

WHITEPAPER

Patient Engagement in Cancer Care through Digital Services

HOW TO ENCOURAGE
ADOPTION AND USE?

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EXECUTIVE SUMMARY

Digital services have been found, among others, to increase health-related quality-of life and several aspects of patient experience¹. Patient engagement, which is associated with better health outcomes and health literacy^{2,3}, can be augmented with the help of digital services⁴. Generally, people's attitudes and expectations on health-related digital service development have been positive^{5,6}. However, to achieve the positive outcomes made possible by digital services, it is essential for these positive attitudes to translate into actual usage of the services.

This whitepaper discusses the adoption of digital services by cancer patients. It aims to present means for promoting patient adoption so that a greater number of patients can benefit from the development of digital health services. The author's master's thesis⁷ forms the basis for the whitepaper.

Several factors that facilitate or hinder patients' adoption can be detected. Adoption is influenced by both the care process as well as the provided services. For example, it is important for the patients that the digital service in use is closely connected to their care and the professionals providing their care. Patients' varying condition should be considered as a factor affecting

their adoption of services. The services' ease of use is also central for adoption and use.

Many of these factors can be influenced rather easily. This allows for low effort encouragement of patients' adoption of provided digital services, which in turn increases the benefits of digital services in cancer care. Communication plays a key role: communicating the purpose and the way of use boosts perceived usefulness and perceived ease of use, thereby promoting the adoption and use of services.

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DIGITAL SERVICES IN CANCER CARE

Digital services are becoming an integral part of quality and patient-centered care, albeit their implementation needs to carefully consider other aspects of the cancer care environment⁸. Among others, digital services provide effective means of increasing patient activation⁹. Patient engagement, then again, is associated with enhanced health outcomes and care experiences².

Examples of digital services in cancer care are digital communication channels¹⁰ and electronic patient-reported outcomes¹¹. Electronic patient-reported outcomes have been found to enable faster reactions and to save time, leading to improved clinical care¹². Furthermore, patient-reported outcomes lead to enhanced health-related quality of life as well as less frequent ER admissions and hospitalizations¹³. Even an increase in patients' overall survival has been noted when using electronic symptom tracking and reporting system compared to traditional care¹³.

Patient experience positively correlates with patient safety, clinical effectiveness, and both subjectively and objectively measured health outcomes¹⁴. Patient experience consists of several dimensions, including communication, information, patient participation and

continuity of care¹⁵. Digital services are becoming a key element in patient experience construction¹⁶. Indeed, digital services can enable improvements in multiple aspects of patient experience¹⁷.

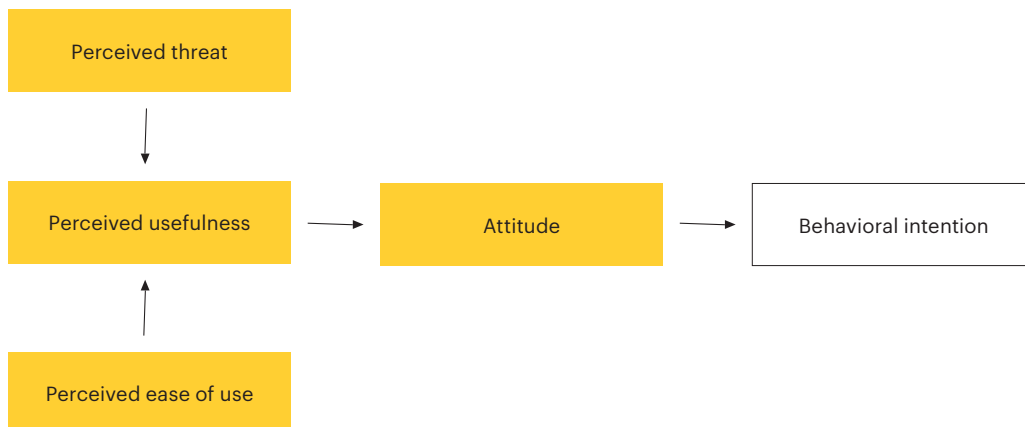
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ADOPTION OF DIGITAL SERVICES

Technology Acceptance Model (TAM) is the most used theory to explain information technology acceptance across different fields¹⁸. TAM suggests that technology acceptance is predicted by perceived usefulness and perceived ease of use¹⁹. Perceived usefulness has been found to influence acceptance significantly stronger than perceived ease of use²⁰. This observation has also been noted when studying e-health technology acceptance by patients²¹.

TAM has been found to considerably predict acceptance of health IT, even though better explanatory power would be expected with modifications expressly related to the healthcare context²². HITAM, i.e. health information technology acceptance model, has been suggested to explain technology acceptance in healthcare from the consumers' point of view. This model presents perceived threat as an additional construct. Perceived threat is affected by health

HITAM — HEALTH INFORMATION TECHNOLOGY ACCEPTANCE MODEL



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ADOPTION OF DIGITAL SERVICES

status and health concerns, and acts as a predictor for acceptance with perceived usefulness and ease of use.²³

Several more specific factors that influence patients' health IT adoption have been noted in literature. Consistent with other contexts, age, education, and general IT use predict patients' acceptance of IT²⁴. IT adoption can be affected by previous and present care experiences⁵, including digital care experiences²⁵ and relationship with medical professionals²⁶. Quite naturally, patients have been found to consider privacy and security issues when thinking about using health-related digital services²⁷. These issues can both hinder or facilitate patients' acceptance²⁸. Trust, or the lack thereof, in both the healthcare provider⁵ and the digital service itself²⁷ affects patients' adoption of the services²⁹.

Based on patient interviews that were conducted to study patient adoption of digital services, the relevant factors that patients brought up were divided into four distinct categories: related to IT, related to the care, related to the patients' own condition, and related to the service in question⁷. Each of these categories include both factors facilitating and hindering adoption, both affecting the initiation of use

as well as its development towards customary practice.

A vast amount of the factors brought up in the above-mentioned study could be linked with perceived usefulness, perceived ease of use, and perceived threat⁷, coherent with TAM¹⁹ and HITAM²³. Factors related to general IT skills seemed to play only a modest role, although for people with limited IT use perceived usefulness might be more important than for people with much IT experience⁷.

**"BUT I AM BEING TAKEN
CARE OF THERE. AND IT IS
THE PEOPLE THAT TAKE CARE
THERE, NOT A SERVICE."**

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REDUCING HINDERANCES OF PATIENT ADOPTION

Detecting hindrances for adoption is especially important because they might decrease patients' initial interest towards digital services. In other words, these types of factors might resist adoption even among patients whose general attitude towards digital services is positive. Eliminating certain hindrances can not only promote adoption among a greater number of patients but also improve the user experience of already active users.

BALANCING WITH DIGITAL AND TRADITIONAL

Preference for more traditional methods for communication and information seeking or

receiving hinders adoption of digital services⁷. It is important to recognize that digital services should not aim to replace the traditional relationship between medical professionals and the patient¹⁶. Instead, they should be utilized to enhance the relationship in accordance with more traditional methods, such as sufficient face-to-face communication.

To avoid the hindering effect of the preference for traditional care processes, it is beneficial to clearly indicate to the patients that they do not need to choose one over the other. On the contrary, the provided digital services fulfill the traditional care processes.

HINDERANCES

- Preference for traditional communication methods
- Separation from medical professionals
- Good condition and clear symptoms
- Bad condition and tiredness
- Imbalance between effort and usefulness

FACILITATORS

- Interesting idea
- Positive effects on care processes
- Relevance of services for medical professionals
- Obligation towards medical professionals

ENSURING CONNECTION WITH CARE PROVIDERS

If the patients perceive that the digital health services are separate from medical professionals, the adoption of the services becomes less likely⁷. In order to realize the full potential of digital solutions, they need to be implemented in a manner that establishes connection between care providers and patients⁸. It is valuable to ensure that the appearance and the features of the services promote the connection with the medical professionals that are participating in the treatment of the patient.

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REDUCING HINDERANCES OF PATIENT ADOPTION

This hindrance can be decreased by improving the design of the used services, but also by making the service prominent during the in-person encounters with the patient. Ways to implement the digital to the physical include, for example, informational video clips presented at the reception³⁰ and discussing the data the patients have provided through the service at the physical appointments.

CONSIDERING VARYING CONDITION

Patients' good condition and clear understanding on their symptoms diminishes intention to use digital services⁷, like predicted by HITAM²³. However, digital services often have many-fold purposes that might not be clear to the patients. In order to increase patient acceptance, the reasons for the use of the service and the possible, perhaps disguised, benefits of use should be openly communicated.

On the other hand, the patients' severely bad condition also hinders adoption of digital services⁷. Especially during cancer treatments patients' condition can fluctuate quite drastically. The ability to internalize information on digital services when they are first presented to the patient can be affected by weak condition

or a challenging emotional state. Therefore, it can be fruitful to bring up the possibility to use digital services as a part of the treatments more than once if the patient does not initiate use after the first time a service is presented.

MATCHING EFFORT AND USEFULNESS

As can be expected based on acceptance theories^{19,31}, imbalance between perceived effort of use and perceived usefulness lowers interest in using digital services in cancer care⁷. Meanwhile, perceived ease of use promotes use by the patients⁷. It is crucial that the use of digital services is easy and fast. Especially in situations where perceived usefulness for the patient is lower, such as when patients' condition is good (see above), the patients are more likely to use the service when the use burdens them as little as possible.

An important step in tackling this hindrance is to ensure that the service includes features that bring additional value to the patients. Another step is to ease the use of the service, for example by providing the patients with shortcuts in filling out patient-reported outcome questionnaires.

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EMBRACING FACILITATORS OF PATIENT ADOPTION

As suggested by acceptance models, perceived ease of use facilitates adoption of digital services also among patients. By the same token, services' good performance that meets the expectations of the patients increases the likelihood of their acceptance.⁷ These are aspects that the service developers naturally aim for, and collaboration between developers and patients is essential for succeeding in this goal. In addition to these facilitators that relate to the development of the services, patient adoption can be facilitated by healthcare providers as well.

AWAKENING INTEREST

An interesting idea behind the service can act as a facilitator for adoption⁷. Furthermore, the included features can have an effect on how eagerly patients adopt a digital service²⁴. To take advantage of this facilitator, digital services should have a simple, but captivating purpose that can be straightforwardly conveyed to the patients. Extensive functionalities²⁷ and difficulties in finding personally relevant information have been pointed

out as a nuisance in digital health services, which supports the aim for adequate simplicity.

To utilize this facilitator, one possibility is to demonstrate the use of the service for the patients at the reception. That way the idea of the service is more likely to become clear for the patients. Furthermore, perceived usefulness and ease of use can be provoked when the use of the service is shown and the patients are not required to learn the use alone⁷.

"I KNEW I HAVE A KIND OF SAFETY THERE. I DON'T HAVE TO PONDER THINGS ALONE. THERE ARE THE PEOPLE WHO HEAR OR READ ME STRAIGHT AWAY THEN. IT WAS THE FEELING OF SAFETY."

ENHANCING CARE PROCESSES

Many facilitating factors in the care-related category are linked with the positive effects of digital services on the care processes⁷. When patients start using a service, these facilitators work by themselves in promoting sustained use. However, they can also be exploited by communicating the targeted effects to the patients when they are presented with the services. Among others, patients have described that digital services enhance communication and information flow^{7,32}, bring the medical professionals closer^{1,7} and increase

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EMBRACING FACILITATORS OF
PATIENT ADOPTION

feelings of safety^{7,17}. Even the notion that appointments became more effective was brought up⁷; a good example on how digital services can also improve the traditional aspects of care.

**PATIENTS VALUE THE WORK OF MEDICAL
PROFESSIONALS**

Recognition of relevance of digital services for medical professionals can promote patient adoption⁷. Furthermore, patients' sense of obligation towards medical professionals can increase adoption if patients perceive that clinical staff appreciate the use of the service⁷. In fact, social factors might play a major part in healthcare technology acceptance³³. Therefore, increasing patients' understanding on how the used services help clinical staff in their work is advantageous. When the patients observe that the use is valuable for medical professionals, their motivation to use the service is increased.

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