**Transforming technology-mediated healthcare services through strategic sense-giving**

## Abstract

**Purpose:** Service research has previously documented service providers’ role in addressing the barriers of technology mediation, mostly at the service delivery level. The purpose of this study is to enhance our understanding about the role of service providers who hold strategic and operational roles, as well as investigate the impact of coordinated, organization-wide initiatives in dealing with the demands and associated emotional ambivalence of technology mediated services.

**Design/methodology/approach:** This qualitative study draws from a series of in-depth interviews with health-care service providers who hold strategic and operational roles in health-care organizations along with participant observation to develop an understanding of the broader organizational context of telehealth services.

**Findings:** This paper outlines the strategic sense-giving process and highlights how health-care service providers who hold strategic and operational roles enact the sense-giver role. This study illustrates that strategic sense-giving involves the recognition of sense-making gaps; identification of sense-giving opportunities; and provision of templates of action.

**Originality/value:** This study illustrates that sense-giving can be performed by a number of organizational members in a more formalized way which extends informal sense-giving efforts at the peer-to-peer level. The importance of strategic sense-giving in providing templates of action for service providers and consumers is highlighted. This study also shows how strategic sense-giving safeguards against confusion and errors by communicating appropriate ways of using technology. Finally, the role of strategic sense-giving in helping service providers and consumers cope with the emotional ambivalence of technology-mediated service interactions is demonstrated.

**Keywords:** Health services, Digital health care, Technology and service, Service encounter, Roles, Role theory.

## Introduction

The use of technology has become an essential element of service interactions (Bitner, 2017). Technology mediation refers to the integration of various technologies at different stages of service delivery and it has transformed traditional service encounters into fully ‘high-tech’ and ‘high-touch’ experiences (Walker and Johnson, 2006; Schumann, Wünderlich, and Wangenheim, 2012). New ways of providing services have been well documented in the literature such as discretionary technology use (Daskalopoulou, Keeling and Pritchard Jones, 2019a; Daskalopoulou *et al.*, 2019b); self-service technologies (Blut, Wang, and Schoefer, 2016); and smart interactive services (Wünderlich, Wangenheim, and Bitner, 2013), amongst others. Prior service research has also explored various aspects of technology mediated services, such as experiences of service separation (Green, Hartley, and Gillespie, 2016; Keh and Pang, 2013). However, the majority of empirical studies focus primarily either on consumer evaluations of the technology-mediated service encounter in regard to benefits and/or barriers induced by the use of technology (Chowdhury *et al.*, 2014; Meuter *et al.*, 2005; Walker and Johnson, 2006) or on service providers’ perspectives (Daskalopoulou *et al.*, 2019a, 2019b; Green *et al.*, 2016; Wünderlich *et al.*, 2013).

Drawing on role theory, prior research has often aimed to understand service providers’ role in addressing the barriers of technology mediation, mostly at the service delivery level (Bowen, 2016; Christ-Brendemühl and Schaarschmidt, 2019; Daskalopoulou *et al.*, 2019a; Larivière *et al.*, 2017). For example, Gallan *et al.* (2013) argue that service providers should be able to identify consumers’ affective states before and during service interactions in order to enhance participation and satisfaction. Similarly, Giebelhausen *et al.* (2014) posit that service providers should be informed about the effects of technology use in rapport building and be advised on how to guide consumers’ interaction with technology and ensure reciprocity in rapport building efforts. Such studies mostly focus on the provider-consumer dyad and do not account for the influence of other macroscopic dimensions (e.g. social, cultural, and organizational). While technology mediation affects micro-level, dyadic interactions and unfolds in unique ways for different individuals, it remains embedded within a specific sociocultural and organizational context (Go Jefferies, Bishop and Hibbert, 2019a). We argue that research on service provider roles needs to account for the impact of other organizational actors beyond the service provider-consumer dyad along with the socio-cultural context in which it is embedded (Askegaard and Linnet, 2011). Indeed, there is limited knowledge about the role of service providers who hold strategic and operational roles, as well as the impact of coordinated, organization-wide initiatives on dealing with the demands (e.g. changes in role behaviors, role expectations, skills) and associated emotional ambivalence (e.g. stress, uncertainty, frustration) of these new types of services (Bitner, 2017; Christ-Brendemühl and Schaarschmidt, 2019).

In this paper, we draw upon a qualitative study about the integration of clinical decision-making aids installed on mobile phones, iPads or telehealth portals in addition to usual service interactions. Studying telemedicine (technology-enhanced professional decision-making aids via mobiles or tablets) and telehealth (technology-enabled remote patient monitoring where clinicians, patients and non-clinical service workers use digital health monitors to obtain data for algorithmic analysis) allowed us to consider relevant changes to roles and behaviors in practice. We interviewed fourteen service providers who hold strategic and operational roles in healthcare organizations and conducted participant observations with telehealth workers within a telehealth steering group, operational meetings and service visits to patient homes. Specifically, we introduce the concept of strategic sense-giving to describe organization-wide efforts aiming to identify individuals’ understanding and expectations of service provider/consumer roles and to communicate in a formalized way the objective and appropriate set of behaviors for each role when using these technologies during service interactions. Our findings extend prior studies in three important ways. First, we contribute to research on service provider roles (Bowen, 2016; Larivière *et al.*, 2017) by illustrating that sense-giving can be performed by a number of organizational members in a more formalized way which extends informal sense-giving efforts at the peer-to-peer level (Daskalopoulou *et al.*, 2019a). We highlight the significance of strategic sense-giving in providing templates of action for service providers and consumers. Second, we demonstrate how strategic sense-giving safeguards against confusion and errors during technology-mediated service interactions by communicating appropriate ways of using technology. Third, we illustrate the role of strategic sense-giving in helping service providers and consumers to cope with the emotional ambivalence (e.g. stress, uncertainty, frustration) of technology-mediated service interactions.

Next, we present an overview of the literature on role theory and provide an analysis of technology mediation in services. We then detail our methodological procedures and outline our findings. We conclude with a discussion of our theoretical contributions and practical suggestions.

## Literature review

### *Role theory*

Role theory is commonly employed in service research in order to theorize service interactions as a form of social exchange. Here, every service interaction needs to adhere to a predetermined and expected set of behaviors which can be subsequently adopted by service providers and consumers. The term ‘role performances’ (Solomon *et al.*, 1985, p. 101) is often used to refer to service interactions.

During ‘role performances’, the adoption of specific roles is charged with specific role expectations (Biddle, 1986). Prior studies highlight the importance of predictable, familiar, and well-defined roles in achieving favorable service outcomes (Solomon *et al.*, 1985; Surprenant and Solomon, 1987) and the ‘mastery’ of role behaviors (Broderick, 1998). According to Mohr and Bitner (1991), service providers and consumers need to have a shared understanding of role expectations to evaluate their experiences similarly and avoid role discrepancy and conflicts (Broderick, 1998). When roles are not well-defined or when individuals are not familiar with expected behaviors (Bitner, Booms and Mohr, 1994), service providers and consumers tend to evaluate service interactions quite differently. In addition, conflicting perspectives might circulate in relation to the objective of these roles (Broderick, 1998) or the appropriate set of behaviors for each role (Solomon *et al.*, 1985). For instance, an unexpected change in dialect and associated jargon-filled language by service providers can cause unintended consequences (Schau, Dellande and Gilly, 2007). Changes in roles have also been linked to consumers’ psychological discomfort (Giebelhausen *et al.*, 2014), uncertainty and dissatisfaction (Schau *et al.*, 2007).

### *Technology-mediated services and new service provider roles*

Prior research dealt with the degree and nature of technology use and its impact on consumer experiences. Service interactions are classified in the literature as ranging from ‘technology-free’ to ‘technology-generated’ encounters. Empirical evidence further illustrates that consumers evaluate their experiences differently in each one of those modes (Froehle and Roth, 2004). The ‘human-touch’ element in service interactions is celebrated by consumers; sometimes claiming that ‘human is better’ (Eastwood, Snook and Luther, 2012) whereas technology use can be perceived as risky (Keh and Pang, 2010). Interestingly, the ‘human touch’ element is an important factor for satisfaction even for tech-savvy consumers (Makarem, Mudambi and Podoshen, 2009).

In addition, consumers’ evaluations of providers who use technology are contradictory. Consumers either challenge service provider expertise and competence or react positively towards providers who interact with technology, as long as technology does not replace their expert judgment when it is used as a decision-aid (Palmeira and Spassova, 2015). Yet, service providers can also experience professional identity tensions when their expertise is challenged by consumers or when technology use is not considered to be in line with perceptions of professional behavior (Daskalopoulou *et al.*, 2019b). Consumers make regular judgements about the legitimacy of the use of technology in service interactions, and they tend to evaluate their experiences accordingly.

Recent studies find that, due to increased technology diffusion in service delivery (Ostrom *et al.*, 2015), service providers start to adopt new roles. Five new service provider roles have been previously documented in the literature: the enabler, differentiator, innovator, coordinator, and sense-giver role (*cf* Bowen, 2016; Daskalopoulou *et al.*, 2019a; Larivière *et al.*, 2017). Service providers adopt new roles for a variety of reasons. They naturally adopt the enabler role to effectuate positive technology-mediated service interactions with consumers (Gallan *et al.*, 2013; Green *et al.*, 2016). This role suggests that service providers need to ensure that all parties can perform well in their respective roles (Bowen, 2016). Acting as enablers involves managing discrepancies between service providers’ and consumers’ expectations about technology use (Daskalopoulou *et al.*, 2019a).

The differentiator role suggests service providers are responsible for maintaining a ‘human touch’ element in technology-mediated services (Bowen, 2016; Eastwood *et al.*, 2012). This role emphasizes that service providers need to ensure that technology use does not become a communication barrier. Acting as differentiator also involves assessing consumers’ technology readiness (Mishra, Maheswarappa and Colby, 2018; Parasuraman, 2000) in order to provide them with the appropriate support to interact with the technology at hand (Daskalopoulou *et al.*, 2019a).

The third role adopted by service providers is the innovator role. Service providers are in a privileged position to innovate because they can leverage insider knowledge to identify innovation opportunities (Daskalopoulou *et al.*, 2019a). When service providers act as innovators, this has a positive impact on the implementation of service innovations, both in terms of innovation volume and innovation radicalness (Gottfridsson, 2014).

The coordinator role implies that service providers are responsible for coordinating and harmonizing the various interdependent actors involved in a technology-mediated service interaction; namely, service providers, consumers, technology and other resources (Larivière *et al.*, 2017; Ostrom *et al.*, 2015). Service providers can shape the entire customer journey (Lohndorf and Diamantios, 2014) and help to increase consumer satisfaction, as well as operational and financial performance (Breidbach, Antons and Salge, 2016).

Service providers also adopt the sense-giver role (Daskalopoulou *et al.*, 2019a) to help their colleagues (i.e. other service providers) to use technology appropriately. By adopting this role, service providers alleviate some of the ambiguity and confusion (Gioia and Chittipeddi, 1991) that surrounds technology mediation in services. Sense-givers help to create a shared understanding at the peer-to-peer level about technology use (i.e. what to do, how to do it, what is going to be achieved). A sense-giver needs to build a shared understanding by describing the situation and goals clearly and logically, and to create mutual faith and trust (Vuori, 2011).

Prior studies mainly focus on the service provider-consumer dyad and have only begun to account for the macroscopic dimensions of service interactions, i.e. the socio-cultural and organizational context in which such interactions are embedded (Askegaard and Linnet, 2011; Go Jefferies, Bishop and Hibbert, 2019a). In other words, a holistic appreciation and detailed understanding of new service provider roles seems to be missing (Daskalopoulou *et al.*, 2019a). Further, Davey and Grönroos (2019) argue that more research is needed to investigate complementary and competing health service roles and resource integration throughout patients’ health-care service journeys. Our study investigates the role of service providers who hold strategic and operational roles, as well as the impact of coordinated, organization-wide initiatives on dealing with the demands (e.g. changes in role behaviors, role expectations, skills) and associated emotional ambivalence (e.g. stress, uncertainty, frustration) of these new types of services (Bitner, 2017; Ostrom *et al.*, 2015).

## Methodology

We collected data from two healthcare organizations; we partnered with an NHS Trust in the North West of England comprising of two large hospitals and an NHS community healthcare provider offering a telehealth service to support case management of chronic disease patients across a large English city in the Midlands. The Trust employs more than 6000 members of staff and is a lead employer in the region. The Trust’s patient population exceeds 50,000 admissions for elective and non-elective procedures yearly. The NHS community healthcare provider is a social enterprise founded in 2011 with an annual income of £66.5 million. It employs 1800 staff and serves a population of 312,000. They deliver approximately 60 Commissioned NHS and Local Authority Public Health services in home settings, community health centers, schools, GP surgeries and an urgent care center. Our in-depth engagement with different levels of NHS organizational actors delivering primary and acute care enabled us to collect rich data about the extended healthcare service context which reflect how the process of strategic sense-giving unfolds in both large-scale organizations and their more small-scale community-based counterparts. Moreover, both contexts involve timely information sharing between providers in a service network (Lariviere *et al.* 2017). Mobile apps make information accessible during service encounters. Telehealth enables patients to provide information for algorithms to alert remote service workers and clinicians.

We followed a qualitative methodology which falls into the interpretivist tradition of social science research (Crotty, 1998) and is considered to be an established research paradigm in management studies which acknowledges the existence of multiple subjective realities and contributes to scientific knowledge through inductive theory development (Quinn-Patton, 2002). Our entire block of data comprises of fourteen in-depth interviews and five participant observations. The second author also conducted 6 hours of participant observation at telehealth steering group and operational meetings, and during service visits to patient homes to manage onsite equipment; the aim was to understand the wider organizational context of the telehealth service studied. We used a mix of purposive and snowball sampling to recruit healthcare service providers (eight male, six female) who were encouraged to implement the telehealth service. Participants were invited to participate via a global email invitation and the second author recruited in-person during regularly scheduled clinical team meetings to explain the aims of the study. Participant observation involved shadowing telehealth workers for 1-3 hours as they undertook their usual activities in provider offices, and during visits to patient homes. Transcribed fieldnotes from participant observation generated over 3500 words. Table 1 summarizes the profile of our informants including their assigned pseudonym, information about their role and responsibilities. All interviews (up to 90 minutes; average interview: 79 minutes) were audio recorded and transcribed. The interviews were conducted in person (n=10) and over the phone (n=4). We conducted unstructured interviews and we employed grand tour questions and probes (Belk, Fischer, and Kozinets, 2013; McCracken, 1988). We encouraged our informants to discuss technology mediation in general terms at the beginning of the interview. We then prompted them to reflect on their role and how it influences technology use in the hospital context and in community-based healthcare. Our informants also discussed initiatives in their organization aiming to support healthcare service providers and patients with technology use (e.g. using telehealth). Pseudonyms were used to protect participants’ anonymity.

In line with interpretivist research approaches, data analysis was a part of an iterative process which involved continuously moving back and forth between conceptualization, data collection and analysis, and theory building (Arsel, 2017). Our findings emerged inductively, following a modified grounded theory approach (Charmaz, 2014). Data analysis followed a constant comparative logic (Belk *et al.*, 2013; Glaser and Strauss, 1967) of coding, categorizing, abstracting and dimensionalizing (Spiggle, 1994). We stopped data collection when we reached theoretical saturation and observed repetition of themes in our data (Glaser and Strauss, 1967). Coding techniques (e.g. open, axial and selective coding) were used throughout the data analysis process (Spiggle, 1994). We developed our initial codes by analyzing several times the textual data from the in-depth interviews and fieldnotes. In the first step of data analysis, we labeled our data by searching for patterns in terms of roles adopted by our informants (Bowen, 2016). Having identified sense-giving as a central role throughout our dataset, we then refined our analysis and developed our emerging codes into axial codes (Spiggle, 1994) until we were able to produce a theoretical storyline grounded in our informants’ narratives.

## Findings

Our findings outline the process of strategic sense-giving which involves three steps; (a) recognition of sense-making gaps, (b) identification of sense-giving opportunities, and (c) provision of templates of action. A detailed summary of our findings can be found in Table 2.

*The recognition of sense-making gaps*

Our analysis shows that the first step of strategic sense-giving involves understanding sense-making gaps. Individuals engage in sense-making activities when they are dealing with ambiguous, or disruptive situations (Maitlis and Christianson, 2014). We find that, in technology-mediated services, service providers and/or consumers often experience knowledge gaps which arise due to lack of organizational cues (Ashforth *et al.*, 2008) in relation to appropriate technology use. These knowledge gaps might hinder how healthcare service providers and/or consumers make sense of technology mediation (Pratt, Rockmann and Kaufmann, 2006). For instance, one of our informants, Michael, explains how the use of mobile applications (apps) in the hospital context has introduced a cultural change in his organization:

*“There's certainly been a change, and there is a degree of cultural change, there's some barriers there, particularly around nurses, I think doctors are much more receptive to using it because a lot of doctors are using a lot of mobile apps on their phones already, and so apps sitting on your mobile can be very helpful, there's still a lot of anxiety around quality and knowing what you can trust, that's been tackled at all sorts of different levels. We tackle it locally by writing our own apps and making them available for our own doctors, it's been tackled at a national level by papers being written by organizations like DHACA [Digital Health and Care Alliance], trying to produce some guidance on app development, NHS England say that they're looking to help curate good quality apps.”* (Michael, Chief Clinical Information Officer/Doctor, interview)

Michael argues that certain groups of healthcare service providers, e.g. nurses, might struggle more with technology mediation since their role does not typically involve interacting with niche technology, such as mobile apps. Healthcare service providers can experience sense-making gaps despite local and national efforts to provide guidelines for technology mediation. This is often due to a lack of shared understanding about what to do with new technology, how to do it and what to expect (Vuori, 2011). Without a clear understanding of how technology can fit within day-to-day roles (Larivière *et al.*, 2017), individuals can experience emotional ambivalence “*there's still a lot of anxiety*” (Christ-Brendemühl and Schaarschmidt, 2019).

On a related note, Sylvia contends that healthcare service providers also feel overwhelmed due to the number of tools they can use:

*“There are various stages in care where people have to make a choice - either a diagnostic choice, or a choice in terms of treatment, or a choice in terms of communication of issues. I suppose it’s a mixture of reasoning and judgement that leads to an action [...] we have a massive amount of assessment tools, care pathways, and procedural guidance. [T]here is a series of different types of evidence, which leads to those decisions being made. Some of that evidence is biophysical, in terms of clinical information from investigations or tests. Some of it is social in terms of the client’s background.”* (Sylvia, Registered Nurse/Nursing School Lecturer, interview)

According to Sylvia, healthcare service providers can rely upon a range of possible approaches when providing appropriate services, including integrating telehealth solutions as a decision-aid (Palmeira and Spassova, 2015). However, she finds that in order to reach a decision either in terms of treatment and diagnosis or communication of results, healthcare service providers also need to consider technical, clinical and social factors (Davey and Grönroos, 2019). Sara (Director of Informatics, interview) stresses that healthcare service providers must decide which types of tools are relevant and appropriate to use in the hospital context: “*it all very much has to sit with the clinicians to decide what they think is appropriate and safe for the hospital to use.”* Essentially, much of the responsibility of integrating successfully technology use falls on the healthcare service provider (Larivière *et al.*, 2017).

These interview extracts highlight the need for clinical input when it comes to delivering technology-mediated healthcare services (Daskalopoulou *et al.*, 2019a, 2019b). But, our informants’ narratives also reveal that it is not always clear how technology mediation fits within existing work routines (Bowen, 2016). This can happen either because it is not common to use technology as part of healthcare service providers’ role or because they are overwhelmed by the plethora of available tools and feel anxious about how to use them. We believe that by identifying why and when these sense-making gaps occur, organizations can offer tailored support and guidance to healthcare service providers who are struggling with technology mediation. Adam elaborates:

*“If there are any particular queries or any particular issues that the group wants to address or would be added to a certain policy, we just make sure that it’s picked up and appropriately addressed within a policy, make sure we’ve not missed anything, that’s why the group is made of such a wide range of members of staff, to make sure we’ve captured the opinion of everybody, from every angle.”* (Adam, Head of Information Governance, interview)

Adam’s vignette showcases how the aim of his committee is to identify potential sense-making gaps for various groups in his organization and to address them in new policies. He specifically talks about the significance of including a diverse group of individuals, who occupy various roles in his committee in order to ensure that all issues regarding technology mediation are dealt with. These policies can then provide a clear description of what the organization is trying to achieve by integrating technology in service delivery.

We also find that it is important to identify gaps in patients’ sense-making efforts. Fiona (Health Technology Assistant, field notes) argues that patients’ familiarity with technology mediation varies: *“some patients are young and knowledgeable, using telehealth from 3 months to long-term; some older patients do too. If patients are anxious and nervous about their results, they’re not suitable for telehealth. Better to keep things simple.”* According to Fiona, technology mediation is not suitable for every patient. For instance, certain patients might experience emotional ambivalence (e.g. anxiety, frustration) about telehealth affecting usual care (Go Jefferies *et al*. 2019a, b). In such cases, it is imperative to recognize patients’ affective states (Gallan *et al.*, 2013) in order to ensure that technology use will not become a barrier at any given point throughout patients’ healthcare journey.

On the contrary, technology mediation should enable the patient to *“understand the relationship between some of their actions and how the readings are, then that will help them help themselves [...] it is that engagement from the patient in the process that is vital”* (Carl, Telehealth Project Manager, interview). According to Carl, the patient is an active participant and co-creator of technology-mediated services (Davey and Grönroos, 2019; Go Jefferies, Bishop and Hibbert, 2019b). Identifying patients’ knowledge gaps is critical in order to avoid life-threatening errors. Sylvia explains:

*“When we hand over the clinical decision-making interpretation to patients, in a way, they’re coming up against the same problems that the practitioners have done for years. And what the professionals have done is drawn on other bits of understanding to make judgments. But when your patient is doing it, have they got those other bits of understanding to make those judgments? I think it’s exposing the kind of uncertainty that is around the decision-making process anyway. That it is a judgement, an opinion, not a fact. Then, what you’re doing is basing that on these different bits of information that you’ve managed to cobble together.”* (Sylvia, Registered Nurse/Nursing School Lecturer, interview)

Sylvia’s narrative highlights the dangers associated with patients’ sense-making gaps, when using telehealth as a self-serving decision-aid (Palmeira and Spassova, 2015), which can have severe unintended consequences for how the service network is perceived to respond (Lariviere *et al.*, 2017).

Next, we explain how understanding sense-making gaps can give rise to specific sense-making opportunities.

*The identification of sense-giving opportunities*

Our findings illustrate that the second step of strategic sense-giving involves the identification of sense-giving opportunities. In line with prior work (Daskalopoulou *et al.*, 2019a; Vuori, 2011), this step refers to detecting instances during which individuals can help healthcare service providers and patients to make sense of the ambiguity and confusion regarding technology mediation (Gioia and Chittipeddi, 1991). Leo discusses organization-wide policies as an opportunity for strategic sense-giving:

*“Now, we're having a meeting in this Trust in a few weeks' time. From that meeting, I think, there'll come a document and a policy which will explain the governance around mobile apps, around which apps are desirable, around what we do about patient confidentiality, and what we do about security of such apps and access, and so on.”* (Leo, Assistant Medical Director/Caldicott Guardian/Doctor, interview)

Leo describes the process of developing an organization-wide policy about the use of mobile apps as part of healthcare service delivery in his organization. His quote reveals that a number of organizational members are embracing the sense-giver role in a more formalized way which extends informal sense-giving efforts at the peer-to-peer level (Daskalopoulou *et al.*, 2019a). Indeed, our informants highlighted the importance of adhering to locally developed policies about technology mediation: *“what we always say to students or nurses is that they have to follow the local policy and guidelines [...] although there are national guidelines, they’re adapted and applied locally”.* (Sylvia, Registered Nurse/Nursing School Lecturer, interview). Adam further explains how organization-wide policies are communicated to all organizational members, as well as newcomers:

*“What we do, we send out global communication, an email saying that this policy is now live, and here are the main points that it concerns. My team delivers mandatory training to all the new staff within the organization, so we have a slide presentation on the new policies, so everything that affects information governance is covered in that presentation.”* (Adam, Head of Information Governance, interview)

Similarly, Arthur elaborates upon the importance of introducing organization-wide policies that govern technology mediation (i.e. the use of mobile apps in the hospital context):

*“You have to have a policy like that, you really do, you have to govern the use of them because what the use of mobile apps gives to the organization is the real agility, real customer-focused design. [...] There needs to be some governance on approach, and you write a policy that provides an insight and direction into some of those activities and some of those benefits, so it’s a controlled environment where you wouldn’t want to have uncontrolled usage of mobile applications.”* (Arthur, Deputy Director for Health Informatics, interview)

In Arthur’s terms, organization-wide policies provide an opportunity to influence the interpretation, meaning creation, and actions (Maitlis and Christianson, 2014) of healthcare service providers in relation to technology mediation. Such guidelines can provide a logical explanation (Vuori, 2011) of how technology use fits within existing roles and routines, and how the proposed implementation has potential to improve healthcare service delivery. Having such policies in place also helps to avoid circulation of conflicting perspectives (Broderick, 1998).

Apart from organization-wide policies, Michael discusses other opportunities for strategic sense-giving, both vertically and horizontally in terms of his role:

*“A part of my job is to be an influencer, and that influence heads vertically, so in terms of being able to influence the junior doctors: ‘you really must use this system, because that is the standard of care within this organization'. My influence, also, vertically is heading upwards to the senior management of the hospital, being able to influence what systems we are looking to buy next, how we shape our informatics strategy from a clinical viewpoint. My influence is also expected to … and is effective horizontally, so I'm able to gather loads of Consultants to join some project boards where we're shaping the next projects, making sure that they're clinically-led and clinically-shaped.”* (Michael, Chief Clinical Information Officer/Doctor, interview)

Michael adopts the sense-giver role in the traditional sense (Daskalopoulou *et al.*, 2019a) by advising junior healthcare service providers about technology mediation. However, he notes that there are other opportunities to *“shape [our] informatics strategy from a clinical viewpoint”* by influencing senior management on new technology acquisition and by recruiting Consultants (i.e. Doctors whose role parallels that of Attending physicians in the United States) to participate in projects (Gottfridsson, 2014). In the telehealth context, however, despite local policy encouraging its use, convincing clinicians to integrate it into healthcare activities was an ongoing process:

*“We anticipated that it wasn’t going to be easy [...] that it would be a piece of work to accept telehealth technology and get clinicians to feel comfortable with introducing it to patients, but I think that’s more of an uphill [struggle] than we thought it would be.”* (Melissa, Assistant Director of Health and Social Care Integration, interview).

This is because opinion is divided over whether technology-mediated services would improve or simply add to provider workloads. This ambiguity was acknowledged by Melissa, who is also a co-author of the region’s telehealth joint strategy document.

“*I think [clinicians’] roles will change [from using telehealth]. So, rather than being very reactive and responding to crises all the time, potentially they would be able to identify when somebody was on a downward spiral [...] and able to intervene earlier. It will never take away your urgent sort of response that is required, because obviously that’s still going to happen, but hopefully just provide a framework so that people can start to try and predict when somebody’s going to need a clinician, to get out there sooner.”* (Melissa, Assistant Director of Health & Social Care Integration, interview)

As a lead strategist for telehealth implementation, Melissa identifies sense-giving gaps and sense-giving opportunities for clinicians with operational roles to reduce local ambiguity about the benefits of using telehealth as a decision-aid improving service processes and outcomes (Palmeira et al. 2015). She suggests that adapting roles will be part of local sense-giving (e.g. doctors getting comfortable with telehealth, enabling patients, providing more preventative care).

Sense-giving and decision-making in response to gaps in sense-making is evident in the way clinicians often decide to make use of telehealth solutions. The choice of appropriate technology use can also involve the identification of relevant service gaps as opportunities to use technology-mediated services. Identifying service gaps offers the chance to introduce new patient roles that, in other circumstances, might be considered inappropriate. In order to reduce levels of emergency hospital admissions, healthcare service providers might use telehealth to support early interventions by using patient self-diagnosis or by initiating self-medication with steroids and antibiotics. In other words, healthcare service providers interpret national and local organizational guidelines at the micro level to determine appropriate action using technology-mediated services, especially in contexts where local services lack specialist support.

Although organization-wide policies provide an excellent opportunity for strategic sense-giving to healthcare service providers, our analysis paints a slightly different story. As Carl explains, in order to influence the meaning construction and behavior of patients, a more personalized approach is needed.

*“Where some patients have clearly just got on with it, we do know that some patients do struggle. So again, we’ve tried to put it across and give that support to the patient to make it as easy as possible. The role of the monitoring center, for example, is if they’re spotting that a patient just isn’t getting on with it - they’re not taking the readings. Can they support the patient more or should they actually take the decision: ‘It’s not working’?”* (Carl, Telehealth Project Manager, interview)

According to Carl, not all patients have the same technology readiness (Mishra *et al.*, 2018; Parasuraman, 2000). He argues that some patients might need more support than others when using telehealth systems (Gallan *et al.*, 2019). In particular, he identifies the role of monitoring centers in providing guidance on how to deal with patients that do not record their readings on a telehealth system. Here, the role of the monitoring center is to help identify if a patient requires additional support from their doctor, when and how it is optimal to provide such support, or if they should stop using telehealth altogether. Sense-giving opportunities therefore involve practical decisions about integrating ‘tech’ and ‘touch’ locally.

*The provision of templates of action*

Our analysis shows that the last step of strategic sense-giving involves providing templates of action. According to Melissa, it is extremely important to provide clear templates of action in order to enable individuals to understand what technology mediation means in terms of their work (Daskalopoulou *et al.*, 2019b; Go Jefferies *et al.* 2019a) and healthcare journey (Go Jefferies *et al.*, 2019b):

*“I think people then need to acknowledge the challenges that accompany it [telehealth]. I think it shouldn’t be seen as a quick win. I think sometimes there’s a danger with assistive technology that people see it as a quick win, because to describe it, it sounds very simplistic. But actually, people don’t necessarily understand that culture change, change for clinicians just to implement it successfully, if it’s pushed too much into trying to be a quick win, then people will lose interest too quickly and not give it a chance to establish itself.”* (Melissa, Assistant Director, Health and Social Care Integration, interview)

Melissa contends that implementing telehealth successfully is no easy task (Green *et al.*, 2016). She specifically notes the dangers of not having a shared understanding of role expectations (Mohr and Bitner, 1991) induced by the introduction of telehealth systems. In other words, strategic sense-giving efforts need to provide specific guidance about expected role behaviors (Bitner *et al.*, 1994) in order to trigger action:

*“It is in this organization to make sure we provide guidance and formulate it in our best practice”* (Leo, Assistant Medical Director/Caldicott Guardian/Doctor, interview)

*“I want to make sure it’s fit and safe and it stays fit and safe, so it’s not about stopping clinicians using these things, we just want to make sure that they are safe apps and that they continue to be safe when they’re developed along their life-spans.”* (Sara, Director of Informatics, interview)

Leo’s and Sara’s quotations illustrate that strategic sense-giving efforts should not be seen as a way to constrain healthcare service providers’ and patients’ technology-mediated service interactions. On the contrary, such efforts should provide them with the necessary vocabulary and scripts (Schau *et al.*, 2007) in order to ‘master’ their role behaviors (Broderick, 1998).

 Having discussed in the previous theme organization-wide policies as an opportunity for sense-giving, Adam further discusses below how their policy on mobile device use aimed to outline appropriate ways for integrating technology within healthcare service delivery:

*“I think the mobile device policy has been introduced a couple of years ago now, because what happened was we’ve seen a lot of people bringing their mobile devices to the hospital, and also bringing iPads and introducing a lot more new mobile technologies, so like laptops, things like that, so we knew that we had to put a policy in place that would regulate the use of technology, so we’ve informed our staff what they can and can’t do with mobile devices, so we were just trying to add some security and governance in place.”* (Adam, Head of Information Governance, interview)

Adam explains that the policy document defined specifically what healthcare service providers could and could not do with mobile devices in the hospital context. It is evident from Adam’s narrative that the policy was intended to be used as a basis for understanding the appropriate set of behaviors for each healthcare service provider role (Solomon *et al.*, 1985).

Despite a clear focus on providing templates of action for healthcare service providers, our findings illustrate that efforts to guide patients’ behavior are somewhat underdeveloped, at least in our research context. Nevertheless, our informants highlighted the significance of strategic sense-giving efforts targeting patients. For instance, Michael reflects on what he said when asked how he was planning to promote the use of a new system in his hospital:

*“You put posters up on the wards, telling patients that they will see the doctors using it, so the patients are recognizing how technology is going to be used in their care, and we build the confidence from both sides.”* (Michael, Chief Clinical Information Officer/Doctor, interview)

Michael finds that by informing patients about changes in service delivery due to technology mediation it will decrease both their and healthcare service providers’ emotional ambivalence, and *‘build the confidence from both sides’*. In this example, even though the posters did not provide any guidance about the role of the patient, they at least removed some of the uncertainty associated with technology use (Schau *et al.*, 2007).

However, when patients are expected to actively interact with technology, as in the case of telehealth, strategic sense-giving efforts need to provide them with materials in order to be able to recognize how they need to behave and what to expect (Ashforth *et al.*, 2008).

## Discussion

*Theoretical implications*

The aim of this paper was to explore the role of service providers who hold strategic and operational roles, as well as the impact of coordinated, organization-wide initiatives in technology-mediated healthcare services. Our study develops the process of strategic sense-giving and illustrates how healthcare service providers who hold strategic and operational roles enact the sense-giver role. Our findings highlight that strategic sense-giving involves three steps; (a) recognition of sense-making gaps, (b) identification of sense-giving opportunities, and (c) provision of templates of action.

We showed that the first step of strategic sense-giving involves understanding service providers’ and consumers’ knowledge gaps which arise due to lack of organizational cues (Ashforth *et al.*, 2008) in relation to technology mediation. Our findings suggest that it is not always clear how technology mediation fits within existing work routines and roles (Bowen, 2016; Larivière *et al.*, 2017). This happens either because it is not common to use technology as part of healthcare service providers’ role (Daskalopoulou *et al.*, 2019a) or because service providers are overwhelmed by the plethora of available tools and are anxious about how to use them. Our findings also illustrate how gaps in patients’ sense-making efforts can produce emotional ambivalence (e.g. stress, uncertainty, frustration) in relation to the use of telehealth systems (Gallan *et al.*, 2019). We argue that organizations need to understand why and when sense-making gaps occur in order to provide tailored support and guidance to healthcare service providers and consumers who are struggling with technology mediation. As Askegaard and Linnet (2011: 381) note, marketing and consumer researchers need to establish links between “the structuring of macro-social explanatory frameworks with the phenomenology of lived experiences, thereby inscribing the micro-social context accounted for by the consumer in a larger socio-historical context”. In other words, this means that both academics and practitioners need to place additional emphasis upon the interplay between microscopic (e.g. dyadic interactions between service providers and consumers) and macroscopic (e.g. the role of the socio-cultural and organizational context) dimensions of technology mediated services.

The second step of strategic sense-giving involves the identification of sense-giving opportunities. In line with prior work (Daskalopoulou *et al.*, 2019a), this step involves detecting instances during which individuals can help service providers and consumers to make sense of the ambiguity and confusion regarding technology mediation (Gioia and Chittipeddi, 1991). Our findings revealed that organization-wide policies provide an excellent opportunity to influence the interpretation, meaning creation, and actions (Maitlis and Christianson, 2014) of service providers about technology mediation. We found that existing policies provide a logical explanation (Vuori, 2011) of how technology use fits within existing roles and routines, and how the proposed implementation would improve healthcare service delivery. Having such policies in place also helps to avoid the circulation of conflicting perspectives (Broderick, 1998). By participating in the development of such initiatives, a number of organizational members embrace the sense-giver role in a more formalized way which extends informal sense-giving efforts at the peer-to-peer level (Daskalopoulou *et al.*, 2019a). Finally, our analysis showed that strategic sense-giving should adopt a more personalized approach since not all patients have the same technology readiness (Mishra *et al.*, 2018; Parasuraman, 2000), access to informative material (e.g. policy documents) or health service literacy (Davey and Grönroos, 2019).

The last step of strategic sense-giving involves providing clear templates of action in order to enable individuals to understand what technology mediation means in terms of their work (Daskalopoulou *et al.*, 2019b; Go Jefferies *et al.* 2019a) and healthcare journey (Go Jefferies *et al.*, 2019b). Our study illustrates that strategic sense-giving efforts should clearly outline the role expectations (Mohr and Bitner, 1991) induced by the increase of technology use (Bitner, 2017; Ostrom *et al.*, 2015), as well as provide specific and logical guidance about expected role behaviors (Bitner *et al.*, 1994; Vuori, 2011). We demonstrated that organizations need to equip both service providers and consumers with the necessary vocabulary and scripts (Schau *et al.*, 2007) in order to be able to ‘master’ new role behaviors (Broderick, 1998). However, we also observed that efforts to guide patients’ behavior were somewhat underdeveloped, at least in our context.

In light of COVID-19, a series of radical transformations and mega-disruptions in services and beyond have occurred which highlight the need for revisiting traditional services marketing concepts (Kabadayi, O’Connor and Tuzovic, 2020). Ongoing social distancing measures also foreground our increasing reliance upon technology use as part of our day-to-day professional and leisure practices. To these ends, our study addresses the call put forth by Ostrom *et al.* (2015) to better understand how technology can be leveraged to advance service provision. More specifically, we make three important contributions to the ongoing dialogue on the intersection of services marketing and technology use (e.g. Blut *et al.*, 2016; Giebelhausen *et al.*, 2014; Palmeira and Spassova, 2015). First, we extend research on service provider roles (Bowen, 2016; Daskalopoulou *et al.*, 2019a; Larivière *et al.*, 2017) by illustrating that strategic sense-giving can be performed by a number of organizational members in a more formalized way which goes beyond informal sense-giving efforts at the peer-to-peer level (Daskalopoulou *et al.*, 2019a). We found that service providers who hold strategic and operational roles engaged in formal sense-giving, for example, by participating in the creation and circulation of organization-wide policies. Second, we contribute to service research focusing on the role of service providers in managing ‘tech’ and ‘touch’ elements in service interactions (Giebelhausen *et al.*, 2014; Green *et al.*, 2016; Makarem *et al.*, 2009; Wünderlich *et al.*, 2013). We do so by illustrating how strategic sense-giving efforts provide service providers with important knowledge about appropriate ways of using technology and safeguard them against confusion and errors during technology mediated service interactions. Moreover, our study extends research on service providers’ and consumers’ affective responses to technology use (Gallan *et al.*, 2013, 2019; Palmeira and Spassova, 2015) by showing how strategic sense-giving efforts help service providers and consumers to cope with the emotional ambivalence (e.g. stress, uncertainty, frustration) of technology mediated service interactions (Christ-Brendemühl and Schaarschmidt, 2019). Finally, our findings also support role theory; the need for familiar and well-defined roles (Solomon et al., 1985; Surprenant and Solomon, 1987), the importance of having a shared understanding of role expectations (Mohr and Bitner, 1991), as well as the need to ‘master’ role behaviors (Broderick, 1998) in order to in achieve favorable technology mediated service outcomes became evident from our analysis.

### *Practical implications*

As technology use becomes a common element of service interactions (Bitner, 2017; Larivière *et al.*, 2017), it is vital to understand the ways in which service providers and consumers can leverage technology use (Palmeira and Spassova, 2015). Because technology mediation needs to be accompanied by normative and organizational change, we suggest that existing organization-wide policies on technology use need to be developed. Policies can offer some structure and guidance to service providers about appropriate technology use. For instance, in healthcare settings, such documentations can outline how technology use falls under hospital rules and regulations, as well as how it fits with healthcare service providers’ roles and work routines (Daskalopoulou *et al.*, 2019a, 2019b).

Further, those responsible for promotion and communication strategies need to communicate clearly the advantages of technology use for the service network (i.e. both service providers and the consumers). Such approaches can contribute to the comprehensibility of technology mediation as part of service interactions and roles. This will also confer that technology mediation is culturally supported by the organization. Given increased pressure on healthcare resources, and the growing trend involving patients as users of healthcare technologies, effective promotion and communication strategies should involve participation from the wider network of community, voluntary and patient voice organizations in shaping normative change for service development.

### *Limitations and Future Research*

Our empirical investigation is based on the U.K. healthcare field; thus, our insights should be transferred with attention to other service contexts. In addition, although our study offers novel insights from the healthcare service provider perspective, future studies involving patients’ input could further inform our understanding about the process of strategic sense-giving. For example, additional research from the patient viewpoint can offer important insights about how strategic sense-giving efforts can be personalized and tailored to the needs of patients with different levels of technology readiness (Mishra *et al.*, 2018; Parasuraman, 2000) or severity of illness at different touchpoints of the healthcare journey (Hunter-Jones et al., 2020). Our qualitative study draws from a relatively small sample size, thus future research should aim to further explore the process of strategic sense-giving by recruiting organizational actors who hold strategic and operational roles in different levels or with different responsibilities. Future empirical studies (both quantitative and qualitative) can draw from our work to develop scales to measure the effectiveness of strategic sense-giving; how do service providers respond to sense-giving efforts? Do service providers respond differently to sense-giving based on who is providing templates of action (e.g. based on their role, gender)? Future work can also aim to develop better mechanisms for identifying sense-making gaps in a service ecosystem; who is responsible for identifying sense-making gaps? How can service providers ‘code switch’ during a service encounter (Schau et al., 2007) when they identify a sense-making gap?

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