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Title:

The role of context in the nature and development of DIY impact measurement tools: A case study

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Abstract

This article aims to explore the nature of DIY impact measurement tools used in the voluntary sector, using a contextual inquiry approach. This is an understudied area of research, knowledge which would be considerably valuable for practitioners in the voluntary sector who wish to create their own DIY impact measurement tool. Semi-structured interviews and observation sessions are used to explore an example of the context a DIY impact measurement tool, the processes of its creation, operation and how it is shaped from the perspective of a UK environmental charity. The study identifies how and why the tool was created as well as which resources are used to build it. Findings show that the functionality and requirements of the DIY impact measurement tool are mostly shaped by the charity's social, cultural and organisational characteristics.

Keywords

volunteering, impact measurement, contextual inquiry, DIY tools.

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Introduction

'Volunteer impact measurement' is the performance evaluation of a volunteer-involving organisation or charity and the outputs they generate (Mackechnie et al, 2011; Polonsky et al, 2016). These outputs can refer to both the impacts of a voluntary organisation or charity and their programmes based on data collected about volunteers (e.g. measuring volunteers' wellbeing) or measuring the impacts generated by volunteering activities (e.g. Social Return on Investment). This article focuses on the first of these two types of impact measurement (Harlock, 2013).

The purpose of 'volunteer impact measurement' is to provide an evidence-base to support claims made, measure performance, ensuring both transparency and accountability of information data collected (Rochester, 2006; Polonsky et al, 2016). This can then be used by voluntary organisations or charities to assist in evaluating their performance as well as promoting issues for public attention and policy related impacts (Metcalf, 2013).

The last decade has seen growing effort in the UK voluntary sector to enhance existing impact measurement practice (Harlock, 2013). In response, there currently exists a plethora of impact measurement tools reflecting and shaped by the diversity of values, motivations and work practices of the sector itself (Ógáin et al, 2012). DIY impact measurement tools are an example of this and are internally created by voluntary organisations and charities wanting to measure the impacts of their activities (Voida et al, 2011).

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Recent studies have explored the creation and operation of 'homebrewed' databases sometimes used amongst UK and US voluntary organisations to store data collected from these DIY impact measurement tools (Voida et al, 2015). To date, the creation, operation and shaping of DIY impact measurement tools is an understudied area of research in the voluntary sector.

This article reports a study which explores a DIY impact measurement tool, the processes of its creation, operation and how it is shaped, using a Contextual Inquiry approach. The research is part of a 4-year project that explored the scope for and effectiveness of design methods being used by voluntary organisations and charities wanting to evaluate and enhance their own impact measurement practices. The tool in this study is used to measure the impacts of a voluntary organisation and its programmes based on data collected about volunteers (e.g. measuring volunteers' wellbeing).

Specifically, the study aimed to:

- identify how the DIY tool was created and evolved over time;
- examine how the DIY impact measurement tool operates in practice; and,
- explore the charity's social, cultural and organisational characteristics and how these have shaped the DIY impact measurement tool's creation.

DIY impact measurement tools in the voluntary sector

The growth in evidence-based monitoring and impact measurement in the voluntary sector in recent decades (Veltri and Bronzetti, 2015) is driven by a range of factors. For instance, there has been a shift towards outcomes-based commissioning in the public sector, where the voluntary sector is increasingly expected to demonstrate outcomes achieved in relation to

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their anticipated goals (Metcalf, 2013; Epstein and Yuthas, 2017). One example is the Public Services (Social Value) Act 2012 which requires all those contributing to the delivery of public services, like the voluntary sector, to consider the wider social, environmental and economic impacts of their activities when reporting the outputs of their activities (Veltri and Bronzetti, 2015). Other reasons for increased impact measurement practices include project management and allocation of resources, improved practices and partnerships as well as voluntary organisations' own internal motivations to understand the impacts of their work (Moxham, 2010; Mackechnie et al, 2011; Polonsky et al, 2016).

In response to this growth in impact measurement practices the voluntary sector has also seen the emergence of new tools and evaluation methods (Ógáin et al, 2012; Epstein and Yuthas, 2017). As a result, there currently exists a diversity of tools and evaluation methods which are often shaped by the diversity of values, motivations and work practices found within the sector itself (Metcalf, 2013; Harlock and Metcalf, 2016). For instance, a study by social research co-operative 'Substance', identified over 130 different tools and evaluation methods currently used by the UK's voluntary sector, including, for example, Social Return on Investment (SROI) and narratives of experiences (Metcalf, 2013; Harlock and Metcalf, 2016). This in part owes to the diversity of voluntary organisations and charities, each varying in their purposes and activities. Additionally, factors such as budget, expertise, time availability and organisational size are also relevant (Harlock and Metcalf, 2016).

Currently there are three main challenges which can hinder the sector's ability to develop tools and evaluation methods used to measure their impact. First, there is a patchwork of support available from consultancy, infrastructure and other specialist organisations in numerous fields. This has led to a situation marked by grey literature, conceptual confusions,

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fragmented evidence bases and uncoordinated support (Harlock, 2013; Veltri and Bronzetti, 2015). Second, much of the voluntary sector comprises small organisations who are often faced with challenges of choosing a tool which meets their budget, practices and time availability (Moxham, 2010; Harlock and Metcalf, 2016). Third, measuring the impact of services often relies on the initiative, technical skills and knowledge expertise of individual employees and volunteers (Haklay, 2010). This can result in the ad hoc or sporadic development of these activities as well as the creation of multiple information management and evaluation tools (Voida et al, 2015).

A range of DIY impact measurement tools has emerged (Voida et al, 2015). typically internally created by a voluntary organisation or charity to meet their specific requirements (Voida et al, 2011).

One resource used to help create these DIY impact measurement tools are 'homebrewed information management systems' - databases which have been internally created by a voluntary organisation or charity, for example using free database software, spreadsheets and paper records (Merkel et al, 2007; Goecks et al, 2008; Voida et al, 2011; Voida et al, 2015). These databases are often used to input and store information relating to a voluntary organisation and charity's management practices, i.e. staff and financial details (Voida et al, 2011).

Research at the intersect of 'homebrew' information management systems and the voluntary sector has started to emerge, revealing how these databases were created, how they operate and how they are shaped by the social, cultural and environmental contextual factors unique to each voluntary organisation or charity that creates them (Voida et al, 2015). For instance, Voida et al (2011) notes that volunteer coordinators have constructed their homebrewed

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databases around the diversity of information they need relating to their individual work practices (e.g. accounting records and scheduling information about events). Other examples include their role in assisting charities in storing information about and allocating emergency resources to those in need (Merkel et al, 2007) as well as recording donations contributed to different education projects that donors wish to fund (Goecks et al, 2008).

Despite differences in motivations for developing homebrewed information management systems, it is reasonable to expect that DIY impact measurement tools are equally shaped by the needs of voluntary organisation and charities. These needs can include what impacts they want to measure, the type of output data they need to collect, and the resources needed to develop the tool itself. However, this remains an understudied area in voluntary sector research, with no empirical studies to date exploring how DIY impact tools are created, how they operate as well as how they might be shaped by the voluntary organisation and charities that create them. Such knowledge would be of considerable value in helping practitioners in the voluntary sector in areas of impact measurement tool design, providing an example of how tools can be created for voluntary organisations and charities wanting to measure the impacts of their activities (Voida et al, 2011). For example, findings from this article can also be used by other voluntary organisations and charities to identify resources accessible to build DIY impact measurement tools and the ways in which these tools can be tailored to suit their individual needs, i.e. work practices, types of output data to collect, staff skills and budgetary requirements. This approach could increase the overall useability and efficiency of the DIY impact measurement tools (Holtzblatt and Beyer, 2015).

Related work and methodological approaches

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Since the 1980s, a user focused design strategy termed User-Centred Design (UCD) has been used widely. It is concerned with understanding the requirements, skills, characteristics and values of individual users or organisations with a view to create new tools or improve the design of existing ones (Haklay and Nivala, 2010).

Contextual inquiry (CI) is one approach often used at the start of the design process (Holtzblatt and Beyer, 2015). Using one-to-one interviews and observations, contextual inquiry provides a rich understanding about the context relevant to the tool being explored, i.e. its social, cultural and organisational characteristics (Löffler et al, 2015). It can be adapted or changed to meet one of two research objectives. It can either be used to gather contextual information to create or improve a tool (Holtzblatt and Beyer, 2015). Alternatively, it can be used as a simple exploratory method to identify the context in which an existing tool has been developed, shaped and is used (Botta et al, 2007).

Contextual inquiry has been applied across a wide range of disciplines, including the creation of impact measurement tools, which are intended to evaluate the outcomes of voluntary organisation activities (for example, the long-term impacts of managing plastic waste in waterways (Kim et al, 2011)). Previous studies have sought to understand contextual information about voluntary organisations, how they would like to collect data, measurement indicators needed and the skills of volunteers who would collect the data in order to create impact measurement tools that are tailored to the organisation's needs (Kim et al, 2011; Lam et al, 2012; Dearden et al, 2014). However, to date voluntary sector research has not yet used contextual inquiry to identify the context in which an existing tool has been developed, shaped and is used (Holtzblatt and Beyer, 2015). Such knowledge would help practitioners in

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the voluntary sector evaluate their existing tools, but would also provide guidance to others wishing to develop similar tools (Botta et al, 2007).

Conversely, studies in UCD research use contextual inquiry to both create new and explore existing tools (Holtzblatt and Beyer, 2015). Existing studies in this area include understanding the filing practices of physicians in general surgeries (Coble et al, 1995), understanding tools used by IT security professionals (Botta et al, 2007) and improving the interface of existing digital technology for those with visual impairments (Dosono et al, 2015).There is scope for this method to be applied in other related or nearby fields (e.g., volunteering).In this article, contextual inquiry is used to explore the creation, operation and shaping of a DIY impact measurement tool. These design areas were selected owing to their importance in understanding the DIY impact measurement tool as well as providing knowledge for practitioners in areas of DIY tool design and application. Each of these characteristics are described below.

As noted, many of the smaller voluntary organisations can experience the challenge of choosing a tool which meets their individual needs, including flexibility, budget and time availability (Moxham, 2010; Harlock and Metcalf, 2016). Knowledge about how a DIY tool is created and evolves could serve as a useful guide for other voluntary organisations to identify which free or low-cost resources are available, the length of time they take to develop as well as strategies used to adapt to change (Moxham, 2010; Veltri and Bronzetti, 2015).

‘Operation’ is the understanding of how a DIY impact measurement tool functions in practice. Research within the voluntary sector has identified a patchy support base for organisations wanting to select or design tools used to measure their impact, with less

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provided for creating DIY tools (Voida et al, 2011; Harlock, 2013; Veltri and Bronzetti, 2015). Understanding how DIY impact measurement tools operate in practice would serve as a useful example of how resources can be used collectively, the types of output data that can be collected using these resources, as well as the activities involved in collecting and evaluating output data. Additionally, such knowledge can be used by other voluntary organisations when designing their DIY tool to strengthen the validity and quality of output data collected (Bryman, 2012).

UCD studies exploring tools used by an organisation often examine how their social, cultural and organisational characteristics, i.e. work practices, shape the tool itself (Holtzblatt and Beyer, 2015). This not only provides a detailed understanding about how the tool is embedded within an organisation, but can also serve as useful baseline knowledge to design any future additions or changes to the tool (Löffler et al, 2015). Sharing similar knowledge about an existing DIY tool could serve as useful guidance for other voluntary organisations designing their own tool to ensure it meets their organisation's values, motivations and work practices (Haklay, 2010).

Method

To explore the creation, operation and shaping of a DIY impact measurement tool, a contextual inquiry methodological approach was applied from September 2013 to September 2014 using a UK environmental charity as a case study. The tool aimed to measure the impacts of the charity and its programmes based on data collected about volunteers (e.g. measuring volunteers' wellbeing).

Case study

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Whilst the environmental charity used as a focus for the case study has not been named to protect confidentiality, it shares similarities with other voluntary organisations and charities who may also have or are looking to develop their own DIY impact measurement tool. Therefore, despite variation in volunteering activities, it is reasonable to expect that some parallels can be drawn from the example charity in this article and other voluntary organisations or charities.

The environmental charity was founded over fifty years ago and attracts volunteers from diverse backgrounds and abilities to engage in its environmental activities. Environmental volunteering refers to the practice of unpaid volunteers engaging in a wide range of practical conservation and outdoor-based activities, including pond weeding, dry stone walling and tree coppicing (Bruyere and Rappe, 2007). It plays a pivotal role in civic participation and the delivery of public services for local communities (Mohan and Bulloch, 2012).

The charity delivers two main volunteering programmes, each with a different objective and associated output measures. One programme measures the long-term wellbeing outcomes of those volunteers who engage in practical conservation and outdoor-based activities. Output measures for this programme include the number of volunteering sessions volunteers have attended, the type of task volunteers engaged in, when and where the volunteering task occurred as well as volunteers' responses to a questionnaire measuring different aspects of their wellbeing (e.g. whether volunteers feel relaxed). The second programme measures the environmental outputs generated by the charity's practical conservation and outdoor-based activities as well as the contributions made to these activities by volunteers. Output measures for this programme are the same, but also cover the types of environmental outputs generated (e.g. number of trees planted).

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The charity created a DIY impact measurement tool for these programmes, which is the focus of this article.

Participants

15 participants were recruited for the study, through 3 gatekeepers in managerial roles (generating 8 participants) and subsequent snowballing (generating a further 7 participants). The gatekeepers were effective in diffusing knowledge of the research over a wide geographical area, fostering both collaboration and trust between the author and participants (Rattani and Johns, 2017). The snowballing method was used not only to gain the trust of participants but to gather a sample which met the eligibility criteria in a reasonable time period which was cost-effective (Heckathorn, 2011). Recruitment continued using the snowballing method until data saturation had been reached, and no new insights or recurring themes could be identified (Mason, 2010). Number of participants recruited were also consistent with recommendations for conducting contextual inquiries (Beyer and Holtzblatt, 2015).

Participants covered a range of roles and associated tasks across the two volunteering programmes. This ensured that as many key characteristics relevant to the research scope were identified, thus increasing the likelihood of a heterogeneous sample (Holtzblatt and Beyer,2015). To protect participants' confidentiality the terms 'managerial' or 'operational' are used to describe roles. In the context of this study, managerial roles refer to those participants who manage the finances of volunteer programmes, oversee the work of operational staff, design the objectives and output measures to use for each volunteer programme as well as review the output data generated by each volunteer programme.

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Operational roles refer to participants who manage a volunteer programme at a local level, oversee and collect output data about volunteers who engage in the volunteer programme. It is noteworthy that those participants who were contacted and did not take part in the study shared similar employee roles and associated tasks as those who did participate.

Participatants came from 7 offices in Greater London (n=7) and the South East of England (n=8). Sampling began in Greater London where there was most job role diversity, before spreading into the South East. Each of these two regions had adequate sample size, shared similar employee positions, and were accessible in travelling distance.No volunteers were recruited as part of this study, because the focus of the study was to explore a DIY impact measurement tool which is used by staff to measure the impacts of the charity's volunteering programmes on volunteers (e.g. measuring volunteers' wellbeing).

Research design and data collection

Contextual inquiry was implemented using two complementary techniques (Bryman, 2012): one-to-one semi-structured interviews and observation sessions. This approach was used to characterise, validate and enhance our understanding of the context in which the DIY tool impact measurement tool was created, operates and was shaped by the charity.

15 one-to-one semi-structured interviews were conducted with participants, each for an hour's duration (n=15 hours) over the period September 2013 to January 2014. Interviews were held in participants' workplace environments, both in the office and in outdoor greenspaces, to form a relaxed working partnership (Holtzblatt and Beyer, 2015). Interviews consisted of 10 open ended questions and covered the following areas: how the DIY impact tool was created, how it operates in practice and what factors have shaped it. Additionally, a probing technique was used throughout interviews to encourage further elaboration or

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explanation from staff using focused follow-up questions (e.g. "Can you tell me more about that?"). The technique was used to learn more about each participant's working goals, task expectations and assumptions behind their work behavior (Doody and Noonan, 2013). The technique also allows flexibility to focus on promising avenues of conversation that might not have otherwise been in the list of questions (Bryman, 2012). All interviews were audio-recorded and transcribed. To ensure validity of information gathered, all content recorded was clarified with staff and their identities were protected using pseudonyms (Patton, 2002). Observation sessions were also conducted with participants for a duration of 8 hours each (n=120 hours) directly after each interview session. Sessions occurred from September 2013 to January 2014, in participant's working environments, both in the office and in outdoor settings whilst they worked with volunteer groups. In these sessions, a co-interpretation partnership with participants was created to gain a comprehensive understanding of the charity's DIY impact measurement tool. This co-partnership was achieved through asking participants to explain and comment on aspects relating to their work and use of the tool. The approach enabled participants to validate observations instantly, stimulate reflection as well as reducing any biases in interpretations (Leicht et al, 2010, Holtzblatt and Beyer, 2015). Finally, during the observation sessions detailed field notes were taken by hand in a notebook across three columns: time and date, fieldnotes, and analytical comments about field notes (Baker, 2006). This enabled a rich in-depth amount of data, providing an 'audit trail' of what happened, when and why, thereby strengthening the truthfulness and transparency of the results (Patton, 2002).

Data analysis

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Interview transcripts and observation field notes were coded using a general inductive approach identifying key themes, categories and linkages (Thomas, 2006). This analytical approach was conducted by two researchers - the author and a fellow PhD student, one with expertise in DIY impact measurement tools and the other with expertise in voluntary sector organisations and charities. Having coders from different disciplines was an attempt to reduce any researcher bias as well as brought varying knowledge and skills to the analysis (Littlechild et al,2015). Coders developed a mutual codebook, based on each coders' initial independent analysis of the transcripts, agreeing on the following aspects: code type, basic definition of code, a full description of code, granularity of code, guidelines of when and when not to use it as well as examples. This approach facilitated increased consistency in coding, intercoder reliability as well as training and support to both coders (Campbell et al, 2013).

Intercoder reliability was then measured using a simple proportion agreement method due to the large-scale variations in coding, and exploratory nature of the study (Campbell et al, 2013). From this, an intercoder agreement score of 85 percent was identified which is deemed acceptable (see Kurasaki, 2000; Campbell et al, 2013).

Based on findings from the data analysis, a model was created to show how the DIY tool operates in practice and how it is used to measure the impacts of the charity's volunteering programmes on volunteers (Holtzblatt and Beyer, 2015). The model was clarified with most staff (n=9) through one-to-one discussions after interview and observational sessions to ensure credibility and confirmability of findings (Bryman, 2012).

Results

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This section presents the findings in terms of the creation, operation and shaping of a DIY impact measurement tool.

How was the DIY impact measure tool created and how has it evolved over time?

Three participants were able to provide an account of why and how the DIY tool began, each having worked closely with the tools' developer. As one noted:

"The [DIY tool] was created as a simple volunteering project management and tracking system back in the early nineties and was a way to store information about volunteers. It started off storing data about volunteers, [volunteering] tasks, [volunteering] sites, and [volunteering] programmes. After this, we saw its potential as a way to measure the impacts of the charity's programmes".

The DIY tool itself was based on a single person's initiative using their knowledge, technical skills and tools accessible to them within the charity's budgetary constraints. This included free database software to store information about volunteers and the charity's programmes (MySQL) as well as low-cost online survey resources to collect volunteer responses to questionnaires (free online software) and a mapping tool to map output data about volunteers (Google Maps).

Owing to its success in one office, some of the participants noted how the tool was then rolled out a year later to other regions across the UK where the charity operated and has over the years been adapted according to the charity's needs. As one participant commented:

"Since it was developed the [DIY tool] has evolved into a complex national [volunteering programme] impact measurement tool. We also have [different] surveys which [the developer] would add in as well for the various [volunteering] programmes we run. I find that at the start of a project I might need to collect new or different data. What's good about [the

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DIY tool] is that if you ask [the tool developers] for something generally you can get it done and added as it's all done in house".

As another member participant commented:

"[The tool] tends not to be behind. The functionality tends to appear quite quickly according to staff needs. The amount of data, like wellbeing or environmental impacts, we're collecting [has] huge potential for what we can report on".

Over half of participants (n=9) highlighted some initial issues with using the DIY tool when it was later rolled out to all offices within the charity at the start of its creation and how these issues were overcome to strengthen the tool. For instance, one participant noted that some staff were uncertain of how the tool worked initially, being more accustomed to existing data collection systems practiced in their office:

"Well when I first used the [DIY tool] I didn't get on too well. A lot of people found that. One reason was that it didn't work quite how you would imagine it would. It was a new way of working and they were quite happy with the systems they were using locally. So, there were a few teething problems of getting used to it".

However, most participants also noted how improvements were soon made within the first year of the tool's rollout in response to these issues. These improvements included the development of face-to-face training courses and step-by-step user guides. These were both successful and remain in place for when new members of staff join the charity. As one participant commented:

"Now I know how to use [the DIY tool], and I think that is the key. I feel confident using it and happy about the parts I can get out of it".

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Further, just over half of participants (n=8) noted that there was a need for more communication about updates being made. Such updates included new data fields (e.g. volunteer responses to a health questionnaire) to accommodate other offices collecting additional data about volunteers and the programmes they managed. Again, participants commented on how changes were quickly communicated, for example via an 'all staff' email, a news bulletin board on the main page of the online database, as well as through staff training.

"Its [bulletin board] got some key information here. Which is really great as you get a feel for what's going on. So, I think everyone has found that really useful".

How has the charity's social, cultural and organisational characteristics shaped the DIY impact measurement tool?

The functionality and requirements of the DIY tool are shaped by various factors. These include the type of volunteering programmes staff managed, programme objectives and how widespread programmes operate. For example, whilst all operational staff engaged in collecting data about the charity's volunteers and the programmes they attend, there were some differences in the types of data staff collected. These would often depend on the type of volunteering programmes staff managed and the objectives of these programmes, factors which have largely shaped the overall data frame of the DIY tool. For instance, three participants noted that they needed basic volunteer data to evaluate engagement levels (e.g. number of volunteers per programme session) in the charity's volunteering activities:

"I produce basic stats like numbers of volunteers who engaged in our programmes for the local council who only want raw data of volunteers. I find this useful as I can then report

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what [volunteering programme] impacts we have made, and it also helps for planning future volunteering activities".

Conversely, other participants collected output data used to measure whether volunteer programmes achieved their long-term objectives. For example, just under half of staff (n=5) collected long-term data about volunteers' wellbeing (e.g. ability to think more clearly). Similarly, other staff (n=6) recorded different types of environmental outputs that had been achieved by volunteers (e.g. number of trees planted).

"I run [a] heritage trees project which aims to map as many old and important heritage trees in the area as possible. I collect data about the different educational sessions that I run, how many people attend and what kind of activities I run. This helps me work towards knowing how many school visits, how many trees have been mapped and how many educational sessions I've run over the year for the project".

In addition to these factors which shape the DIY tool and its data frame, staff use the tool in different ways or at different points depending on their roles and responsibilities. For example, managerial staff (n=3) spent a large proportion of their time overseeing the general management of volunteering programmes undertaken by operational staff. Some of their activities included reviewing the deliverables of volunteer programmes, liaising with stakeholders of the volunteering programmes as well as managing and overseeing the financial budgets for each programme. As a result, managerial staff tended to collect data about the volunteering programmes (e.g. funding information) and reviewing their outputs (e.g. number of volunteers who attended), rather than collect data about volunteers directly. As one participant stated:

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"I use it when I am meeting people or do anything which involves volunteer programmes. So, I will enter in programme details and the financial plan. I also use it to [create] reports about volunteer programme outputs or to get information out like statistical stuff which is quite often for funders and stakeholders".

Conversely, operational staff (n=9) spent more time engaging directly with volunteers in outdoor practical conservation activities as well as collecting and uploading data about volunteers and related programmes. For this reason, operational staff tended to collect data about volunteers, volunteering programmes, volunteering sites, and volunteers' responses to questionnaire surveys on selected projects. As one participant commented:

"My duties include leading groups of volunteers in conservation work, doing education sessions, carrying out the habitat maintenance management, site risk assessments, carrying out project management as well as running environmental workshops. As part of this, I record information about the activities I run, like what tasks I plan to do and where these tasks will be taking place, as well as details about the volunteers who take part in the activities".

How does the DIY impact measurement tool operate in practice?

The steps and actions undertaken by staff to collect and evaluate data about volunteers and the volunteering programmes they attend using the DIY impact measurement tool have been illustrated in Figure 1. These steps and actions are based on findings from the contextual inquiry and are explained below.

First, operational staff organise activities for the volunteering programmes that they manage. Operational staff do this by collecting the following information data using paper-based forms: volunteering site details (e.g. location), type of volunteering activity, date of activity and activity equipment required. This information data is then inputted and saved onto an

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online database (Step 1). After the volunteering activities have occurred, operational staff will identify which volunteers contributed to these activities using a written register. For each volunteering activity, operational staff add the names of volunteers who attended to information previously recorded about the volunteering activity (Step 2). For those volunteers who have attended more than one volunteering activity, their personal and identifying data will have already been collected using paper forms and inputted onto the online database (Steps 2 and 3). If there are any new volunteers, their personal and identifying data will have already been collected on the day of the activity using a paper form. This information is then inputted onto the online database before the new volunteers' names are then added to information previously recorded about the volunteering activity (Step 3). All information collected in steps 1 to 3 are later used to categorise questionnaire survey data collected about volunteers to help evaluate outputs generated by the charity's volunteering activities, for example, identifying relationships between output data and volunteering activities. It is noteworthy that managerial staff use similar methods (e.g. paper forms and online database) to record and input financial and stakeholder information about the volunteering programmes. At the beginning of any new volunteering programme, the charity's managerial staff outline a set of objectives to be achieved by the end of the programme. These objectives (e.g. to improve volunteers' wellbeing) are evaluated throughout the programme's duration using selected output data collected by staff about the volunteers who engaged in these volunteering programmes. Questionnaire surveys are first created by managerial staff using a low-cost online survey resource at the start of a volunteering programme (Step 4). These questionnaire surveys are then sent to volunteers at variable intervals (e.g. monthly) by operational staff in the form of a weblink through e-mail (Step 5). Once volunteers have

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inputted their questionnaire responses, they are then asked to click a button at the bottom of the weblink page which exports and saves these responses onto the charity's online database (Step 6). All data recorded on the online database can be exported into an excel spreadsheet and used by operational staff to evaluate the outputs of the charity's volunteering programmes (e.g. wellbeing and environmental output data). This can include mapping questionnaire responses onto Google Maps to present the charity's outputs spatially. Outputs identified can then be reported back to managerial staff, funders and stakeholders to review volunteering programme objectives, i.e. to improve volunteers' wellbeing over time (Step 7).

[Insert Figure 1 here].

Figure 1: A diagram showing how the DIY impact measurement tool operates in practice.

Discussion

The research in this article exploring a DIY impact measurement tool from the perspective of a UK charity builds on existing research about homebrewed databases in the voluntary sector (Merkel et al, 2007; Goecks et al, 2008; Voida et al, 2011; Voida et al, 2015). In particular, the study identifies the social, cultural and organisational context in which the tool has been developed, shaped and is used (Botta et al, 2007). This study also shows the potential for contextual inquiry to be applied to both UCD and voluntary sector studies. This could be valuable in assisting voluntary sector practitioners in areas of tool design and application as well as used to explore the creation, operation and shaping of an existing DIY impact measurement tool (Holtzblatt and Beyer, 2015).

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Participants in this study note that the DIY tool was created by a member of staff who used their knowledge, technical skills and low-cost tools (e.g. MySQL database software). What began as a simple volunteer management tool has developed into a complex impact measurement tool recording the outputs generated by the charity's volunteering activities. This practice of DIY tool development in the voluntary sector has also been identified in similar studies exploring homebrewed databases used by voluntary organisations to store practice documentation, i.e. staff, resource and financial details (Merkel et al, 2007; Goecks et al, 2008; Voida et al, 2011; Voida et al, 2015).

Participants also identified two issues which emerged where strategies were implemented to strengthen usage of the DIY impact measurement tool's during its initial rollout across the charity's other offices. First, there was some uncertainty over how the tool worked. In response, improvements were quickly made and remain in place for when new members of staff join the charity owing to their success (e.g. face-to-face training courses and step-by-step user guides). A similar finding was identified by Voida et al (2011) where staff working in US voluntary sector organisations felt their general lack of expertise and limited previous training in using homebrewed databases often constrained their work. As Voida et al (2011) and others more widely in UCD research highlight, learnability and training are key factors in the adoption of any tools (Pretorius, 2010; Eason, 2014). It is therefore important, as the charity soon identified, to have resources in place to support and facilitate staff training (Voida et al, 2011). Second, staff also noted how changes were quickly communicated, such as 'all staff' email updates and a news bulletin board. Communication and information strategies such as these have also been identified by others as being a well-recognised and

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effective approach when implementing changes within an organisation (Bordia et al, 2004; Christensen, 2014).

Considering how the tool operates in practice, findings show that the charity uses various resources collectively to create the overall DIY impact measurement tool, i.e. paper-based forms, free-database and online survey software. These findings concur with similar studies in both the UCD and the voluntary sector (Merkel et al, 2007; Goecks et al, 2008; Voida et al, 2011; Kim et al, 2011; Kim et al, 2013; Boakes et al, 2016). Suggested explanations for this include the need for various tool functions, collecting different types of output data and the existing skills base of the tool's users (Voida et al, 2011; Kim et al, 2011; Boakes et al, 2016). Additionally, the DIY impact measurement tool is used to collect and evaluate various types of short and long-term output data, i.e. levels of engagement and questionnaire responses. Collecting multiple types of output data can be supported by one or more impact measurement tools depending on the initiatives of individuals, objectives of volunteer programmes and financial resources (Voida et al, 2015). Often, however, this can result in the ad hoc or sporadic activities in tool development having an impact on and creating biases in output data collected, i.e. spatial biases (Haklay, 2010; Boakes et al, 2016). Further, during the data collection and evaluation process various members of staff use the DIY tool at different points of the process and in relation to their individual roles and volunteer programmes they managed. Again, this practice can vary across the voluntary sector depending on financial resources and the objectives of a volunteer programme (Harlock, 2013; Metcalf, 2013; Harlock and Metcalf, 2016). Such operational information can be important for DIY impact measurement tool developers, particularly when planning a data collection framework to record outputs generated by their volunteer programme activities

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(Boakes et al, 2016). This information can also be used during the initial planning stage of a DIY impact measurement tool to help increase the level of consistency and internal reliability of volunteer data collected for further analysis (Bryman, 2012).

Last, findings show that the functionality and requirements of the charity's DIY tool were mostly shaped by contextual factors, i.e. social, cultural and organisational aspects (Löffler et al, 2015). There were differences in the types of data staff collected which depended on the type of volunteering programmes they managed and related outcome objectives they wished to measure (e.g. volunteers' level of engagement). Second, there were differences in the output data collected about volunteers depending on how widespread a volunteer programme was (e.g. multiple regions vs. a more localised level or within a single region). Similar findings have been noted by others which have found impact measurement tools to vary widely, reflecting and shaped by the diversity of values, motivations, funder requirements and work practices of the sector itself (Ógáin et al, 2012; Harlock, 2013; Harlock and Metcalf, 2016). This suggests that most impact measurement tools are in some way shaped by either the sector, an individual organisation or voluntary programme. Therefore, understanding those contextual factors relevant to a tool can serve as useful baseline knowledge for voluntary organisations when designing a new or enhancing an existing impact measure tool (Löffler et al, 2015). In doing so, this would also help increase a tool's efficiency in measuring the outputs and performance of an organisation's volunteering activities (Holtzblatt and Beyer, 2015).

By exploring the creation, operation and shaping of an existing DIY impact measurement tool the article has shown that these tools can be both organisationally and environmentally driven. In particular, they can be shaped by innovative initiatives of individual employees, an

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organisation or charity's ability to adapt to employee feedback and needs, accessibility of resources and the dynamics of volunteering programmes being managed and monitored (Haklay, 2010; Moxham, 2010; Harlock and Metcalf, 2016). A knowledge of what organisational dynamics (e.g. adaptation) can help shape the creation and operation of DIY impact measurement tools is not only valuable in assisting practitioners in the voluntary sector in areas of tool design and application (Holtzblatt and Beyer, 2015). It also increases our understanding of how DIY impact tools have evolved as well as the relationship between the voluntary sector, impact measurement and DIY impact measurements tools.

A number of authors have highlighted a series of challenges that can inhibit voluntary sector organisations' selection and development of an impact measurement tool (for example, Harlock, 2013; Metcalf, 2013). These include an uncoordinated support base, financial constraints and sporadic tool development. With this in mind, these study findings suggest that DIY impact measurement tools could be viewed as one alternative in addressing such challenges in the future. It also demonstrates the innovative nature and organisational dynamics of voluntary organisations and charities wanting to measure the impacts of their activities (Voida et al, 2011).

Moving forward, further questions remain to be explored to gain a broader appreciation of DIY impact measurement tools. For instance, how widespread are DIY impact measurement tools? Do they differ in nature? Are organisational dynamics which foster change the same across all tools? And if not, could further lessons be learnt from these tools? Answering some of these questions would enable further understanding about the relationship between the voluntary sector, impact measurement and the development of DIY impact measurement tools.

Study limitations

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There are three main limitations of the analysis presented here. First, findings were based on two neighbouring regions, Greater London and South East of England, increasing susceptibility that organisational practices are similar and cannot therefore be generalised. Second, whilst findings in this study were specific to the environmental charity interviewed, similar more generalised findings on management information and impact measurement systems have also been identified in existing voluntary sector research (Voida et al, 2011; Harlock, 2013). This suggests that the findings from this study could be extendable. Further work is therefore needed to explore and characterise management information systems in the volunteering sector.This would provide a more in-depth understanding of the nature and variability of management information systems in the voluntary sector.

Third, though this study characterises the nature of DIY impact measurement tools used by an environmental charity, the contextual inquiry qualitative analytical method does not explore how volunteering staff engage with these tools, i.e. how often and for what tasks do staff engage with the tools. There is therefore a need to use complementary forms of quantitative methodological approaches (such as transaction log analysis) to provide a more in-depth understanding about DIY impact measurement tools and how they are used. Such mixed methods would allow for multiple perspectives, and an exploration of how volunteering staff engage with these tools.

Conclusion

In this article a contextual inquiry approach has been used to explore a DIY impact measurement tool which assesses the impacts of a UK charity and its volunteering programmes on volunteers. In particular, the study identifies the social, cultural and

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organisational context in which the tool has been developed, shaped and is used. The method used in this study also has potential to be applied to other voluntary sector studies, and may assist practitioners in the design and application of DIY impact measurement tools.

Findings identified that the DIY tool was created through a single person's initiative using technical skills and low-cost tools. These findings were similar to other studies exploring homebrewed databases used in the voluntary sector and owed to various factors including budgetary constraints and the internal motivations of voluntary organisations and charities themselves. Further, improvements were quickly made to support and facilitate participants' use of the tool during its initial rollout across the charity's other offices. By understanding how these DIY tools are created and which resources are available voluntary sector organisations and charities can be better equipped in designing their own tool as well as organising resources required (e.g. costs and software).

Various resources were used to enable the tool to collect different types of output data about volunteers who attend the charity's volunteering programmes. Additionally, participants used the tool at different points of the data collection and evaluation process, often relating to their employee roles and the different volunteer programmes they managed. Similar findings were also identified in existing voluntary sector research reviewing volunteer impact measurement tools more generally (e.g. Harlock and Metcalf, 2016). Such operational information is useful for other DIY impact measurement tool developers when planning a data collection framework to help increase the level of consistency and internal reliability of output data collected.

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Finally, findings show that the functionality and requirements of the charity's DIY tool were mostly shaped by contextual factors, i.e. social, cultural and organisational characteristics. These include the type of volunteering programmes staff manage and their related programme objectives as well as how widespread programmes operate. Similar findings have also been noted by others in voluntary sector research (Ógáin et al, 2012; Harlock, 2013; Harlock and Metcalf, 2016). This suggests that impact measurement tools are in some way shaped by contextual factors in the voluntary sector. This can serve as useful baseline knowledge for voluntary organisations when designing a new or enhancing an existing impact measurement tool.

The study also identifies areas that warrant further research. For example, it is recommended that additional quantitative approaches could be used to explore the underlying mechanisms of behaviours exhibited by tool users and associated contextual information, including volunteer motivations. In addition, the study opens questions as to whether the characteristics that shape DIY impact measurement tools are evident in other voluntary organisations. Further research may therefore be needed to explore and characterise DIY impact measurement tools and management information systems in the voluntary sector. Such evidence would provide a more in-depth understanding of the nature and variability of the tools used by the voluntary sector.

Declarations of Interests

The author declares there to be no competing interests.

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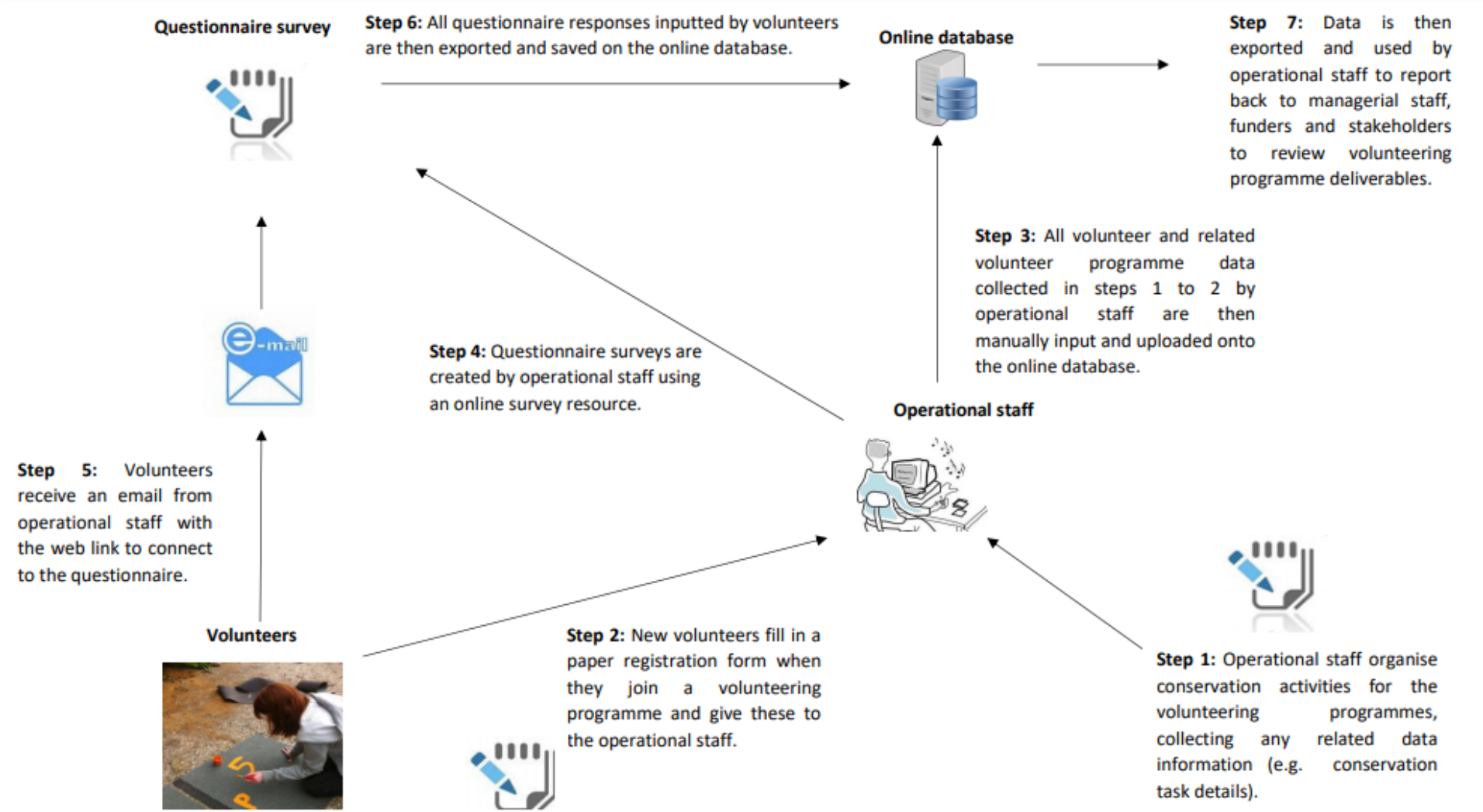

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