, XGBoost and SMOTE algorithm were integrated to identify the factors that predict patient satisfaction. The role of features played in satisfaction prediction is also analyzed at the individual feature level and feature combination level.

Savoli and Bhatt attempt to recognize the factors that influence the arousal of emotions in chronic patients while using self-managing care IT. Given that previous studies underplayed the role of individual user's identity, this study proposes that patients' health identity centrality (i.e., the extent to which they consider health as central to their sense of self) can play an important role in forming their dependence on health IT by affecting their use directly and by shaping their emotions around it. By examining 237 chronic patients who have used the activity tracker, Fitbit, this study reveals that health identity centrality shapes emotions toward IT and patients' dependence on the technology. Furthermore, dependence on IT, as well as users' emotions, shapes IT usage directly.

Tang et al. attempt to understand how caregivers can effectively provide long-term care services to meet older adults' needs with finite resources. To solve this problem, this study proposes a two-echelon responsive health analytic model (EHAM) to deliver appropriate healthcare services in nursing homes under the Internet of Medical Things environment. A novel care plan revision index is developed using a dual fuzzy logic approach for multidimensional health assessments, followed by care plan modification using case-based reasoning. The findings reveal that EHAM can generate high-quality patient-centered long-term care solutions to maximize the satisfaction of nursing home residents and their families.

Zhu et al. build a theoretical model based on the unified theory of acceptance and use of technology (UTAUT) 2 and protection motivation theory to interpret the adoption of Mobile Chronic Disease Management Service (MCDMS). The authors also verified the differentiating age effect on the service adoption intention from the experiential distance perspective of construal level theory. Empirical results show that the young group focuses more on the impact of effort expectancy, whereas the elderly group focuses more on performance expectancy, imitating others, and perceived severity. However,

the young group focuses more on the impact of perceived vulnerability, and offline medical habits do not affect each group's intention to adopt. The findings can aid MCDMS providers in selecting marketing strategies that can target different age groups.

Tabassum et al. aim to establish a platform using Mobile Ad hoc Network to support connectivity in hospitals. The cost of the existing patient monitoring system's design is high because of scalability criteria because the increased wireless nodes may reduce performance. Also, such systems suffer from interoperability issues and hence are less reliable and flexible. The proposed solution to transmit information is better than the previous system because the use of mobile applications is common, and stakeholders find it extremely easy to download the mobile application to monitor their health issues.

Li et al. detect different types of healthcare insurance fraud and provides possible solutions. Statistical analysis was conducted on a large dataset of national social insurance in China to examine the essential characteristics of fraudulent behaviors, which can be organized into five categories, namely, gangs committing crimes, identity fraud, unbundling, drug replacements, and false hospitalizations. Results indicate that medical records that involved fraud have a lower frequency and shorter time interval of hospital visits, along with higher costs of medical bills and expenses and lower average costs per bill. Fraudulent claims indicate a higher expense ratio paid by subsidy, higher costs of medical materials and alternative herbal medicines, and lower costs of hospital beds.

Zheng et al. examine the patients' decision-making process from online to offline health services by integrating the extended valence framework and the halo effect. By analyzing 221 samples with online consultation experiences, the study shows that trust significantly influences perceived benefits and perceived risks, while trust, perceived benefits, and perceived risks significantly influence the intention to consult. The intention to consult influences the intention to visit positively. Considering the moderating effects of payment types, the influence of perceived risks on the intention to consult is larger for the free group than for the paid group. The findings are useful in understanding patients' decisions to use eHealth.

Jones and Venable concern with how to improve problem formulation within the mHealth Design Science Research (DSR) domain. This study finds that existing problem formulation is often weakly performed through a systematic literature review with shortcomings in stakeholder analysis, patient-centricity, clinical input, use of kernel theory, and problem analysis. To address the problem, the Colored Cognitive Mapping for DSR (CCM4DSR) is proposed and tested in mhealth DSR. The results show that CCM4DSR exhibits good performance in deriving the key design features of the mHealth app for supporting melanoma survivors.

FUTURE RESEARCH FOR E-HEALTH AND M-HEALTH MANAGEMENT

The successful utilization of mobile and ubiquitous computing technologies in business provides acceptable, sustainable, and inexpensive ways for organizations to collect, store, monitor, and process health-related data. At the same time, the emergence of software and services, such as online platforms, mobile and smartwatch apps, and VR/AR, allow organizations and users to exploit and explore these masses of data in this context and offer them immersive interactions (Liu et al., 2019; Steinhubl, 2013). These developments provide significant opportunities and challenges for us to advance methodological, empirical, theoretical, and conceptual understanding for e-health and m-health management (Chen et al., 2019; Liu et al., 2019; Gefen et al., 2011; Hair et al., 2019; Shiau et al., 2019; Khan et al., 2019; Shiau & Chau, 2016).

Manuscripts in this special issue present some useful directions for future research. We encourage readers to consider the findings and implications published in this special issue and pursue opportunities for further research. For example, we encourage researchers to undertake further research in terms of the role of e-health and m-health and how it can lead to value creation in areas, such as patient empowerment, elderly and chronic disease management, and epidemic management. Furthermore, noting that challenges abound when it comes to applying advanced technologies in

healthcare management is important. For instance, researchers are struggling with bias and accuracy caused by the difficult and messy medical data. Despite unprecedented challenges, careful and responsible use of AI is recognized as a promising direction. In addition, the profound function of E-health and M-health in beating COVID-19 should be examined from a system perspective. The influence can be more extensive than the direct clinical and financial impacts. The development of technologies in healthcare can enable and facilitate new forms of care delivery, which could play a significant important role in addressing COVID-19 and other healthcare issues.

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