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Factors Affecting Web-based Social Service Referral Technology Adoption in the Nonprofit Sector

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by

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Background

Nonprofit Information and Communication Technology Adoption

Nonprofits play a significant role in providing social services that increase communities' overall well-being (Ressler et al., 2021; Reckhow et al., 2019; Smith & Phillips, 2016), and adopting new technologies helps promote these positive outcomes (Hackler & Saxton, 2007). However, with new technologies emerging at a pace few nonprofit organizations can keep up with, how do nonprofit leaders decide which technologies to adopt given their limited resources? This study seeks to understand what factors affect nonprofit leaders' technology adoption decision-making. Online referral platforms are not new in health or homeless organizations. Web-based coordinated social service referral tools are more recently integrating health organizations and the social service nonprofit sector into a coordinated network of service providers on web-based referral platforms. These platforms provide a more holistic service delivery model to families[1]. In addition, web-based referral tools provide coordinated electronic referral (e-referral) networks that increase referral processes' efficiency and effectiveness, which increases nonprofits' workflows in this area of organizations' operations. Nonetheless, nonprofits often lag behind other sectors in technology adoption (Zorn et al., 2011). Nonprofit leaders who make decisions to adopt web-based referral tools can positively influence mission outcomes (Boles, 2013; Goldkind, 2017; Hackler & Saxton, 2007; Laporte et al., 2018; Liao et al., 2009; McDonald, 2007; Mosely & Smith, 2018; Sherry et al., n.d.; Spelhaug & Woodman, 2017). Using Rogers' Diffusion of Innovations theory as the theoretical foundation, this study seeks to

[1] HUD's definition of family (24 CFR § 5.403) is one or more individuals who live together, including non-blood relatives, unmarried individuals, or people not connected in any other legal way (United States Department of Housing and Urban Development, 2019).

understand what factors affect Santa Cruz County health and human service nonprofit organization leaders' decisions to adopt a newly introduced web-based referral tool.

Ressler et al. (2021) conducted a study on how nonprofits contribute to the well-being of communities and concluded that "they matter for community-level outcomes" (p.822). According to Reckhow et al. (2019), "Nonprofits represent a critical component of service provisions in the United States both currently and historically" (p. 1473). More than ten million nonprofits and non-governmental organizations exist worldwide, and approximately 1.3 million United States-based nonprofits are identified as 501(c)3s (Conrardy, 2020). In addition, Conrardy (2020) states, "The solutions to many of the greatest challenges of our time – from climate change to cancer – lie in the nonprofit sector. We also know that we need an effective nonprofit sector now more than ever" (para. 7). According to TaxExemptWorld (2021, May), a data site with current statistics on nonprofits, there are over 2,500 nonprofits in Santa Cruz County. An analysis of the nonprofits identified in Santa Cruz County using their National Taxonomy of Exempt Entities (NTEE) code produced fifty-four nonprofits (Appendix B) with NTEE descriptions that include health and human service-related codes (Schwencke et al., 2021).

Health and human service nonprofit organizations (NPO) are arguably among the most important in promoting community well-being. They provide safety net services that often make the difference between people simply surviving or helping them to thrive (U.S. Department of Health and Human Services, 2021; Haslam et al., 2019; Kearney, 2019; Minton & Giannarelli, 2019; Rehan, 2019; Smith & Phillips, 2016). A report by the Urban Institute showed that nearly one in five people overall, one-third of children, and 75% of people living in poverty, receive at least one safety net service through a local nonprofit or government agency. These services

included the most common programs like food, housing, financial, and childcare assistance (Minton & Giannarelli, 2019). Health and human service nonprofits make vital contributions that address local needs and build communities that thrive (Francis & Talansky, 2013).

Technology is advancing exponentially, and nonprofits are often not as technologically innovative as other sectors (Corder, 2001; Hackler & Saxton, 2007; Bipat et al., 2018). With scarce resources often spread thin among social service nonprofits (Lam, 2020; National Council of Nonprofits, n.d.), maximizing operational efficiency and effectiveness allows nonprofit organizations to use their limited resources to assist more families (Boles, 2013). Kuntz (2018) states, "When organizations commit to examining and improving their day-to-day processes, they have the potential to dramatically increase their human capital and invest it back into their mission" (para. 1). Forbes Magazine contributor Madeline Duva (2019) pointed out that technology "is an essential driver of impact" (para. 8). Studies show that nonprofit organizations can increase their efficiency and effectiveness, thereby maximizing their mission goals, by using new information and communication technologies (Boles, 2013; Goldkind, L., 2017; Hackler & Saxton, 2007; Laporte et al., 2018; Liao et al., 2009; McDonald, 2007; Mosely & Smith, 2018; Sherry et al., n.d.; Spelhaug & Woodman, 2017). Goldkind (2017) states, "Information and communication technologies (ICT) have been held up as a means for nonprofit organizations to be innovative, to address challenges of accountability and transparency, and increasingly to answer calls for efficiency" (p.207). Unfortunately, some nonprofit leaders' reluctance to adopt new ICTs, which would optimize the organizations' ability to meet and exceed mission goals, hinders the agencies' ability to exploit these tools' benefits (Duva, 2019; Lee & Blouin, 2019; Zorn et al., 2011). Lee and Blouin (2019) go further and boldly claim, "Those organizations that

are able to innovate and change will thrive and prosper, whereas those that fail to adapt will decline and perish" (p.363).

However, there is evidence that some NPOs are beginning to position themselves to make the most of the opportunities ICT adoption offers (Finn et al., 2006). For example, the ICT software company Salesforce highlighted ten examples of how ICT adoption can help nonprofits thrive (Ragones, 2020). The following are three of these examples:

1. A New York nonprofit, Robin Hood, helped combat poverty by investing millions of dollars in local nonprofits, providing training and support, leveraging data, advocating for wise policy, and increasing its donor base by 300% by implementing data integrity software.
2. Big Brothers Big Sisters of America created a new community platform for 120,000 volunteer mentors by tracking conversations, activities, youth development plans, and support requests on a single coordinated platform.
3. The Center is "the heart and home of NYC's LGBT community, providing programs for health, wellness, and community connection" (para. 14). It met the 40% increase in demand for services during the COVID pandemic by using a chat support feature on its website that organization leaders had not previously embraced.

These examples provide a glimpse into what is possible when nonprofit decision-makers lead technology adoption; however, they are the exception.

Technology Adoption Decision-making Among Nonprofit Leaders.

The environment in which nonprofit organizations exist today demands that nonprofit leaders embrace technology and innovativeness (Hackler & Saxton, 2007; Jaskyte, 2004;

Spelhaug & Woodman, 2017; Zorn et al., 2011). According to an article in the *Non-profit Times*, nonprofit staff indicated that organization leaders were the most influential in technology adoption decision-making, followed by the board of directors (Ward, 2019). Empirical research validates Ward's article and shows that organizations' leaders play a crucial role in technology adoption (Jaskyte, 2004; Ihm, & Kim, 2021; Lee & Blouin, 2019; Marquez et al., 2020; Slatten, 2012). Leaders' decisions to adopt and support technological innovativeness set the tone for the rest of the organization (Jaskyte, 2004). Slatten (2012) states, "By understanding what may cause executive directors and board members to behave as they do, leaders within the organization may work to achieve beneficial outcomes and engage in organizational improvement activities" (p.428). Executive directors' responsibilities include leadership of operations, development of the board of directors, and technological knowledge of systems (Haddad, 2021). In the 1990s, when the internet was coming of age, research by Armstrong and Sambamurthy (1999) showed that "the knowledge of the senior leadership and the interactions among them have a significant influence on firms' IT assimilation" (p. 1). Another study of nonprofit executive directors showed that leaders' support for new technology was mainly related to the active use of technology compared to other control variables (Ihm & Kim, 2021). Furthermore, organizations leaders' perceptions of the importance of using technology (Briones et al., 2011; Hackler & Saxton, 2007; Nah & Saxton, 2013; Zorn et al., 2011) affects their decisions to adopt or reject it (Lee & Blouin, 2019; Marquez et al., 2020; Slatten, 2012). Therefore, this study seeks to understand factors affecting web-based social service referral adoption in the nonprofit sector through survey results from nonprofit leaders throughout Santa Cruz County.

History of Web-based Coordinated Referral Tools

Traditionally, sending and receiving client referrals to other community health and human service agencies relied on verbal and paper-based methods (Kim-Hwang et al., 2010). In the early 1990s, web-based electronic referral systems, or e-referral systems, were introduced in Finland in primary healthcare settings to improve the quality and efficiency of referrals between primary and secondary healthcare providers. According to Tian (2011), "Efficient communications, accurate health information transfer, and knowledge sharing have the potential to significantly enhance overall health outcomes" (para. 1). The new technology diffused internationally, with Denmark, Netherlands, Norway, Australia, and New Zealand adopting e-referral systems between 1995 and 2007 (Tian, 2011). One of the case studies that Tian (2011) discussed was the New Zealand Hutt Valley District Health Board, which adopted e-referral technology and attributed its success to a commitment from senior management. The study concluded that e-referral technology helped reduce costs and provided more accurate and efficient communication, "overall smoothing the patient's journey through the health community" (para. 29). While it is unclear when web-based referral systems emerged in the United States, studies evaluating the efficacy of e-referrals beginning in 2009 conclude that electronic referrals improved healthcare access and quality (Azamar-Alonso, 2019; Fleeger et al., 2016; Kim et al., 2009; Kim-Hwang et al., 2010; Naseriasl et al., 2015).

More recently, web-based coordinated referral tools, also termed, in part, cross-sector referral systems, community care coordination systems, and coordinated care networks, are deemed critical to improving community-level well-being (Hogan et al., 2018; Hovey et al., 2021; Sherry et al., n.d.). Web-based coordinated referral tools support positive health outcomes through a "community-level, system approach that connects individuals to health promotion and

support services" (Hogan et al., 2018. p. 1). Sherry et al. (n.d.) state, "Decades of research have demonstrated the vital role communities play in generating outcomes related to health and well-being" (p.3).

In 2016, across 25 sites, California launched the Whole Person Care program, a coordinated assessment, and referral system focused on taking a more active role in addressing California's homeless crisis. The California Association of Public Hospitals and Health Systems (2019) states,

> For people in low-income communities, medical problems can be caused and worsened by factors related to poverty, such as poor nutrition, lack of safe and stable housing, incarceration, unemployment, and the chronic anxiety of income insecurity. These factors, coupled with a fragmented delivery system where services are provided in a siloed fashion and providers are unable to communicate regularly to coordinate care, mean patients with complex needs face a range of obstacles when seeking health care (para.1).

Whole Person Care focuses on two of the most vulnerable populations, people experiencing homelessness and Medical recipients. One goal of the program is "to build partnerships and develop infrastructure to coordinate care seamlessly across providers from multiple sectors to provide tailored, integrated care for high-risk individuals to improve health" (California Association of Public Hospitals and Health Systems, 2019, para. 2). This philosophy is spreading nationwide as a mechanism to address and improve the multiple factors, known as social determinants of health, attributable to overall community well-being (Azamar-Alonso, 2019; Bell et al., 2012; Curry et al., 2017; Fleeger et al., 2016; Kim et al., 2009; Kim-Hwang et al., 2010, The Build Health Challenge. 2018).

Social Determinants of Health

The World Health Organization's Global Commission on Social Determinants of Health and the 2011 World Conference on Social Determinants of Health in Brazil drew attention to social determinants of health and the critical role policymakers, healthcare providers, and nonprofits play in producing positive health outcomes. "The World Health Organization defines social determinants of health as conditions or circumstances in which people are born, grow, live, work, and age," and "these conditions are shaped by political, social, and economic forces" (Islam, 2018, p. 1). Poor, or the absence of, policies, unequal economic opportunities, and bad governance lead to disparate outcomes of social determinants of health.

Social, or human, service nonprofits typically address the social determinants of health, including food access, economic stability, housing, social connection, education, and safe neighborhoods. Research shows that collaboration between social services and health organizations can help people experience positive health outcomes by focusing on both medical and social needs. According to Sherry et al. (n.d.), "Decades of research have determined the vital role communities play in generating outcomes related to health and well-being" (p. 3). Nevertheless, despite this growing body of research and shared understanding, in the United States, patient dissatisfaction, poor health outcomes, and high healthcare costs are rampant (Raday et al., 2018). Affirmatively, Roehr (2007) states "The United States is the nation most dissatisfied with its healthcare system" (p. 956).

A collective understanding of how social determinants influence health outcomes has emerged in recent years. These social determinants significantly influence individuals' overall well-being more than medical care alone. Human service organizations are the experts in addressing these social determinants of health at the local level because they are acutely aware of

the specific challenges of the populations they serve. The trend toward unifying these formerly distinct healthcare and human services sectors is now considered a fundamental model for improving community-level health outcomes (Raday et al., 2018). However, despite this emerging trend and the critical role the nonprofit sector plays in building healthy communities, many social service nonprofits lack the financial means to keep pace with health care systems in technology adoption that supports the health and social service integrated model. Without financial readiness, the human service nonprofit sector is left behind. As a result, these essential community-level partnerships between health and human service organizations are challenging to create and sustain.

The technology company, Unite Us recently expanded into Santa Cruz County. Their mission is to begin efforts to integrate health and social service providers through their community action framework designed to "increase and improve relationships among sectors with the goal of better health and human service coordination" (Sherry et al., n.d. p.2). However, these efforts have come with challenges (Ellen Dektar & Heather Thompson, Ph.D., personal communication, November 16, 2021).

State of Adoption of The Unite Us Platform

Unite Us is an information and technology innovation tool known as a coordinated care network. It is a web-based referral tool that networks cross-sector health and human service providers through the Unite Us infrastructure. This network allows health and human service organizations to efficiently and effectively access various social services to serve community members holistically and equitably (Sherry et al., n.d.). Figure 1 shows the core conditions for health and well-being that the Unite Us platform seeks to target through partnerships with local

social service agencies. According to Young and Lezin (2021), these core conditions, or social determinants of health, are

- stable and affordable housing
- safe and just community
- healthy environments
- community connectedness
- thriving families
- economic security and mobility
- lifelong learning and education
- health and wellness

Core Conditions for Health & Well-Being

Fig. 1

Source: Young & Lezin, 2021

The Unite Us technology falls under the broad definition of information and communication technology (ICT). It allows community health and human service organizations

to operate within a closed-loop referral system that changes the traditional siloed verbal and paper-based referral model to a web-based coordinated model (Sherry et al., n.d.). According to Sherry et al. (n.d.), the Unite Us platform has been adopted nationally in communities across 42 states to "support the acceleration of health and social service care organizations collaborating across sectors to improve community health" (p. 6). Like other e-referral systems, the Unite Us platform seeks to make the referral process more effective and efficient for providers and the people they serve. Efficient and effective online coordinated referral systems help organizations maximize their ability to make and receive cross-sector referrals by tapping into a network of community resources and providing multiple service referrals more efficiently (Hogan et al., 2018; Hovey et al., 2021, Sherry et al., n.d.; The BUILD Health Challenge, 2018). In addition, a report prepared by the National Opinion Research Center for the U.S. Department of Health and Human Services indicated that communities networked through the Unite Us platform were considered exemplary examples of how communities can address the social needs of residents and improve lives (McConnell, 2021).

According to a recent webinar presented by Optimal Solutions Consulting about the collective impact of the Unite Us platform in Santa Cruz County, Unite Us has partnered with over 32 organizations operating more than 65 programs with over 100 users (Young & Lezin, 2021, slide 10). When the Unite Us platform was introduced in Santa Cruz County, outreach staff contacted social service nonprofit leaders to discuss the benefits of joining the network and presented demonstrations of how the platform worked. Once organizations' leaders decided to adopt the new technology and join the network, the organizations' staff were trained by Unite Us staff. The decision made by the agencies' leaders on whether to adopt the new technology initiated the process of the diffusion of the ICT countywide (Brenda Moss, personal

communication, September 19, 2020; Heather Thompson, Ph.D., personal communication, January 4, 2022).

The Importance of Understanding ICT and E-referral Adoption by Public Service Leaders

For decades, public service leaders' adoption of information communication technology (ICT) has played an essential role in the public sector (Emerson et al., 2011; Hodžić et al. 2021; Liu & Yuan, 2015; Reddick, 2012; Singh, 2019). Through ICT, the dissemination of information has progressively developed from merely posting agendas and meeting minutes on public bulletin boards to how local, state, national, and international governments conduct a significant portion of their business. For example, Emerson et al. (2011) point out that "Now government sites advertise recreation classes and take enrollments, allow residents and businesses to pay parking tickets and utility bills, allow tracking of the status of building and other permits, and for businesses, shows the status of invoices submitted for payment for services rendered to governments" (p. 68). In 2010, the United States' top leader, President Obama, recognized technology as essential for job creation and economic growth. According to the Obama White House archives (The White House, n.d.), his administration created the Internet Policy Task Force "to bring together industry, consumer groups, and policy experts to identify ways of ensuring that the Internet remains a reliable and trustworthy resource for consumers and businesses" (para. 4). In 2014, the Federal Register Modernization Act (H.R. 4195, 2013-2014), introduced by Republican Congressman Darrell Issa, required the Federal Register to be published electronically rather than in print. In 2019, the Housing Authority of the County of Santa Cruz and numerous public housing agencies nationwide introduced online portals for tenants and landlords. These portals allow instant access to information and forms required to participate in Housing Authority programs, which streamlines processes making the

administration of the Housing Choice Voucher and other Housing Authority programs more efficient (Jenny Panetta, Executive Director, personal communication). These examples highlight the role of ICT adoption by public service leaders in the public sector. Public agencies and the nonprofit sector often provide services to the same populations so online coordinated services in both sectors play a critical role in wholistically addressing communities' social determinants of health and promoting health equity (National Academies of Sciences, Engineering, and Medicine, 2017).

Existing and emerging ICT "has made communication faster and more convenient, affordable, customized, and interactive than ever before (Emerson et al., 2011, p. 68). Lui and Yuan (2012) conducted a qualitative study of journal articles on technology adoption in public management to understand what types of ICT have been adopted by government organizations, the bidirectional evolutionary relationship between ICT and public administration, and the implications of this understanding. They concluded that the literature between 1980-2013 found in leading academic databases showed that electronic public administration, or e-governance, "has evolved rapidly from rudimentary uses of ICTs as simple tools to support highly structured administrative work to the integration of ICT throughout government operations" (p. 140). They summarized their analysis of the 5627 papers spanning nearly 25 years, stating, "ICT innovations have introduced great benefits such as the following:"

- increased effectiveness and efficiency in government operations,
- integration of government operations across departments, regions, and states,
- customized service delivery,
- increased level of communication between public agencies and citizens, and
- some levels of engagement of the public decision and policy making (p. 147).

As previously demonstrated, public organization leaders play a vital role in adopting ICT (Jaskyte, 2004; Ihm, & Kim, 2021; Lee & Blouin, 2019; Marquez et al., 2020; Slatten, 2012). In the report on implementing community resource referral platforms prepared for the U.S. Department of Health and Human Services mentioned above, McConnell (2021) stated, "First and foremost, strong leadership at the central or founding organization was essential. Leadership helped bring stakeholders together and provided an overarching vision for the project, keeping diverse partners engaged and committed" (p. 2). The report noted that it is the leaders of organizations who have the power to "articulate a central message and bring a community of partners together around a cohesive strategy" (p. 13). In addition, public service leaders can build consensus and bring other community leaders to the table. The Community Care Coordination Systems: Technology Supports report (Hogan et al., 2018) discussed the importance of e-referral systems and public service leaders' role in accelerating the diffusion of the technology that supports these systems. According to the report, closed-looped e-referral systems that track exchanges between healthcare providers and social service providers "demonstrated a positive impact on reducing unmet health-related social needs for low-income families" and listed leadership as a critical element "to galvanize key community members and develop shared community goals" (p. 5). Lastly, the report concluded, "leaders can catapult the spread and scale of effective community care coordination by aligning efforts" (p. 14).

Literature Review

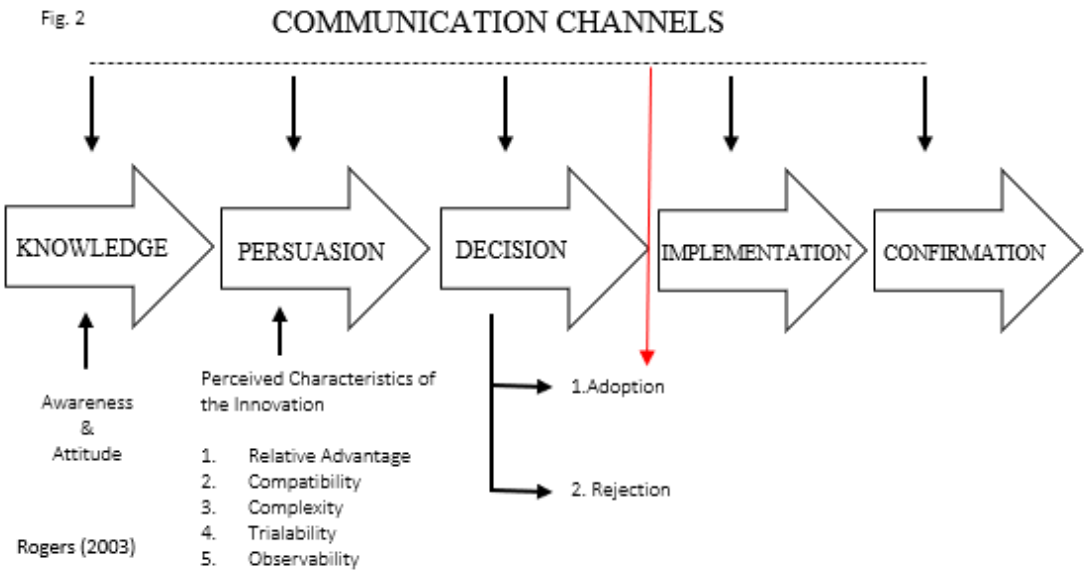
Technological Innovation Adoption

The scope of technology innovation (TI) adoption research extends to nearly every topic, from social good (Mao et al., 2020), to firm performance (Bipat et al., 2018; Chen et al., 2020) and firm growth (Martinez-Alonso et al., 2019), to building sustainable cities (Goi, 2017), and economic growth (Broughel & Thierer, 2019) to public administration (Liu & Yuan, 2015) and nonprofit organizations (Jaskyte, 2011; Lee & Blouin, 2019; Lee & Blouin, 2015). The notion of TI extends the broader concept of innovation. Rogers (2003) defines *innovation* as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" and notes that the terms "innovation" and "technology" are often used interchangeably (p. 12). Technology innovation adoption generates opportunities for organizations to increase efficiency and performance (Chen et al., 2020; Martínez-Alonso et al., 2019; Miranda et al., 2016) and allows communities to explore ideas faster and more frequently (Goi, 2017). Furthermore, the adoption of TI benefits communities and organizations through economic growth and enhanced human well-being (Broughel & Thierer, 2019). Laporte et al., (2018) state, "Done effectively, technology adoption isn't gadget chasing; it's strategically selected digital tools that empower staff and stakeholders to deliver on the organization's mission" (para. 3). How do agencies move beyond gadget chasing and decide what technological innovations will help them better meet their mission goals? This study addresses that question by exploring how certain factors affect nonprofit leaders' decisions to adopt new technology with the potential to increase performance and meet organizational mission goals. Rogers' Diffusion of Innovations theory is the theoretical basis used in this study to explain, in part, nonprofit leaders' adoption behaviors. Rogers states, "Getting a new idea adopted, even when it has obvious advantages, is difficult" (p. 1).

Rogers' Diffusion of Innovations theory

Numerous theories and models of technology adoption that explain adoption behaviors exist; however, one of the most widely accepted and relevant to this study is the Diffusion of Innovations (DOI) Theory (Lee & Blouin, 2019; Koul & Eydgahi, 2017; Taherdoost, 2017; Wang et al., 2011). According to Lee and Blouin (2019), the DOI theory "is one of the most important theories used in I.S. [information systems] to help explain the adoption of technological innovations" (p.364). A central element of Rogers' DOI theory is the innovation-decision process. This element is the focus of this study. Rogers defines the innovation-decision process as "the process through which an individual (or other decision-making units) passes from knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject it, to implementation of the new idea, and confirmation of this decision" (p. 37). Rogers' model shown below (Fig.2) presents these five steps (p. 170).

- knowledge – when an individual (or decision-making unit) becomes aware of the existence of the new idea and gains some understanding of it



- persuasion or attitude – after learning of the new idea, an individual (or decision-making unit) forms an attitude toward the innovation
- decision – an individual (or decision-making unit) decides to adopt or reject the new idea
- implementation – when an individual (or decision-making unit) engages in the use of the innovation
- confirmation – after a decision has been made to adopt or reject the innovation, an individual (or decision-making unit) considers whether to continue using the new technology or reconsiders and subsequently rejects the idea.

This study is concerned with the decision to adopt or reject web-based referral tools; therefore, the focus is on the first three communication channels; knowledge, persuasion, and decision. After an individual or other decision-making unit gains awareness of and forms an attitude towards innovation, they enter the decision phase. The decision to adopt or reject the technology occurs during this phase. It is strictly the initial decision to adopt or reject the new idea. In nonprofit organizations, it is typically the leaders who make the initial decision to adopt or reject new technology (Jaskyte, 2004; Ihm, & Kim, 2021; Lee & Blouin, 2019; Marquez et al., 2020; Miranda et al., 2016; Slatten, 2012).

Information and Communication Adoption by Leaders in the Nonprofit Sector

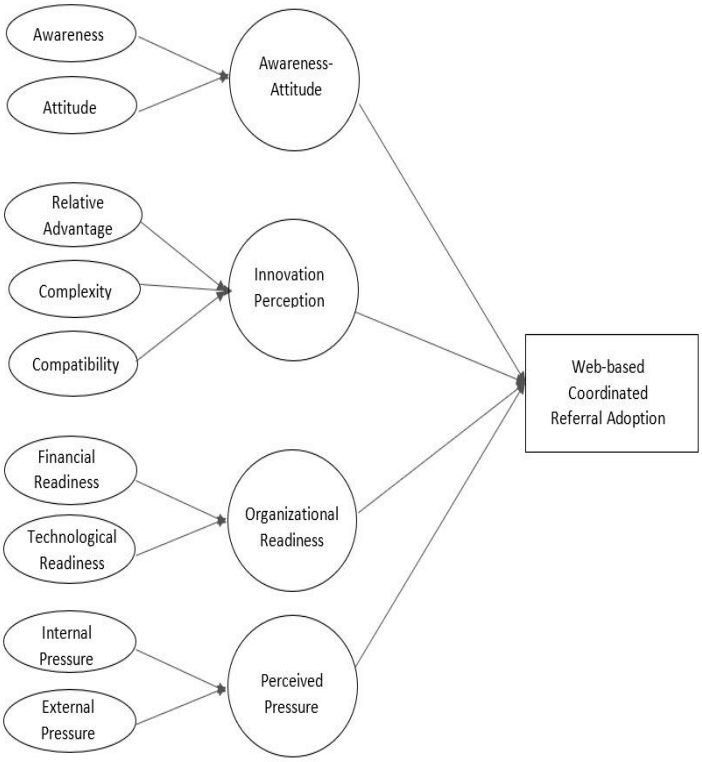
A study conducted by Miranda et al. (2016) used Rogers' Diffusion of Innovations theory to describe the adoption process of resource planning technology in a Brazilian nonprofit organization. Their study considered all five factors of Rogers' innovation-decision process as seen in Figure 2. First, the organization's end users, middle management, and top leaders were interviewed. Second, the organization's Chief Executive Officer (noted in the study's results by "DP") was surveyed because the researchers understood that leaders' knowledge of the existence

of the innovation began with the introduction of the innovation to the organization's CEO through a presentation by a partner agency. Third, the CEO's insight into the relative advantage (in this case, ease of use) of the innovation was based on the CEO's knowledge of other systems on the market. Finally, the study showed that the decision to adopt the innovation was partly based on the DP's consideration of the benefits it would provide compared to the implementation difficulties.

Another study, conducted by Lee and Blouin (2019), examined “the primary factors that influence the adoption and resistance of web-disclosure" (p. 363) through the lens of Rogers' Diffusion of Innovations theory. The survey instrument "was addressed to the organization leader" (p. 368). Based on Rogers' (2003) DOI theory and their research, Lee and Blouin (2019) concluded, "The five characteristics that explain the variation in individual adoption levels are as follows: (1) relative advantage; (2) compatibility; (3) complexity; (4) trialability; and (5) observability" (p. 346). Aligning with Lee and Blouin's (2019) study, this study aims to understand the first three characteristics and how they contribute to Santa Cruz County health and human service nonprofit leaders' tendencies towards adopting or rejecting the web-based referral tool recently introduced in the county. The first three characteristics are considered in this study because Lee and Blouin (2019) state, "researchers have consistently found that relative advantage, compatibility, and complexity are the most significant attributes of the technology that are related to adoption" (p.364). Lee and Blouin (2019) developed a model incorporating Rogers' (2003) adopter characteristics. Based on their research, the model included financial and

technological readiness and internal and external pressure (Fig. 3; to view a larger image of the model, see Appendix A). This study uses Lee and Blouin's (2019) model because of the similarities related to technology adoption decision-making behavior among leaders in the nonprofit sector. Lee and Blouin (2019) sought to understand what factors affect web disclosure adoption in nonprofits and medium enterprises. This study seeks to understand factors affecting web-based coordinated referral technology adoption in health and human service nonprofits. The dependent variable in Lee and Blouin's (2019) model was the adoption of technology for web disclosure. Following their model, the dependent variable in this study is the adoption of technology for web-based referrals. The subsequent sections discuss the indicators of the four factors – awareness and attitude, innovation perception, organizational readiness, and perceived pressure – as they relate to decision-makers who would adopt or reject the technology.

Fig. 3 – Innovation Adoption Model



Source: Lee & Blouin, (2019)

Awareness and Attitude: Decision-Makers Characteristics

Before a new technology can be adopted, decision-makers must know that it exists. Lee and Blouin (2019) state, "According to the diffusion of innovations theory, the innovation-decision process begins when an individual or other decision-making unit becomes aware of an

innovation's existence and how it functions" (p. 366). As such, the following hypothesis is proposed.

Hypothesis 1: Agency decision makers' awareness of web-based coordinated social service referral tools is positively related to the adoption of the Unite Us platform.

According to Lee and Blouin (2019), "attitude refers to the degree to which an individual has a favorable or unfavorable appraisal of an innovation" (p. 366). Rogers' (2003) DOI theory posits that individuals may seek information and messages that align with their existing attitudes and beliefs, reinforcing their attitudes. Thus, if an individual already has a favorable attitude towards a specific innovation, they will likely seek information that agrees with their existing attitudes and *vise-versa*. Lee and Blouin's (2019) research showed that decision-makers with a more positive attitude toward an innovation are more likely to adopt the it. Therefore, the following hypothesis is proposed.

Hypothesis 2: The agency decision-maker's favorable attitude toward web-based coordinated social service referral tools is positively related to the adoption of the Unite Us platform.

Innovation Perception: Innovative Decision Process Characteristics

Relative Advantage

The innovation-decision process indicators considered in this study are relative advantage, complexity, and compatibility. As previously noted, Lee and Blouin (2019) state, "researchers have consistently found that relative advantage, compatibility, and complexity are the most significant attributes of the technology that are related to adoption" (p. 364). In addition, Rogers (2003) defines *relative advantage* as "the degree in which an innovation is perceived as being better than the idea it supersedes" (p. 229). As discussed above, research

suggests that web-based referral tools are a more efficient method for sending and receiving referrals than traditional verbal and paper-based methods, thus saving time and being advantageous over traditional inefficient methods. As such, the following hypothesis is proposed.

Hypothesis 3: The perceived relative advantage of a web-based coordinated social service referral tool is positively related to the adoption of the Unite Us platform.

Complexity

Complexity is "the degree to which an innovation is perceived as relatively difficult to understand and use" (Rogers, 2003, p. 256). The more difficult a web-based referral tool is to understand and use, the less likely an agency decision-maker will adopt it. Looking back at the study conducted by Miranda et al. (2016), new technology is generally introduced to organizations' leaders through presentations or by other organizations that have already adopted it. According to Rogers' (2003) theory, once individuals are aware of an innovation, they seek information and form an opinion about it. The theory further posits that if the innovation is perceived as complex, adoption is resisted due to a "lack of skills and knowledge" (Lee & Blouin, 2019, p. 367). The web-based referral tool in this study was introduced to nonprofit decision-makers through outreach efforts – presentations and collaborative meetings of health and human service nonprofit leaders – by the company's team (Heather Thompson, personal communication, January 4, 2022). Those outreach efforts provided agency decision-makers with knowledge of how the platform worked and the organizational benefits it could provide. This research posits that nonprofit leaders who viewed the web-based referral tool as complex and challenging to use were less likely to adopt the platform. Therefore, the following hypothesis is proposed.

Hypothesis 4: The perceived complexity of a web-based coordinated social service referral tool is negatively related to the adoption of the Unite Us platform.

Compatibility

Rogers (2003) defines *compatibility* as "the degree to which an innovation is perceived as compatible with the existing values, past experiences, and needs of potential adopters" (p. 240). This concept is critical because new technology will likely not be adopted if it does not align with existing organizational values. For example, if agency leaders place a high value on face-to-face contact with clients or clients being able to speak directly with agency staff on the telephone, then using a web-based referral tool that eliminates these types of interactions would conflict with the more personal styles of communication leaders value (Brenda Moss and Clay Kempf, personal communication, August 18, 2021). According to Borkovich et al. (2015), organizations are more likely to embrace new technology when it aligns with the organizational culture and the organization's culture is often heavily influenced by agency leadership. Additionally, if nonprofit agency leaders are satisfied with the service delivery system currently in use, they would likely not see the need to adopt new technology and therefore be more resistant. Thus, the following hypothesis is suggested.

Hypothesis 5: The perceived compatibility of web-based coordinated referral tools is positively related to the adoption of the Unite Us platform.

Organizational Readiness: Organization Characteristics

Financial Readiness

Lee and Blouin (2019) state, "organizational readiness refers to the level of financial and technological resources available to the organization" (367). Nonprofits often struggle with insufficient financial resources necessary to adopt new technologies. Numerous studies identify

budget size as a barrier to technology adoption (AbouAssi et al., 2016; Finn & Maher, 2009; Miranda et al., 2016; Slatten 2012; Zorn et al., 2011). According to Finn and Maher (2009), it is essential to consider the budget size because it is often the most cited barrier to technology adoption, putting nonprofits at a disadvantage compared to larger organizations. Therefore, the following hypothesis is proposed.

Hypothesis 6: Financial readiness is positively related to the adoption of the Unite Us platform.

Technological Readiness.

In addition to financial readiness, nonprofits with higher levels of technological expertise and sophistication are more inclined to adopt new technologies like the web-based coordinated referral tool offered by Unite Us. Lee and Blouin (2019) state, "researchers have found that low levels of I.T. sophistication and technical expertise among SMEs and NPOs impeded I.S. [information systems] adoption" (p. 367). As such, the following hypothesis is suggested.

Hypothesis 7: Technological readiness is positively related to the adoption of the Unite Us platform.

Perceived Pressure: Environmental Characteristics

The final factor in Lee and Blouin's (2019) model refers to internal and external influences from stakeholders. Board members and employees are considered internal stakeholders. An executive director may get pressure to adopt or reject new technology from these internal stakeholders. Lee and Blouin (2019) include perceived pressure indicators based on the stakeholder theory. However, in their study, Lee and Blouin (2019) combine internal and external indicators and ran the OLS regression with pressure as a single variable. In the current study, based on prior research (Corder, 2001; Hackler & Saxton, 2007; Iacovou et al., 1995; Zorn

et al., 2011) internal and external pressure indicators were included in the model as separate, independent variables. For internal pressure, this study posits the following hypothesis.

Hypothesis 8: Perceived internal pressure to use a web-based coordinated referral tool is positively related to the adoption of the Unite Us platform.

According to Lee and Blouin (2019) external stakeholders "consist of major donors, government organizations, and private foundations that are major sources of funding" (p.367), which is supported by additional research (Corder, 2001; Hackler & Saxton, 2007; Iacovou et al., 1995; Zorn et al., 2011). In particular to this study, external stakeholders may include other nonprofit agency leaders who exert pressure to adopt the web-based referral tool because the more agencies that adopt the tool, the more effective it becomes. Other sources of external pressure are health care organizations and the Unite Us technology company (B. Moss, Clay Kempf, and Heather Thompson, PhD, personal communication, May 05, 2021). Therefore, the following hypothesis is offered.

Hypothesis 9: Perceived external pressure to use a web-based coordinated referral tool is positively related to the adoption of the Unite Us platform.

Methodology

This study implements a quantitative methodology, using objective measurements and the statistical analysis of data collected through a questionnaire using standardized questions (Welch, & Comer, 2006). Data were collected from a questionnaire designed in Qualtrics and disseminated electronically via email to Santa Cruz County health and human service nonprofit leaders. The personally identifiable information collection mechanism was disabled to ensure data were collected anonymously. IBM® SPSS Statistics software was used as the data analysis tool. Therefore, the methodology used in this study is derived and modified from the methodology employed by Lee and Blouin (2019), and uses descriptive statistics and OLS regression analysis to identify the results of the tested hypotheses.

The list of nonprofits selected to be surveyed in this study (Appendix B) was collected and cross-referenced by researching publicly available data on ProPublica (Schwencke, 2013), TaxExemptWorld (2021), and GreatNonprofits (n.d.) websites. Additional information was obtained during Unite Us webinars and personal communication with the project manager, Heather Thompson, Ph.D., of a Santa Cruz County local partner agency, Health Improvement Partnership, and Unite Us Senior Community Engagement Manager, Ellen Dektar. The National Taxonomy for Exempt Entities (NTEE) is the predominant system used to classify nonprofit organizations by their field of practice (Fyall et al., 1994). The nonprofits for this study were selected based on their NTEE code and include organizations with the following NTEEs:

- human services
- multipurpose and other
- food, agriculture, and nutrition
- youth services
- senior centers
- delinquency prevention
- mental health
- education
- housing and shelter

In addition, crime and legal NPOs were reviewed and selected if, based on website research and mission statements, it was determined they provided any social type services.

The survey was emailed to agency email addresses obtained online or by calling the agency phone number and asking for the agency email. In many cases, the survey was emailed directly to an organization's Executive Director or other agency leader responsible for making technology adoption decisions. Executive Directors' or other agency leaders' direct emails were obtained through the following methodologies:

1. Seniors Council of Santa Cruz and San Benito Counties Executive Director, Clay Kempf
2. Seniors Council of Santa Cruz and San Benito Counties Board Member, Steven Matzie
3. Telephone calls to the organizations

In cases where leaders' emails were unknown, the survey link was emailed to the agency email with instructions that the survey must be completed by a leader in the organization who is responsible for making or influencing technology adoption decisions either in whole or in part. One week before the survey was emailed, the agency was contacted by email to advise the survey link would be emailed the following week with the assurance the survey was anonymous. The survey link was emailed, and a follow-up email was sent with the survey link included again and an endorsement letter from a nonprofit leader, Clay Kempf, three weeks after the initial email.

The model used in this research was adapted from Lee and Blouin's (2019) research. Lee and Blouin (2019) refined the model developed by Iacovou et al. (1995). Iacovou et al.'s (1995) model was tested and extended based on prior research by Bouchard (1993), Pare, and Raymond

(1991) and Thong (1995). Based on Lee and Blouin's (2019) model (see Fig. 3 and Appendix A), four factors, awareness-attitude, innovation perception, organizational readiness, and perceived pressure, that included nine indicators were used as the independent variables in the analysis to ascertain their correlational effect on the dependent variable, the decision to adopt technology for web-based referrals.

Findings

Results of descriptive statistics of the dependent variable and the nine independent variables, awareness, attitude, relative advantage, compatibility, complexity, financial readiness, technological readiness, internal pressure, and external pressure are presented in Table 1.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
aware	27	.00	.00	.0000	.00000
attitude	27	.00	1.00	.1852	.39585
advantage	27	.00	1.00	.3333	.48038
compat	27	.00	1.00	.3333	.48038
complex	27	.00	1.00	.3333	.48038
fin_ready	27	.00	1.00	.5185	.50918
tech_ready	27	.00	1.00	.2222	.42366
int_pressure	27	.00	1.00	.5926	.50071
ext_press	27	.00	1.00	.3333	.48038
adopted_dummy	25	.00	1.00	.3600	.48990

A total of fifty-four health and human service nonprofits in Santa Cruz County (Appendix B) were identified. It was discovered that three organizations were closed permanently due to the COVID pandemic. The survey link was emailed to the remaining fifty-one organizations and three were returned as “undeliverable” due to unknown email addresses. Unsuccessful attempts were made to obtain a usable email address for the three organizations. Of the remaining forty-eight, twenty-seven nonprofit leaders responded to the survey however, two did not answer the dependent variable question, whether their organization adopted the Unite Us platform. Demographic data collected from respondents are presented in Tables 2-7.

Table 2: Age (years)

	N	%
< 25	1	3.7%
26-35	4	14.8%
36-45	5	18.5%
46-55	8	29.6%
56-65	8	29.6%
66 +	1	3.7%

Table 3: Gender

	N	%
female	13	48.1%
genderqueer	1	3.7%
male	12	44.4%
prefer not to say	1	3.7%

Table 4: Race

	N	%
Asian	1	3.7%
White	25	92.6%
Prefer not to say	1	3.7%

Table 5: Ethnicity

	N	%
No, not of Hispanic, Latino/a/x, or Spanish origin	22	81.5%
Yes, Mexican, Mexican American, Chicano/a/x	3	11.1%
Yes, Another Hispanic, Latino/a/x or Spanish origin	2	7.4%

Table 6: Number of Employees

	N	%
0-19	14	51.9%
20-49	7	25.9%
50-99	3	11.1%
100-200	2	7.4%
more than 200	1	3.7%

Table 7: Annual budget

	N	%
0 - $249,999	1	3.7%
$250,000 - $999,999	6	22.2%
$1,000,000 - $2,499,999	10	37.0%
$2,500,000 - $9,999,999	7	25.9%
$10,000,000 +	3	11.1%

The data showed nearly 60% of respondents were between 45 and 65 years old (Table 2), over 90% were White (Table 4) and over 80% identified as non-Hispanic (Table 5). Leaders who responded to the survey were roughly evenly split between male and female with one respondent identifying as genderqueer and one respondent who preferred not to say (Table 3). Just over 50% of respondents were leaders in organizations with less than 20 employees followed by organizations with between 20 and 49 employees (Table 6). Ten of the organizations that

responded had budgets between $1m and $2.5m followed by seven organizations reporting budgets between $2.5m and $10m, six organizations with budgets between $250,000-$999,999. Finally, three organizations reported annual budgets of $10m or higher (Table 7).

Table 8 shows the frequency and percent of respondents whose organizations adopted the Unite Us platform which was used as the dependent variable in this study. A total of 27 agency leaders responded to the survey. However, as indicated in the frequency table, two respondents opted out of answering whether their organization adopted the web-based referral technology. Therefore, the validated data show 64% of nonprofit leaders indicated their organizations adopted the Unite Us web-based referral technology and 36% indicated their organizations did not adopt the technology as of the time they responded to this survey.

Table 8: Organizations that Adopted the Web-based Referral Technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	16	59.3	64.0	64.0
	no	9	33.3	36.0	100.0
	Total	25	92.6	100.0	
Missing	System	2	7.4		
Total		27	100.0		

An OLS regression test was conducted as follows:

$$\textit{Web-based referral technology adoption} = ß0 + ß1\textit{Awareness} + ß2\textit{Attitude} + ß3\textit{Advantage} + ß4\textit{Complexity} + ß5\textit{Compatability} + ß6\textit{FinRedi} + ß7\textit{TechRedi} + ß8\textit{IntPress} + ß9\textit{ExtPress}$$

The results are presented in Table 9.

Table 9: Regression Analysis all Variables[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.108	.133		.813	.429
	aware	-.489	.350	-.276	-1.397	.183
	attitude	-.620	.417	-.516	-1.485	.158
	advantage	.135	.225	.135	.597	.559
	compat	.100	.309	.100	.325	.749
	complex	.223	.282	.217	.793	.440
	fin_ready	.807	.319	.840	2.531	.023
	tech_ready	-.160	.265	-.134	-.605	.554
	int_pressure	-.343	.250	-.354	-1.372	.190
	ext_press	.299	.225	.291	1.328	.204

a. Dependent Variable: adopted the Unite Us technology: $R^2 = .575$

When all independent variables were included in the model, financial readiness produced a statistically significant finding at the 95% confidence level with an R square of .575. This means that over 57% of the variation is explained by the model. As such, the results indicate that a positive relationship exists between an organization's financial readiness and whether the organization's leader adopted the web-based social service referral technology. Therefore, the number six null hypothesis is rejected because the data show there is a statistically significant difference in adoption behavior between respondents who perceived their organizations had the financial readiness to adopt the web-based referral technology and those respondents who perceived their organizations did not. However, when regression analyses were run separately for the four factors described in Lee and Blouin's (2019) model, external pressure also indicated a statistically significant relationship to the organizations' leaders' decision to adopt the platform (Table 13). Therefore, the number 8 null hypothesis can be rejected as well. The number 8 null

hypothesis can be rejected because data indicated there was a statistically significant difference in adoption behavior between respondents who perceived they received external pressure and respondents who perceived they did not receive external pressure. Both statistically significant findings may be cautiously generalized to the larger population to help explain social service nonprofit leaders' technology adoption decision-making behavior. However, the generalizability of external pressure is tenuous because the revised simple linear regressions may demonstrate multicollinearity, meaning the independent variables may be correlated, which is why when the regression analysis is run with all independent variables external pressure does not demonstrate significance, but when run separately it does.

Tables 10-13 show the revised simple linear regression analyses of the four factors that include the indicators associated with each factor. Unlike the previous research suggests (Lee & Blouin, 2019) this study found no relationship between awareness-attitude (Table 10) or innovation perception factors (Table 11) and the adoption of the technology. This may be explained by the small sample size but also may be influenced by the pervasive outreach strategies employed by the for-profit technology company and the national healthcare system seeking to expand in Santa Cruz County (Heather Thompson, PhD. & Ellen Dektar, personal communication, November 16, 2021). The Unite Us outreach team provided at least information about the web-based referral technology to all the NPOs in this study. As such, all respondents indicated awareness of the technology. Further explanation of the relevance of this is discussed in the analysis section below.

Table 10: Awareness-Attitude Factor[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.333	.115		2.909	.008
	aware	-.333	.362	-.188	-.920	.368
	attitude	.267	.246	.222	1.085	.290

a. Dependent Variable: adopted the Unite Us technology: $R^2 = .097$

Table 11: Innovation Perception Factor[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.222	.132		1.688	.106
	advantage	.184	.271	.184	.678	.505
	compat	.164	.302	.164	.541	.594
	complex	.040	.255	.039	.158	.876

a. Dependent Variable: adopted the Unite Us technology: $R^2 = .114$

Table 12: Organizational Readiness Factor[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.077	.111		.690	.497
	fin_ready	.637	.188	.663	3.384	.003
	tech_ready	-.114	.235	-.095	-.486	.632

a. Dependent Variable: adopted the Unite Us technology: $R^2 = .383$

Table 12a: Financial Readiness Alone[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.077	.110		.702	.490
	fin_ready	.590	.158	.614	3.729	.001

a. Dependent Variable: adopted the Unite Us technology: $R^2 = .377$

When fewer variables were included in the model, financial readiness became a more significant predictor of technology adoption. This may be explained by the addition of other

correlated variables which may help explain some of the variation related to the dependent variable. Table 12 includes both organizational readiness indicators, financial and technology readiness, and the significance level of financial readiness as a predictor of technology adoption is .003. Table 12a shows when financial readiness is the only variable included in the model, the significance level is .001.

While the model including all independent variables (Table 9) shows external pressure to be statistically insignificant (.204), Table 13 shows when the perceived pressure factor indicators, internal and external pressure, are isolated, external pressure shows statistical

Table 13: Perceived Pressure Factor[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.134	.129		1.043	.308
	int_pressure	.103	.189	.107	.546	.591
	ext_press	.526	.201	.511	2.616	.016

a. Dependent Variable: adopted the Unite Us technology: $R^2 = .320$

Table 13a: External pressure only[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.176	.101		1.751	.093
	ext_press	.574	.178	.557	3.220	.004

a. Dependent Variable: adopted_dummy: $R^2 = .311$

significance at .016. When isolated as a single variable, the significance is .004 (Table 13a). Similar to financial readiness, the small sample size and exclusion of other variables may affect the significance level of the perceived pressure indicators. In this case, and consistent with the inclusive regression analysis (Table 9), internal pressure is not a statistically significant predictor of web-based referral technology adoption for the sample population in this study.

Table 14: Financial readiness compared to adoption

		Financial readiness	
		agree	disagree
adopted Unite Us	yes	12	4
	no	1	8

Financial readiness and external pressure data were analyzed using frequency tables. This analysis further highlights the importance of at least considering financial readiness and external pressure as possible predictors of web-based social service referral technology adoption for this population, Table 14 shows that 75% of agency leaders whose organizations adopted the Unite Us technology agreed their organization was financially ready to do so. Conversely, only 11%, or 1 of 8, agency leaders felt their organization was financially ready but did not adopt the technology. Interestingly, for the agency that did not adopt the technology but felt her organization had the financial ability to do so, the data revealed she perceive she did not receive external pressure Internal pressure was not predictive of adoption. However, as seen in Table 15, of the agencies that adopted the Unite Us technology, the data revealed 14 of the 16, or 87.5%, of survey respondents who adopted the technology, agreed they received external pressure, and two-thirds of the agencies that did not adopt the technology indicated they did not receive pressure from external sources.

Table 15: External pressure compared to adoption

		Received external pressure	
		agree	disagree
adopted Unite Us	yes	14	2
	no	3	6

When a regression analysis of the age demographic data was run (Table 16), no significant predictors were indicated. However, the age group 25-34 years old, indicated a

Table 16: Age[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.950	1.029		.923	.367
	age_25	.143	.498	.058	.287	.777
	age_25_34	-.607	.292	-.464	-2.080	.051
	age_35_44	-.057	.273	-.048	-.210	.836
	age_55_64	-.429	.249	-.401	-1.722	.101
	age_65_plus	.143	.498	.058	.287	.777

a. Dependent Variable: adopted the Unite Us technology: $R^2 = .284$

negative trend at .051 significance. Although not statistically significant, the near statistical significance of this variable stands out. It raises questions about whether age is related to technology adoption or financial readiness. Are younger versus older nonprofit leaders more or less likely to perceive their organizations are financially ready to adopt new technologies? Further research regarding the relationship between age and the adoption of web-based referral technology should be explored. Demographic data for gender, race, and ethnicity showed no significant relationships for this sample population. However, once again, this may be attributed to the small sample size of this study and may be worthy of further research.

In the end, the results of the analysis indicate that the adopted model from Lee and Blouin (2019) does not fully predict the adoption of technology for web-based referrals by leaders of NPOs in the Santa Cruz area. However, individual investigation of the indicators from that model do demonstrate some correlational effects, in particular financial readiness and external pressure. This result may indicate that the independent variables are correlated and may indicate the presence of multicollinearity. Multicollinearity exists whenever an independent variable is highly correlated with one or more of the other independent variables in a multiple regression equation. Multicollinearity is a problem because it undermines the statistical significance of an independent variable. This means that Lee and Blouin's (2019) model may not

be as predictive of the phenomenon in question for this population, and more research may be necessary to identify a more explanatory model for this population. These simple regression results provide some indication of the mechanisms surrounding the decision to adopt technology by leaders of NPOs in Santa Cruz County, and require further investigation as the analysis below demonstrates.

Analysis

In an environment where innovative web-based referral technologies are assumed to increase the efficiency and effectiveness of health and human service delivery, it is important to understand what factors influence nonprofit leaders' technology adoption decisions. With a greater understanding of the factors affecting decision-making in this area, nonprofit leaders, governments, policymakers, and technology innovators can strategize to increase equitable access to technology tools that integrate health systems with the nonprofit social service sector.

Since the nonprofit sector provides an enormous range of services that specifically target social determinants of health at the local level, focused research on what influences local health and human service nonprofit leaders' technology adoption decision-making can provide valuable insight. This insight can influence policymakers to rethink funding priorities. Ressler et al. (2021) state, "politicians and policymakers are increasingly interested in how to measure and improve subjective well-being of communities" (p. 822), so the political environment is ripe to receive this type of research. With the potentially primed political environment, how can social service nonprofit advocates push the issue of funding onto the public agenda?

According to Gerston (2010), triggering mechanisms – whether gradual or instantaneous – thrust an issue into public view. Once an issue is in the public view, it is more likely to catch the attention of key actors, such as politicians, social service and nonprofit advocates, nonprofit leaders, and technology innovators that have the power, influence, and authority to get issues on the public agenda. The gradual triggering mechanism in play here is the increasing global understanding that community health and well-being are directly related to social determinants of health. However, as discussed in the following section, this gradual triggering mechanism has proved insufficient to increase funding for health and human services. Instead, funding has

decreased over the long term. When funding for social services decreases, disparities increase, particularly for people of color. According to the Centers for Disease Control and Prevention (2021), “A growing body of research shows that centuries of racism in this country has had a profound and negative impact on communities of color” (para. 3).

Financial Readiness

As evidence of the importance of social determinants of health has surfaced, and value-based initiatives that reward healthcare providers through incentive payments for improved patient health outcomes are increasingly implemented, efforts to integrate healthcare and human services through shared technology platforms have emerged (Amarashingham, 1999; Cartier, 2020). According to Fichtenberg et al. (2020), “Most of the integration efforts are initiated by health-sector organizations, funded with health care dollars, or both” (p. 569). Financial sustainability is a significant challenge to integrated health and human service efforts (Amarashingham et al., 2018). Health care providers are motivated by financial incentives. However, social service nonprofits are not receiving the same incentives but are being asked to participate in coordinated efforts to increase positive community health outcomes, nonetheless.

The data in this study show that financial readiness was a statistically significant predictor of web-based social service referral technology adoption among the social service nonprofits in Santa Cruz County. Financial readiness was determined by asking nonprofit leaders if they felt their organization had an adequate budget to support adopting a web-based social service referral platform that “advances community health through its coordinated care network” (Sherry et al., n.d., p. 5). Nonprofit leaders who perceived their organizations had sufficient financial means were more likely to adopt the new technology. However, nearly 50% of the survey respondents indicated their organizations were not financially stable enough to commit

the resources necessary to adopt the new technology. Of that 50%, two-thirds did not adopt the technology.

Further exploration of why Santa Cruz County social service nonprofit leaders perceived their organizations were not financially stable enough to commit the resources necessary to adopt the newly introduced web-based referral technology revealed it was not the cost of the technology platform itself but the financial costs associated with staff resources and training. The web-based technology was offered to Santa Cruz County social service nonprofits free of cost, and the company even provided incentive stipends to organizations that were among the first to adopt the platform. Most agencies' big challenges and hesitancies are that state (and sometimes local) governments push everyone to their chosen product or data management system, creating a reluctance to invest time or resources in other products. For example, the California Department of Aging has discussed the statewide adoption of a singular comprehensive database for all Area Agencies on Aging. Making this switch will put organizations in conflict with whatever systems they are currently using (Clay Kempf, personal communication, April 15, 2022).

Another example of the pressure from governments is, the California Continuums of Care are required to report data through Homeless Management Information System (HMIS), and there are currently six different vendors throughout California. Nonprofit and health organizations alike are being inundated with new technology, with little consistency and integrative compatibility, producing new technology exhaustion (Clay Kempf, Personal communication, April 15, 2022). Service providers look at new products and even try them out, but the enthusiasm and buy-in are short-lived because of the technology exhaustion. The result is that line staff – those who ultimately might benefit most from using the new tool – are not adequately engaged in it or trained in its use. Therefore, data measuring the efficacy of

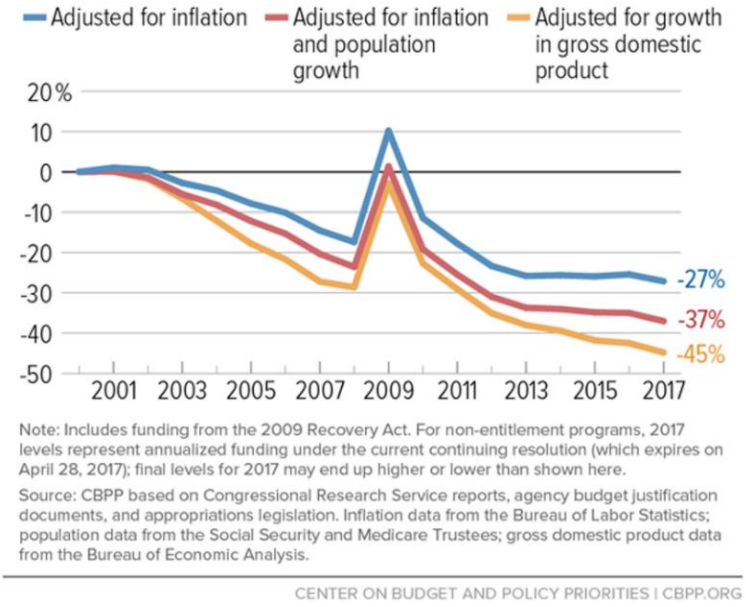
innovative technologies may not be indicating positive results which may also contribute to technology exhaustion. Nonprofit leaders do not want to invest staff resources in making an operational switch when the long-term viability of any new tool is questionable. “Too many competing products, or at least too many competing threats to change the system, are out there” (Clay Kempf, personal communication, April 15, 2022).

Web-based referral technology increases the likelihood that families’ social needs are met by expanding cross-sector referrals that integrate health and social services to improve social determinants of health. According to Cartier et al. (2020), “Health care organizations are increasingly implementing programs to address patients’ social conditions. To support these efforts, new technology platforms have emerged to facilitate referrals to community social service organizations” (p.662). However, what about those organizations without the financial readiness to adopt such technology? It is essential to understand how nonprofits are funded and the impact that their level of financial readiness has on their decision to adopt technology that supports health and human service integration.

Grants have historically funded nonprofit human service organizations. According to Hrywna (2019), “Overall, 80 cents of every dollar of nonprofit revenue in the United States comes from government grants or contracts and fees for services” (para. 4). For example, in California, The California Department of Community Services & Development provides funding to health, housing, and social service organizations through Community Service Block Grants (CSBG), allocated to states by the federal government. However, an analysis conducted by the Center on Budget and Policy Priorities concluded, “Funding for housing, health, and social services block grants has fallen significantly over time, an examination of several decades of budget data demonstrates” (Reich et al., 2017. p. 1).

Figure 4 shows the significant decrease in funding since 2000. Furthermore, the report indicates that social service block grant funding has decreased 73% since its inception in 1987 and 81% when adjusted for inflation. Interestingly, when there is a national crisis like the 2008 recession (spike seen in Fig. 4) and the 2020 COVID pandemic (Mackey, 2022), sharp increases in CSBG funding becomes available and is funneled to health and human services. For example, the CARES Act of 2020 provided $1 billion in additional CSBG funding (California Community Action Partnership Association, 2020). These spikes in funding highlight that the federal government can, and does, find the money to increase funding for health and human services when there is an instantaneous triggering event, like the COVID pandemic and the great recession, that thrusts issues onto the public agenda. However, there has been a continuous decrease in available funding for the critical entities charged with improving community health. This brings into question funding priorities during normal times. Local, state, and federal governments depend on nonprofits to provide many social services to individuals and families that would be more costly if provided by governments or for-profit organizations. Equally, the nonprofit sector depends on local, state, and federal governments for a significant portion of their operating budgets through grants and contracts (National Council of Nonprofits, n.d.). The

Fig. 4 Change relative to 2000 funding level



Note: Includes funding from the 2009 Recovery Act. For non-entitlement programs, 2017 levels represent annualized funding under the current continuing resolution (which expires on April 28, 2017); final levels for 2017 may end up higher or lower than shown here.

Source: CBPP based on Congressional Research Service reports, agency budget justification documents, and appropriations legislation. Inflation data from the Bureau of Labor Statistics; population data from the Social Security and Medicare Trustees; gross domestic product data from the Bureau of Economic Analysis.

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partnership exists but the power lies with the funders and social service nonprofits continue to have to do more with less.

The California Association of Nonprofits, CalNonprofits, is a statewide organization of nonprofits that advocate for investment in community-based organizations and the people they serve. According to the CalNonprofit website, California's 80,000 nonprofits are "economic drivers, leaders in innovations, and champions for hope and opportunity" (California Association of Nonprofits, 2019, para. 12). The number one policy priority of CalNonprofit is to advocate for sufficient public investment in communities (California Association of Nonprofits, 2021). With emerging value-based incentive programs, health care organizations get paid for positive health outcomes. In contrast, human service organizations, "which have historically been funded by grants – are often not well prepared to enter into service contracts with health care organizations, especially if the former are being asked to document health outcomes" (Fichtenberg et al., 2020, p. 570).

Therefore, data-driven research and studies such as this one can provide advocacy groups like CalNonprofit with the valuable information necessary to justify the level of funding required to propel and sustain the health and human service integrated model critical to improving the social determinants of health in all communities.

External Pressure

In addition to financial readiness, this study indicated a statistically significant relationship between external pressure and Santa Cruz County social service nonprofit leaders' decisions to adopt the newly introduced web-based referral technology. The sources of external pressure nonprofit leaders were experiencing came from other nonprofit leaders interested in the technology, health care organizations, and the for-profit technology company that introduced the

technology in Santa Cruz County (Brenda Moss and Clay Kempf, personal communication, December 18, 2021).

Web-based social service referral tools are most effective when the entire population of health and human service organizations in a community adopts the technology. The whole idea is to have a coordinated network of area-wide health and human service providers that can send and receive referrals through the coordinated web-based technology and simultaneously track outcomes to multiple service providers. Typically, people with poor health outcomes who are the focus of this type of integrated model, have co-occurring health issues and co-occurring social needs. For example, an individual may seek medical attention for pain in his lower extremities. His medical doctor discovers he has diabetes. His medical team uncovers that chronic pain causes depressive episodes. They also discover he has a poor diet because he states fresh fruits and vegetables cost too much, so he relies on inexpensive processed foods from grocery stores that are the least expensive. He tells his medical team he cannot exercise due to the pain and has no access to reliable transportation to get to his medical appointments. This individual needs referrals to mental health, transportation, food and nutrition, diabetic educational classes, and exercise classes. When using the traditional model of sending and receiving referrals, the health care team makes numerous telephone calls and sends numerous emails to cover the entirety of services necessary for this individual. This referral method requires additional emailing and telephone calls to follow-up to make sure the receiving agencies made contact with the referred client. In other words, this method of sending and receiving referrals is time-intensive if assurance that the referral is received and acted upon. However, suppose a web-based coordinated social service referral tool was available. In that case, the health care team could make all the necessary referrals at one time and track the outcomes of those referrals. However,

this could only occur if all the necessary service providers were available and engaged on the network. “This type of web-based referral technology only works if enough organizations participate in the network” (Ellen Dektar, personal communication, February 12, 2022). It makes sense that the organizations most enthusiastic about the need for and efficacy of this technology would encourage, or exert pressure upon, those organizations that were equivocating about whether their organization would adopt the Unite Us platform. Referring to Table 15 above, of the agencies that indicated they received external pressure, 82% adopted the technology.

Literature Comparison

This study was primarily modeled after Lee and Blouin’s (2019) study of factors affecting the adoption of web disclosure practices in the nonprofit sector. The dependent variable in Lee and Blouin’s (2019) study was web disclosure, defined as “the extent that NPOs are currently disclosing key financial, performance, and governance information on their own public websites” (p.366). Adoption of web disclosure is different from the adoption of web-based referral technology in that web disclosure is a management strategy, and web-based referral technology is an operational tool. However, the similarity is that the dependent variable in both studies relates to innovative technology adoption behavior, whether the nonprofit leader made or influenced the decision to adopt the innovative technology, either web-disclosure or a web-based referral tool, for their respective organizations.

As discussed above, innovative technology is a broad term that includes information systems technology, information technology, and systems technology. Therefore, both studies aimed to expand the existing research on information systems or information technology adoption in the nonprofit sector. In addition, both studies used Rogers’ (2003) Diffusion of Innovations theory as the theoretical foundation.

Another similarity between Lee and Blouin's (2019) and the current study is the samples' target population – nonprofit leaders. Lee and Blouin (2019) sought to understand the respondents' perceptions of the factors laid out by Rogers (2003) and discussed above. Interestingly, unlike Lee and Blouin (2019), this study found no statistically significant relationship between adoption and attitude or adoption and compatibility. The lack of statistical significance for these factors in this study may be explained by the difference in the dependent variables' effects on the nonprofit. The adoption of innovative web-based referral technology affects service delivery productivity. Conversely, adopting innovative web disclosure technology affects organizational transparency and accountability, which increases public confidence, trust, and investment in nonprofits. Gaining public trust, confidence, and investment is critical and the aspiration of most nonprofit leaders. However, disclosing information about the organizational financial status and governing practices is not necessarily comfortable for all NPO leaders (Brenda Moss, personal communication, August 18, 2021; Clay Kempf, personal communication, April 13, 2022). Additionally, some NPO leaders may have come from the for-profit sector where financial and other organizational information is not public knowledge. Although in the nonprofit sector it is, as one of Lee and Blouin's (2019) respondents stated, "I know it is public information, but if someone needs it, they can just ask" (p.369).

Differences in findings regarding compatibility were challenging to assess. The Lee and Blouin (2019) study had a much larger sample size which may have contributed to their significant findings. This study showed that 75% of the respondents who agreed the technology was compatible with their organization's existing referral processes adopted the Unite Us platform (Appendix C). However, the lack of statistical significance for this variable in the

regression analysis indicates that compatibility does not explain enough of the variation in adoption behavior for this population.

Lee and Blouin (2019) and this study both indicated a relationship between financial readiness and adoption of innovative technology. Nonetheless, a study by Iacovou et al. (1995), which Lee and Blouin (2019) referenced, indicated that greater overall organizational readiness, including technological and financial readiness, did not necessarily lead to higher adoption of their dependent variable, electronic data interchange. Rather, they found that "current adopters are, on average, larger than non-adopters. This is not surprising because size, especially in financial measures, should indicate the resources available to the firm" (Iacovou et al., 1995, p.477).

A similarity between this and the Iacovou et al. (1995) study was the relationship between external pressure and technology adoption. In both cases, the statistically significant relationship could be attributed in part to dependence. Firms in the Iacovou et al. (1995) study that were highly dependent on government organizations were more likely to adopt the technology. In this study, the success of the technology was dependent on other NPOs' adoption of the technology. Therefore, NPO leaders who were inclined to adopt the technology, and did, exerted pressure on other NPO leaders to do the same. As previously stated, in this study, 75 % of NPO leaders who received external pressure adopted the technology.

Limitations

First, this study was limited to social service nonprofits in the County of Santa Cruz that were identified through online resources which produced a population of fifty-four organizations. Several organizations were no longer in business and three did not have a usable email. This limited the total population to forty-eight organizations. Second, the number of questions on the

questionnaire was deliberately kept to a minimum which limited the number of indicators for each item and corresponding factor. Limited indicators may have affected the overall significance of the corresponding factors. However, additional questions may have limited the number of responses. Third, because the sample was not randomly selected, sample bias may or may not exist. Fourth, the potential for multicollinearity limits the generalizability of this study to the larger population. Lastly, while the studies used as the basis for this research were similar in many respects, they were not specific to web-based social service referral technology. Future research could build on this study using a revised model, a larger sample size, a more detailed survey, and consideration of comparing and controlling for demographic data such as age, gender, and race, and web-based referral technology adoption. In addition, since prior research and data in this study indicate a positive relationship between financial readiness and technology adoption behavior, further research of the social service nonprofit sector focusing on budget size compared to the number of employees and web-based referral technology adoption would meaningfully contribute to the literature for this population.

Conclusion

As the nonprofit sector continues to provide many of the services that local governments once provided, public administrators and policymakers must create intelligent policies that recognize the importance of the nonprofit sector and fund them accordingly. Nonprofit leaders play a significant role in technology adoption decision-making, and up-to-date technology is critical for nonprofits to provide the essential social services that address the social determinants of health effectively and efficiently. Unfortunately, one area of organizational planning where the nonprofit sector often falls short is technology adoption strategies. This lack of technology strategic planning is not because nonprofit leaders are not aware of the importance of innovative technology or have negative attitudes towards it. Instead, as this study showed, their organizations do not have the financial ability to commit the resources necessary to research, adopt, and implement new technologies.

Emerging research indicating the criticality of health and human service integration that seeks to address social determinants of health from a holistic approach highlights the necessity of web-based referral technology adoption in the social service nonprofit sector. Social service nonprofits typically operate on insufficient budgets, so making the best use of innovative technology allows them to maximize their limited resources. Results of this study showed that financial readiness and external pressure were statistically significant indicators of web-based referral technology adoption among social service nonprofits in Santa Cruz County. These findings support the justification for increased funding for social service nonprofits. With sufficient funding, leaders of these nonprofits may be more willing to adopt web-based referral technologies that allow their organizations to participate in the health and human service integration systems expanding throughout communities in California and the United States.

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Appendix A: Lee & Blouin (2019) Innovation Adoption Model

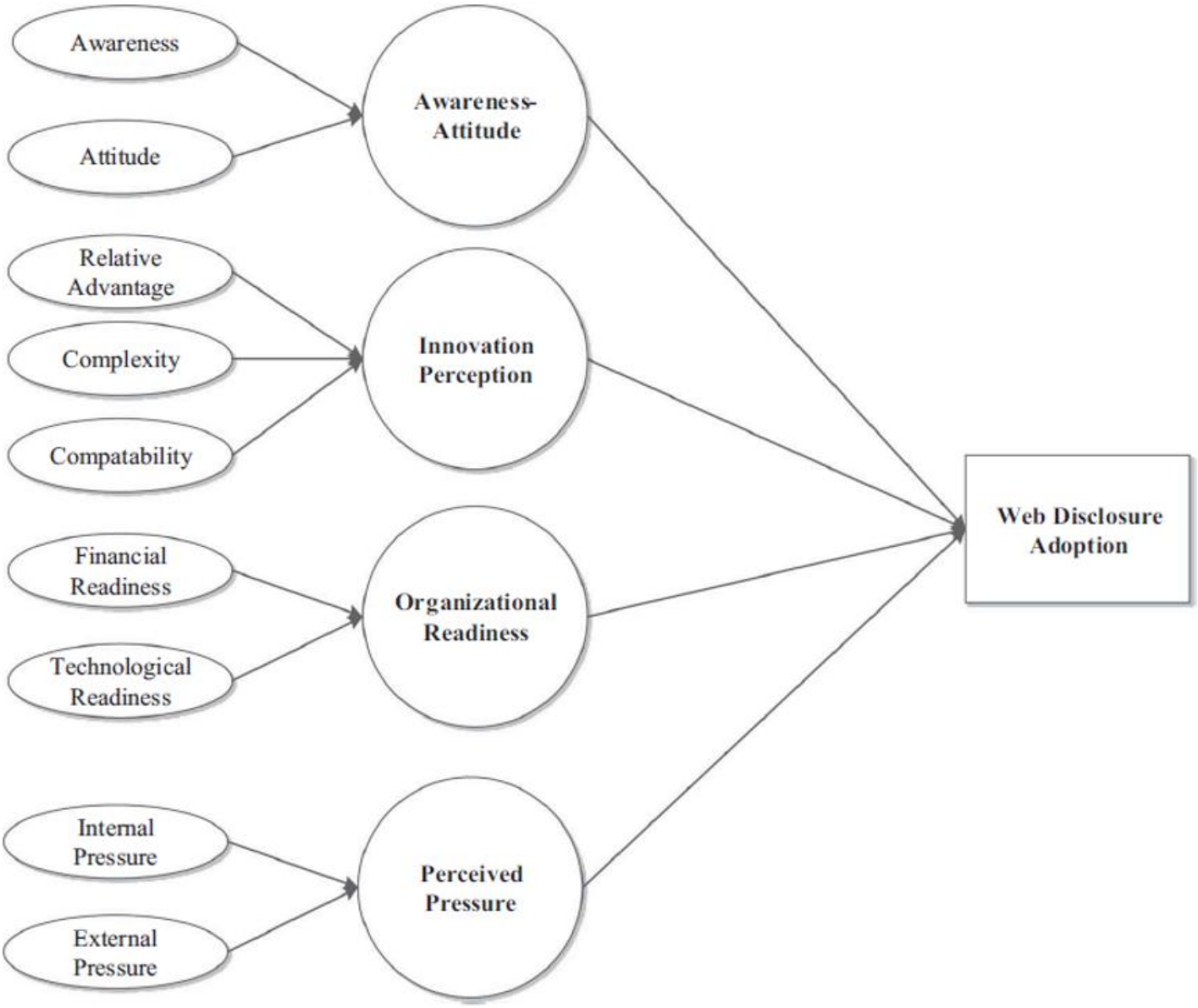

Fig. 1: Web disclosure adoption model (Lee & Blouin, 2019).

Appendix B: Health and Human Service Nonprofits Identified for this Study

Advocacy Inc
Autism Family Network
Balance SCC (formerly Balance 4 Kids)
Barrios Unidos (Eastside)
Big Brothers Big Sisters
Bird School Project
Camphill Communities California
CCCIL
Central Coast Energy Services
CAB
Community Bridges
Community Life Services
Conflict Resolution Center
CASA
Dientes Community Dental Care
Encompass Community
Family Service Agency
Food What?
Girls Inc. of the Central Coast
Grey Bears
Habitat for Humanity
Health Improvement Partnership
Health Projects Center
Homeless Garden Project
Hopes Closet of Santa Cruz
Housing Matters
Jacobs Heart
Janus of Santa Cruz
Live Like Coco
Mental Health Client Action Network
MENtors
Monarch Services
New Life Community Services
Nonviolent Communication
Pajaro Loaves and Fishes
Pajaro Valley Shelter services
Santa Cruz County Society of St Vincent De
Pregnancy Resource Center of Santa Cruz County
San Andreas Regional Center
Santa Cruz Community Ventures
Diversity Center
Second Harvest Food Bank
Seniors Council
Senior Legal Services
Senior Network Services
Shared Adventures
Teen Kitchen
The Uilani Fund
Valley Churches United
Vista Center for the Blind
Volunteer Center of Santa Cruz
Walnut Avenue Women's Center
Warming Center Program
Wings Homeless Advocacy

Appendix C – Comparison Tables

Table 17: Awareness compared to adotion

yes	no
Count	Count
16	9

Tabble 18: Attitude compared to adotion

		yes	no
		Count	Count
attitude	fav	14	6
	unfav	2	3

Table 19: Advantage compared to adoption

		yes	no
		Count	Count
advantage	agree	12	4
	dagree	4	5

Table 20: Compatibility compared to adoption

		yes	no
		Count	Count
compat	agree	12	4
	dagree	4	5

Table 21: Complexity compared to adoption

		yes	no
		Count	Count
complex	agree	12	5
	dagree	4	4

Appendix D – Survey Questionnaire

1. Consent to complete the survey

   ☐ Yes ☐ No

2. Our organization has received written or verbal information about a web-based coordinated social service referral tool that is being used by health and social service organizations in Santa Cruz County to send/receive electronic referrals. (If yes is selected they skip to Q3 if No or I don't know is selected they skip to Q2.)

   ☐ Yes ☐ No ☐ I don't know

3. I know about web-based coordinated referral tools, that they are used to send/receive referrals electronically through an online coordinated network of health and social service providers.

   ☐ Yes ☐ No

4. How would you rate your attitude towards web-based coordinated social service referral tools?

   ☐ Very Favorable ☐ Favorable ☐ Neither favorable or unfavorable ☐ Unfavorable

   ☐ Very Unfavorable

5. I think sending/receiving referrals using a web-based coordinated referral tool would save staff time.

   ☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree

   ☐ Strongly Disagree

6. I believe using web-based coordinated referral technology is compatible with the way my organization currently sends/receives referrals.

   ☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree

   ☐ Strongly Disagree

7. It is easy to understand how web-based coordinated referral tools are used to send/receive referrals.

   ☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree

   ☐ Strongly Disagree

8. My organization has an adequate budget to support using a web-based coordinated referral tool.

   ☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree

   ☐ Strongly Disagree

9. Overall, my staff has the knowledge and ability to use a web-based coordinated referral tool.

   ☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree

   ☐ Strongly Disagree

10. I have been encouraged by others in this organization to adopt a web-based coordinated referral tool to send/receive referrals electronically.

    ☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree

    ☐ Strongly Disagree

11. I have been encouraged by others outside this organization to begin using the web-based coordinated referral tool.

    ☐ Strongly Agree ☐ Agree ☐ Neither Agree nor Disagree ☐ Disagree

    ☐ Strongly Disagree

12. Age

    ☐ < 25 ☐ 26-35 ☐ 36-45 ☐ 46-55 ☐ 56-65 ☐ 66+

13. Gender

    ☐ Agender ☐ Cisgender ☐ female ☐ genderqueer ☐ male ☐ non-binary/third gender ☐ prefer not to say ☐ prefer to self-describe ☐ transgender

14. Race

☐ American Indian or Alaskan Native ☐ Asian ☐ Back or African American ☐ Native Hawaiian or Other Pacific Islander ☐ White ☐ some other race, ethnicity, or origin ☐ prefer to self-describe ☐ prefer not to say

15. Ethnicity

☐ No, not of Hispanic, Latino/a/x, or Spanish origin ☐ Yes, Mexican, Mexican American, Chicano/a/x ☐ Yes, Puerto Rican ☐ Yes, Cuban ☐ Yes, Another Hispanic, Latino/a/x, or Spanish origin ☐ some other race, ethnicity, or origin ☐ prefer to self-describe ☐ prefer not to say

16. Number of Employees

☐ 0-19 ☐ 20-49 ☐ 50-99 ☐ 100-200 ☐ more than 200

17. Annual budget

☐ $0-$249,000 ☐ $250,000-$999,999 ☐ $1,000,000-$2,499,999 ☐ $2,500,000-$9,999,999 ☐ $10,000,000+

18. This organization joined the Unite Us Network

☐ Yes ☐ No