Incorporating digital self-services into integrated mental health care : A physician's perspective

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Abstract

Purpose This paper enhances current understanding of digital self-services (computerized Cognitive Behavioural Therapy (cCBT)) and how they could be better incorporated into integrated mental healthcare from the physician's perspective. Service marketing and information systems literature are combined in the context of mental healthcare delivery.

Design/methodology/approach An online survey of 412 Finnish physicians was undertaken to understand physicians' acceptance of cCBT. The study applies thematic analysis and structural equation modelling to answer its research questions.

Findings Adopting a service marketing perspective helps understand how digital self-services can be incorporated in healthcare delivery. The findings suggest that value creation within this context should be seen as an intertwined process where value co-creation and self-creation should occur seamlessly at different stages. Furthermore, the usefulness of having a value self-creation supervisor was identified. These value creation logic changes should be understood and enabled in order to incorporate digital self-services into integrated mental healthcare delivery.

Research limitations/implications Because healthcare systems vary across countries, strengthening understanding through exploring different contexts is crucial.

Practical implications Assistance should be provided to physicians to enable better understanding of the application and suitability of digital self-service as a treatment option (such as cCBT) within their profession. Additionally, supportive facilitating conditions should be created to incorporate them as part of integrated care chain.

Social implications Digital self-services have the potential to serve goals beyond routine activities in a healthcare setting.

Originality/Value This study demonstrates the relevance of service theories within the healthcare context and improves understanding of value creation in digital self-services. It also offers a consistent depiction of the barriers to acceptance.

Keywords: self-service, service separation, integrated care, value creation, service providers, computerized Cognitive Behavioural Therapy

Research paper

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1. Introduction

The treatment gap for mental disorders is a broad issue, even in well-developed countries (Patel *et al.,* 2013; WHO/WONCA, 2008). For individuals, not getting help is mainly due to shortcomings in the accessibility of mental health services, which are often part of an overburdened special healthcare system, and accessed via primary care practitioners who do not always possess the necessary resources to treat mild-to-moderate cases (OECD, 2014). Approaches addressing these challenges are commonly related to principles of integrated care; provision of seamless, effective, and efficient care throughout an individual's life in cooperation with the individual and their family. These principles call for an individual-centred approach, better access to healthcare services, and better communication and continuity between different levels of healthcare providers (see e.g., Kodner, 2009).

New technologies have provided opportunities to better integrate care. The computerized Cognitive Behavioural Therapy (cCBT) approach is one option to promote more efficient care delivery in the context of mental health. The cCBT approach makes it possible to integrate different levels of care in one setting, and to provide flexible access to care, addressing the challenge of providing cost-effective treatment options with decreasing public resources (see Chatzimarkakis, 2010; Cummings *et al.,* 2013; Du *et al.,* 2013). The benefits of cCBT fit well with the integrated care philosophy (see Kodner, 2009). Despite the potential of cCBT and the generally positive attitudes toward it, utilization among physicians is low in many countries, including in the USA (e.g., Carper *et al.,* 2013), Australia (e.g., Donovan *et al.,* 2015), and the UK (e.g., Du *et al.,* 2013; Stallard *et al.,* 2010). In the EU, while the potential is known, cCBT has not yet been routinely incorporated into healthcare delivery (Topooco *et al.,* 2017; Vis *et al*., 2015).

To improve current understanding, this paper takes a multidisciplinary perspective by combining service marketing and information systems literature in the mental healthcare context. The study reflects the physicians' perspective, because without their support such services will not become part of future healthcare delivery. From a service marketing perspective, cCBT represents a form of digital self-service exemplifying the phenomenon of service separation. Accordingly, this paper first applies service marketing, and particularly value creation literature, to strengthen the knowledge of cCBT as a service type. Second, a more consistent understanding of the barriers to acceptance will be established by examining barriers identified in the mental healthcare literature through information system lenses. Then, these perspectives will be extended through empirical understanding and combined in order to understand how digital self-services can be incorporated to contribute to integrated mental healthcare. To serve this aim, this study address the following research questions:

1. How can value creation logic be extended to incorporate digital self-service (cCBT) into integrated mental healthcare delivery?
2. What are the barriers to digital self-service (cCBT) acceptance in mental healthcare delivery and how can they be overcome?

The purpose of this paper is to enhance the current understanding of digital self-services in the form of cCBT and how they can be incorporated to contribute to integrated mental healthcare from the physician's perspective. The current research makes three theoretical contributions to the literature that also translates into contributions to practice. First, this paper extends the understanding of separated service delivery (see e.g. Green *et al.,* 2016; Keh and Pang, 2010; Paluch and Blut, 2013) by providing a description of the value creation logic of digital self-services in a mental healthcare context. From practical a perspective, this opens new avenues to understand the fundamental logic of these special types of services in healthcare settings. Second, this paper contributes to the current discussion about cCBT acceptance (see e.g., Lazuras and Dokou, 2016; Montero-Marin *et al*., 2015; Topooco *et al*., 2017) providing a more systematic way to understand the factors influencing acceptance. This provides service managers with a more comprehensive understanding of the issues hindering uptake of these special types of services. Third, by utilizing and further developing understanding of the logic of value creation within the mental health context, this paper helps understand how digital self-services could become integrators in integrated care. In so doing, the study provides further evidence of the relevance of service theories within the healthcare context (see e.g., Hardyman *et al*., 2015; McColl-Kennedy *et al.,* 2012; McDermott and Pedersen, 2016).

2. Conceptual development

2.1. Digital self-service (cCBT) from value creation logic perspective

Computer-mediated technologies have increasingly separated consumers and service providers, and healthcare as a context is no exception (Green *et al*., 2016; Hartley and Green, 2017). Service separation refers to a spatial (Keh and Pang, 2010) and/or temporal separation (Green *et al.,* 2016) between service production and consumption that challenges the essential element of the IHIP paradigm; services inseparability (see Zeithaml *et al.,* 1985). Separated services are effective for routine activities; however, to deliver value—including care and personal interaction—the unseparated mode is seen as more effective and desirable (Keh and Pang, 2010).

Green *et al*. (2016) suggest there are different degrees of service separation that depend on the technology infused into the service. At one end of the spectrum, the service encounter is completely replaced with a digital form. These services can be classified as self-services where value is "produced by customers for themselves, independent of direct service employee involvement, using a technological infrastructure that is provided by the service provider" (Schumann *et al.,* 2012, 134). In this study, cCBT represents such a technology infused self-service, where the value is created indirectly through a digital encounter.

As a service type, cCBT contrasts with the traditional paternalistic model of medicine practice, which views physicians as experts who assess, diagnose, and deliver treatment (Mechanic, 2008). These new self-care practices transfer care from traditional clinical settings, controlled by a physician, to the domestic environment (Storni, 2014). The customer acts as an independent value creator, self-creating value independently of the service provider (see Zainuddin *et al*., 2016). Consequently, the role of the physician changes from that of care (therapy) provider and value co-creator to a referee of care (therapy) and a value facilitator (see Grönroos and Voima, 2013). This required logic change is presented in Figure 1. This also means acceptance in this context does not mean merely acceptance of technology but refers an acceptance of the transformation from value co-creation to enable patient independent value self-creation. Within this study, this is operationalized as physicians' intention to prescribe cCBT.

<insert figure 1 about here>

Figure 1: A framework to understand the digital self-service value creation logic (modified from Grönroos and Voima, 2013).

2.2. Understanding barriers to the acceptance of digital self-service (cCBT)

Healthcare professionals operate in specific settings involving factors at different levels that influence their decision making. Chau and Hu (2002) developed a framework suggesting technology acceptance is influenced by three contexts that should be seen as different layers, with each having a direct influence on acceptance. Those layers are: 1) the implementation context (organizational and social factors of where technology is implemented), 2) The technological context (perceived usefulness of innovation), and 3) the individual context (including factors such as attitude and knowledge). Within this study, the technological context in labelled as the innovation context to better capture the idea of this layer.

Several studies examining physicians' acceptance of cCBT have identified knowledge at the individual level, as the main barrier to acceptance (see e.g., Du *et al*., 2013; Donovan *et al*., 2015; Vigerland *et al*., 2014). In general, greater knowledge and a positive attitude toward digital treatment options is associated with advanced e-mental health delivery (Topooco *et al*., 2017). Within this study, the individual context factors are captured by measuring attitude and knowledge, which leads to the following hypothesis:

H1a: Attitude (Individual context) has a direct positive effect on physicians' intention to prescribe cCBT

H1b: Knowledge (Individual context) has a direct positive effect on physicians' intention to prescribe cCBT

Studies examining clinicians' use of health IT for patient care have consistently found the innovation context (specifically perceived usefulness/performance expectancy) affects clinicians' acceptance of technology (see Holden and Karsh, 2010) and some studies declare

it to be the most powerful factor affecting behavioural intention (see e.g., Liu *et al*., 2015). Studies examining cCBT acceptance specifically among physicians express concerns over the effectiveness and efficiency of treatment (Bruno and Abbott, 2015; Du *et al*., 2013; Vigerland *et al*., 2014). The absence of a therapeutic relationship is an additional concern related to the innovation context and has been identified as a factor hindering acceptance (Bruno and Abbott, 2015; Fleming and Merry, 2013; Vigerland *et al*., 2014). Within this study, the innovation context is captured by measuring performance expectancy, referring to the perception using the system will help the user to achieve certain goals, such as effectively treating patients. Accordingly, the following hypotheses are proposed:

H2: Performance expectancy (Innovation context), has a direct positive effect on physicians' intention to prescribe cCBT

Factors related to the implementation context, such as facilitating conditions, can be meaningful. However useful and easy to use health IT is, consumers will not accept it if it is not possible to use, as occurs when usage is prohibited by policy, for example (see Holden and Karsh, 2010). A multi-stakeholder study in the EU also identified low feasibility of delivery within existing care services as the primary barrier to the acceptance of digital treatment (Topooco *et al.,* 2017). The implementation context has attracted little research attention, although concerns related to the implementation context, such as who is responsible for the patient when they are undergoing cCBT, have been raised and identified as a barrier to cCBT acceptance (Bruno and Abbott, 2015). Following Chau and Hu (2002), the implementation context is captured by measuring facilitating conditions (referring to the perception the organizational and technological infrastructure exists to support using the system) and social influence (referring to the perception important others support the use of the system). Accordingly, we hypothesize:

H3a: Facilitating conditions (the implementation context) has a direct positive effect on physicians' intentions to prescribe cCBT

H3b: Social influence (the implementation context) has a direct positive effect on physicians' intentions to prescribe cCBT

3. Method

Context of the study

Data for this study were collected from physicians in Finland via an e-mail survey. In Finland, healthcare is provided through a decentralized, three-level, public healthcare system and a partly publicly reimbursed private sector. Most of the physicians are employed by public or private health centres. The Finnish healthcare system is based on the Nordic welfare model that aims to offer equal access to healthcare services for all residents, and general practitioners are well equipped to offer a wide range of medical services and are often gatekeepers of specialized public services (Eide *et al*., 2017). Currently, mental health services are administered as specialized healthcare (a secondary level of care) at psychiatric clinics and psychiatric hospitals (Ministry of Social Affairs and Health, 2017) for which general practitioners act as gatekeepers (Kaipio *et al.,* 2017). Recently, developed forms of

cCBT have been up-scaled for provision in healthcare around the country in response to a shortage of available therapists and to provide more flexible and accessible solutions to provide mental healthcare especially at the primary care level (see, Johnson, 2017). Similar aims and progress can be observed around the EU in recent years (see e.g., Topooco *et al*., 2017; Vis *et al*., 2015).

Data collection and sample characteristics

An invitation to participate in the survey was sent by e-mail to 2565 physicians who were randomly selected using a simple random sample from each of two clusters supplied by The Finnish Medical Association. These two clusters were made up of unspecialized physicians and specialized physicians (either specialized in general medicine or psychiatry). The total number of working-age physicians in Finland is 20,970 (The Finnish Medical Association, 2016) and the register covers approximately 91% of physicians registered in Finland. The invitation produced 412 responses equating to a 16 % response rate (those who answered/those to whom the survey was sent), the effective response rate (those who answered/those who opened the link) was 69 %. Response rates are in line with similar studies conducted among the same target group (see e.g., Groenewegen *et al*., 2016; Hyppönen *et al*., 2014; Kivekäs *et al*., 2014).

Approximately one third of respondents (32.5 %) were aged between 51 and 60 years of age with 21–30 years' work experience. In terms of main specialization, 41.4% (n=170) reported working in psychiatric medicine; 35.4% (n=146) in general medicine; 11.4 % (n=47) in occupational health; and the remaining 11.9 % (n=49) in other fields of medicine. This means within the dataset, those specializing in psychiatric medicine is overrepresented in comparison to the number of physicians specializing in the psychiatric field in Finland, but this was intentional given the context of the study. In Finland, physicians working in the psychiatric, general medicine, or occupational health fields should make the decisions related to cCBT usage, but currently, it is often a physician specialized in mental health making decisions on the care provided, such as cCBT. The majority of respondents worked in the public health sector (73.5 %, n=303) which is in line with the general situation in Finland as 70 % of medical professionals work in the public sector (The Finnish Medical Association, 2016). Despite the limited sample size, the data represent the intended target group well.

Questionnaire development and measures

To better understand the factors influencing physicians' intention to prescribe cCBT, variables from technology adoption literature were identified among the previous literature on healthcare (Chau and Hu, 2002; Holden and Karsh, 2010; Lazuras and Dokou, 2016; Liu *et al.*, 2015). Items to measure intention to prescribe cCBT (3-items), attitude (4-items), facilitating conditions (4-items), social influence (4 items), and performance expectancy (4-items) were all adopted from Venkatesh *et al.* (2003) and modified to fit the context of this study. To measure knowledge, three items were adopted from Vigerland *et al.* (2014). All items were measured using a 7-point Likert scale. To better understand general concerns

related to cCBT prescription, the physicians were requested to describe any such concerns verbally following the process advocated by Stallard *et al.* (2010) and Vigerland *et al.* (2014).

The next section presents the preliminary results firstly of the quantitative data analysis then the qualitative data analysis. This is followed by an integrative analysis of the qualitative and quantitative findings in the results section in order to answer RQ1 and RQ2.

Quantitative data analysis and preliminary results

The study analyses the quantitative data using the two-step approach of structural equation modelling (SEM) (Anderson and Gerbing, 1988) and AMOS software. First, scale reliability and validity were examined using confirmatory factor analysis (CFA). The study's initial measurement model had six multi-item constructs with 22 items. Owing to discriminant validity, two items were removed from the measurement model (PE3 and FC3) resulting in six multi-item constructs with 20 items. These modifications did not compromise the original theoretical considerations and improved the model. Composite reliabilities (CR) ranged from 0.83 to 0.96, demonstrating good internal reliability. The average variance extracted (AVE) values exceeded the cut-off of 0.50 supporting the acceptable internal consistency. Furthermore, AVE greater than .50 and CR equal to or higher than .70 indicates good convergent validity (see Fornell and Larcker, 1981). All factor loadings were equal to or greater than 0.532 ($p < .001$) Fornell and Lacker's (1981) AVE method was used to test discriminant validity. This showed acceptable discriminant validity, as the correlations between the constructs were below the square roots of the AVEs. (See Table 1.) The model indicated adequate model fit ($\chi^2 = 403.29$, $df = 153$, $\chi^2/df = 2.64$, $p = .000$; RMSEA = .063, TLI = .96 CFI = .97 and IFI = .097) (Byrne, 2001).

Table 1. AVE, construct correlations (CR), square root of AVEs (on the diagonal), mean, and standard deviation.

<insert table 1 about here>

Furthermore, survey studies are always subject to common method bias (CMB). In the present study, this was minimized by carefully designing the questionnaire. In addition, in order to control for common method variance ex post, a Harman single factor test was performed, which confirmed the majority of variance could not be attributed to one factor (Fuller *et al.,* 2016).

The second step involved estimating a structural model using the maximum likelihood bootstrap method to examine the hypotheses. Table 2 presents the relationship between individual factors and the intention to direct patients to use cCBT.

Table 2. Testing the conceptual model and the hypotheses.

<insert table 2 about here>

Qualitative data analysis and preliminary results

Almost 40 % of the physicians surveyed (38.8%, n=160) reported having no concerns about prescribing cCBT for their patients, while the rest were either unsure (35.4 %, n=146) or had concerns (25.7 %, n=106). The qualitative descriptions (n=240) covering the 381 concerns that physicians had described verbally were coded and thematically analysed to reveal potential barriers and the required value creation logic. A similar approach was used by Stallard *et al,* (2010) and Vigerland *et al.* (2014). This qualitative analysis followed the processes outlined by Corley and Gioia (2004) as explained below:

1. The initial concepts were first identified in the data and then grouped into categories (open coding) using simple descriptive phrases from the original survey responses (first order themes).
2. Next, axial coding was performed by grouping similar first order themes. The current research primarily adopts an inductive approach, meaning the researchers took account of themes identified in similar previous studies analysis (see Stallard *et al.,* 2010; Vigerland *et al.,* 2014), a process that facilitated the identification of relevant themes.
3. After the first author concluded axial coding, the second author evaluated the interpretations of the first author item by item to enhance intercoder reliability (Lombard *et al.*, 2002). The level of agreement between the two authors was 94.5 %, indicating highly acceptable agreement on coding.
4. Finally, the authors discussed and negotiated over their different interpretations, and subsequently refined the coding manual and reassessed the second-order themes to form higher-order themes. The identified higher-order themes were also linked with the contextual levels to which each was related.

The final data structure is illustrated in Table 3 revealing seven higher-order themes and 15 second-order themes. The table also details the context level (individual, innovation, and implementation) to which each theme is related.

Table 3. Data structure of themes of physicians' concerns with cCBT.

<insert table 3 about here>

4. Results

The results show physicians' perceptions of cCBT are quite positive (attitude $\bar{x}$=5.4 SD=1.39; performance expectancy $\bar{x}$=4.4 SD=1.36). This indicates that physicians agree that such forms of separated services can serve to meet rather complex goals such as assisting the physicians to treat their patients. Despite the recognized potential of cCBT, the intention to guide patients to use them was low ($\bar{x}$=3.4 SD=1.80). This indicates there are some barriers to be overcome

to enable greater utilization. Linking the identified barriers with an enhanced understanding of the logic of value creation helps to understand how digital self-services can be incorporated to contribute to integrated mental healthcare.

4.1. Enhancing understanding of value creation logic in the context of digital self-services (cCBTs)

First, the value creation logic within the healthcare context as modified by enhanced empirical understanding is presented to answer RQ1: How can value creation logic be extended to incorporate digital self-service (cCBT) into integrated mental healthcare delivery? The qualitative analysis of the physicians' concerns highlighted the current value creation issues and identified ways in which value creation logic might be extended to incorporate digital self-services in the form of cCBT into an integrated mental healthcare delivery process. The key additions to the current framework identified are summarized in Figure 2 (additions highlighted in italics) and described in detail below.

<insert figure 2 about here>

Figure 2: A framework to understand digital self-service value creation logic (developed from Grönroos and Voima, 2013).

A service provider committed to delivering integrated health would ideally identify a form of cCBT (the value production) that allows value self-creation through a digital interface. Then the physician should evaluate the situation with the patient (value co-creation) and decide whether to use cCBT. The qualitative results of this study establish that this phase is critical to successful value self-creation. Physicians viewed the selection of applicable patient profiles along with patient willingness and the ability to self-create value as aspects requiring careful consideration. They also expressed concern as to whether this phase is feasible without meeting the patient face-to-face. The physicians believed a digital interface would condense too much clinical information. Once patients had been declared suitable for cCBT, they would then be advised to follow the instructions for the form of cCBT (value self-creation). Importantly, the results of this study demonstrate the self-creation of value should not be the end of the process, which should extend to the physician re-evaluating the situation with the patient (value co-creation). Accordingly, value creation should be seen as an intertwined process where value co-creation and self-creation should occur seamlessly at different stages. Physicians were concerned that using these types of services might leave the patient without support and saw their role as safeguarding patient care. For the physicians, there also seemed to be a need to monitor patient value self-creation. Accordingly, the physicians felt the role of the service provider should not transform from being a value co-creator to being only a value facilitator (see Grönroos and Voima, 2013) but should also incorporate being a value self-creation supervisor.

4.2. Understanding and overcoming barriers

Understanding of three different contexts provided a key to combine the quantitative hypotheses tested (see Table 2) and the qualitative findings (see Table 3) systematically to further understand barriers and address factors that would facilitate self-service (cCBT) incorporation into integrated mental healthcare. This enabled the second research question (RQ2) to be addressed: What are the barriers to digital self-service (cCBT) acceptance in mental healthcare delivery and how can they be overcome?
A summary of the identified key barriers for acceptance and aspects needed to be overcome is presented in Table 4.

Table 4. Summary of key barriers for acceptance and aspects needed to be overcome.

<insert table 4 about here>

The quantitative findings do not indicate **individual level** factors directly influence intention (H1a; H1b); however, such factors do relate closely to the innovation context. The qualitative findings indicate physicians need more information about suitable patient profiles, the content of cCBT, and help with selecting suitable cCBT service providers. Consistent with a market segmentation approach (Rundle-Thiele *et al*, 2015), the qualitative results suggest that guidelines on the severity of patients' conditions and the suitability for self-service programmes of different patient profiles should be developed. Increasing the understanding of the applicability of cCBT for different patient profiles might help physicians to see the benefits of cCBT for their patients, and hence increase the performance expectancy that in turn positively influences acceptance.

In relation to the **innovation context**, performance expectancy was found to be the primary factor influencing intention (H2). Themes related to efficiency arose as the main concerns in the qualitative findings. The comments represent the feeling of physicians that a digital interface is not a suitable replacement for real interaction. The physicians viewed real interaction as an important part of therapy both to promote efficiency and to ensure patients are correctly monitored. This introduces the question of how to design an innovation in a way that a digital interface does not replace but instead enhances face-to-face interaction. Another question is how the patient is to be safely monitored during the self-creation of value. These modifications in the context of innovation itself are required to provide safe and efficient care delivery from the physicians' perspective.

In relation to the **implementation context,** facilitating conditions had a significant influence on intention to prescribe (H3a). However, social influences did not have a significant influence on intention to prescribe (H3b). Among the qualitative findings, the themes *responsibility and role, practical matters,* and *ideological concerns* were also recognized as capturing issues related to this context. Physicians' intentions appear to be highly dependent on their employers' policies. These aspects are crucial because often the focus is on individual decision making, but in the case of clinical settings, institutional factors seem to play an important role. As the qualitative findings suggest, the current practices and facilitating conditions should support usage and a flexible transformation within the care chain between different levels of care and service provider (such as a cCBT service provider). This requires

careful process and policy development as well as flexible structures and well-defined guidelines on how these services can be organizationally tied to current care practices.

5. Discussion

5.1. Theoretical implications

The purpose of this paper was to enhance the current understanding of digital self-services as a form of cCBTs and of how they could be incorporated into integrated mental healthcare provision from the physicians' perspective. The current research addressed its research goals by adopting a multidisciplinary perspective drawing on service marketing and information systems literature in the context of integrated mental healthcare.

The paper described the value creation logic of digital self-services, and presented a new role —value self-creation supervisor—under value creation in a healthcare context; and accordingly this paper has extended the understanding of separated service delivery (Green *et al.,* 2016; Keh and Pang, 2010; Paluch and Blut, 2013). The results indicate value creation should be seen as a simultaneous process where value co-creation and self-creation occur seamlessly at different stages in the service consumption process. Furthermore, these types of digital services should not be seen as replacing co-creation, but as complementing it, highlighting the need for the solid integration of digital services within the care chain. The results suggest separated services can also serve more complex goals in the healthcare setting, in contrast to previous literature where self-services are suggested to serve routine activities (see Keh and Pang, 2010).

Secondly, this paper contributes to the current discussion about cCBT acceptance (see e.g., Lazuras and Dokou, 2016; Montero-Marin *et al*., 2015; Topooco *et al*., 2017) identifying the innovation context together with the implementation context as the main barriers to greater utilization. The results suggest physicians would benefit from having a better understanding of the applications of cCBT within their profession, and from having access to facilitating conditions to provide these kinds of solutions as part of the care chain. Consistent with previous research (Topooco *et al*., 2017) this study found that current care systems are not yet ready for the integration of cCBT. Individual context factors (knowledge and attitude) were not found to be significant in influencing utilization, although in many previous studies, lack of knowledge in particular has been highlighted as the main barrier to it (see e.g., Du *et al*., 2013; Donovan *et al*., 2015; Vigerland *et al*., 2014).

Thirdly, this paper has extended understanding of the logic of value creation within the mental healthcare context and illustrated how digital self-services could serve as integrators supporting the goal of integrated care. The current research has provided further evidence of the relevance of service theories within the healthcare context (see e.g., Hardyman *et al*., 2015; McColl-Kennedy *et al.,* 2012; McDermott and Pedersen, 2016).

5.2. Managerial implications

Taking a marketing approach to the development of service offerings for integrated care brings the consumer into focus. In this context, there are two target groups of consumers; the patient and the physician, who each have different requirements. From the physicians' perspective, there are problems in both the service design and service delivery chain. These issues are also intertwined with the physicians' ethical responsibility to provide the best possible care for their patients. Patients are often also vulnerable and therefore rely on their physicians to make treatment option decisions for them. This highlights that there are a range of ethical issues that need to be addressed for the physician as a consumer of cCBT as a separated service.

Although it is important to better understand how organizations can support the patients' role as active actors instead of passive recipients (McDermott and Pedersen, 2016), the results of this study emphasize that it is also important to understand when it is ethical and appropriate to encourage an active role. Thus, to ensure these types of self-service programs are compatible for both groups, that is, the physician and their patients, it is important to also give due consideration to the patients' specific needs and condition. For example, as part of the program design, physicians seems to require a mechanism or tool which allows them to monitor their patient's progress. Guidelines should also be developed to address issues around the severity of patients' conditions and their suitability for self-services such as cCBT. Further, the development of practices to choose the right patients along with incorporating and enabling monitoring has the potential to assist in overcoming some of these important ethical concerns and enable physicians to fulfil their ethical responsibilities.

In addition, processes for moving the patient between digital and non-digital treatment interfaces need to be resolved at the policy level before such services can be fully integrated into the care chain. The focus should be directed from individual level factors to the implementation level factors that enable physicians to fully exploit these services within their work. Insights into the value creation logic and the related barriers from this study will provide a foundation for discussion at the governing body level to enable the effective implementation of these types of digital services as integrators in integrated care.

5.3. Limitations and future research

Healthcare systems vary across countries, which naturally also influences the interpretation and generalizability of the results of this study. Nevertheless, the study does provide a detailed description of the relevant healthcare system and study context. Leveraging understanding through studying different healthcare systems and countries should be central aspects of future research. The service studied here, cCBT, also sets limits on the interpretation of the results. This study was conducted in the context of mental health where the patients are likely to be particularly vulnerable, which might be reflected in the physicians' responses. Future research should therefore study self-services in different healthcare contexts to test the extent of the universality of the concerns identified. Furthermore, the self-service type studied here is intended to deliver treatment, not to offer prevention or chronic condition management. This is important because there might be differences depending on which part of the care chain the self-service is incorporated within. Comparing self-services with different goals and positions in the integrated care chain would

improve understanding of their potential. Furthermore, as the results of this study reveal, facilitating conditions are a major concern. A heightened understanding of the structures within integrated care could assist in overcoming these concerns.

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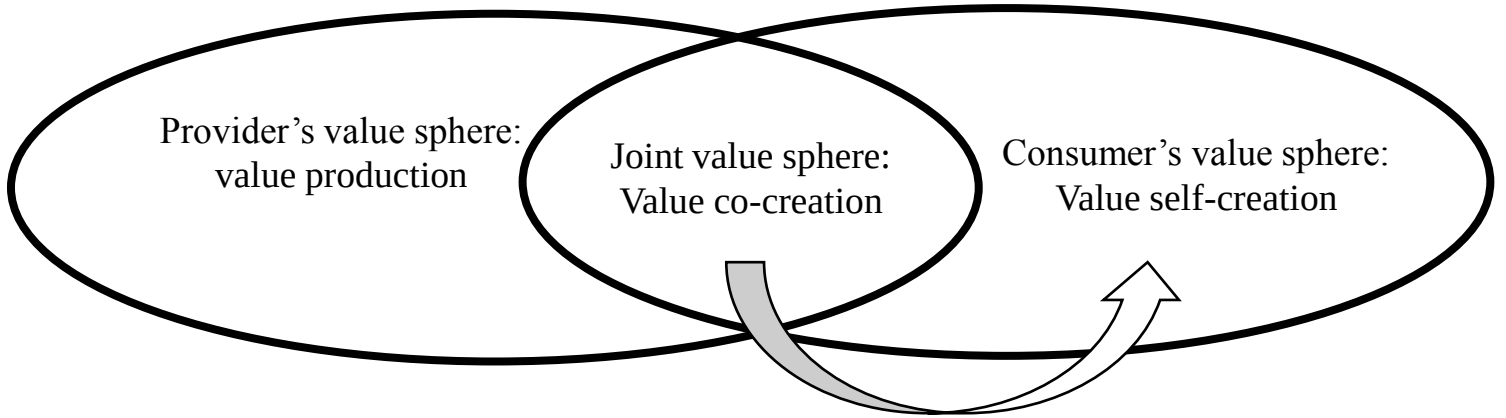
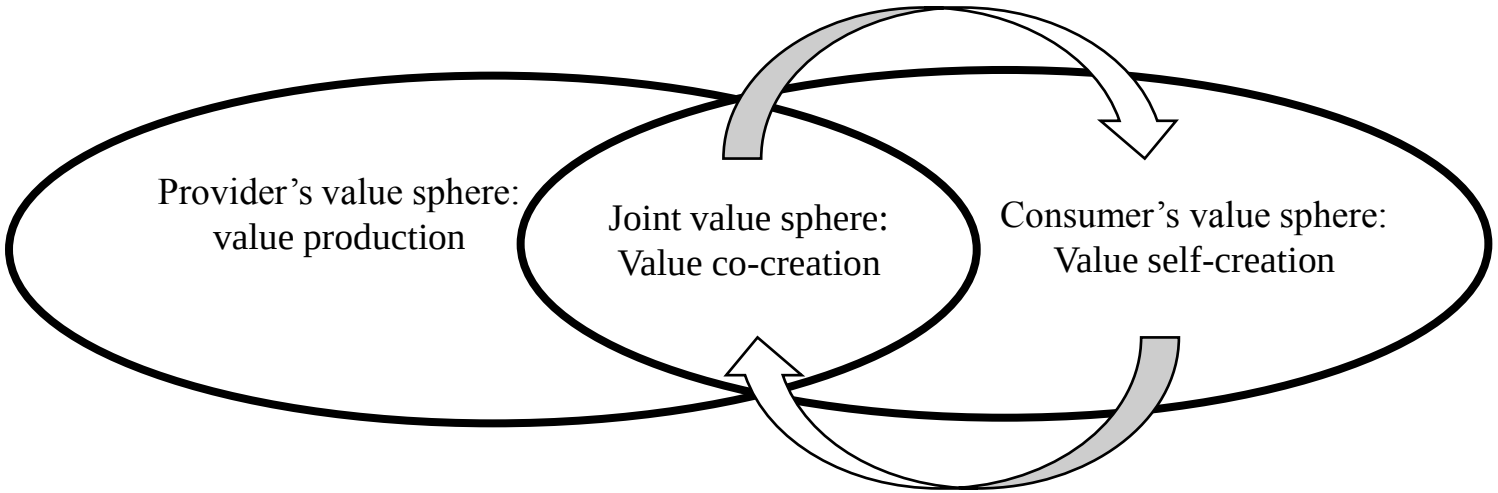


Physician role: Value facilitator
Patient role: n/a

Physician role: Active value co-creator
Patient role: Active value co-creator

Physician role: Value facilitator
Patient role: Active and independent value creator

Acceptance of transformation to move from value co-creation to enable patient independent value self-creation



Physician role: Value facilitator

Patient role: n/a

Physician role: Active value co-creator

Patient role: Active value co-creator

Physician role: Value facilitator AND *value creation supervisor*

Patient role: Active and independent value creator

Value creation should be seen as an intertwined process where value co-creation and self-creation should occur seamlessly at different stages.

Value creation supervisor as a necessary new role.

Table 1. AVE, construct correlations (CR), square root of AVEs (on the diagonal), mean and standard deviations

	CR	AVE	INT	ATT	SI	PE	FC	KNOW
Intention to prescribe cCBT (INT)	0.964	0.898	0.948*					
Attitude (ATT)	0.934	0.781	0.479*	0.884*				
Social Influence (SI)	0.828	0.562	0.480*	0.358*	0.749*			
Performance expectancy (PE)	0.91	0.771	0.561*	0.860*	0.423*	0.878*		
Facilitating conditions (FC)	0.85	0.657	0.575*	0.325*	0.709*	0.359*	0.81*	
Knowledge (KNOW)	0.92	0.793	0.492*	0.325*	0.580*	0.369*	0.787*	0.891*
Mean			3.4	5.4	3.6	4.4	3.7	2.8
SD			1.80	1.39	1.47	1.36	1.67	1.40

* p= 0.01

Table 2. Testing the conceptual model and the hypotheses.

Direct effects	β	Hypothesis test results
Individual context		
H1a: Attitude –> Intention to prescribe cCBT	-.04^{ns}	H1a: Not Supported
H1b: Knowledge –> Intention to prescribe cCBT	.01^{ns}	H1b: Not Supported
Innovation context		
H2: Performance expectancy –> Intention to prescribe cCBT	.44*	H2: Supported
Implementation context		
H3a: Facilitating conditions –> Intention to prescribe cCBT	.418*	H3a: Supported
H3b: Social influence –> Intention to prescribe cCBT	.005^{ns}	H3b: Not supported

Notes: *p=.001, ns=not significant

Table 3. Data structure of themes of physicians' concerns with cCBT.

Higher-order themes	Second-order themes	First order themes	Representative quotation
Individual context			
Lack of knowledge (n=60, 25%)	Patient selection (n=22, 9%)	Lack of understanding of which patients will benefit from the treatment	"Who benefits from therapy/for whom is it never applicable in any circumstances." (ID269)
	Content (n=23, 10%)	Expressed the need for more information about the programmes and their contents	"I don't know the content of therapies well enough that I would feel confident to direct my patients to them." (ID112)
	Service provider competence (n=19, 8%)	Challenges and difficulties in identifying competent service providers	"How to identify reliable providers from those whose efficiency is not confirmed/validated?" (ID65)
Innovation context			
Efficiency (n=124, 52%)	Lack of human contact (n=70, 29%)	Reflects the importance of human/face-to-face (f2f) interaction in providing therapy, concern that this is lacking. (cf. themes *lack of therapeutic relationship*, Stallard *et al.* 2010; and *human support* Vigerland *et al.* 2014)	"Therapy is so much more than just words." (ID389)
	Lack of human contact subtheme1: Isolation (n=9, 4%)	Concerns that cCBT could exacerbate social isolation (cf. Staller *et al.* 2010)	"They (cCBT processes) don't encourage patients to leave home." (ID235)
	Lack of human contact subtheme 2: Risk management (n=17, 7%)	Concerns over whether it is possible to fully understand the patient and identify risk factors during the therapy (cf. *risk management*, Stallard *et al.* 2010 and *reduced clinical information*, Vigerland *et al.* 2014). Lack of f2f monitoring during the process was seen as risky	"If the patient's condition worsens, does anyone notice?" (ID51)
	General concerns about the efficacy of cCBT (n=30, 13%)	Reflects concerns related to efficacy, efficiency, concerns over tailoring	"Is it too much of a one-size-fits-all type?" (ID217)
	Concerns of patient engagement (n=39, 16%)	Concerns related to patient engagement: Commitment, motivation, ability to express her/himself in written format	"I wonder, if there are easy drop-outs. Does a patient commit to therapy?" (ID201)
Internet security (n=7, 3%)		Concerns related to internet security	"Patient records ending up in the wrong hands, or possible hacking of patient data." (ID133)
Nonapplicable patient profile (n=26, 11%)		Concerns related to special groups who are not eligible to benefit from cCBT such as children, the elderly, patients with severe issues etc.	"I treat mentally disabled persons. For them there should be different services." (ID212)
Implementation context			
Responsibility and role (n=47, 20%)	Care responsibility (n=36, 15%)	Who takes responsibility for the patient during and after the cCBT care; who is responsible for monitoring the patient and making necessary changes, especially if the patient does not feel better or discontinues the treatment?	"Who is responsible for treatment and monitoring of the patient?" (ID406)
	Patient left drifting (n=16, 7%)	Concerns that the patient is left alone with the condition and/or concerns over whether the patient is getting the required support	"In my opinion, monitoring during therapy, and evaluating treatment response is not optimally actualized, and thus patients are somewhat left without care." (ID286)
Practical matters	Unclear practices (n=19, 8%)	Lack of understanding of how to direct patient to use cCBT, how to report etc.	"I don't know how to direct patients to web-based therapy." (ID80)

(n=37, 15%)	Cost coverage (n=12, 5%)	Lack of clarity on who pays for the treatment, the billing process, and how the money is divided between service provider and prescriber	"Allocating the costs of the prescriber could be complicated." (ID256)
	Rigid conditions (n=8, 3%)	Current practices that prevented or caused problems if the patient was directed into cCBT, such as guidelines that prohibit directing patients into cCBT, in some areas prescribing cCBT ruled out other options to provide care or triggered patients' removal from a waiting list for face-to-face therapy	"My employer does not allow patients to be directed into web-based therapy." (ID137)
Ideological concerns (n=26, 11%)	cCBT as replacement (n=15, 6%)	Concerns over cCBT being promoted as an inexpensive option and a solution to inadequate resources to provide care	"I've got an image that cCBT is provided for economic reasons and the human side is secondary." (ID28)
	Importance of diagnosis (n=13, 5%)	Concerns that cCBT offers too easy a solution and patients will not get a proper diagnosis before being directed onward	"Patients treated without diagnosis." (ID260)

Table 4. Summary of key barriers for acceptance and aspects needed to be overcome.

Context level	**Barriers (Quantitative findings)**	**Barriers (Qualitative)**	***Key aspects needed to be overcome to better incorporate cCBT within integrated care.***
Individual context	• Attitude (insignificant influencer) • Knowledge (insignificant influencer)	• Lack of knowledge ○ Patient selection ○ Content ○ Service provider competence	• *Better knowledge of the applicability of cCBT for different patient profiles.*
Innovation context	• Performance expectancy (significant influencer)	• Efficiency ○ Lack of human contact (isolation, risk management) ○ General concerns ○ Patient engagement • Internet security • Non-applicable patient profile	• *Product design to serve the needs of the physician to enable value self-creation monitoring.* • *Product design that allows moving between value co-creation and value self-creation.*
Implementation context	• Facilitating conditions (significant influencer) • Social influence (insignificant influencer)	• Responsibility and role ○ Care responsibility ○ Patient left drifting • Practical matters ○ Unclear practices ○ Cost coverage ○ Rigid conditions • Ideological concerns ○ CCBT as replacement ○ Importance of diagnosis	• *Policies and practices that would enable value self-creation monitoring.* • *Better integration of practices and structures, possibility to move back and forth within value co-creation and self-creation.*