

Godefroid, Marie-E.; Plattfaut, Ralf; Niehaves, Björn

**Article — Published Version**

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Nonprofit Management and Leadership

**Provided in Cooperation with:**

John Wiley & Sons

*Suggested Citation:* Godefroid, Marie-E.; Plattfaut, Ralf; Niehaves, Björn (2023) : Identifying key barriers to nonprofit organizations' adoption of technology innovations, Nonprofit Management and Leadership, ISSN 1542-7854, Wiley Periodicals, Inc., Hoboken, NJ, Vol. 35, Iss. 1, pp. 237-259, <https://doi.org/10.1002/nml.21609>

This Version is available at:

<https://hdl.handle.net/10419/306210>

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## RESEARCH NOTE

# Identifying key barriers to nonprofit organizations' adoption of technology innovations

Marie-E. Godefroid<sup>1</sup>  | Ralf Plattfaut<sup>1</sup>  | Björn Niehaves<sup>2</sup> 

<sup>1</sup>Chair of Information Systems and Transformation Management, University of Duisburg-Essen, Essen, Germany

<sup>2</sup>Chair of Digital Public, University of Bremen, Bremen, Germany

## Correspondence

Ralf Plattfaut, Chair of Information Systems and Transformation Management, University of Duisburg-Essen, Essen, Germany.

Email: [ralf.plattfaut@icb.uni-due.de](mailto:ralf.plattfaut@icb.uni-due.de)

## Abstract

Despite substantial innovations in Information and Communication Technologies (ICT) that could benefit non-governmental organizations (NGOs), NGOs are not using ICT yet to their full potential – especially compared to the ICT use in the private sector. Such behavior appears counterintuitive as one would expect NGOs to use every available resource to further their important mission. However, reservations appear to remain even though several case studies demonstrated the value ICT can generate for NGOs. Through a series of 20 interviews with NGOs of various sizes and backgrounds, we examined the use of ICT along the NGO value chain (program design, fundraising, fund management, and program delivery). We find a distinct prioritization of ICT support along the value chain. Based on these findings, we identify six sector-specific reasons for NGOs not to use ICT for certain activities. With these, we add to known reasons in the literature and offer important avenues for further research.

## KEYWORDS

ICT, information and communication technology, NGOs, non-governmental organizations, non-use

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## 1 | INTRODUCTION

Information and communication technology (ICT) could offer additional opportunities for the social sector, but some non-governmental organizations (NGOs) do not yet use ICTs to their full potential. Technology can be beneficial for NGOs, for example, to advertise services, expand their reach to donors, communicate their mission, or recruit and educate volunteers (Evans & Clarke, 2010; Finn et al., 2006; Grubb, 2022; Merkel et al., 2007; H. Zhou & Ye, 2021). Examples of successful use cases span from simple communication efforts in migrant communities (Uzcanga & Oiarzabal, 2019) to social media's targeted use for cause-related marketing (Guerreiro & Loureiro, 2020). However, ICT can have a more profound effect on how NGOs operate. For example, ICT use affects credibility (Ganesh, 2003), offers new ways of working (Omona & Mukuye, 2013), and makes NGO work overall more successful (Berrett, 2022; Lee, 2020, 2021). However, some NGOs do not employ ICT despite its potential benefits. For example, social media use is still limited both by fear about what is shared with the general public (Kanter & Fine, 2010) and by a preference for more traditional ways of communication (Sheombar et al., 2015).

Valuable research has taken initial steps to examine why NGOs are not using ICT to their full potential in their primary activities. Hereby, we broadly refer to NGOs as “formal (professionalised) independent societal organisations whose primary aim is to promote common goals” (Martens, 2002, p. 282). Research has already identified multiple reasons, ranging from a lack of financial and technological resources due to the focus on overhead cost reduction (Burkart et al., 2018; Lecy & Searing, 2015; Merkel et al., 2007) to missing the necessary skill set or expertise in ICT (Volda et al., 2011). However, these studies all focus on particular use cases. As a result, a cross-organizational assessment of NGOs' reasons not to use ICT is still missing. Such an assessment is, however, crucial to identify key issues and counter them effectively. Therefore, we aim to answer the research question: *Why are NGOs reluctant to use ICT in their primary activities?* To this end, we take an explorative stance and conduct qualitative interviews with representatives from NGOs.

## 2 | THEORETICAL BACKGROUND

### 2.1 | Reasons for non-use of ICT by NGOs

ICT can have tremendous advantages for NGOs. Prior research has directly linked IT investments with greater effectiveness of NGOs (Berrett, 2022). Contemporary research highlighted the importance of ICT innovations such as virtual reality (Tsai, 2021; Yoo & Drumwright, 2018), augmented reality (Yoo et al., 2023), (omnichannel) volunteer management software (Berrett, 2022; Mato-Santiso et al., 2023), distributed ledger technologies (Howson, 2021), or 360° video productions (García-Orosa & Pérez-Seijo, 2020; Walewijns et al., 2023). Still, NGOs tend to lack behind the private sector in the adoption of these ICT innovations (Finn et al., 2006).

In the following, we review the literature on reasons for the non-use of ICT by NGOs. In line with the business standard ITIL, we understand ICT as “the application of science to the processing of data according to programmed instructions in order to derive results. In the widest sense, ICT includes all communications, information and related technology” (Zuppo, 2012, p. 16). Different theories exist that explain why individuals or organizations adopt ICT. On an

individual level, for example, the Technology Acceptance Model (Davis, 1985) and related work (e.g., Venkatesh et al. 2003) argue that technologies need to be both useful and usable to be adopted. On an organizational level, for example, the diffusion of innovation theory (Rogers, 1962) posits that organizations adopt technologies in different waves starting with innovators and early adopters and ending with the late majority and laggards.

Taking this knowledge into account, we rely on the Technology, Organization, Environment (TOE) framework (see Figure 1) developed to summarize and explain organizations' technological innovation decisions (Tornatzky et al., 1990). Researchers studying various technologies relied on this framework for explorative research (Alkhalil et al., 2017; Borgman et al., 2013; Rahman & Ratnawati, 2021). As study from the social sector is yet missing but the model has been used in education and public sector research: For example, it helped to assess barriers to ICT implementation in education in Ethiopia identifying technological factors like insufficient ICT infrastructure, organizational barriers like lack of support from management, and environmental barriers like a lack of ICT policy for education (Ergado et al., 2021). These factors are, however, highly sector specific as a study assessing influences on AI capability in the public sector, for example, identified factors like perceived benefits for the technological context, perceived financial cost for the organizational context, and perceived government pressure for environmental context (Mikalef et al., 2022). Thus, a NGO specific version remains to be developed.

The framework argues that the availability and characteristics of the technology per se, organizational peculiarities, and environmental factors influence decisions on technological innovations. For example, with regards to technology (i.e., ICT), prior NGO research has underlined that a technology that individual users do not perceive as useful and easy to use will not be adopted (Davis, 1985; Seo & Vu, 2020). Similarly, the difficulty of conveying a complex message can be a reason not to use ICT (Sheombar et al., 2015). Finally, a prominent theme is a lack of privacy and security (Ojo et al., 2021). However, an overarching study, for example, across technology types focusing on their availability and characteristics, is missing.

Regarding organization, budgetary constraints (Dipendra, 2024; Finn et al., 2006; Merkel et al., 2007) and lack of management support (Ergado et al., 2021) are key issues. Some sources also speak of resistance from NGO staff (Chui & Chan, 2019; Sheombar et al., 2015). This resistance can have different causes, for example, the lack of skills, training, and knowledge of computer use (Barr et al., 2005; Ojo et al., 2021; Volda et al., 2011), cultural influences

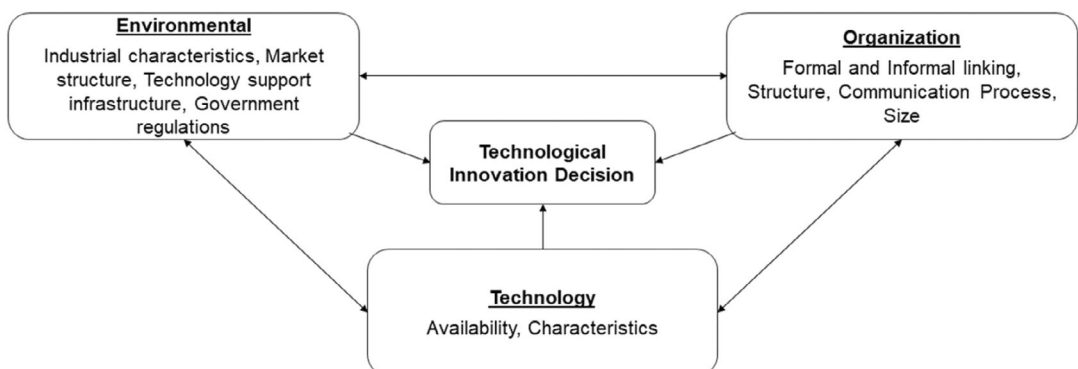


FIGURE 1 Technology, organization, environment (TOE) framework.



FIGURE 2 The NGO reference model—main activities.

(Ihm & Kim, 2021), a perception that ICT use could distract from the essentials of the job (Berlinger & Te'eni, 1999) or perceived adverse effects on the workplace (Chui & Chan, 2019; Saidel & Cour, 2003). Moreover, NGOs require a governance that enables implementation of ICT innovations (Beagles, 2022; Godefroid, Borghoff, et al., 2022).

Finally, regarding the environment, external factors like government regulations and the technology support infrastructure can influence organizational decisions. In NGOs, this can imply the influence of past political structures, for example, post-colonialism, that denies the subaltern the necessary ICT resources (Lin et al., 2015). But the cooperation with other NGOs or an emerging network economy can also drive ICT decisions (Muswede & Lubinga, 2018; Saab et al., 2013). In addition, the literature mentions the technophobia of participants (Sultana et al., 2019) and donor preferences and engagement (Chisa & Hoskins, 2016). Quite consistent for less developed countries are also aspects of the technology support infrastructure like network inaccessibility (Katrmpouza et al., 2020), lack of electricity (Ojo et al., 2021), or otherwise insufficient IT infrastructure (Ergado et al., 2021).

## 2.2 | The NGO value chain

To systematize our assessment of the use of digital technologies by NGOs, we use the NGO reference model that conceptualizes four primary and several enabling activities (see Figure 2). Several contributors developed the NGO reference model conceptualizing the NGO value chain—the core being Save the Children, WaterAid, and SOS Children's Villages (Snow et al., 2016). In addition, the value chain was successfully applied in prior research (Godefroid, 2021).

Program design refers to all activities necessary to assess the context and plan the NGO's program and is grounded in the field context. Fundraising alludes to all activities necessary to conduct relevant research and analysis, develop an income strategy, and manage donor acquisition and retention. Fund Management describes all activities necessary for portfolio matching and compliance management. Finally, program delivery delivers the impact and refers to all activities necessary for the setup, implementation, control, monitoring, and evaluation of the programs, as well as the management of accountability and transition at the end of the program. These activities are supported by organizational management and governance, knowledge management, supply chain management, finance, human resource management, and information technology.

## 3 | RESEARCH DESIGN AND METHOD

Our study used a qualitative approach to explore why NGOs might resist using ICT (McMullin, 2021). We conducted 20 interviews to maximize sample variation. We used a semi-

structured guideline with open-ended questions to obtain a broader range of responses. We structured our interview guide along the four steps of the NGO value chain (see Section 2.2). Through probing questions, we ensured that answers covered all three dimensions of the TEO framework (see Section 2.1). We followed Sarker and colleagues' guidelines for qualitative research to avoid the typical pitfalls of semi-structured interviews (Sarker et al., 2013). We improved our first version of the interview guide after three pre-interviews leading only to minor changes (see Appendix A).

We interviewed members of NGO focused on different causes, sizes, and countries (Chui & Chan, 2019; Palinkas et al., 2015) to account for potential reasons for ICT non-adoption that result from organizational or environmental characteristics. We started with a convenience sample and then extended our sample through the recommendations of our interview partners (snowball sampling). Seven of our interviewees were female, and 13 were male. The age ranged from 25 to 50 years. Regarding the countries, our sample focuses largely on the global north—and especially Europe—as we had to rely on connections to get smaller NGOs to talk about this sensitive topic. Also, larger NGOs' leading roles and headquarters were typically located there. But we also included three interviews from a regional perspective. Table 1 provides an overview of the conducted interviews. In the following, we refer to the interviews as I1–I20. They were conducted between April 2021 and June 2021 and had an average length of 45 min.

The interviews were audio-recorded, transcribed verbatim, and analyzed with MAXQDA. In this approach, we followed specific advice for research in the social sector (McMullin, 2021). Following the example by Parker et al. (2020), we used an inductive approach. Following grounded theory guidelines, the first two researchers independently applied open coding, that is, we assigned the sentences and paragraphs with code phrases that best represent the content (Corbin & Strauss, 2014; Glaser & Strauss, 2017). Afterward, we compared and grouped the findings (axial coding) to specify superordinate measures (Corbin & Strauss, 2014). Next, we discussed divergent interpretations and settled them by agreement (Kaplan & Maxwell, 2005). Subsequently, the axial codes were grouped by subject areas (see Appendix B; Table B1). Finally, we ended the analysis when no further insights emerged (saturation). We followed the guidance for iterative intercoder reliability measurement for grounded theory (Díaz et al., 2023), arriving at a satisfactory agreement rate of 85% (O'Connor & Joffe, 2020).

## 4 | FINDINGS ON ICT USE AND KEY REASONS FOR RELUCTANCE

### 4.1 | ICT use along the NGO value chain

Generally, our interview partners perceived the ICT support in NGOs to be lower than in the private sector. However, NGOs have recognized the importance of ICT, and strategic changes are about: “I would also argue where we are at the technology curve it is probably a bit behind where at the most for-profits are” (I18). This sentiment echoed across interviews: Another interviewee called his organization a ‘low-tech environment’ (I10), and a third described that he used his private computer because equipment from the organization arrived 5 months late (I6). But change is happening: “The executive team, not I alone, we have taken [the organisation] from what I call Jurassic Park, to a mature, you know, digitally transformed [organisation], we are in the middle of that transformation” (I16). There are different technological trends. The most prominent one was the drive for more accurate data (e.g., I4, I17, I19), for example, by

**TABLE 1** Overview of interviews and organizational contexts.

No.	Organization cause	Role	Country	Employees	Value
1	Community work	Volunteer	Germany	10	All steps
2	Community work and school	Manager	Germany	50	
3	Dance lessons for young people	Volunteer	Germany	7	
4	Childcare	Head of Strategy	Austria	39,000	Program design
5	Climate activism	Project manager	Germany	46	
6	Wildlife preservation	Project manager	Malaysia	7000	
7	Wildlife preservation	Project manager	Germany	338	
8	Charity	Admin. staff	Germany	51	Fundraising
9	N/A (interims manager)	Interims manager	Netherlands	N/A <sup>a</sup>	
10	Peace movement	Head of IT	Germany	250	
11	Homeless care	Head of local branch	Germany	70	Program delivery
12	Social care	IT representative	Germany	690,000	
13	Childcare	Regional head of IT	Bolivia	10,000	
14	Refugee relief	Specialist program	Netherlands	1000	
15	Childcare	Regional head of IT	Estonia	10,000	Supporting activity: ICT
16	Refugee relief	Head of IT	USA	2014	
17	Childcare	Head of IT	USA	37,000	
18	Emergency relief	Head of IT	USA	5000	
19	Childcare	Head of IT	Austria	39,000	
20	Emergency relief	Head of IT	Ireland	3900	

<sup>a</sup>As an interims manager, this interviewee has no fixed organization. He has served NGOs with 1.000–40.000 employees in the last 3 years.

introducing a new Enterprise Resource Planning (ERP) system. Overall, projects range from small, for example, the introduction of a chatbot, to more fundamental shifts like a move to the cloud or an ERP system (I17).

The change has also affected the role of the IT department and its interaction with the specialist departments. While NGOs' IT departments were busy addressing basic infrastructure needs, they are now more focused on understanding and fulfilling business needs (I17), thereby requiring stronger engagement by senior leadership and department leads: "That needs ownership from the senior management. And you cannot tell the IT department, hey, help us. [...] The head of marketing [...] should be the product owner if you talk in an agile way. So, he should be the one who decides on what has priority and how things are organised" (I9).



Based on the interview results, we assessed the current ICT support along the core activities of the NGO value chain (program design, fundraising, fund management, and program design; see Section 2.2).

ICT support for program design appears to focus mostly on office software. However, digitalization is underway. Program design activities are typically carried out with standard office tools (I6, I9). One of our interviewees even felt that ICT support in this step was not as crucial: “[Program design] is more business to business, B2B, I would say, and fundraising is more business to consumer, which makes it, I would say more complicated and more important that you have a good IT system” (I9). Nonetheless, there are NGO leaders who plan to increase ICT support also for this step: “We [the IT department] have become very deliberate in participating in the program design and proposal writing” (I17). They believe this is a crucial step to incorporate digitalization needs: “If you’re saying we are going digital-first, it has to start at that level. We cannot be thinking digital when already the proposal and the budgeting of that project or other program has already been done” (I17).

Several interviewees stressed the importance of the right ICT support for the fundraising step as crucial for the organization. Fundraising activities are a crucial use of ICT, as one of our interviewees put it: “It’s the technology that we use to bring money into the organisation, [...] because if you don’t have funds, you can’t do many things right? That’s number one” (I16). Here, organizations typically employ classical marketing tools like customer relationship management (CRM) systems and marketing automation (I11). One could argue that these ICT investments follow the flow of money and that it makes sense for organizations to invest here as it allows them to raise more money. Or simply that this value chain step requires expensive systems: “Yeah, I would say that there’s already the main part of ICT investment is on the fundraising part already. Because then there, you need the most expensive systems” (I9).

Regarding fund management, the ICT support is improving, but not yet at the desired levels, as an interviewee described: “We have our financial system only in our HQ, but our country offices would have their spreadsheets as late as last year and doing their analysis and sending that by the end of the month to our HQ. So you can imagine somebody is implementing a project, how hard it is for you even to track that spending” (I17). In contrast to fundraising, where suitable tools are readily available on the market, the challenge appears to be to get the right ICT support. This situation has prompted at least one organization to develop its own system: “We are developing a grants management system, (...) to have virtually in real-time what the burn rate on a grant might be. Yes, you are 18 months into your grant, and already you have used up 75% of that grant money. So, you are way ahead of schedule” (I15).

Finally, regarding program delivery, we found mixed results. Program delivery activities depend largely on the nature of the specific program and the general program types the organization supports. But there also appear to exist systematic differences: While some struggle with ICT support, there is also the example of an international NGO that “won all kinds of prizes for innovative interventions in the field with all kinds of use of mobile apps and tools” (I9). Other organizations stress specific ICT-oriented programs. As an example, one organization provides digital learning services to program participants: “We are providing Digital Learning Services to more than 10,000 people per year in 7 languages from South America. And the interesting part is that it has [...] a global impact on the organisation.” (I13).

But this does not seem to be the case for the majority of the organizations, however, not due to lack of engagement: “The folks out in the field have worked with minimal, everything. And so, they’re all MacGyver out there. They all find ways of getting things done” (I18). However, this lack of ICT support is not only limited to programs in less technologically advanced



economies, as we also found examples of fieldwork in Germany, a rich Western country, where fieldwork was not sufficiently supported with ICT (I8, I10, I11).

## 4.2 | Key reasons for NGO reluctance to use ICT

Building upon the analysis of ICT use along the value chain, we derive six reasons for NGOs not to use ICT. In this exploratory study, these reasons do not appear to depend on the organization's size or cause. First, in line with previous literature, we heard the argument of a lack of skills and ICT resources for field staff and participants (e.g., I2, I7, I12) and limited financial resources (e.g., I7, I14, I19) for all NGO value chain steps. Here, the latter could surely remedy the former. As one of our interviewees said: "Yes, but budget is always only an excuse. I have no budget for this because I don't think it's important" (I19). This overarching *lack of resources* is only partially changeable by NGOs.

Second, one of the key success factors mentioned across all value chain steps was leadership support, for example, I4, I9, and I11. ICT often requires processual and structural changes, which makes leadership engagement important: *So, a new system is not just okay, we have to implement a new system [...] but how did we organize our communication, our departments? [...] That needs senior management's ownership* (I9). A *lack of leadership engagement and sub-optimal decision-making structures* thus form the second reason. Leadership might not be engaged because they don't value specific effects of ICT use as much: "It's often the top management in the countries themselves, which are a little hesitant or doubtful about more data-driven decisions and thinking. [...] [They] don't value this so much and don't want to go this direction" (I19). Other interviewees stress the sub-optimal decision-making structures, for example, I5, I9, and I11.

Third, ICT use in some functions appears to be easier to finance and justify than in others. For example, as detailed in the previous section, fundraising activities are well supported because they bring money into the organization. However, at the same time, activities in the program design, fund allocation, and program delivery steps lack funding, for example, to justify the introduction of a data management system, "you have to explain to a donor first that this is a meaningful project even so we could finance another volunteer position in the field with the same money" (I10). One could, therefore, argue that the interest of donors causes this prioritization because NGOs invest more into fundraising and other donor-mandated initiatives (I19). As such, the decision not to use ICT in specific areas might result from a *lack of prioritization* in favor of other areas.

Fourth, even though market solutions are well-suited for many activities in fundraising and fund management, program design and delivery appear less well-supported (yet). Here, a *lack of standard software* can be observed. One of the activities that are well supported is fundraising, where standard market solutions are readily available: "Many of us are using Salesforce CRM. Many of us also use this AmpImpact Salesforce specialised tools on program management, but on [...] the Microsoft side, the D365 and the O365, they are extremely strong" (I17). But for other activities, NGOs still need to develop their solutions, as the grant management example above demonstrates (I9). This need also applies to other activities: "In our case, it's our case management system. We're writing an application or system to do case management, right, track our services, track our beneficiaries" (I8).

Fifth, NGOs still appear to be cautious with ICT investments despite positive examples. The primary reason for the lack of ICT investment across all value chain steps we encountered

across interviews (I9, I10, I14) was risk avoidance: “Why we don’t adapt tech has to do with NGO companies being very risk averse. On the one hand, path dependency comes with very high risks and costs. On the other hand - opportunity costs and transaction costs. All these costs make you stick with what you know” (I14). This *overestimation of ICT project implementation risks* prevents innovative efforts, especially in areas with no standard software (see also reason above).

Lastly, several interviewees also described situations in program delivery with factual reasons not to use ICT because the communities served by NGOs are vulnerable (I11, I13, I16). For example, NGOs dealing with vulnerable communities like refugees must be very careful with data security, as the information NGOs hold can be potentially harmful, for example, documenting illegal border crossings of refugees: “Anything we do at any level has to be secure. We’re dealing with beneficiary information; we’re dealing with compromised people” (I16). As such, for some activities, *fear of data privacy risks when serving vulnerable communities* prevents the use of ICT.

## 5 | DISCUSSION AND RECOMMENDATIONS

Our analysis of the ICT use along the value chain showed that fundraising activities are well supported while other activities still lack ICT support. Across all four value chain steps, we found six reasons for NGOs not to use ICT. These reasons originate from all three elements of the TOE framework introduced above (see Figure 3). In line with prior theory, the reasons stem from the available technology (i.e., lack of standard solutions), originate in the organization itself (i.e., lack of resources, lack of leadership engagement and decision-making structures, lack of prioritization of ICT investments, and overestimation of ICT project implementation risks), and result out of the specific environment of NGOs (i.e., the fear of data-privacy risks when serving vulnerable communities).

Some of these factors have already been discussed in prior literature on NGOs. Regarding the organization, the lack of skills and financial resources frequently appears (Barr et al., 2005; Finn et al., 2006; Merkel et al., 2007; Ojo et al., 2021). We can elaborate, however, that at least parts of these issues stem from prioritization and loss aversion. The importance of leadership support is well established in the social sector context (Ahmed & Abdullahi, 2017; Burfeindt & Schubert, 2023; Ergado et al., 2021; Malik et al., 2022). Thus, we can re-iterate its importance and extend this observation to the lack of suitable governance structures for IT decisions in the social sector, which is yet to be addressed (Godefroid, Borghoff, et al., 2022; Weill & Ross, 2017). Decisions about resource allocation in general also appear in NGO literature (Krause, 2020), but the special issues of advocating for ICT investments are yet underexplored. Similarly, the influence of risk perception on judgment is well explored (Barnes, 1984; Kahneman & Tversky, 1979). However, available risk management approaches (Wideman, 1992) appear insufficient. Regarding technology, the social sector more frequently appears not to face simple build or buy challenges (Daneshgar et al., 2013) but novel challenges like, for example, tracking homeless people with COVID-19 (Jones et al., 2022). On the environmental level, we can finally add another justified reason not to use ICT: In vulnerable communities like refugees, careful consideration of when to use ICT is in order. The literature has so far only looked at the individual data privacy risks of marginalized communities (Gangadharan, 2017; Witteborn, 2021). A more detailed discussion of prior research is given in Appendix C (Table C1). In contrast to prior literature (Oliveira & Martins, 2011; Santos, 1989),

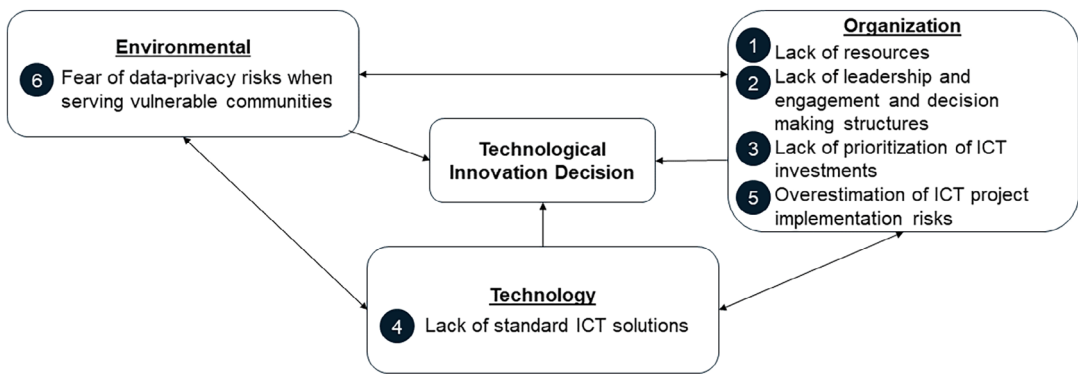


FIGURE 3 Reasons for lack of ICT use along the TOE Framework.



FIGURE 4 Reasons for lack of ICT use along the NGO value chain.

we found no influence of organizational size or cause on the reasons for the non-use of ICT. We did find, however, that reasons were of varying relevance to the different NGO value chain steps (see Figure 4).

Based on the identified reasons, we developed recommendations: Regarding 1), we recommend making use of external experts as temporary staff or volunteers, for example, product owners, for implementing a new solution or free IT consultancy (Capgemini, 2019). For licensing and implementation costs, using available philanthropy discounts and working out support deals with IT providers could help, for example, the robotic process automation provider UiPath that helped the New York Foundling as part of their social responsibility efforts (UiPath, 2020). When external resources and discounts are exhausted, it can be helpful to establish a clear business case to allocate internal resources (Remenyi & Sherwood-Smith, 2012) and to look more generally at how the resources are allocated within the organization (Krause, 2020). Regarding 2), we recommend ensuring leadership support through project patronage and intensive involvement (Baker, 2018) as well as promoting more managers with IT backgrounds (Sweetman, 2001). Regarding 3), we recommend only committing to ICT investments if the corresponding projects are sufficiently prioritized and regularly reviewing the progress of projects and terminating them if they lack sufficient prioritization (Schmidt et al., 2001). It can be helpful to extend such a review culture to other overhead costs (Pyhrr, 2012). Regarding 4), we recommend ensuring that knowledge about available sector-specific solutions and vendors is made available in the organization, for example, through increasing networking activities on an organizational level (Pittaway et al., 2004). Where sector-specific solutions are not yet available, collaboration across NGOs can lead to joint solutions, for example, the solutions the Nethope collective is working on (Chen & Yu, 2022; Dobe, 2014). Regarding 5), we recommend communicating best practices and success stories but also looking at project management methods which can de-risk implementation projects, for example, agile methods (Coram & Bohner, 2005). It is also important to rationally address existing fears and openly address potential implementation risks (Godefroid, Plattfaut, & Niehaves, 2022). Finally,

regarding 6), we recommend ensuring adequate technical IT security, for example, controlling access to data and systems, and organizational IT security, for example, having clear guidelines on data privacy and ensuring awareness (Nieles et al., 2017). When both are in place, organizations should also de-bias risk perceptions, for example, by improving IT project portfolio decision processes (Fasolo et al., 2011). Appendix D provides more details on both reasons and recommendations (Table D1).

## 6 | CONCLUSION

With insights from our 20 interviews, we assessed ICT use along the value chain and identified six reasons for NGOs not to use ICT and corresponding recommendations. While most of these reasons stem from the organization itself (e.g., lack of resources or non-fitting prioritization), others come from the technology (lack of available standard solutions) and the environment (resulting from the need for beneficiary privacy in vulnerable communities).

With these findings, we contribute to existing theory: Building on the valuable case descriptions by previous NGO researchers (Merkel et al., 2007; Sheombar et al., 2015; Voids et al., 2011), we are now able to add a use case overarching view both of ICT use along the value chain and of reasons for NGOs not to use ICT. The focus of ICT support on fundraising activities and the reasons not yet covered by literature are interesting findings that warrant further examination. Apparently, NGOs emphasize streamlining of donor-related processes over project work. From our perspective, this might be a conscious prioritization to ensure sufficient funding when using ICT innovations further down the value chain. With these findings, we also contribute to information systems research where deliberate non-use of ICT or a lack of technology acceptance have already received substantial attention (Davis, 1985; Marangunić & Granić, 2015), but a need for more social sector-specific theorizing has been raised (Zmud et al., 2004). Here, we can add the peculiarities of the non-profit sector, for example, those resulting from the cause of protecting refugees. Last, we can show the usefulness of the TOE framework when analyzing technology adoption within NGOs. We are thus able to complement the existing studies of the TOE-framework in educational and public sector contexts (Ergado et al., 2021; Mikalef et al., 2022) with a social sector specific study highlighting the relevance of organizational reasons not to use ICT, which warrants further attention.

With these insights, we also provide practical takeaways as a starting point for assessing an organization's ICT use and its reasons. We identified six reasons to help practitioners reflect on their ICT decisions and potentially correct their course of action. To that extent, we also derived recommendations based on the identified reasons. Some of these, like the leadership support aspect, might be well-known and easy to fix. Still, like risk aversion, others might be less easy to spot and highlight the need for NGO-specific IS theories (Zmud et al., 2004). Similarly, our findings regarding prioritization along the value chain might offer opportunities to recalibrate current decisions in practice.

Despite taking the utmost care to design our research, this work has some limitations. First and foremost, in our search for a model of NGO activities, we were confronted with an apparent lack of one universal model (Zmud et al., 2004). The NGO value chain we then decided to use might not be generalizable to all NGOs. However, all our interviewees could work with the four steps used in the research before. Secondly, we aimed at comprehensive coverage of the NGO value chain; however, none of our interviewees worked primarily in the fund management phase, which might have led to an overrepresentation of the other phases. Thirdly, we tried to

select our sample of organizations as diversely as possible; however, as NGOs differ quite drastically in their organization and internal structure depending on their cause, size, and operational scope, our findings might not apply to all NGOs, and further research into the specifics of context and organization types is required. Here, the selection of organizations from one distinct list of organizations (e.g., members of the European NGO Confederation for Relief and Development, see García-Orosa & Pérez-Seijo, 2020) or focusing on only one class of NGOs (Vakil, 1997) could make the findings more specific. Alternatively, a quantitative approach could also uncover potential influences of organization size and cause. Here, future research can take a more hypothetico-deductive stance to identify and test causal relationships between different factors and the technology innovation decision. Alternatively, following a configurational comparative method approach could allow identifying equifinal configurations of contextualized influencing factors for the concrete decision to employ ICT innovations.

Our findings also open up other exciting opportunities for further research: The prioritization of IT support along the value chain appears to have valid reasons. But it is also interesting that this appears to follow donor interests rather than field staff and participants. An interesting fact when in international NGOs, donors are usually in the global north, and field staff and participants are in the global south. It could imply that the IT decisions follow post-colonial structures, which would counteract NGOs' societal mission and warrant further studies. Furthermore, the effects of risk aversion regarding IT security and project implementation risks must be further examined as well as potential countermeasures. Finally, the limits of digitalization are a topic that warrants further exploration. Extending the individual-level data privacy risk studies (Witteborn, 2021) to the organizational context would be both academically insightful and help practitioners to shield vulnerable communities better.

## ACKNOWLEDGEMENT

Open Access funding enabled and organized by Projekt DEAL.

## CONFLICT OF INTEREST STATEMENT

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

## DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

## ORCID

Marie-E. Godefroid  <https://orcid.org/0000-0002-4332-4086>

Ralf Plattfaut  <https://orcid.org/0000-0002-1442-4758>

Björn Niehaves  <https://orcid.org/0000-0002-2682-6009>

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## AUTHOR BIOGRAPHIES

**Marie-E. Godefroid** is a PhD student in the area of digital transformation in the social sector. She used to work for a major strategy consultancy. Her work has been presented in information systems conferences (e.g., ICIS) and published in relevant journals (e.g., *Management Review Quarterly*).

**Ralf Plattfaut** is Professor for Information Systems and Transformation Management at the University of Duisburg-Essen since 2023. He heads the Process Innovation & Automation Lab and conducts research on digital transformation. After studying and completing his Ph.D. in Information Systems at the Universities of Münster and Liechtenstein, Ralf advised companies at McKinsey & Company on issues relating to the digitalization of work processes. From 2019 to 2023, he was Professor for Information Systems at the South Westphalia University of Applied Sciences. His research findings are regularly published in journals and presented at conferences. In 2022, he was called one of the Top 50 german-speaking business administration researchers below 40 years.

**Björn Niehaves** is Full Professor at the University of Bremen and holds the Chair of Digital Public. He received a Ph.D. in Information Systems and Political Science from the University of Muenster. He is responsible for large projects of organizational development at state and municipal level as well as research projects on behalf of federal and state governments. He advises numerous cities, municipalities and districts on the topic of digitization in North Rhine-Westphalia, and shows the providers how digital transformation can succeed.

**How to cite this article:** Godefroid, M.-E., Plattfaut, R., & Niehaves, B. (2024).

Identifying key barriers to nonprofit organizations' adoption of technology innovations.

*Nonprofit Management and Leadership*, 35(1), 237–259. [https://doi.org/10.1002/nml.](https://doi.org/10.1002/nml.21609)

[21609](https://doi.org/10.1002/nml.21609)

## APPENDIX A

### A.1 | INTERVIEW INSTRUMENT

The interview guide was developed based on the TOE framework (Technology, Organization, and Environment) and the NGO value chain (Program Design, Fundraising, Fund Management, and Program Delivery). In the interviews, we focused our main questions on the organizational dimension of the TEO framework but also made sure to cover the environmental and technology dimensions through probing questions. For example, when asking what kind of ICTs were currently new or being implemented, we probed for a specific project and also asked about the specific technology characteristics and its availability on the market. Hereby, we concentrated on the ICT support for each step of the NGO value chain.

1. How do you perceive the ICT support in your organization in general and for the specific tasks of your role?

2. Have there been any ICTs newly introduced in your organization, or is your organization currently planning to do so? (*Probing question: If yes, what kind of project is being implemented, and what is the desired impact?*)
3. How and by whom are decisions to introduce new ICTs made?

*To understand the ICT support along the value chain, we briefly explained the NGO reference model to our interviewee and explained the aspects covered by its four main activities.*

4. What does ICT support look like in the Program Design phase?
5. What does ICT support look like in the Fundraising Phase?
6. What does ICT support look like in the Fund Management Phase?
7. What does ICT support look like in the Program Delivery Phase?
8. What are the reasons for the lack of ICT support? (*Probing question: Why is that an issue, what are the effects, and can you give examples?*)
9. Where would you desire more ICT support/ what could be improved?

## APPENDIX B

### B.1 | CODING STRATEGY

**TABLE B1** Example of coding strategy.

Interview utterance	1. Open code	2. Axial Code	3. Subject area
“It’s the technology that we use to bring money into the organization, [...] because if you don’t have funds, you can’t do many things right? That’s number one”	Fundraising ICT support is essential to acquire funds	Fundraising	ICT use along the value chain
“Why we don’t adapt tech has to do with NGO companies being very risk averse. On the one hand, path dependency comes with very high risks and costs. On the other hand—opportunity costs and transaction costs. All these costs make you stick with what you know”	NGOs don’t adopt tech due to high estimated costs	Overestimation of ICT project implementation risks	Reasons for ICT reluctance
“Anything we do at any level has to be secure. We’re dealing with beneficiary information; we’re dealing with compromised people”	ICT use could compromise beneficiary data	Fear of data-driven privacy risks when serving vulnerable communities	Reasons for ICT reluctance

## APPENDIX C

### C.1 | COMPARISON WITH PREVIOUS LITERATURE

**TABLE C1** Overview of relevant previous literature regarding key reasons.

TOE	Key reasons	Previous literature
Organization	1) Lack of resources	The lack of skills and financial resources is a prominent reason mentioned in NGO research (Barr et al., 2005; Merkel et al., 2007; Ojo et al., 2021). Less prominent but also relevant is the lack of technical resources like the internet connection in the beneficiary country (Ergado et al., 2021; Katrimpouza et al., 2020; Ojo et al., 2021).
	2) Lack of leadership and engagement and decision-making structures	Leadership support is one of the most prominently mentioned critical success factors for IT projects in general (Iriarte & Bayona, 2020), and researchers also mention it in the social sector context (Ahmed & Abdullahi, 2017; Ergado et al., 2021; Malik et al., 2022). In addition, we find a lack of suitable governance structures for IT decisions. While there is a whole research field on IT governance (Calder & Moir, 2009; van Grembergen, 2004; Weill & Ross, 2017), the specific aspects of NGOs are yet underexplored. So far, there are only very few publications that only look at very specific aspects (Godefroid et al., 2021; Godefroid, Borghoff, et al., 2022). A general exploration into IT decision structures for NGOs is still missing.
	3) Lack of prioritization of ICT investments	While the lack of resources already appears in NGO research (see above), our findings elaborate that these issues also stem from prioritization and loss aversion. Decisions about resource allocation already appear in NGO literature, e.g., on social media use (Krause, 2020), we can now add advocating for ICT investments. Similarly, the influence of loss aversion on technology investment decisions is known (Khan et al., 2017) but has not yet appeared in NGO research.
	5) Overestimation of ICT project implementation risks	Prior research has established that judgments about risks are potentially biased (Barnes, 1984; Kahneman & Tversky, 1979), and valid methods for risk management in projects are long since well established (Wideman, 1992; L. Zhou et al., 2008). To some extent, this could be explained by uncertainty costs influencing technology acceptance, which occur when the value of a good or service is not known beforehand (Kim &

TABLE C1 (Continued)

TOE	Key reasons	Previous literature
		Kankanhalli, 2009). In addition, our interviews indicate a more specific effect around project implementation.
Technology	4) Lack of standard ICT solutions	The lack of suitable solutions in information systems research typically discussed as part of the build or buy debate (Daneshgar et al., 2013; Hung & Low, 2008). However, in these cases, the issue is not that a standard solution is not available but that it does not sufficiently address the organization's needs. A similar phenomenon on the individual level is Bring Your Own Device (BYOD), where employees decide to rather use their own technical resources because they find the resources provided by the organization insufficient to their needs (Köffer et al., 2015). However, it appears that the social sector encounters a larger number of novel issues that no other organization faces. Thus, there are no standard ICT solutions for these issues, e.g., solutions that allow tracking the number of homeless people with COVID-19 (Jones et al., 2022). However, to date, this phenomenon appears only in the form of separate publications of the new use cases in research and has not been recognized as a systematic challenge.
Environment	6) Fear of data-privacy risks when serving vulnerable communities	Here the focus of researchers regarding marginalized communities has so far been more on digital inclusion and the digital divide (Madon et al., 2009; Pérez-Escolar & Canet, 2022), but researchers have also started to look into the downsides of digital inclusion, e.g., surveillance issues in the broadband use of marginalized communities (Gangadharan, 2017) or the data privacy issues in the social media use of asylum seekers (Witteborn, 2021). While (perceived) data-privacy risks are a known influence on individual technology acceptance, for example, on health apps and smart speakers (Schroeder et al., 2022), the influence of the concern for a third party on technology selection is a novel concept. In our case, our interviewees did not fear for their own data privacy but for those of their beneficiaries.



## APPENDIX D

### D.1 | TABLE OF KEY REASONS AND RECOMMENDATIONS

**TABLE D1** Overview connecting key reasons, interviews, value chain steps and recommendations.

TOE	Key reasons	Interviews	Value chain	Recommendations
Organization	1. Lack of resources	I2, I7, I12, I11, I14, I15, I16, I19, I20	All	We recommend using external experts as temporary staff, volunteers or pro-bono projects with consultancies. Using available philanthropy discounts and working out support deals with IT providers could help with licensing and implementation costs. When external resources and discounts are exhausted, it can be helpful to establish a clear business case to allocate internal resources.
	2. Lack of leadership engagement and decision-making structures	I4, I5, I9, I11, I14, I19	All	We recommend ensuring leadership support through project patronage and intensive involvement and promoting more managers with IT backgrounds.
	3. Lack of prioritization of ICT investments	I6, I7, I10, I15, I19	Program Design, Fund Management, and Program Delivery	We recommend only committing to ICT investments if the related projects are sufficiently prioritized and regularly reviewing the progress of projects and terminating them if they lack sufficient prioritization. If possible, extending such a review culture to other overhead costs can be helpful.
	4. Overestimation of ICT project implementation risks	I1, I2, I8, I9, I10, I17	All	We recommend communicating best practices and success stories and looking at project management methods that can de-risk implementation projects. Here it is also important to rationally address existing fears and openly address potential implementation risks.

TABLE D1 (Continued)

TOE	Key reasons	Interviews	Value chain	Recommendations
Technology	5. Lack of standard ICT solutions	I9, I10, I12, I13, I14, I19	Program Design and Program Delivery	We recommend ensuring that knowledge about available sector-specific solutions and vendors is available and used. Collaboration across NGOs is necessary to establish common solutions where sector-specific solutions are not yet available.
Environment	6. Fear of data-privacy risks when serving vulnerable communities	I1, I3, I10, I11, I13, I14, I15, I16	Program Delivery	We recommend ensuring adequate technical IT security as well as organizational IT security. When both are in place, organizations should also de-bias risk perceptions.