Digital Services in the Welfare, Social and Health Sector Organizations of the South Ostrobothnia Region

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Abstract. Digital services in healthcare and social services have increased due to national promotion and Covid19 pandemic. However, the regional differences may exist. Successful implementation and sustainability of digital services requires that attention is paid to addressing barriers and supporting facilitators at all levels in health care provision.

The purpose of this study was to investigate the effects of employee status, form of organization and organizational size on the views related to current state and the role of digital services, development barriers, development plans and the support needed for development in welfare, social and health service organizations operating in the South Ostrobothnia region. The study was carried out in the era of exceptional circumstances created by the Covid19 pandemic in the summer of 2021. The study was a quantitative cross-sectional study using an electronic survey. Respondents (n = 121) were managers, entrepreneurs and employees of welfare, social and health service organizations operating in the South Ostrobothnia region.

The results suggested that in more than four out of five welfare, social and health service organizations operating in the region of South Ostrobothnia, part of the services were already digital in the summer of 2021. These services had been extensively developed during the previous year, which was lived in exceptional circumstances caused by the Covid19 pandemic. Digital services were seen to function especially as enablers of customers in exceptional circumstances. However, managers or entrepreneurs also saw digital services as reaching new customers more important than employees. The acquisition of technology and human resources were felt to be the most significant barriers in the development of digital services, regardless of the employee status, form of organization and organization size. Regarding the use and development of digital services, information was felt to be necessary, especially about the characteristics of digital services, and financial support was also felt to be necessary for the development. However, the support needs were significant in many aspects related to digital service development. In particular, large organizations needed information on the cost-effectiveness of digital services.

The results can be used to support welfare, social and health service organizations in digital service development.

Keywords: digital services · health care · social services

1 Introduction

The digitalization of the social and health sector has been promoted in a targeted manner for a long time. The reform of the organization of health, social and rescue services carried out during Sanna Marin's term as prime minister (2019–2023) included the Future Health and Social Services Center program, where measures related to digitalization were a significant part of the realization of the goals [1]. These goals were aimed at improving the equal availability, timeliness and continuity of services, shifting the emphasis of operations to preventive and proactive work, ensuring the quality and effectiveness of services, and strengthening the multidisciplinary and interoperability of services.

Covid19 pandemic increased rapidly the use of digital services in social and health care sector [2, 3]. Already half a year after the start of the restrictions caused by the pandemic, electronic contact withdrawals had increased in services that were already in use before the pandemic [2]. In addition, already then also new digital services were developed. For example, customer and patient meetings were arranged more online and group activities were implemented remotely. However, the report by Jormanainen et al. (2020) [2] targeted to describe the development of digital services in the area of a large hospital district (HUS), which does not give full details about the changes in the service structure in other parts of the country, such as in South Ostrobothnia. Region specific differences may appear in Finland in the development of digital services in social services and health care sectors [3].

In the current government program, digital services and information management in the social and health sector are one of the contents of a functioning and sustainable welfare society [4]. The goal is to draw up long-term strategic goals to guide the development work of health and safety information management, digitalization, and research as well as development and innovation activities, so that the use of technology in the social and health sector would produce the desired benefits. The goal is to increase the share of electronic transactions and make digital transactions a priority for those customers for whom it is possible. Health care professionals have felt that electronic transaction services will be the main transaction channel in the future, while still securing in-person transactions [5]. The impact of digital services on patient satisfaction has been shown to be positive when digital services are accessible, easy to use, improve patient-provider communication and include the option to usual care [6].

Digital services in health care and social services sectors include for example digital peer support groups and similar communication services between customers or relatives or remote transactions and monitoring between customer and the service provider [7]. These can also include customer self-monitoring for example with symptom diaries or collecting the customer's health and well-being information with electronic forms. These services can be either asynchronous, meaning that two people aren't expected to be present and available at the exact same time, or synchronous, where there is simultaneous communication with two people [6]. Some of the digital services replace traditional reception visits and phone calls [7].

According to recent report [7], health care sector in Finland has more digital services as compared to social care sector. The most used digital services are those produced both publicly and privately in outpatient care of health services, both in special care and in primary health care. In social care, the solutions focus on remote home care solutions

and point-based solutions to electronic forms and applications. The most widely used are digital services, which support electronic communication between the client and the professional. These include, for example, separate remote receptions and electronic messages, which can be found in almost all service categories in both healthcare and social services sectors. However, there seems to be regional differences in the amount and type of digital services in Finland. These differences are partly explained by differences in naming accuracy of the services. In addition, the regional digital services are a combination of national solutions and solutions that can be purchased from the market or that can be developed in-house. Regional variation of digital services is thus formed depending on how much the regions have implemented self-developed or commercial, tendered digital services.

The health care and social services workforce in Finland is divided into the private and public sectors [8]. There are differences between different wellbeing services counties in how the workforce is divided into the public and private sector in the field of social security services. Ten years ago, less than half of the public organizations and an even smaller proportion of private organizations offered digital services for specific target groups [9].

Digital services are seen in the current government program as one of the ways to improve the functionality of the social and health service system and to curb expenditure growth [4]. Long-term cost benefits are often sought with digital services, although uncertainty is recognized in this regard, as broad estimates of the cost benefit potential of the digitalization of the social and health sector are still scarce [6, 10]. Doctors have seen the benefits of digital services for themselves as reduced telephone traffic, increased efficiency, freeing up time for medical evaluations, less crowded waiting rooms, and more accurate communication [11]. Healthcare professionals have seen increased flexibility, autonomy [5, 11] and time and money savings [11] as benefits of digital services for customers. According to healthcare professionals the benefits of digital services for themselves have been improved flow of work, enrichment of the professional's own job description, increased efficiency of information transmission and improved service availability [12]. Digital services have had a positive impact on healthcare professionals' satisfaction in endocrinology, palliative care, dermatology, and surgery [6]. Easy use and perceived usefulness of the digital services have been related to healthcare personnel satisfaction. However, the effects of digital services on the work of professionals are not only positive [12, 13]. As disadvantages of digital services, healthcare professionals have highlighted the decrease in face-to-face contact between the client and the professional and problems with the use of technology [12]. However, healthcare professionals' satisfaction in digital services has been shown to be understudied in literature [6].

In the development and evaluation of digital health services, the service's effectiveness, safety, costs, information security and data protection, as well as usability and accessibility must be taken into account [14]. The inclusion of digital services in healthcare changes treatment processes, which needs to be further developed from the point of view of healthcare professionals, so that the services work in the best possible way for both the professional and the customer [5]. Successful implementation and sustainability of digital services requires that attention is paid to addressing barriers and supporting facilitators at all levels in health care provision [6].

Due to the lack of region-specific data, the purpose of this study was to investigate digital services in welfare, social and health service organizations operating in the South Ostrobothnia region in Finland. The aim was to investigate the effects of employee status, form of organization and organizational size on the views related to different aspects of digital services and the development of these services. The study was carried out in the era of exceptional circumstances created by the Covid19 pandemic in the summer of 2021.

The research questions were:

1. What is the current state and the role of digital services in organizations and how do the views differ between respondents with different employee status, form of organization or organizational size?
2. What are the perceived development barriers related to digital services and how do the views differ between respondents with different employee status, form of organization or organizational size?
3. What are the development plans of the digital services in organizations and how do the views differ between respondents with different employee status, form of organization or organizational size?
4. What are the perceived support needs for digital services development and how do the views differ between respondents with different employee status, form of organization or organizational size?

2   Methods

2.1   Study Design

The study was a quantitative cross-sectional study using an electronic Webropol survey (version Webropol 3.0). Research population included welfare, social and health service organizations operating in the South Ostrobothnia region. These were private companies (micro, SME, large), public actors and service providers maintained by foundations or societies from the following business and service sectors: 1. Health services (primary health care, medical clinics), 2. Social services (housing services, family caregivers, home care), 3. Sports, youth and cultural services of municipalities, 4. Physiotherapy services, 5. Rehabilitation services (speech and occupational therapy), 6. Interpreter services (hearing and speech impaired services), 7. Psychologist services, 8. Exercise services, gyms, group exercise, 9. Services for the older adults, 10. Child protection services, 11. Substance abuse services.

Specialized medical care in its main features (e.g., specialized medical care at a Central hospital) and dental services on the municipalities were excluded from the study, although the survey was sent to organizations that offered some of these services.

2.2   Sample

The sampling method was mainly convenience sampling but with features from cluster sampling. An email list was collected with search of welfare, social and health service organizations operating in the South Ostrobothnia region. Organizations' contact information (e-mail addresses) was searched on the Internet using search engines and on the

websites of known organizations. E-mail addresses had to be findable and available on the organizations' websites or otherwise found on the internet. When contact information was found, the survey was sent to managers, entrepreneurs, as well as employees of organizations.

The survey was sent to a total of 1266 email addresses and 223 different organizations. The survey got through to 1252 e-mail addresses.

2.3   Data Collection and Ethical Considerations

The request to answer the survey was sent for the first time on 31 May 2021. Two reminder messages were sent to answer the survey: the first on 9 June 2021 and the second on 16 August 2021. The survey link was closed on 20 August 2021. This deadline for answering the survey was known and presented in the last reminder message.

The study followed the principles of the Helsinki Declaration (2013) [15] and the General Data Protection Regulation GDPR (2016) [16]. The survey was carried out using an anonymous questionnaire and the name of the organization that the respondent represented was not asked. Thus, the individual respondents could not be identified. The respondents were sent a cover letter explaining the purpose of the study, possible benefits to science and society, and an explanation of the voluntary nature of their participation.

2.4   Quantitative Cross-Sectional Survey

This is a sub-study of a wider study, in which entrepreneurs, managers and employees of welfare, social and health service organizations were asked about their current digital services and the use of welfare technologies as part of the services, as well as the effects of the Covid19 on the services. In addition, the survey inquired about the development ideas of the aforementioned sub-areas and the support needed for development. The survey was purpose-designed for the current study but partly used questions from previous studies by Seinäjoki University of Applied Sciences [17, 18] (permissions retrieved) targeted to welfare, healthcare and social services organizations. The questionnaire and descriptive results from the entire research group have been published in Hoffrén-Mikkola et al. (2021) [19]. In this study, the results and differences from the survey are reported on the current state and the role of digital services, perceived barriers to development, plans for the development of digital services and support needs for development according to employee status, form of organization and organization size. The survey question about the perceived barriers for development of digital services was from Kettunen et al. (2020) [17] and the question regarding support needs for development of digital services was from Toivonen & Vainionpää (2020) [18]. Respondents were introduced to digital services in the survey with the following description: *Digital services can be e.g., electronic appointment booking, chat service on the website, remote reception, consultation, training or other remote service, video-mediated service, electronic message delivery to the customer or the use of sensor-based data to support the service.*

2.5 Analyses

The data was analyzed with the IBM SPSS Statistics Version 29.0.0.0 (241) program. The results are presented as frequencies, relative frequencies (%) and/or means and standard deviations (SD). Statistical significances between different employee groups (manager or entrepreneur, employee), organizational forms (public operator, private company) and organizations of different sizes (1–9, 10–49, 50–249, $\geq$ 250 people) were tested for categorized and ordinal variables using Pearson Chi-Square test (2-sided). Opinion scale (4-point Likert scale) variables were treated as continuous variables. Statistical significances between different employee groups and organizational forms in continuous variables were tested with the nonparametric Mann-Whitney U test and for organizations of different sizes first with the Kruskal Wallis test and then pairwise comparisons with post hoc Bonferroni. The limit of statistical significance was set at 5% ($p < 0.05$). In the case of opinion scale variables, when the respondents had the opportunity to choose the "I can't say" option, these answers were classified as missing information before the test.

3 Results

The survey was answered by 121 people. Therefore, the response rate was 9.7%. Of the respondents, 53.7% (n = 65) were employees and 46.3% (n = 56) were managers or entrepreneurs. The majority (75.2%, n = 91) were from the public sector and 19.0% (n = 23) were from private companies. Six people (5.0%) were from societies and one person (0.8%) from a foundation-type organization. Since the majority of respondents were from the public sector and private companies, comparisons of organizational form were made only between these groups. The survey received responses from organizations of all sizes: 13.2% (n = 16) were from 1–4 people, 11.6% (n = 14) from 5–9 people, 31.4% (n = 38) from 10–49 people, 19.8% (n = 24) from 50–249 people and 24.0% (n = 29) more than 250 people organizations. In the organization size comparisons, the two smallest organizational groups (1–4 people and 5–9 people) were reclassified into one group (1–9 people organizations, n = 30, 24.7% respondents).

### 3.1 Current State and the Role of Digital Services

83.5% of the respondents answered that some of the services of the organization they represented were digital. Correspondingly, 16.5% reported that the organization they represented did not have any digital services. There were no statistically significant differences between employee status, form of organization or organization size in these views. Of those who had digital services, clearly more than half (61.4%) perceived some of these services had been put into use during the previous year. Employee status, form of organization or organization size had no statistically significant differences in this.

In the entire group of respondents, those respondents who had digital services, 47.5% felt that specifically the organization's digital services had either significantly or very significantly enabled customers during the exceptional circumstances created by the Covid19 pandemic. Employee status, form of organization or organization size did not

have statistically significant differences in these views. However, digital services were not seen so much as significant for reaching new customers, as 29.7% of the entire respondent group felt that digital services had either significantly or very significantly provided the organization with the opportunity to reach new customers. Form of organization or organization size did not have statistically significant differences in these views. However, managers or entrepreneurs saw digital services as reaching new customers more significant than employees ($p < 0.05$). Of employees 20.4% perceived that digital services had either significantly or very significantly provided the organization with the opportunity to reach new customers whereas of managers or entrepreneurs 40.4% perceived so.

3.2 Perceived Barriers for Development of Digital Services

The most significant barriers in the development of digital services in the organization that the respondent represented were perceived to be especially the acquisition of technology (software, tools), and human resources, which were perceived by 66.1% and 66.9% of the respondents as either significant or very significant barriers, respectively (Fig. 1). There were no statistically significant differences between employee status, form of organization or organization size in these views, although there were indications that small organizations perceived the barriers to be slightly greater than large organizations ($p = 0.075$, ns) and public actors greater than private companies ($p = 0.068$, ns).
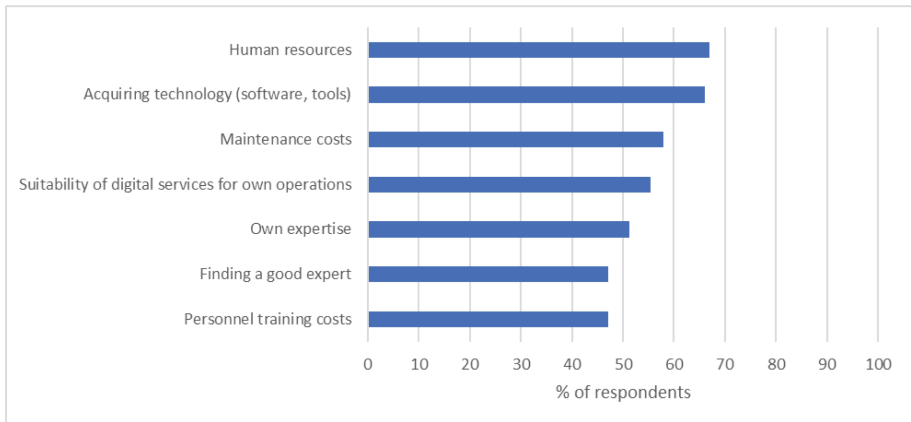
Fig. 1. Either significant or very significant barriers for development of digital services perceived by respondents. Numbers are percentages of respondents in the entire respondent group ($n = 121$).

3.3 Development Plans

In the entire group of respondents, slightly more than half (52%) estimated that the organization they represented had the goal of increasing the number of digital services

within a year, and 58% that it was intended to do so within five years. However, increasing the number of digital services also included a lot of uncertainty among the respondents (Tables 1 and 2).

Table 1. Respondents' views on organizations' goals to increase the number of digital services within one year relative to employee status, form of organization and organization size. P-values describe the statistically significant difference between respondent categories within independent variable. ** = statistically significant difference (p < 0.01).

Independent variable	Respondent category	Yes (%)	No (%)	I cannot say (%)	Diff (p-value)
Employee status	Manager or entrepreneur (n = 56)	57.1	17.9	25.0	p = 0.007 **
	Employee (n = 65)	30.8	18.5	50.8	
Form of organization	Public actor (n = 91)	45.1	12.1	42.9	p = 0.009 **
	Private company (n = 23)	34.8	39.1	26.1	
Organization size	1–9 people (n = 30)	26.7	40.0	33.3	p = 0.003 **
	10–49 people (n = 38)	34.2	18.4	47.4	
	50–249 people (n = 24)	62.5	8.3	29.2	
	≥ 250 people (n = 29)	55.2	3.4	41.4	

In particular, managers or entrepreneurs, public actors and large organizations perceived that the organization they represented was about to develop digital services within one year (Table 1) and within five years (Table 2). However, the differences in views between different groups of respondents were smaller in longer time scale (five years) as compared to shorter time scale (one year).
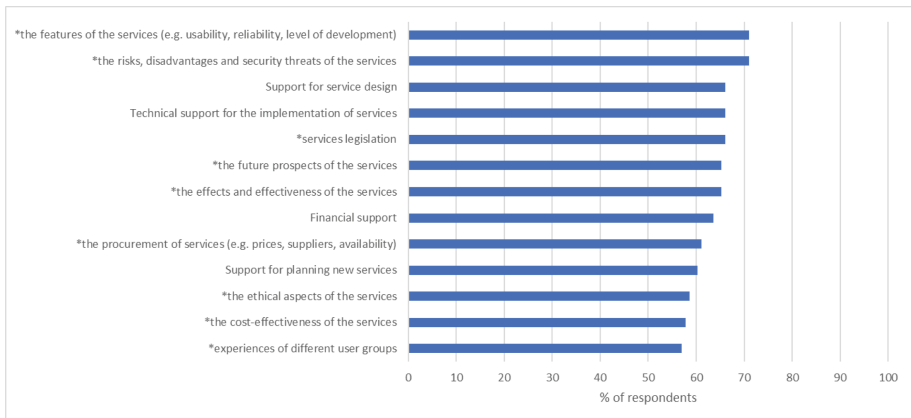
3.4 Support Needs

In the entire group of respondents, the most support related to the use and development of digital services was perceived for obtaining the necessary information about the characteristics of digital services (e.g., usability, reliability, level of development), where the mean ± standard deviation in the entire group of respondents was 3.08 ± 0.8 on a scale of 1–4, where 4 meant very significant need. Next, financial support was perceived to be necessary for the use and development of digital services (3.06 ± 0.90). However, support needs were perceived to be high for all categories since 57–71% of respondents reported either significant or very significant support needs for different categories (Fig. 2). Employee status or form of organization did not have a statistically significant effect on the perceived need for support. The size of the organization did not have a statistically significant effect on support needs, except for one area: larger organizations needed statistically significantly (p <0.01) more information about the

Table 2. Respondents' views on organizations' goals to increase the number of digital services within five years relative to employee status, form of organization and organization size. P-values describe the statistically significant difference between respondent categories within independent variable. ns = no significant difference, * = statistically significant difference (p < 0.05).

Independent variable	Respondent category	Yes (%)	No (%)	I cannot say (%)	Diff (p-value)
Employee status	Manager or entrepreneur (n = 56)	58.9	14.3	26.8	p = 0.017 *
	Employee (n = 65)	38.5	9.2	52.3	
Form of organization	Public actor (n = 91)	47.3	7.7	45.1	p = 0.139 ns
	Private company (n = 23)	43.5	21.7	34.8	
Organization size	1–9 people (n = 30)	40.0	23.3	36.7	p = 0.014 *
	10–49 people (n = 38)	31.6	13.2	55.3	
	50–249 people (n = 24)	62.5	8.3	29.2	
	≥ 250 people (n = 29)	65.5	0.0	34.5	

cost-effectiveness of digital services than small organizations. In bilateral tests, there was only a significant difference (p <0.01) between organizations with 10–49 people (2.56 ± 0.96) and more than 250 people (3.31 ± 0.806).

Fig. 2. Either significant or very significant support needs for development of digital services perceived by respondents. Numbers are percentages of respondents in the entire respondent group (n = 121). *Information about…

4   Discussion

This study supports the previous literature [2, 3, 20] that Covid19 pandemic increased the development of digital services in social and health care sector. Laukka et al. (2021) [3] reported that, of the psychiatric outpatient visits, 9% were conducted using phone or remote access in January 2020 and 48% in May 2020 which means that by remote transactions had increased 39 percentage units in five months. In the current study 61% of organizations that had digital services had developed some of these during the previous year with Covid19. This study adds to previous literature with the findings that the amount of digital services and the development of services during Covid19 has been similar in public actors and private organizations as well as in organizations of different sizes in South Ostrobothnia.

The results of the current study suggest that digital services in welfare, social and health service organizations were especially seen as enablers of existing customers in exceptional circumstances than reaching new customers. This is in line with previous literature in psychiatric outpatient services [3] and in specialized youth psychiatric care [20]. Laukka et al. (2021) [3] reported that digital and remote services enabled psychiatric outpatient services during Covid19 pandemic to those patients for whom they were suitable and who could use them and found out that one of the supporters of remote service usage was familiarity of the customers. The specialized youth psychiatric care employees in the study by Sirnelä-Rif et al. (2020) [20] felt that taking care of a young person they had known for a long time was successful also remotely during Covid19 pandemic. They perceived that this was because there was already a trusting relationship with the patient created. The familiarity of customers could explain the results of the current study that the digital services were more seen as enablers of already existing customers in exceptional circumstances than reaching new customers. Especially employees had this opinion in the current study. This can be because employees normally work closer with customers as compared to managers or entrepreneurs. Koivisto et al. (2023) [12] showed that different actors (nurse, manager, technology developer) perceive the role of a technology for care work in different ways because they have different goals for the technology. It has been reported in previous literature that healthcare professionals have emphasized the importance of trustful relationships with clients in telehomecare of older adults [21] as well as in telemonitoring of chronically ill patients [22]. The current study supports these results.

The human resources and acquisition of technology (software, tools) were felt to be the most significant barriers in the development of digital services according to managers, entrepreneurs and employees of the welfare, social and health service organizations of the current study. These may be explained first of all by the shortage of labour in healthcare and social services sector [8] and thereafter by the timing of the survey during the exceptional circumstances caused by Covid19 pandemic. Healthcare professionals have described that one of the negative factors of digital services in their work is insufficient resourcing to maintain the professional's technology skills, which include insufficient training and support, insufficient time to learn new things and number of tools and constant updates [12]. Human resources as one of the most significant barriers for development of digital services in the current study may be because the development of digital services takes time and resources from the organization. Because of shortage

of labour it may be impossible to find time to include both managers and employees for digital service development. Digital competence of occupational health doctors and occupational health nurses have been reported to include competence in developing the use of technology in one's own organization [12]. Especially during the Covid19 pandemic this may have felt impossible which may explain the results of the current study. In addition, the challenges for using remote services in psychiatric outpatient services shortly after the start of Covid19 pandemic were related for example to the lack of IT equipment and inoperative programs, which is supported by the current study where acquisition of technology was one of the most significant barriers for development of digital services. The organizations were forced to tailor services to digital format without proper time for planning and therefore were not prepared for this change in services with proper technology acquisition.

Regarding the use and development of digital services, support and information was felt to be necessary especially about the characteristics of digital services, and financial support was also needed for the development. However, the support needs were significant in many aspects related to digital service development. Professionals in occupational healthcare have needed most of all the instructions on the use of video conferencing and chat services [12]. The current study was not that specific since it included organizations from different kinds of service sectors and target groups and therefore different variety of digital services. In particular, large organizations that were about to develop digital services more in one year and five years time scale than smaller organizations needed information on the cost-effectiveness of digital services. The effectiveness and cost-effectiveness of technologies and digital services are indeed factors about which little is still known, as no systematic information has been collected [22] and the results are unclear [6, 10].

This study has a few methodological considerations and limitations that need to be addressed. The number of survey respondents (n = 121) and the response rate (9.7%) were small. This may be partly because the sample was large. The survey was sent not only to managers and entrepreneurs, but also to all employees of organizations whose contact information could be found on the internet. Almost the same number of managers or entrepreneurs and employees answered, so the response rate for managers or entrepreneurs is estimated to be higher than for employees. However, this was not investigated, and it was not possible to find out which group the respondents represented in the case of managers and entrepreneurs. The strength of the research can be considered that with this research setup, it was possible to examine employees' views widely and compare employees' perspectives about digital services with the views of managers or entrepreneurs. One reason for low response rate could be the timing of the survey during the holiday season in Finland. However, since the reminders to respond were sent both in June and in August, it can be argued that all had possibility to answer even during this season. It should also be noted that the study was not able to document differences between the professionals who responded to the survey and those who did not. Thus, it is not known how well the respondents represented the entire population. The questionnaire was extensive (8 pages, 26 questions, response time 15–20 min), so it is possible that the least busy managers, entrepreneurs and employees answered the survey, and this can possibly affect the results. The survey was also mainly purpose-designed and was not

validated. Last, it must be remembered that this survey was carried out already few years ago before the social and health care reform and the establishment of wellbeing services counties. As suggested also by Pennanen et al. (2023) [7], the use and prevalence of digital services should be studied more when wellbeing services counties are settled and have further developed their digital services. This applies also to South Ostrobothnia. The results of the current study may then be used for comparison.

Conclusions and Practical Implications. The results of the current study can be used to support welfare, social and health service organizations in digital service development. First, the study supports previous research that digital services work best when the customer relationship already exists, and the customer is known. This should be taken into account in service path development. It must be noted, as supported by the current study, managers or entrepreneurs and employees perceive the roles of a digital services in different ways. Therefore, all these groups should be included in digital service development in the organization. Second, organizations need extra resources, human resources as well as financial support, in development of digital services which is a challenge during the shortage of labour in healthcare and social services sector as well as with cost challenges faced by the newly developed wellbeing services counties. Finally, according to this study, the large organizations and public organizations in South Ostrobothnia were more certain in their views to develop more digital services especially in short time scale. Organizations should be supported in their plans with providing them support with the forms of more information about the characteristics of digital services as well as about the effectiveness and cost-effectiveness of these services since this information is scarce and partly unclear.

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