Negative Denominators in Index Variables: The Vulnerability of Return on Equity, Debt to Equity, and Other Ratios

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Abstract: This paper highlights construct validity issues that can occur when researchers utilize index variables (commonly referred to as ratios) in which the denominator can become negative. These indexes are commonly used in management research, and we demonstrate that indexes constructed from data which includes negative values for the denominator lose their ordinal properties and can be difficult, if not impossible, to interpret. Further, we show that common empirical practices to resolve these issues do not solve issues of ordinality and interpretability and may lead to additional validity issues. We recommend the use of alternate measures not affected by the issues described in this article to increase the validity of future organizational research.

Keywords: Indexes, methodological issues, negative denominators, ratios, research methodology.

1. Introduction

For decades, management scholars have criticized their own field for not placing the same importance on the measurement of variables representing constructs as is placed on the theory connecting those constructs (Venkatraman and Grant, 1986, Lubatkin et al., 1993, Hoskisson et al., 1993, Boyd et al., 2005b, Boyd et al., 2005a, Boyd et al., 2013, Ketchen et al., 2013). A lack of confidence that our measures reflect the constructs we intend them to, forces us to question the validity and reliability of our field’s findings (Wiseman and Choi, 2011). One place where this occurs is when scholars use index variables (in which one number is divided by another) to operationalize a construct. It is important to ensure that the denominator of the index cannot become negative. If the denominator of an index can become negative, the data requires careful examination because the validity of any statistical analysis is jeopardized if the data includes indexes with negative denominators. The concern here is twofold. First, these indexes will not possess ordinal properties throughout the full range of observations. This limits our ability to compare different values for such indexes. As is shown in this paper, negative denominators can cause two indexes representing the same theoretical construct to have no statistical relationship to one another. Second, it may be difficult, if not impossible, to interpret the meaning of such indexes when the denominator of the index includes negative values. The inclusion of such cases distorts any analyses based on the related index measures. Evidence from contemporary research suggests that management scholars may not be aware of these issues or address them properly, which may have led to the publication of erroneous or misleading results. Further, when the weaknesses of common negative denominator ratios, such as return on equity and debt to equity, are discussed in publications, the issues outlined in this paper are not highlighted (Gallo, 2016, Gallo, 2015).

The purpose of this research paper is fivefold. First, we explain and illustrate why organization scholars should exhibit caution when using indexes in which the denominator can be negative, which we title negative denominator indexes. Second, using variables from strategic management as exemplars, we highlight the prevalent use of negative denominator indexes which suggests that scholars are unaware of this problem because most research papers do not mention transformations to negative denominator indexes. Therefore, we review negative denominator indexes used in strategic management, and show the frequency in which these measures are used in major publications. Third, to illustrate the effects on analyses, we replicate relative aspects of a published study and show substantial changes in results when accounting for our concerns. Fourth, we critically review potential remedies of the problems described and find that transformations of negative denominator ratios have potential flaws. Finally, we offer recommendations that improve the interpretability of findings.
2. Literature Review

Before we begin, it is important to define and clarify our terminology. Following established terminology (Stevens, 1951), we refer to single variables such as net income, total assets, total liabilities and total equity as *scales*. Scales can either be nominal, ordinal, interval, or ratio in nature. When one scale is divided by another scale, such as net income divided by total assets to create the measure return on assets, we refer to the quotient as an *index* (following Cohen et al., 2003). Analog to scales, indexes can have nominal, ordinal, interval, or ratio properties.

The appropriate use of indexes has gained more scrutiny in the business literature recently (Faello, 2015). Additionally, indexes are prominently being used in contemporary research in the areas of firm performance (Mubashar and Tariq, 2017), operations (Färe and Karagiannis, 2017), real estate (Mills, 2016) as well as accounting and finance (Kristanti and Herwany, 2017). Indexes serve three roles in data analyses (Bollen and Ward, 1979). The first purpose of an index is to attempt to measure a theoretical concept. This may best be exemplified by the use of administrative ratios in organizational studies which is defined as the ratio of administrative personnel to production personnel (Millan and Daft, 1979). The second purpose of an index is to scale a variable for size effects, for example scaling (also known as deflating) R&D expenditures to some measure of firm size. Finally, indexes can be used in an attempt to correct for heteroscedasticity. In all three roles that indexes serve, their use should be done with caution (see Bollen and Ward, 1979 for a review).

According to Millan and Daft (1979) and Stevens (1951), for a scale or index to have *nominal* properties, we must be able to determine if one value is equal to another. An example of a nominal scale is an indicator variable which denotes gender in a sample. *Ordinal* scales allow a researcher to determine if one point on the scale is greater or less than another point on the scale. Likert scales with ‘strongly disagree’ to ‘strongly agree’ are examples of ordinal scales. *Interval* scales have the added property that equal intervals between points on the scale represent equal conceptual distances of the construct the scale is meant to represent. For example, the difference between 80 and 82 degrees Fahrenheit and the difference between 90 and 92 degrees Fahrenheit is the same measurable amount of two degrees. For scales or indexes to have *ratio* properties, they must have all of the above properties as well as an absolute zero point, denoting the absence of the construct being measured. An example of a ratio scale would be the balance in a checking account, which may be zero, reflecting the absence of money.

Indexes have been seen as a cause for concern in management research when used as dependent variables (DVs) (Wiseman and Choi, 2011). Spurious parameter estimates in ordinary least squares regression will most likely occur when independent variables (IVs) and dependent variables (DVs) are both divided by the same variable (such as firm size). Similar spurious results can also occur between completely independent DVs and IVs after the DV becomes a ratio (divided by another variable) (Wiseman and Choi, 2011).

These recent findings prompt us to take a close look at other potential spurious results that may come from commonly used indexes, specifically when an index denominator may be negative. When indexes have negative denominators two major issues occur when attempting to interpret results or data. We will address each issue independently, but both pertain to construct validity. The first issue is that negative denominators make the ratio difficult to interpret as a theoretically coherent continuous variable. The second issue is that negative denominator ratios may not reflect the theoretical construct that we as researchers are interested in.

2.1 Negative Denominator Indexes

Given the critical roles that indexes serve in empirical research, it is important to understand why scholars should be concerned about negative denominator indexes. In the following, we use the term *negative denominator index* to refer to indexes which have the potential to be constructed with negative values in their denominator. Negative denominator indexes are important because they influence the validity of how constructs are operationalized in two important ways. First, negative denominator indexes may lack ordinal properties, and second they may suffer from a lack of interpretability (both issues will be explained later with the use of Figure 1). These issues have been raised in the accounting literature (Trimbath, 2006), but so far have been neglected in the broader organization and management research methods literature. To better demonstrate these issues with negative denominator indexes, we utilize firm equity as a scale commonly used as a denominator in strategic management research. Although negative equity sounds like an oxymoron and is generally considered a rare exception, our analysis, discussed later, shows that it is more common than initially
expected. Negative equity can occur when a firm experiences losses, depreciation of assets without offsetting increases in equity, takes out loans for non-asset expenditures such as payroll or marketing, or through the depreciation of assets. The importance, and prevalence, of firms with negative equity was highlighted in a recent paper. The paper used an indicator variable of negative equity as a dependent variable reflecting a firm’s survivability in the context of financial, political and governance factors (Kristanti and Herwany, 2017). As detailed later, approximately 7.95% of COMPUSTAT firms have negative equity, which have empirical effects on data analyses.

2.2 Lack of ordinal properties

Recall that for a scale or index to have ordinal properties, lower or higher values must reflect a lesser or greater amount of a construct, respectively. However, when an index has a denominator that can become negative, and a researcher’s sample contains both positive and negative denominator values, the index will not possess ordinal properties.

This can be demonstrated using a common measure of firm performance: return on equity (ROE). If ROE is calculated for a firm which has negative equity, ROE takes on the inverse ordinal properties that we would wish for it to display. Figure 1 illustrates in a hypothetical example how ROE changes for a firm with 10 million in net income and 30 million in assets as liabilities are increased. At point A, the firm has 31 million in liabilities, resulting in -1 million in equity. Thus, the ROE value is -10 (e.g., 10/-1). At this point, a firm with low levels of negative equity seems to have an extremely low performance when an ROE index is calculated. At point B, the firm has 60 million in liabilities, resulting in -30 million in equity. When ROE is calculated, it is -.33 (e., 10/-30). Per this situation, the firm has more debt at point B and should be in a worse financial position than at point A. However, when using ROE as a measure, at point B the firm would be incorrectly interpreted as having better ROE performance than a firm at point A. Therefore, if a scholar uses ROE as a measure of firm performance with firms in their dataset with negative equity, ROE will not have ordinal properties and will not be a useful measure of firm performance.

Figure 1: Return on equity as liabilities increase
2.3 Loss of interpretability

When the firm’s equity is negative, the ROE of the firm is negative when net income is positive. In this situation, a common perception of negative ROE would suggest the firm is unprofitable and unsuccessful, which is incorrect since in reality the firm is profitable. Practitioners are aware of this misinterpretation issue and generally omit negative ROE values from their analyses (Jensen Investment Management, 2011). The question becomes: why do we as scientists not take the same precautions in statistical analyses? After all, it is simply the division by a negative equity value that causes the aforementioned firm to appear unprofitable. If a researcher’s sample has profitable firms with negative equity in it, these profitable firms would seem to be unprofitable according to the ROE index.

Additionally concerning, firms with negative equity and negative profits would have a positive ROE. This positive ROE would make the firms appear to be profitable, when in fact the firm is in a dire situation (unprofitable and negative equity due to more liabilities than assets). In our research of the prevalence of negative equity ratios (next section) we found one study that seems to have firms exhibiting this exact issue (Kulich et al., 2011). The study reports that firms in their sample have a mean ROA (net income divided by assets) of -1.96. Since a firm cannot have negative assets (the denominator), this negative value suggests that net income (the numerator) must be negative. A negative ROA would not normally be of concern, but the authors also report a ROE of 6.25. Since we deduce that the firm’s sample of firms have a negative net income, in order to get a positive ROE, equity (the denominator) must be negative as well. Therefore, we have found evidence that the results of this study may be flawed due to the presence of negative equity.

In both of the situations outlined above, interpreting the results from statistical analyses becomes difficult when ROE is used as an independent or dependent variable. The issue will also occur with other negative denominator indexes, such as debt to equity (DTE). Next, we explore the relevance of these aspects within strategic management research as an exemplar.

3. Methodology

We elected to examine the use of negative denominator indexes in strategic management because the field’s constructs, particularly in the area of firm performance as well as the use of archival data, have been gaining increased attention in the field of research methods (Boyd et al., 2013, Hamann et al., 2013, Mubashar and Tariq, 2017). We raise four sequential questions regarding the relevance of our study. First, to what extent do strategic management scholars use negative denominator indexes, such as ROE and DTE, in their research? Second, do a meaningful number of firms in these analyses have negative equity? Third, do negative denominators influence the relationship between conceptually similar variables? And fourth, do negative denominator ratios influence the results of strategic management studies?

To answer the first question, we examined the use of negative denominator indexes in two top management journals: The Academy of Management Journal and the Strategic Management Journal. Second, we then examined how many firms have negative equity by looking at financial data on major firms for the last thirty years using COMPUSTAT. Next, to determine if negative equity ratios influence financial ratios, we selected a conservative sample of firms with negative equity and examined whether or not conceptually similar variables, such as ROA and ROE, had high correlations which would suggest that negative equity had no effect on results in the literature. Lastly, to determine if current studies succumb to issues outlined in this paper, we replicated a study and examined how some of the final results of the paper may have been influences by negative equity.

4. Results

Strategy scholars are primarily concerned with understanding the sources of firm performance (Penrose, 1959, Wernerfelt, 1984, Barney, 1991). When the construct of firm performance is operationalized through an empirical measure, it typically involves assessing a firm’s profitability. To compare firms of different sizes, a firm’s profitability is often deflated (i.e., divided) by the firm’s sales, assets, or equity. Our specific concern here is with equity-based deflation because equity, unlike sales and assets, can be negative. Such a deflation leads to a common measure of firm performance: ROE (net income divided by total equity). ROE has been described as the “ultimate measure of the strength of any financial institution” (Richard, 2000 p.60 citing Earle & Mendelson, 1991). ROE is most commonly used as a measure of firm performance (Ming-Jer et al., 2010, Tian et al., 2011, Tuggle et al., 2010, Ortiz-De-Mandojana and Bansal, 2016, Kim et al., 2015) and a measure of profitability (Lee and Makhija, 2009, Cho et al., 2016, Vedd and Yassinski, 2015). In a review of the Academy of
Another important factor to consider when explaining the determinants of firm performance is the amount of debt a firm carries. A heavily indebted firm may have large debt payment obligations that reduce the amount of cash the firm has to invest in future projects. Further, a heavily indebted firm may be unable to borrow additional funds at reasonable interest rates. This may make it difficult for a firm to obtain capital that will allow it to grow or survive a downward trend in the business cycle. On the other hand, a very low debt level suggests that a firm’s resources are underutilized and opens the door for hostile takeovers. A medium debt level is thus generally preferred (van Binsbergen et al., 2011). Therefore, strategic management scholars often control for the amount of debt a firm has when conducting statistical analyses. A common measure of a firm’s indebtedness is DTE (total liabilities divided by total equity). DTE has been used as a measure of slack or potential slack (Greve, 2011, Desai, 2016), leverage (Ho et al., 2011, Muller and Kräussl, 2011, Xia and Li, 2013, Pathak et al., 2014, Ma and Khanna, 2016) and solvency (Hermelo and Vassolo, 2010, Nadolska and Barkema, 2014). In our review of Academy of Management Journal and Strategic Management Journal articles from 2000 to 2016, as shown in Table 1B we found that DTE was used 83 times (approximately 75% of studies) as a measure of debt. In contrast, debt to assets (DTA), an alternative to DTE was only used 28 times (25%) in our review. This suggests that DTE is a preferred measure of a firm’s relative debt level. Therefore, we conclude that equity based measures of firm performance and debt are commonly used in management research and, in light of our discussion above, may be a source of serious concern. However, these variables are only two examples of negative denominator ratios and the implications of indexes with denominators that can become negative go beyond ROE and DTE.

A methodologically troubling observation in our review of AMJ and SMJ papers is that we find scant information regarding whether or how authors transform equity-based measures to avoid loss of ordinal properties or loss of interpretability. We do find that some scholars have commented on the issues with equity indexes (Greve, 2003, Iyer and Miller, 2008) which suggest some awareness of the issue. But as shown, scholars continue to use equity based measures without describing their transformations to avoid the issues outlined in this paper.

4.1 Prevalence of negative equity and its effects

Even though management scholars use equity based measures of firm performance and debt, two important questions to answer are whether or not negative equity is prevalent in a large number of firms and does negative equity influence the relationship between conceptually similar variables? To answer these questions we examined the population of COMPSTAT firms from the last thirty years which data was available: 1986 to 2015. We find that on average 7.95 percent of firms had negative equity. The minimum and maximum were 5.3 percent in 1994 and 11.69 percent in 2002. As explained earlier, the ROE values of those firms will reflect the opposite of their actual performance. Since this paper uses equity indexes as an exemplar of negative denominator indexes, and we are concerned with their effects on the validity of statistical analyses, we ran correlations between conceptually similar variables. Because our data had shown that 1994 had the smallest percentage of firms with negative equity, we employed this year’s data to ensure a conservative comparison. When we examine the zero order correlation between DTE and DTA—both measures of firm indebtedness—the correlation for the 1994 sample is 0.0001. The correlation between ROE and return on assets—both measures of firm financial performance—is 0.0007. These findings suggest that even a small percentage of firms with negative equity in a sample can cause the relationship between two conceptually related variables to become statistically non-existent [We ran several alterations to the data to determine whether that the lack of correlation can be alleviated through adjustments to the negative equity values. We address those adjustments in our discussion]. This is a major concern from a construct validity standpoint because we would expect measures the same construct to be highly correlated (Cronbach and Meehl, 1955). Given these analyses we conclude that a large enough percentage of public firms have negative equity, thus scholars should be concerned with the results of studies using equity-based indexes.
4.2 Do negative denominator ratios influence findings?

Alarmed by these findings we wanted to know if management scholars are using negative denominator indexes in their publications without addressing the statistical issues inherent in them. In our literature review of AMJ and SMJ we found several studies which reported DTE variables with low means and standard deviations over ten times the size of the mean (McDonald et al., 2008, Chakrabarti et al., 2007, McNamara et al., 2008). Because the DTE index cannot be negative unless the firm has negative equity (since a firm cannot have negative debt), the high standard deviations suggest that these studies may have observations with negative equity. This suggests that these studies may suffer from the issues of negative denominator indexes we address in this paper. However, this may also be caused by severe skewness in the data underlying those variables. To investigate this further, we set out to replicate published findings to further check the legitimacy of our concern.

4.3 Replication of prior work

We attempted to replicate one study that used ROE as the main variable of interest (Henkel, 2009) in order to provide empirical evidence of the problem we are investigating. This study contributed to the literature on the risk-return paradox. It suggests that skewness in measures of firm performance, by looking at the means and standard deviations of ROE in the sample, may have caused spurious outcomes in previous studies. We decided to replicate this paper because the author should have been intimately familiar with the mean and standard deviations of the ROE variable of their dataset, yet used negative ROE values in their analysis. Further, this study’s methodology did not require any proprietary data in order to replicate. While our purpose here is in no way to contend the arguments put forth in this paper, through our replication we are able to show that (1) the author did include firms with negative equity in the analysis and (2) our removal of these observations caused substantial changes in the results.

When we attempted to replicate the Henkel’s study, we were unable to obtain the same results in terms of number of observations and correlations between means and variance for some SIC codes. Table 1 offers a comparison of Henkel’s (2009) results and our replication for the eight industries which we were able to replicate without error. The table displays the correlations between the mean and variance for an industry’s ROE for a ten year period from 1970–1979. Of those eight industries, three had at least one firm with a year of negative equity. We eliminated these firms from the dataset and recalculated the correlations. The results are remarkable; the elimination of a single or two firms with negative equity dramatically changes the correlations for each industry. Notably, it not only leads to substantial changes in magnitude but all three industries show a reversal of the relationship. For example, the correlation for SIC 26 changes from -0.19 to 0.76. It should be noted that we are not able to state that these reversals of correlations affect the author’s findings, because we were unable to replicate the entire dataset. However, these results support our contention that negative denominator indexes can create for extreme outliers in a dataset, which have the ability to severely influence the empirical findings of a study. Further, it suggests that outliers are not always eliminated from a published study’s dataset, even when an author’s study is intimately concerned with the mean and standard deviation of a negative denominator index, such as ROE.

Table 1: Partial replication of Henkel (2009)—selected industries

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5. Discussion & Recommendations

Without the confidence that our measures reflect the constructs we wish for them to reflect, the validity and reliability of a history of findings in the field of management may need to be questioned (Wiseman and Choi,
2011). As such, management scholars should be concerned with the ordinal nature and interpretability of negative denominator indexes. We agree with Wiseman and Choi when they state:

“We may have to reexamine what we know about the determinants of firm performance if the results from prior research have been the product of spurious or misinterpreted findings due to the use of ratio [i.e., index] measures” (2011, p.3)

It is important to note that ROE and DTE are simply exemplars of index variables displaying issues regarding ordinality and interpretability. Any index in which the denominator can become negative may not possess ordinal properties or be interpretable at all possible values. For example, when scholars take the z-score of a variable, or mean center a variable, half of the values in the sample for the variable is positive and the other half is negative. If the variable’s values were to be used as a denominator in an index, the issues described in this paper will occur.

It has been suggested to the authors that researchers are aware of these potential construct validity issues and that researchers transform their data to avoid the issues. There are indications of such adjustments in the data of some studies, as we see a variety of different correlations within sets of COMPUSTAT data referenced in some studies, but no explicit mentioning of it. Therefore, as noted before, there is a lack of information regarding the transformations researchers make to their data, and if any transformations are made at all. More importantly, even if transformations are being made without noting them in research papers, no empirical transformation is known to the authors to solve the issues of ordinality, interpretability, and construct validity that does not create further empirical issues (Trimbath, 2006). We illustrate this argument with our prior COMPUSTAT data.

Recall that our initial correlation for the 1994 COMPUSTAT sample between DTE and DTA, measures for the same theoretical construct, was 0.0001. Several methodologies were used to find an inferentially valid transformation to increase this correlation. First, when we eliminate all negative DTE values caused by negative equity, the correlation between DTA and DTE was .02 suggesting no relationship. In addition, this transformation non-randomly eliminates potentially important data points. Second, when we transformed all negative DTE values cause by negative equity to the maximum positive DTE value in the sample to more accurately represent heavily indebted firms, the correlation was 0.05. Third, in our research we noted a recent article transformed DTE by taking of log DTE (Judge et al., 2015). We replicated this transformation in our sample and the correlation with DTA is at the 0.96 level. On the surface this seems to solve our stated problem. However, taking the base 10 log of DTE eliminates all negative DTE values, a non-random elimination of data. This elimination may be acceptable for debt measures since it is difficult to conceptualize negative debt. However, this transformation is not acceptable for profitability measures, such as ROE, because firms can be unprofitable.

Finally, it has been proposed that ranking measures in a sample, such as ranking firms on performance from the most successful firm to the least successful firm, may be useful to strategic management scholars (Powell and Reinhardt, 2010). However, to rank firms requires that the measures possess ordinal properties which may not occur with negative denominator indexes. Therefore, it is the opinion of the authors that transformations of indexes with negative denominators have little chance of solving the issues of ordinality and interpretability while achieving construct validity.

To remedy these issues we recommend that researchers do one of the following. First, rather than deflating (dividing) a scale for a measure of firm size, use the numerator of an index as a scale variable. For example, use net income as a measure of firm performance without dividing it by another scale. Researchers can control for the size of an organization by introducing measures of firm size into their models as control variables. Second, if deflating a scale is necessary, deflate the numerator by a variable which cannot become negative. As an alternative to ROE, we suggest management scholars use ROA because assets cannot be negative. An analog substitute for DTE would be DTA. Third, scholars can examine subsets of their data to determine if observations with negative denominators provide different results than other observations. If a difference is detected and cannot be resolved, the difference should be noted in the scholar’s methodology. If these three suggestions are not suitable, we refer scholars to recent work regarding best practices for the treatment of outliers (Aguinis et al., 2013).
Even though are not able to find a transformation that resolves the issues of ordinality, interpretability, and construct validity we encourage other scholars to pursue the issue. While we found accounting and financial literature that has mentioned these issues (Trimbath, 2006), to our knowledge these fields do not have solutions to the issues. Perhaps collaboration among research methodologists from multiple areas, as well as researching new techniques from the fields of mathematics, will provide novel solutions.

We believe the issue of negative denominator indexes is of deep concern, yet the larger field of management is most likely unaware of the issue. More publications on the topic may help close this knowledge gap, and we believe one of the best ways to do so is through replication of prior work. If prior studies can be replicated, and negative denominator indexes can be shown to have an effect on the results of the study, then the field may question some of the field’s major findings. Not only would this help to promote understanding of negative denominator indexes, it would help the field by shining light on erroneous empirical findings that other scholars may be basing their work off of.

6. Conclusion

We believe that achieving construct validity is quintessential to any empirical study. In this paper we have shown how indexes will not portray ordinal properties if the sample includes denominators with negative values. We have also shown that these indexes may not be interpretable. In addition, we have shown that datasets with a small amount of negative denominators can make two theoretically similar variables become statistically unrelated. Finally, we provide alternatives to negative denominator indexes as well as recommendations to scholars using indexes with similar characteristics. These issues are of serious concern to the validity of published results, due to the prevalent use of negative denominator indexes, such as DTE and ROE, in strategic management research. As we cannot undue the past, we hope that raising our concerns will aid in increasing the validity in future studies. As such, it is our hope that this research note informs future empirical research and adds to our field’s knowledge of methods and measurement.

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References


An Original Information Systems Research Method: The Discount Focus Subgroup Method

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Abstract: The aim of this paper is to present a new original qualitative research method called the Discount Focus Subgroup (DFSG) method, which originated in and was developed from information systems research. This paper synthesizes previous work on DFSG method to provide a more coherent picture of the method's applications, procedures, and strengths. It discusses why the DFSG is an innovative method and how it is distinct from the existing traditional qualitative group-based methods (e.g. focus group, brainstorming, and joint application development). The paper also provides a critical evaluation of the method by highlighting the limitations and dilemmas that a researcher might encounter when applying it and demonstrating how these pitfalls can be avoided or lessened. It finally offers directions for future research to further develop this method. This paper presents useful methodological guidelines to researchers who intend to use this method in their research projects.

Keywords: Information systems, qualitative research, Discount Focus Subgroup (DFSG) method, focus group

1. Introduction

Most empirical qualitative information systems (IS) research uses traditional research methods, such as case studies, grounded theory, ethnography, and actions research, including techniques like interviews, focus groups, and observations. These methods originated in the social science fields (Myers, 1997). This trend could also refer to the nature of IS, which is a multidisciplinary field where human activities, actions, and perceptions are an integral part of most IS research. Hence, IS researchers agree that social science methods are appropriate for investigating IS research questions. However, IS qualitative researchers should focus not only on social and behavioral issues but also on technology, which should figure prominently in investigations within the IS field (Sarker, Xiao, and Beaulieu, 2013). Sarker et al. (2013) reviewed 98 articles published in top IS journals from 2001–2011 and reported that many qualitative research papers merely focused on social issues, while technology was no more than the context of the research or received little attention in the surveyed research articles.

Indeed, qualitative IS researchers need to concentrate on sociotechnical interactions (Lee, 2001); a failure to do so can rob IS researchers of their comparative advantage compared to other social science researchers (Markus, 1997). Surprisingly, the IS literature only rarely contains research methods that originated in the IS field itself; some researchers used minor adaptations of existing methods to show their applicability and relevance to IS research, while others attempted to integrate several of them to produce more rigorous research (Baskerville and Pries-Heje, 1999; Carroll and Swatman, 2000; Fernández, Lehmann, and Underwood, 2002; Pan and Tan, 2011; Walsh, 2015; Wolfswinkel, Furtmueller, and Wilderom, 2013). The current paper demonstrates an original qualitative research method called the Discount Focus Subgroup (DFSG), which originated in the IS research field. We initially designed the DFSG method for a study that aimed to identify the ethical concerns that could arise due to the use of a new and emerging technology (i.e. near field communication). The method evolved through several stages, as not all aspects and dimensions of the method were clear or completely specified at the beginning. First, observations from prior research indicated the need and justification for a new non-traditional method to tackle new challenges; next, the traditional method (i.e., focus group) was adapted and altered to address these challenges. As a result, new abstract and generalizable methodological steps emerged. Later, researchers raised further reflections and feedback regarding application of the DFSG. Finally, the need for robust criteria to evaluate its applicability was recognized. Many theorists supported this viewpoint for building a new theory or method using a stages-based model and an iterative process of improvement (Carlisle and Christensen, 2005; Christensen, 2006; Jones and Gregor, 2006). As a natural result, the method development occurred in cycles and produced several papers for top IS conferences, and others (Halaweh, 2013, 2014, 2015, 2016). However, this paper synthesizes a complete picture of all issues and dimensions related to the method as it continues to gain a higher degree of maturity. This maturity increases the dependability of the method and its applicability to the IS field so researchers in IS
and other close fields, such as management and software engineering, who find the method appropriate for their research context can apply it confidently.

This paper contributes to IS qualitative research methods by providing a more cohesive picture of the method's applications, procedures, strengths and limitations through synthesizing all previous work. It also shows how the DFSG is innovative and original compared with other traditional group-based methods.

The next section presents literature review on group-based methods. Section three details the development and application of the DFSG method. Section four discusses the originality and innovativeness of the method, limitations and dilemmas that might arise when applying the method, quality criteria for evaluating the DFSG research, and its applicability in other IS related fields. Finally, the conclusion section offers some directions for future research that will lead to further development and applications of the DSFG method.

2. Literature Review

This section reviews literature on existing similar group-based methods (traditional focus group, brainstorming and joint application development (JAD)) used in IS research, which are used for gathering qualitative data (e.g., ideas or requirements) from a group of participants. The literature is reviewed in order to show in subsequent section how the DFSG is different from these methods.

The focus group (i.e., traditional) method emerged from the social research of the 1950s (Templeton, 1994). Powell et al. (1996) defined a focus group as “a group of individuals selected and assembled by researchers to discuss and comment on, from personal experience, the topic that is the subject of the research” (p. 499). Focus groups allow researchers to obtain insight and rich data from a group discussion in a short amount of time (Morgan and Scannell, 1998). The data collected from focus groups provide profound insight into people's beliefs, opinions, and experiences. The focus group method is the most appropriate for exploratory research, but it can also be used for confirmatory research (Stewart and Shamdasani, 1990). According to the literature, more than one focus group meeting is needed within a study (Krueger, 2000; Morgan and Scannell, 1998). The literature also suggests that the number of focus group participants should be in the range of 4–12 (Jankowicz, 1995), 6–10 (Morgan and Scannell, 1998), 7–10 (Krueger, 2000), or 6–12 (Kelley, 1999). Participants are selected using purposive sampling on the basis of their relevance to the research topic under investigation. Typically, a moderator conducts focus group sessions; this moderator should possess the necessary oral and written skills to conduct the session successfully, such as the ability to allow all participants to express their views, to communicate, to listen, and to involve all participants in the conversation (Krueger and Casey, 2000). Researchers typically record the sessions with audio and/or video devices (Krueger and Casey, 2000) and then transcribe them for analysis using different methods and techniques. Key factors in the success of group work are the harmony of the participants (Homogeneity within the group) to capitalize on people’s shared experiences (Kitzinger, 1995; Morgan (1997).

Researchers in the IS field have advocated the use of the focus group method (Burgess, 2010; O'hEocha et al., 2012; Sobrepeerez, 2008). However, despite its suitability for researching IS phenomena, only a few researchers have used this method in the IS field (O'hEocha et al., 2010; Sobrepeerez, 2008). This lack of extensive use was confirmed by Belanger (2012), who reviewed 58 articles published in top IS journals that employed the focus group method. Her literature review indicated that many published articles had adopted this research method in general, but they were recent publications; 49 out of the 58 studies were published between 2003 and 2011. Furthermore, Belanger (2012) pointed out that this method is gaining acceptance for its appropriateness in IS research. Another important finding was that most of the reviewed papers used the focus group method to study the new exploratory nature of IS phenomena. The focus group research method has been used to study IS phenomena, such as IT/IS adoption, acceptance, impact, and evaluation (Klaus and Blanton, 2010; Otondo et al., 2009; Weidong and Lee, 2005). However, some IS studies that used this method did not specify the number of focus groups (Smith et al., 1996), while others did not include the number of participants in each group (Smith and McKeen 2007; Weidong and Lee, 2005). In fact, some articles specified neither the number of focus groups in the study nor the number of participants in the focus groups (Wang et al., 2004). In some investigations, the focus group was the sole research method (Campbell et al., 2005; Lee and Kwon, 2008); in others, it was used in conjunction with other methods, such as survey or/and or interviews (Dickinger et al., 2008; Krasnova et al., 2010; Smith et al., 1996; Weidong and Lee 2005). The focus group was also used as the method for requirement elicitation and IS development (Farinha and da Silva, 2009; O'hEocha et al., 2010).
Stahl et al. (2011) suggested using focus groups in IS research as a critical method that can facilitate emancipation. Tremblay et al. (2010) used the focus group method as an evaluation technique for design research. Despite its advantages for gathering rich data in a short time, Turban and Aronson (1998) cited the drawbacks of group work, such as inappropriate representation in the group, a tendency to repeat what has already been said, inappropriate influences (such as domination of time, opinions, or topics by one or a few individuals, or a fear of speaking), and the fact that activities are time consuming to plan. Zowghi and Coulin (2005) cited the limitations of this method, including dominant participants, biased opinions, high logistic costs, and gathering participants. Furthermore, when the method has been used for requirements elicitation, it was difficult to organize due to the large number of different stakeholders that may be involved in a project (Dheepa et al., 2013; Zowghi and Coulin, 2005).

Brainstorming was originally developed by Alex Osborn in 1939 as a method for creative problem solving. He subsequently published his book, *Applied Imagination* (1953), in which he provided systemic guidelines for applying brainstorming. Brainstorming is a process where participants engage in informal discussion to rapidly generate as many ideas as possible without focusing on any one in particular (Zowghi and Coulin, 2005). Leffingwell and Widrig (2000) divided brainstorming sessions into two phases: idea generation and idea reduction. The primary goal during idea generation is to produce as many ideas as possible. The principal aim during idea reduction is to analyze all the generated ideas. The idea reduction phase includes refining, ranking, and grouping. With the participants’ consent, the most usable ideas become decisions that will be implemented or will become requirements for the product (Robertson and Robertson, 1999). One of the advantages of using brainstorming is that it promotes freethinking, expression, and so-called “out-of-the-box” thinking and also allows for the discovery of new and innovative solutions to existing problems (Leffingwell and Widrig, 2003; Zowghi and Coulin, 2005). During brainstorming sessions, people are told that all ideas are acceptable no matter how crazy they may seem and that they must not slow the process down by criticizing or debating the merits of various ideas (Leffingwell and Widrig, 2000). In fact, the main principle of brainstorming is to defer any judgment about the quality of the ideas (Osborn, 1953), which is sometimes referred to as “no criticism” of ideas.

According to Osborn (1953), another main principle of brainstorming is to focus on quantity rather than quality. This “imagination of ideas” might be seen as a challenge or a criticism of the method because it is difficult to keep focused and stay within the boundaries of the problem that should be solved (Jonasson, 2012). However, the intended purpose of brainstorming sessions is not usually to resolve major issues or make key decisions (Zowghi and Coulin, 2005). The disadvantage of this method is that participants are not yet permitted to criticize or judge the ideas because the sole focus is on generating ideas. Liikkanen et al. (2011) recommended that a large number of participants is not advisable in brainstorming sessions. Studies have revealed that when there were more than three participants around a table, they were more likely to distract each other and block the production of ideas by the person speaking or prevent others from thinking (Stroebe et al., 1992; Wilson, 2006). These impediments increased the risk that ideas would be forgotten as well as the likelihood of free riding and an increased pressure for social conformity. Diehl and Stroebe (1991, 1987) confirmed this view in a review of 22 studies, demonstrating that group brainstorming produces fewer ideas than individual brainstorming, when the individual works alone.

JAD was originally developed by International Business Machines (IBM) in the late 1970s (Jonasson, 2012). It is an organized and structured group-based technique used for requirement elicitation (Maiden and Rugg, 1996) where all key stakeholders, including sponsors, project managers, business users, and IT professionals (system analysts/software engineers), as well as the JAD session facilitator and scribe, discuss the requirements, analyze these requirements, and design user interfaces. The main aim of JAD is to build consensus and agreement among stakeholders about the system requirements (Jonasson, 2012). Jonasson (2012) pointed out that the optimal number of participants in a JAD session is between 5 and 10. Jonasson (2012) pointed out that, the facilitator is most important to the success of the JAD sessions. He also added that while the facilitator is the key to the success of the JAD session, the scribe is the key to accurate documentation of everything of value. Hence, JAD is highly dependent on a facilitator and a scribe. Christel and Kang (1992) recognized that all participants funnel their ideas through a facilitator or a recorder. Thus, the recorder may inadvertently impose an interpretation on the collected data not shared by the group. Liou and Chen (1993) also noted some problems with JAD, such as the unequal involvement of JAD participants (only the comments...
of the most vocal are captured) and the limited ability of analysts to judge the group consensus in real time. In addition, there is also the inability to involve a large number of participants.

Obviously, the use of group techniques for gathering data demands more planning and follow-up, and translating and transcribing the data are more time consuming and can also be costly if the existing traditional methods are used. Moreover, these existing methods (JAD, brainstorming sessions, and focus groups) lack the means to manage the data and information gathered from large numbers of people. These approaches also fail to scale up to big projects with a large number of participants; in these cases, many stakeholders are omitted, and their viewpoints are overlooked (Lim and Finkelstein, 2012). The methods do not include large number of participants in a single group session, as the maximum number of participants should not exceed 12, which is also not recommended in other methods like brainstorming. A large number of participants (more than three) is often considered a problem as it may block the process of idea generation. Other methods aim to build a consensus among the participants, such as JAD, which is not necessarily the case in a research context where participants are free to express different viewpoints on a particular topic. In all traditional group-based methods, there is high dependency on the moderator/facilitator (who might also be the primary researcher), who could be biased in documenting and transcribing notes or misunderstand/misinterpret the issues. In addition, some participants or topics could also dominate the discussion.

3. DFSG Method Development and Application

DFSG can be defined as a qualitative research method that aims to gather and analyze qualitative data on emerging technologies and/or phenomena in an effective, efficient and economical manner. This section addresses the context of the research where the DFSG method was devised, the motivations and justification for developing the DFSG method, and how it was developed.

3.1 Research Context

The DFSG method was developed in research intended to investigate the future ethical concerns that could arise from using a new and emerging technology called near field communication (NFC), which allows users to make mobile payments on smart phones. At the time of this study, experts considered NFC to be an emerging technology (Thomas et al., 2009), as it was still not widely used or applied for mobile payments in retail stores. Since the technology was new, no one had conducted investigations into the ethical issues surrounding this technology, as it was unclear what future concerns this technology might bring. While some might say that it is too early to investigate this issue, IT ethics researchers would object to that idea. For example, Sandler (2009) indicated that some people harbor misconceptions about ethics and emerging technology. One of these misconceptions is the belief that “It is too soon to tell what the social and ethical issues are” (Sandler, 2009, p. 6), which is due to the narrow focus on the technology itself and a neglect of the broader contextual factors. However, Stahl et al. (2007) disagreed when he stated that “The best way of creating IT policy that is sensitive to ethical issues pertains to being proactive in addressing such issues at an early stage of the technology life cycle” (p. 1). Therefore, now (the time of this study) is both timely and reasonable to consider the possible impact of this emerging technology, even if it is yet not widely used by customers and merchants for mobile payments.

The literature review on NFC technology also confirms that there is a need to highlight the social and ethical concerns that might arise by adopting NFC-enabled technologies (Özdenizci et al. 2010). Thus, this subject is an interesting area for investigation, as no previous study has highlighted it, and we should not wait until the technology impacts us negatively.

3.2 Motivation and rationale for developing DFSG

Both general and specific challenges arose during this research study (i.e., the ethical impacts of NFC technology), which gave rise to the DFSG method. General challenges pertained to the limited funds available for conducting research; there were no funds to hire research assistants to help with gathering and analyzing the qualitative data. Therefore, only one researcher conducted this entire investigation. More importantly, other challenges involved the difficulty in finding research participants, particularly those who could provide insight and relevant information, due to the nature of this new and emerging research topic. When it comes to new technologies that are not widely known or accepted, it is difficult to find participants who are familiar with them. This limitation produces difficulty in gaining insight from one-on-one interviews or even focus groups that contain small numbers of participants, as some of them could be unfamiliar with the research topic (e.g., NFC technology) or have little knowledge about it. A third challenge concerned the analysis phase.
As there is no existing research in this area, qualitative research is appropriate for gathering data, obtaining insight, and building concepts and hypotheses. However, in qualitative research, the researcher typically spends considerable time gathering data and then transcribing every single recorded word—a process that may result in hundreds of pages that are not entirely insightful or useful.

The existing group-based methods did not clearly address the aforementioned challenges. Obviously, these challenges justify the need for the DFSG, which answers the question of when it can be applied. Therefore, this method can be used in three situations: when limited funds (monetary and human resources) are available for conducting research; to investigate emerging technology or related phenomena where it may be difficult to recruit research participants to provide insight and relevant information on pertinent topics and that could not be gained from one on-one interviews or even focus groups with small numbers of participants; and when the researcher wants to overcome challenges concerning the analysis of qualitative data. Moreover, it addresses some of the problems and pitfalls of the existing group-based methods discussed in the previous section.

### 3.3 DFSG application

Because NFC technology is relatively new and not widely known, the researcher chose a qualitative research approach for this study as it provides insight about ethical concerns through focus group discussion. The first group session included four participants, as suggested by the literature, which recommended a range of between 4–10 participants. However, this group did not produce relevant or important insights or rich discussions of issues due to the nature of the research topic, which concerns a new technology that they had not experienced. Furthermore, it was also difficult to find participants who knew about it or had already used it. As a result, the researcher decided to invite more participants in a large group with the hope that it would produce more ideas and a richer discussion; two additional focus group sessions lasted about 75 minutes. The second group included 16 participants, and 10 of them had NFC-enabled mobile phones. The third group consisted of 17 participants, but only 5 of them had NFC technology on their mobile phones. In addition, some of the participants only discovered during the course of the meeting that they had this technology available on their mobile phones. They were neither previously aware that they had it, nor did they know its function.

The number of participants involved in Groups 2 and 3 was larger than the group sizes suggested in the literature. This greater number was due to the nature of the research topic, which involved discussions and debates about an emerging technology that is not yet widely accepted by individuals or merchants. Thus, it was expected that some of the participants would be unfamiliar with this technology or have little knowledge about it. However, their contributions could still be considered effective in raising questions and enquiring into the topic, while others who were more familiar could provide answers on the basis of their opinions and experience. Due to the limited resources, the researcher selected the participants from the university, which is the researcher’s work environment and therefore was easy to access. The researcher worked as a facilitator to motivate and encourage the participants to share their opinions and beliefs freely. The researcher led the discussion by introducing the objectives of this research and providing a briefing about NFC technology. The discussions revolved around the main question: What are the ethical implications of using NFC technology for mobile payment?

Because of the limited human resources (research assistants) available to manage and moderate the session, the researcher divided Groups 2 and 3 into subgroups, which are easily managed. The researcher asked the participants to spend a few minutes writing their answers in note form, and then they discussed their ideas first with the members of each subgroup and then in an open discussion among the whole group. The discussion between the members of each subgroup involved debating, joking, and sometimes reaching an agreement about their opinions. The participants documented the session results on paper themselves (Appendices A.1 and A.2), and the researcher also took notes during the open discussion. These results were combined into a document for analysis that focused on identifying the issues and themes. The researcher did not attempt to transcribe each word spoken in the discussion; instead, the focus was to identify the significant issues discussed by the groups. In addition, the researcher took no audio or video recordings of the session to avoid too much formality and the possible concern that each participant would be assessed on the basis of his or her speech. The participants themselves led the discussions, as each of the subgroups had a leader who wrote notes down on paper. Some members of the subgroups posed the questions, while others provided their answers and opinions. This approach enabled each participant to think, speak out, and express his or her opinion freely. To ensure that no issues/ideas were missed, each subgroup wrote its ideas on paper, and the researcher focused on writing notes during the open discussion between subgroups. When the discussion...
between all subgroups was open, all ideas were heard in a circular manner. For example, most of the subgroups listed privacy as an issue. However, when the issue was raised for the first time by one subgroup, other subgroups stated their viewpoint in relation to the same issue, even when it was listed as point #4 on the sheet for another subgroup. This procedure was done to avoid repetitions of the same issues during another round of the open discussion.

After collecting the papers, the researcher applied a constant comparative analysis to the collected data by constantly comparing the issues and then grouping similar ones together under one category. In this scenario, the data collection and a partial analysis occurred simultaneously; therefore, the researcher did not have to devote time later to transcribing each word and coding the keywords. Instead, the listed ideas or issues from all the subgroups are usually ready for clustering and categorizing (analysis). The researcher applied the clustering process (grouping a set of issues/ideas that are similar or that have similar properties) before categorization (classify issue/idea according to predefined concepts / categories), which was very important to ensure the emergence of concepts. Table 1 shows some chunks of data taken from written notes by different subgroups, which were then compared. Since they are similar, they were combined and refined under the “privacy” category. Samples of handwritten notes are shown in Appendices A.1 and A.2.

Table 1: Codes and a category that emerged from a constant comparison analysis

<table>
<thead>
<tr>
<th>Category: Privacy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chunks (codes underlined)</strong></td>
</tr>
<tr>
<td>Personal information privacy will be violated.</td>
</tr>
<tr>
<td>They can watch my personal information.</td>
</tr>
<tr>
<td>Privacy can be violated. Not anyone can access the information.</td>
</tr>
<tr>
<td>Companies could track the personal details used.</td>
</tr>
<tr>
<td>Access to our information. Banks will easily know our location and our payment process; we can easily be tracked.</td>
</tr>
<tr>
<td>The dilemma: easy access to others. Can be easily violated especially if the mobile phone is stolen.</td>
</tr>
<tr>
<td>Hackers may access the information stored in the chip, and can be used in fraud transactions or purchases.</td>
</tr>
</tbody>
</table>

On the basis of the demonstrated application of the altered focus group method, five methodological steps/principles were generalized for applying the DFSG method (shown in Figure 1).

1. Use the limited resources available
   - Find participants from the work environment: in academia, students and instructors at the university; in industry, staff and workers from organizations. Both have various characteristics that are suitable for a large number of research topics.

2. Divide and assign roles
   - Divide the participants (the larger the number, the more numerous the insights and issues that may emerge from the discussion) into subgroups and appoint one member of each subgroup as a research assistant/moderator to record their notes and ideas (in the form of a list) from the subgroup discussions on paper, which will later be delivered to the researcher.

3. Avoid formality
   - Avoid using recorders and cameras to allow everyone to take freely and spontaneously. Permit joking, debates, and fun. Avoiding formality increases participation. No one will be shy or judged by his/her speech and answers; instead, those who are unfamiliar with the topic or who have limited knowledge can pose questions and enrich the discussion. Having participants from the same environment (as indicated in Step 1) will facilitate the discussion and remove the formality, as the participants will already know each other.

4. Open the discussion and document cross-discussions
   - Open the discussion and document cross-discussions and debates among all subgroups that are not recorded by the subgroup leaders and that are derived from the interaction among the subgroups. Take the contribution from each subgroup in a circular round (a unique issue is discussed once to avoid repetition). Start with one idea/issue from each subgroup and then do another round to take another idea/issue while allowing interventions and debates from the other subgroups.

5. Consolidate and cluster
   - Consolidate and cluster the lists of issues/ideas written on paper by all subgroup leaders, as well as the issues/ideas written during the open discussion and debating.

Figure 1: DFSG methodological steps/principles
The following figure depicts a typical DFSG meeting in which the method steps are applied. As shown in Figure 2, the participants in a big group (assuming 21 participants) are divided into 3 subgroups with 7 participants each. The number of participants in each subgroup might be slightly different depending on the number of participants in the big group. In each subgroup, one person should lead the subgroup’s discussion and record the members’ viewpoints. Each subgroup should produce one document to be delivered to the principal researcher at the end of the session. Figure 2 also shows the principal researcher, who coordinates and moderates the entire session. He or she also writes notes or memos during the open discussion among all subgroups and when observing the subgroup members’ discussions. Figure 2’s arrows indicate the circular direction in which issues are discussed (a unique issue is discussed once) to avoid repetition of the same issues when the open discussion takes place among all subgroups.

![Figure 2: Typical DFSG meeting](image)

4. Discussion

This section discusses the originality of the method including its strengths, limitations, ways to evaluate the quality of research applied the DFSG method, and its applicability in other fields.

4.1 Originality and innovativeness

This paper argues that the DFSG method is original and innovative. To support this argument, the proposed method is compared with the traditional focus group method and other group-based methods. Table 2 displays the differences between the DFSG method and the traditional focus group method. These also show the advantages (strengths) of the method over the others.

The DFSG is considered innovative for the following three reasons. First, when more than 12 participants (the maximum number suggested in the literature) are involved, the method still remains effective as the participants are divided into subgroups. Although the literature indicates otherwise, more participants actually provide more insight and discussion than a smaller number of people. Using subgroups within one big group is a new way of addressing a large number of participants. This is also a need for certain research topics that are new and emerging, as researchers expect some of the participants to be unfamiliar with the topic under investigation, and their role is to raise questions. This, again, does not cause problems, as the participants are divided into subgroups, and each is led by a leader who plays the role of moderator or acts as a research assistant so the session can be managed and organized.

Second, the DFSG eliminates the costs of employing research assistants, using voice/video recorders, and transcribing each recorded word; instead of transcribing intensive and often irrelevant speech, the research can focus on the issues and themes and make use of the participants to write down the ideas. Therefore, the answers to the research questions are focused and organized, as they are written in the form of a list on paper. In addition, the cost of finding participants is reduced, as the participants are selected from the researcher’s environment or from one that can be easily accessed (a school, university, hospital, company, etc.). Due to these economic factors, the term “discount” was added to the name of the method, which is also a new perspective that was not clearly considered by previous researchers in the context of qualitative IS research.
Table 2: A comparison between the traditional focus group/group-based methods and the DFSG method

| Number of participants | The DFSG method |
|------------------------|--|---|
| Limited. A small number is recommended. | Large number. A greater number of participants means more ideas, thoughts, opinions, and insights will be shared and obtained. |

| Key research participants | The primary researcher and the participants themselves, who help in managing and conducting the session; they document their own viewpoints, so bias, misunderstanding, and misinterpretations are rare. |
|---------------------------|--|---|
| The primary researcher, hired research assistants, moderators, facilitators who might be biased or misunderstand or misinterpret the data (i.e., ideas/issues requirements) | |

| Cost and time | Not costly (economic) and more efficient for data collection and analysis by removing the need to transcribe and document the discussion and by selecting research participants who are easily accessible. |
|---------------|--|---|
| Logistical factors, planning, finding participants, and the need for recording and transcribing the group session data are both costly and time-consuming. | |

| Studying emerging technology/phenomena | Very suitable for investigating emerging technologies and phenomena by involving a (heterogeneous) large number of participants, even those with limited knowledge, as they raise questions that enrich the discussion and thought. |
|----------------------------------------|--|---|
| Does not provide the means to study emerging topics that are unknown or limited knowledge/experience known about them. Experience and homogeneity “participants have similar characteristics or levels of understanding about a given topic” within the group is required to success the group meeting. | |

| Learning | DFSG involves some participants who have no knowledge or little knowledge of a particular topic, so they might learn about a new thing or gain knowledge from the discussion. |
|-----------|--|---|
| Does not focus on learning and instead aims only to gather data. Previous literature did not refer to using group-based method for this purpose. | |

Third, the application of the DFSG aids in promoting awareness and learning new things (e.g., new technology and its impact). For emerging issues that are not common or widely known, it is acceptable for some participants to be unfamiliar with the topic under investigation. In the example, the participants learned about NFC from the discussion, and some even discovered that they had this technology on their mobile phones. The traditional focus group method does not move beyond the objective of data collection and therefore does not assist in learning and spreading awareness among participants during group meetings. The DFSG is an IS research method because one of its applications, which justified its development, is investigating new emerging technologies. The DFSG method is designed to research both (emerging) technology and social organizational factors, which is not addressed by the traditional research methods. The nature of the IS discipline is that rapidly develops with new features and advancements in technology on a continual basis (Moor’s Law implication). Indeed, the IS community needs an innovative method (i.e., the DFSG) to aid in researching innovative technology as well as the issues and phenomena that surround the technology, which develops and changes rapidly and continuously.

4.2 Limitations and pitfalls/dilemmas

Although the DFSG method has many advantages, as indicated in a previous section, some limitations must also be highlighted along with dilemmas and concerns that might emerge when applying the DFSG method. Scholars raised some of these issues at several conferences or workshops where this method was presented, while readers who want to apply the method might point out other issues or questions which are also discussed in this section. This section provides a reflection on the application of the DFSG method and offers some guidelines to avoid any pitfalls. It also presents clarifications on its application and addresses some misconceptions about the DFSG.
4.2.1 Quality of the data

One of the main criticisms of using the DFSG is the lack of any medium to record the meeting session; the quality of data can be questioned, as only some of the data can be gathered and important issues could be lost. The purpose of obtaining a recording is to remind the researcher of the issues discussed during the meeting that he or she might overlook. It also provides an audit trail of the raised issues. However, these purposes can be achieved by the DFSG. During the group session, the participants record their thoughts on paper, so important issues will not be missed. Instead, the credibility of the information actually increases as any misinterpretation or misunderstanding that could occur during transcription is eliminated. The researcher can also ask the participants to write about all issues that were raised even though some issues may not be agreed upon. The main point here is that all issues raised and discussed at the table were written on the paper and given to the researcher.

Researchers collect less data when applying the DFSG compared to traditional focus groups, which is expected, since the data are already organized by the participants themselves and prepared for cross-group/subgroup analysis and clustering. Here, it is important to differentiate between the value and the amount of gathered data; one may glean insight from a small amount of data, as was the case in the current research project, since the collected data were summarized and organized. In traditional focus groups, where audio/video is used to record every single moment of the session, a large amount of data is collected and then transcribed into tens or hundreds of pages, but not necessarily each sentence or transcribed speech will be significant and insightful. By applying the DFSG, the data collection and analysis processes will be shortened due to the focus on issues, ideas, and themes, as opposed to the transcription of detailed speech and manifold sentences in focus group settings.

If the amount of written data is limited or very short, then the researcher might request additional explanations from the participants during the session. The researcher could also exclude a number of the participants from the overall group number. For example, if the researcher selected 20 participants but one subgroup of 5 did not produce anything useful (no unique issues raised), then that subgroup’s participants will not be counted and the actual considered number is 15 participants. This practice is similar to how researchers analyze survey data and exclude some questionnaires from the analysis because they are not filled in completely or because they contain suspicious answers.

4.2.2 Selecting subgroup leaders

Another concern that might arise is that the person who leads the subgroup could dominate the discussion, write down ideas that he or she likes or dislikes, or ignore some ideas. To avoid such issues, the researcher should first ask the subgroups to select a leader, who will have two main tasks: to document the discussed issues and to verbalize the group’s ideas when discussing them with other subgroups (in the open discussion). The second practice is to ask each member to double check the written issues/ideas and then sign the paper before giving it to the primary researcher. Here, the participant agrees that his/her viewpoint is documented on the paper but not necessarily that he or she agrees with everything written on the paper. In other words, the written ideas/notes do not necessarily represent a consensus among the subgroup participants. If the leader feels that some points are missing, he or she may still write them down her/himself. The third practice is that the principal researcher should observe the participants and their discussion to document those issues that are hidden or ignored by the subgroup leaders and then raise them when the discussion is opened up to all subgroups. It is also important to note that one of the subgroup members might spontaneously volunteer to write the notes of the subgroup discussion and present them. These people often have oral, written, and leadership skills and can be identified in the meeting or when the subgroups are formed. Obviously, failing to identify those active volunteers might result in missing important ideas that are not documented. The above three strategies can help in minimizing this risk.

4.2.3 The method of selecting the participants

The method’s first step/principle is to select its participants from the researcher’s environment/workplace; therefore, the DFSG is more compatible with a case study, as the participants are chosen from a specific boundary. Although it can be said the method fits with the case study methodology, multiple case studies might be difficult to arrange because the researcher usually only works in one company at a time. The method is group-based, and the group must be selected easily and economically (first principle); this situation can therefore only exist in one organization, and it is more suitable for the researcher to use his/her workplace.
For example, an instructor might want to examine the use of smart phones by his or her colleagues and students at the university where he or she teaches. An IT specialist could study the implementation of a health enterprise information system at a hospital where he or she works. A data specialist might investigate the opportunities and challenges of implementing Big Data at his or her organization. The DFSG method is more applicable when the researchers are IS professionals and practitioners who can easily use their workplace for the research's purpose.

4.2.4 Misunderstanding of the term “discount”

The term “discount” does not mean producing low-quality or discounted research results, as this does not fit with the scientific and academic world. Instead, “discount” refers to using innovative tools/means in a smart way to gather and analyze qualitative data economically. The DFSG method is economical compared to other methods because it eliminates the costs of employing research assistants, using voice/video recorders, and transcribing the recordings. A discount reduces the research costs in a smart way while maintaining the quality of the research. In fact, the term “discount” was used by Nielsen (1989), who developed “discount usability engineering”, in the human computer interface (HCI) field; his method was a formative technique and is used by many HCI professionals. However, Nielsen’s method is distinct from the DFSG in terms of its purposes and applications. The term “discount” within the DFSG method can be used in the context of qualitative research as a formative and/or summative data collection and analysis technique that involves unique and different procedures: sampling people who are easily available, dividing the participants into subgroups (and using larger groups than are typically recommended, which differs drastically from Nielsen’s (1989) method, which suggests testing interface designs using only five participants), asking participants to take notes (removing the need for transcription), discussing unique items from each subgroup with the full group, consolidating a list of ideas from all subgroup lists and the full group discussion, and avoiding formality and recorders.

4.3 Quality evaluation of IS research applied DFSG

Another important issue is related to the quality of the research that has applied this method: how the IS community (including journals, conference editors and reviewers, thesis supervisors, and examiners) will evaluate the soundness of any research that used the DFSG method. The quality can be ensured through three main approaches. First, the quality of the justification: the three conditions for applying the method were discussed in a previous section. These conditions need to apply to any IS research that employs the method. However, some might apply the method when only one condition out of the three is relevant and applicable. In this situation, the method is still valid, but details about the context should be provided to determine if the method perfectly fits with all or some of these conditions. Second, the quality of the process of application: quality can be assured by providing details about the context of conducting the subgroup meetings, the steps of the application (Figure 1), and the notes and observations taken by the researcher while the subgroups discussed the issues, and also by documenting any odd observations or actions that took place during the discussion. Third, the quality of output (research outcomes): one of the main elements that should be provided by any study that applies DFSG is a sample of the ideas and notes written by the subgroup leaders, which should be attached as an appendix. It is important to emphasize that these should not be transferred or typed into a computer; instead, they should be handwritten (they might be provided beside computer typed version for text clarity) by the participants themselves. This criterion is an advantage over the traditional methods where interviews are transcribed and typed into a computer by the researcher. In this traditional case, there is no evidence that the information is original, accurate or complete or raised by the participants themselves. Attaching handwritten samples will increase the credibility and auditability of the research results.

4.4 Applicability of the DFSG method in other fields

Other IT/IS-related fields, such as software engineering and knowledge management, might apply the DFSG method for knowledge and requirement elicitation and analysis. For example, in certain large projects, such as enterprise systems (ERP), large numbers of stakeholders are required to determine the system requirements and functions. There might be a need for several people from each department or functional area within the organization to be involved. Organizations might need to involve more people in the development process of the system. As existing methods do not involve large numbers of stakeholders, there is no guarantee that one or two people from each department are representative. Some people are not included on the assumption that they are not sufficiently knowledgeable or not suitable for political reasons, a process that might give rise to bias in the outcomes. In addition, some people simply may not be involved due to the limited number of permitted participants (at most 12). In fact, meeting people from cross-functional areas and allowing...
interactions between them is also important for such systems because system components and business processes are interdependent. In some cases, conducting separate meetings with people from each department is not appropriate when the organization’s business processes are interdependent and when understanding how work is done requires collaboration between individuals from cross-functional areas. Moreover, conducting separate meetings with several groups of people from different divisions increases costs. Therefore, DFSG method can be more appropriate in this case by having large number of people in one group.

Similarly, in knowledge management field, organizations might need to acquire and document employees’ experience on particular subject. By using DFSG, they can involve large number of employees from same environment who will share and document their experience (tacit knowledge). When there are employees who have little knowledge involved in the meeting, they might learn from more knowledgeable people through subgroups discussion. Moreover, tacit knowledge might be transformed from experts’ minds into explicit knowledge documented by both senior (expert) and junior (novice) employees, which will be an asset for the organization.

5. Conclusion

This paper demonstrated a new qualitative research method called DFSG. It shows the contexts in which the method can be applied. The method is effective and efficient for investigating new emerging IT research phenomena. Also, it is appropriate for collecting data from large groups, and addressing challenges that researchers encounter when conducting qualitative research such as availability of resources (human and financial) to gather and analyze data. This paper also argued that the DFSG method is original and innovative, and has advantages over other existing group-based methods such as traditional focus group, JAD, brainstorming (as shown in Table 2). Nevertheless, researchers who adopt this method might encounter some pitfalls and problems. Therefore, this paper provided methodological guidance on how to apply the method and avoid the potential pitfalls.

PhD students might be advised to explore the applicability of the DFSG method for their research, particularly those who are already working in organizations, so their workplace (if applicable) can be the case study where the environment can be used and qualitative data can be collected economically. The DFSG method might also be explored and applied in other IT/IS-related fields as shown in the previous section.

The DFSG method fits with one single case study strategy, as the researcher typically works in one place where he or she can select the participants. Future research might discuss whether this is an advantage or a disadvantage and comment on whether there is a need for multiple case studies or if one unique case is sufficient. Multiple researchers might also collaborate on a joint research project to create multiple collective cases where each researcher can use his or her own working environment.

The method can stand alone and be used throughout an entire research project, but it can also be used as a formative research technique during the research project life cycle to gather some needed data at particular stages. Future research should examine this distinction to determine if the method can be used for a pilot study to rapidly gather data, which helps to design survey questions or build case study protocol, including initial questions that can be investigated later using one-to-one interviews.

The DFSG is considered a qualitative research method. Some might argue that it is not a research method but instead is a data collection technique. However, a literature review on research methods in the IS and other fields has produced mixed interpretations and uses of these terms. In the IS field, there could be some level of agreement among a large number of IS scholars that grounded theory, case study, action research and ethnography are research methods, but the IS field should not be limited by this classification (each should be considered a “method” and not a “methodology”). For example, some consider grounded theory to be research “methodology” instead of “research method”, while others used it only as a technique for data analysis. On his current website (the Grounded Theory Institute: www.groundedtheory.com), Barney Glaser, the co-founding father of grounded theory, points out that many people call grounded theory a qualitative method, although it is not. He considers grounded theory as an inductive methodology. Therefore, further research and arguments about this issue might be conducted in the future with regards classifying DFSG as methodology, method or technique.
References


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Appendix A: Samples of Notes Written by the Participants

A.1 Samples of discussion notes (chunks of data) written by subgroup leaders and compared with each other

A.2 A sample of some notes written by one subgroup

[Handwritten notes image]

1. "Personal information privacy is not violated.
2. "They can watch my personal information."
4. "Storing private information is out of our responsibility."
5. 
6. "Companies could track the person—details used.
7. "Privacy can be violated.
8. "Not anyone can access the information, if information were accessed, for example, to only have prices listed, how much you paid and the date and time (without listing venues)."
9. "And upon activation users must be well-informed of what information will be accessed and by whom.
10. "Access to our information—a bank will easily know our location and our payment processors we can easily be tracked."
11. "The dilemma—easy access to others, can be easily violated—especially if mobile is stolen.
12. "Hackers may access the information stored in the chip and can be used in fraud transactions or purchases."

[Handwritten notes image]
The Collective Use of Forms of Language as Cultural Artefacts to Represent Public Understanding in Case-Studies

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Abstract: The need to demonstrate both the value of collective forms of language and the richness that interviewee reviews add to constructed analyses is a focus of debate. Researchers undertaking developmental studies have continually affirmed their commitment to demonstrate to the managers of Developmental Charities (DCs) and associated stakeholder groups not only the value a case-study approach adds to understanding but, more importantly, how better to analyse the perspectives of the different stakeholder groups regarding the management of their organisations. Here we demonstrate a methodology to help achieve this. This paper reflects on a novel case-study approach used to demonstrate the added value of constructed analyses from data provided by key informants in the construction of case studies for Oxfam GB, Water Aid, Christian Aid, Amnesty International and Action Aid. Using a wide-range of key informants to provide different insights with regards to the subject of study is an intrinsic part of the methodology. These act as the principals in adding value to data and reviewing the constructed analysis. The constructionist approach used in the development of meanings is a key methodological feature in creating a cumulative cultural text. This fits well with the key features inherent in Representation Theory that guides the choice of methodology. Four components are discussed in relation to a new proposal for case-study methodologies. These are: Key Informants, Cumulative Cultural Text, Representation Theory, Constructed Public Understanding.

Keywords: Case-Study Method, Key Informants, Different Voices, Cumulative Cultural Text, Representation Theory, Interviewee Reviews, and Constructed Public Understanding.

1. Introduction

This paper aims to demonstrate the benefits of using language as a cultural artefact to represent public understanding, and how a richer understanding of contested issues is gained when interviewee reviews add value to analyses in the construction of case studies for Oxfam GB, Water Aid, Action Aid, Amnesty International and Christian Aid. It focuses on the discussion of a proposed case-study method used in research regarding the aforementioned DCs, whose managers have continually affirmed their commitment not only to improve the allocation and use of developmental funds but, more importantly, to improve public confidence and to achieve their objectives in more viable ways. This is not only of interest to the managers of DCs and researchers but also to the recipients of charitable aid and those members of the public, other organisations, and stakeholders who contribute and/or have a vested interest in the charities’ operations (Mukasa, 2016).

The decision to propose a different case-study approach for DCs is motivated by the following observations:

1. DCs serve in similar areas to each other and as such provide vital fuel for comparison and cross-referencing, and as examples of different approaches/systems or practices of operational management;
2. an approach is needed which offers a unique analysis of practices for specific DCs;
3. an approach is needed that compares and contrasts similar practices across different charities, which in turn can suggest how these organisations can improve their current working practices.

This paper begins with a review of the relevant literature and a discussion of possible methodologies that were considered for the construction of case studies for DCs. It outlines the key features inherent in the proposed method, and discusses the difference between this method and the best practices of case-study research in the business and management fields. The paper then discusses how the proposed approach constructs case studies and how the underpinning theory connects with the case research. The last sections of the paper demonstrate how meanings are constructed from data gathered and analysed from a wide range of key informants.

Five case studies have been constructed. These are case studies for Oxfam GB, Water Aid, Amnesty International, Christian Aid and Action Aid. The analyses, conclusions, arguments and recommendations presented here arise from the data compiled in their construction.

2. Literature Review

Languages are artefacts intentionally used for a purpose and the properties which make up a language depend on the collective intentions of the speaker/s (Hilpinen, 1992:1993; Weir, 2005). The use of languages as cultural artefacts is based upon fundamental assumptions and observations. For example, Hall (1997) demonstrates that the shared meanings, understanding and values of groups or societies are carried in their natural languages. Similarly, Du Gay et al (1997) emphasise that people’s responses regarding issues affecting them or their understanding of the world are carried in what they say. It is observed however, that sharing meanings in a language does not mean that every individual contributor of a narrative or a story interprets or responds to world events in a similar way. It means contributors to a language understand other’s perspectives and accept them as legitimate in order to realise a desired solution or future (Hall, 1997; Du Gay et al, 1997).

Ross (2007) and Scholes (1980) explain that when the natural languages of specific groups or communities are used collectively, it is observed that they share the same conceptual maps, they reason or interpret issues or occurrences in roughly the same way, they build up a shared culture together and inhabit the same social world. Yin (2009) emphasises that languages dominate societal studies that aim to achieve a collective interpretation and understanding of a phenomena. Weber and Mitchell (1995) describe the cumulative cultural text as a feature arrived at through accretion and aggregation. Qualitative researchers can rely on this text to represent the shared meaning of differing groups or communities whose natural languages collectively respond to some contested issues (Weber and Mitchell, 1995). In case-study research, languages are an intrinsic part of the methodology. This is demonstrated when the understanding of the dynamics that exist within specific settings is obtained from the experiences and observations people carry in their narratives or stories (Yin, 1984; Eisenhardt, 1989; Harris and Sutton, 1986).

The advancement or construction of knowledge from languages is based on three approaches, all of which are explained in Hall’s Representation Theory (1997). These approaches are: naturalistic, constructionist and interpretive. The naturalistic approach is underpinned by the argument that languages are artefacts intentionally used by speakers to represent meanings (Hall, 1997; Hangen, 1997; Hilpinen, 1993). The constructionist approach is based on the idea that meanings responding to contested issues or people’s understanding of the world can be constructed from their narratives and stories (Hall, 1997; Ross, 2007; Scholes, 1980). This approach is supported by the earlier work of Bourgeois and Eisenhardt (1988), who state that when constructions from qualitative data prove important to a study, researchers provide firmer empirical grounds for their emerging findings. The interpretive approach is based upon the argument that individual readers/writers make their own interpretations of the work or of the meanings written by others in order to advance knowledge or to satisfy their production intentions (Hall, 1997; Du Gay et al, 1997; 2013).

Although the terms ‘case study’ and ‘qualitative research’ are often used interchangeably, case-studies can be based on qualitative data solely in the form of a narrative or story (Eisenhardt, 1989). For example, in their study regarding bankruptcy in Silicon Valley, Sutton and Callanhan (1987) specifically rely on qualitative data. Mintzberg and McHugh (1985) use similar data in their study which focuses on the National Film Board of Canada, and Warburton and Saunders (1996) rely on qualitative data in a study which focuses on the professional culture of teachers. Narratives provide a rich description of evidence attained from anecdote, and such soft data helps researchers to arrive at more complex conclusions (Mintzberg, 1982). Qualitative studies can rely specifically on narrative accounts because researchers unavoidably serve as a researcher tool to undertake investigations without physical measuring instruments or experimental procedures (Yin, 2015).

Whilst narratives and stories offer a rich description of evidence, qualitative researchers should bolster their findings by guarding against false impressions and reconciling their personal views and experiences (Eisenhardt, 1989; Miles and Huberman, 1984). Studies relying only on qualitative data should:

- be conducted in a covert manner (Yin, 1984);
- Discard influencing behaviours and responses of informants (Miles and Huberman, 1984);
- Resist emotional attachment to the subject matter (Eisenhardt, 1989). Researchers relying on qualitative data are reminded to build relationships with informants based on trust, to collect data...
This paper makes a contribution to the available literature by demonstrating how forms of a language fit well with the key features inherent in Representation Theory, and the notion of a cumulative cultural text to support the proposal for a new approach to case-studies. In essence, Representation Theory and a cumulative cultural text are borrowed from cultural studies in order to underpin the use of languages as cultural artefacts for case studies in the wider fields of business and management.

3. Using Alternative Methodologies

As researchers, we considered other possible methodologies. Three in particular were discussed in detail. The first of these was to enable key informants to provide self-generated written accounts. We rejected this, even though the process of self-consideration would add richness to the data, because this would be too hard for respondents to reproduce. However, to take a more simplified method we did consider the use of questionnaires: a method we also later rejected as being too imprecise in the nature of its responses. Although we initially thought it would be advantageous to use participant observation as this would yield a higher quality data, our analysis later made us conclude that this would be too extended a research programme to manage and achieve with the resources we had at our disposal (Newman and Benz, 1998; Creswell and Miller, 2000; Zahra and Pearce, 1990).

Thus we chose the case-study method as our main approach. Again, there were three main reasons for doing this. Firstly, it provided for the appropriate nature of interaction with the key informants. Secondly, as we would end up with five case studies this method would allow for ease of cross-checking between each. Finally, using a case-study method allowed us to use Representation Theory and the creation of a cumulative cultural text to underpin the method. We felt that this process of formative accretion as part of our method was a significantly novel development.

3.1 Key Features of the Proposed Methodology

We emphasise a two-phased case-study approach which fits well with the notion of creating a cumulative cultural text. The principal of a constructionist approach to Representation Theory guides the choice of methodology.

Table 1: Key Features Inherent in a Two-Phased Case-Study Approach

<table>
<thead>
<tr>
<th>PHASE I</th>
<th>PHASE II</th>
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</thead>
<tbody>
<tr>
<td>Case-study compilation.</td>
<td>Establishing the relationship between constructed analyses, key moments, and critical incidents in relation to the research questions.</td>
</tr>
<tr>
<td>Comparison of case studies.</td>
<td>Construction of a cumulative cultural text using selection and accretion</td>
</tr>
<tr>
<td>Construction of a cumulative cultural text using the principal of a constructionist approach to Representation Theory.</td>
<td></td>
</tr>
<tr>
<td>Key informants review constructed analyses.</td>
<td></td>
</tr>
<tr>
<td>Final compilation of constructed analyses.</td>
<td></td>
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</tbody>
</table>

This approach relies on an embedded design that emphasises multiple levels of analysis.

3.2 Proposed Case-Study Method

The best practices of case-study research in the business and management fields are generalised as:
• The use of interdisciplinary approaches that emphasise the relationship between the social and the individual to report the complexity of phenomena or contested issues in their natural form;
• Not necessarily requiring published data to construct or to advance knowledge as they report one instance of an activity based on observation, discussion, and the understanding and experiences of those individuals or parties associated with the subject;
• Allow a narrowing of the focus of any inquiry by directly interacting with the topic and interviewing those involved with it (the advantages of which are cutting down the number of variables to consider, concentrating on specific issues, and allowing validity to be achieved more easily);
• They offer a rich description of the subject based on explained narratives and other data gathered from this narrow focus (Yin, 2003; Lewin and Somekh, 2008; Walker, 1997; Stake, 1978; Spiggle, 1994; Patton, 1987; Kvale, 1996).

The proposed approach is unique. Firstly it takes theories, notions and terminologies from cultural studies methodology to guide the construction of case studies for DCs. Secondly, the approach relies on accretion and aggregation of the ‘different voices’ to approve evidence regarding contested issues and on the enrichment of such evidence via feedbacks from interviewee reviews.

The cultural studies terminology ‘different voices’ describes the approach of gathering arguments, opinions, views or stories from a wide range of informants (i.e. managers, charity donors, opinion leaders, etc.), all of whom provide different perspectives regarding how the current working practices of DCs could be improved (Weber and Mitchell, 1995). In essence, every key informant is expected to have a different story to tell regarding the subject. We use the phrase ‘contested issue’ to mean the differing perspectives of each associated stakeholder group regarding the subject.

The factors that provided the motivation for the research discussed in this paper were a concern regarding the increased anxieties of donors surrounding some of the current working practices of DCs. The donors shared the view that the managers of the organisations with which they are involved have a different perspective to other stakeholders regarding how their current working practices can be improved upon. We therefore propose a different case-study approach for DCs, and one that allows the ‘different voices’ of the key informants to bring multiple foci to the subject in question.

### 3.3 Constructing Case Studies

Our methodological approach to creating case studies has certain novel aspects. It demonstrates the constructed uniqueness of the case study and makes clear its contribution to the value chain of the study. It allows the creation of a cumulative cultural text as a key method of obtaining an analysis in the construction of public meaning, i.e. as a feature that represents public understanding compiled by collective accretion (Weber and Mitchell, 1995; Warburton and Saunders, 1996; Hall, 1997). In essence, the perspectives taken regarding the subject of the study are gathered from ‘texts’ provided by a wide range of key informants, all of whom provide different insights into how the current working practices of DCs could be improved. The benefit of this is the accretion and aggregation of a ‘master text’ constructed from these smaller texts provided by the key informants. ‘Master texts’ present conclusions that represent the understanding of stakeholder groups and the public in respect to the subject at hand (Weber and Mitchell, 1995; Warburton and Saunders, 1996).

In addition, the processes leading to the construction of meanings are underpinned by the notions inherent in Representation Theory. Texts are extracts from language/s and are used as evidence or data. In the process of construction the writer/reader develops meaning from what the key informants say (Hilpinen, 1993; Hangen, 1997; Weir, 2005). This notion of ‘text artefacts’ being used collectively is the basis for constructing a cumulative cultural text. The reader/s, when constructing meaning, interpret or make sense of what is written based on their own understanding (Hall, 1997; Du Gay et al, 1997:2013; Hilpinen, 1993; Hangen, 1997; Weir, 2005; Ross, 2007; Scholes, 1980).

The method emphasised in this paper adds to the value chain of the study in two ways. Firstly, the constructed meanings perceived to represent ‘constructed public meaning’ are reviewed by key informants to ascertain whether or not their understanding has been ‘correctly’ analysed and represented. Secondly, when the perspectives of all key informants are combined, we are able to effectively construct the cumulative cultural text in which the sum of the whole is greater than that of the individual constituent parts. The use of the term
'key informant' as it applies to interviewees is methodologically significant. The term itself makes explicit that the notions expressed by such respondents are privileged due to their particular roles and placings within their relevant milieux. The key informants are representatives of the stakeholder groups who contribute and/or have a vested interest in the operations of the five DCs. These comprise Executive and Operational Managers of DCs, donors/funders of DCs, beneficiaries of projects undertaken by DCs, organisations that regulate and monitor DCs, Opinion Leaders, academics and support staff. All these groups are themselves stakeholders and provide different insights regarding how the current working practices of DCs could be improved.

3.4 Underpinning Theory

The construction of the proposed case-study method is underpinned by Representation Theory. This theory explains three approaches used to attain meanings from language/s. To reiterate, the approaches are: naturalistic, constructionist, and interpretive. The naturalistic approach describes the natural languages of people as cultural artefacts due to the fact that responses regarding 'contested issues' or understanding of the world are carried in what they say. The second approach is constructionist, which explains that writers/readers construct meanings from what is said by others. Lastly, the interpretive approach explains that readers meaningfully interpret or make sense of what is written by others (Hall, 1997; Du Gay et al, 1997; 2013; Weir, 2005; Hilpinen, 1992; Ross, 2007; Scholes, 1980).

The naturalistic approach guides the use of 'different voices' to gather relevant texts carrying the relevant perspectives of key informants’ responses to the research questions. The constructionist approach guides the use of the cumulative cultural text as a springboard to construct meanings from the perspectives of key informants. We emphasise that (i) the summative result of the ‘different voices’ leads to the formation of a cumulative cultural text, (ii) the cumulative cultural text represents collectively gathered languages in the form of texts, which are used as cultural artefacts in the construction of meanings. The constructionist approach is therefore a key methodological feature in the proposed case-study approach for DCs. The interpretive approach guides the evaluation of constructed analyses by interviewees. This is demonstrated when interviewees read analyses and make their own interpretations of what is written by others (Hall, 1997; Du Gay et al, 1997; 2013; Weir, 2005; Hilpinen, 1992; Ross, 2007; Scholes, 1980).

When the perspectives of all key informants are gathered in the form of relevant texts, we are able to effectively undertake the first phase of constructing analysis from the key features inherent in the texts (Weber and Mitchel, 1995; Warburton and Saunders, 1996; Mukasa, 2016).

A cumulative cultural text grows out of the aggregation of smaller texts and is therefore a feature which represents constructed understanding compiled by collective accretion (Weber and Mitchel, 1995).

Narrative lines are significant to the study because they carry full details regarding specific perspective/s of key informants. We emphasise narrative accounts in this study as carrying stories, critical incidents and key moments which are relevant in responding to the research questions. In essence, narrative accounts are drawn upon to gather relevant threads and texts.

The overall process of analysing data emphasised in this paper is highly iterative and tightly linked to narrative accounts, a research feature which is commonly associated with new topic areas (Eisenhardt, 1989). This is demonstrated when every perspective added by an individual informant improves the quality of data, as is the case with constructed meanings. Key informant review meanings and add value to them by providing clarification and further meanings. The researcher looks at all the different sets of data and is therefore well placed to be an informed key informant.

This paper relies on semi-structured dialogic interviews as an integral part of our method to gather texts. The objectives of the study are:

- to identify factors/concerns relating to the need for DCs to improve their current working practices;
- to explore a significant problem, i.e. that the managers of the DCs represented in the study described may not have seen the benefits that could be gained by their organisations incorporating wider public perceptions into the strategic planning and formulation of their working practices;
to address the benefits of why public understanding should be incorporated into the current working practices of DCs, and to put forward a new and robust operating model incorporating the perceptions of all stakeholders who contribute and/or have a vested interest in the operations of DCs by accretion and aggregation which could help them improve operational effectiveness and public confidence;

Semi-structured dialogic interviews were conducted with 54 key informants representing the different stakeholder groups. Based on their personal experiences and understanding, it was expected of key informants to describe or explain practices that cause them concern and that thus may need reviewing.

1. All questions were formed to suit individual informants and were introduced in the form of interview themes for discussion.
2. Prompts were carefully selected and used to seek further information.
3. No specific information explaining examples of the working practices of particular DCs were provided to key informants.

The interview schedule was divided into five sections. The interview themes were:

1. Scale and Number of Projects Undertaken by DCs
2. Current Working Practices of DCs that Might Cause Concern to Stake-holders
3. Approaches Used by DCs to Achieve their Defined Objectives
4. Supervision and Management of Developmental Projects
5. Current Working Practices of DCs that Can be Improved by Better Strategic Decision-making

Table 2: Key Informants Differentiated by Type

<table>
<thead>
<tr>
<th>Total sample of key informants = 54</th>
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<tbody>
<tr>
<td>Executive Managers representing the five DCs = 10</td>
</tr>
<tr>
<td>Donors who contribute to the funding of the five DCs regularly = 10</td>
</tr>
<tr>
<td>Informants from organisations involved in the regulation and monitoring of DCs = 9</td>
</tr>
<tr>
<td>Informants familiar with the management of DCs, businesses and public organisations = 15</td>
</tr>
<tr>
<td>Informants from the five DCs with information relating to the study that has never been published or disclosed to the public before (e.g. minutes of meetings, emails, etc.) = 5</td>
</tr>
<tr>
<td>Opinion leaders, celebrities and fundraisers = 5</td>
</tr>
</tbody>
</table>

The study emphasises a balanced representation and selection of key informants able to provide specific data relevant to the subject under study.

4. Construction of Meanings

The perspectives of key informants responding to the research questions, which were formed to suit each individual informant and introduced to them in the form of interview themes for discussion, are presented in this section. Here, we demonstrate how the summative result of the `different voices` forms the cumulative culture text through accretion and aggregation. The key features represented in the cumulative cultural text include explained narratives and stories, and examples of key moments and critical incidents regarding the subject. The main constructions from the `cumulative cultural text` are the `master texts`, which represent the constructed shared meanings and understanding of the stakeholders and the public regarding how DCs can improve their current working practices.

4.1 Scale and Number of Projects Undertaken by DCs

Of the 54 key informants interviewed, 41 stressed the importance of reviewing the scale and number of projects currently undertaken by DCs as a critical factor in enabling them to improve their current working practices. There was also a common belief that if those who manage DCs were to consider specialisation in specific projects or services this would be more likely to improve their effectiveness:
“I am concerned with the scale of projects undertaken by DCs without well-established systems to ensure such projects are effectively managed and supervised” (Informant D19)

This is echoed by 40 other interviewees who share views about two main issues. Firstly, the current working practices of DCs do not demonstrate evidence of well-established and effective management systems because they are not based on reliable systems, i.e. operating consistently and in the same manner from one system event to another identical system event at the same time and/or across geographical locations. Secondly, the current management of DCs, which is described by the majority of informants as based on ‘conviction’ and ‘trusting’ third parties to manage and supervise the allocation and use of donor funds across continents, makes it difficult to gather empirical evidence of measuring performance. Thus, unrealistic performance evaluation methods are likely to impact validity of evaluation and consequently affect stakeholder satisfaction.

“DCs need to specialise in the provision of specific services and to avoid undertaking too many projects at the same time. Imagine a single charity funding projects in over 120 countries which aim to provide people with the basics of life”. (Informant D29)

Of the 54 key informants interviewed, 42 urged that it was important for DCs to narrow their focus. Their argument was dominated by a shared view that a narrow focus would help DCs to cut down the number of variables and challenges they normally face and to achieve operational validity more easily.

“I doubt if DCs have explored the benefits of specialising in specific projects. Specialisation will help DCs to be more effective, to demonstrate legitimate evidence of performance and help them to cut overhead costs”. (Informant D43)

The majority of informants echoed that specialisation would help DCs to demonstrate their expertise in defined fields and in the provision of specialised benefit packages.

“Because DCs undertake various projects in geographical locations across continents, the management and supervision of developmental funds is primarily vested with third parties - a practice [perceived] to be exposing developmental funds to mismanagement and corruption.” (Informant D37)

Those involved with the direct management of DCs, however, strongly shared the narrative that it might be difficult for some DCs to specialise in the provision of specific services as some causes are directly connected and cannot be represented separately. Thus:

“It’s illogical to provide education to children dying from starvation and you cannot treat diarrhoea if people are still consuming unsafe or contaminated water. In these two cases, you have to provide food along with education and treat diarrhoea while simultaneously providing safe drinking water if you want to achieve your aim”. (Informant D3)

4.2 Perceived Corruption in DCs

The need for DCs to limit the influence and participation of politicians and governments in the management and supervision of developmental funds was a recurring theme. Of the 54 key informants interviewed, 36 suggested that before developmental funds are transferred to the beneficiary communities, there should be pre-agreements or assurances regarding the level of involvement of politicians and governments within the receiving communities. They argued that perceived corruption and mismanagement of developmental funds mostly happens on the ground in communities where developmental projects are undertaken and that it is mostly a result of the politicians and governments of the receiving communities being allowed to influence the direction of donor funds.

“I am disappointed that charitable funds can still be mismanaged and sometimes accessed [by perceived] corrupt officials and governments on the ground”. (Informant D17)

This argument is shared by the majority of informants. It is believed that governments of beneficiary communities influence local leaders and other parties involved in the direct allocation and use of donor funds.
Informants urged that such influence is the major contributor to what is perceived as corruption, embezzlement and the mismanagement of donor funds.

“DCs seem to be soft and easily influenced by politicians or governments in developing countries and this is how developmental funds end up being abused.” (Informant D39)

To emphasise how the governments of beneficiary communities are perceived to be associated with corruption and mismanagement of donor funds, informant D18 provides a narrative containing the key features expressed by most of the key informants.

“We acknowledge the need for DCs to work with local leaders and governments in the communities where developmental projects are undertaken for purposes of acceptability, mobilisation, sensitisation, peace and stability, but their role must be agreed and communicated to stakeholders before projects are undertaken.” (Informant D18)

The majority of informants are concerned that local leaders and third parties trusted with the allocation and use of developmental funds are influenced by governments of the beneficiary communities.

“Corruption is a big problem in DCs but in [most open reports] corruption, mismanagement or abuse of donor funds are [reported as isolated incidents].” (Informant D28)

The narratives above carry two key issues which are shared by 36 key informants. To reiterate, the issues are: firstly, that the way DCs are currently working with the governments and local leaders in beneficiary communities might be impacting the success of programmes. The concern raised by the majority of informants is that the developmental funds raised to help people in need are accessed by governments and local leaders in beneficiary communities. Government and leaders who are perceived to be associated with corruption, embezzlement or mismanagement of fund; thus, trusting such parties with developmental funds impacts the success of these programmes. Secondly, to ensure that corruption is eradicated the majority of informants suggest that: (i) DCs should have a structured process or work plan that stipulates the role of all parties in the allocation and use of those donor funds accessible to all stakeholders, (ii) in funding developmental projects through governments who influence local leaders, there should be defined pre-agreements regarding the level of involvement those governments and local leaders should have in the management of donor funds, (iii) DCs need to establish a robust system of oversight, which may even be devolved oversight, in order to ensure tight and vigorous supervision of developmental funds.

4.3 Management and Supervision of Developmental Projects

The need for DCs to vigorously supervise the allocation and use of donor funds was a recurring theme emerging from the responses of the interviewees. Most of the interviewees (41 key informants) shared the view that the allocation and use of donor funds is mostly passed-on to third parties in communities where developmental projects are undertaken without close supervision from senior managers or executives of the DCs concerned. Key informants argued that the practice of trusting third parties to manage donor funds without close supervision was contributing to the corruption and mismanagement of developmental funds.

“Those managing DCs should instead work directly with the beneficiary communities without the involvement [of perceived] corrupt leaders and governments who are associated with abusing developmental funds.” (Informant D20)

Of the 54 key informants interviewed, 37 urged that DCs would be demonstrating best practices if they worked directly with beneficiary communities.

“Lack of vigorous supervision of developmental funds by the executives of DCs is the reason as to why corruption and mismanagement have been reported in these organisations.” (Informant D22)

Of the 54 key informants interviewed, 40 shared the view that projects undertaken by DCs are most of the time underfunded, largely because these organisations might be lacking narrowness in terms of focus.
“The biggest challenge faced by DCs is the development of robust management systems that can be relied on to effectively [apportion and] watch over donor funds across continents. The current practice of management based on files and reports provided by third parties is not robust enough and can easily be manipulated.” (Informant D27)

4.4 Approaches DCs Use to Achieve their Objectives

The perception that the strategies used by DCs to reach their goals impact their resource-use practices was one held by 39 of the 54 key informants interviewed. The argument is that the approaches DCs use to achieve the objective of ending world poverty are extremely broad and should really be ‘projects in action’ with a narrower or more manageable focus. When interviewees were prompted to describe the approach used by the five DCs to end world poverty, they could not differentiate between the aims of DCs and the approaches such organisations use to end poverty.

“Oxfam GB builds infrastructures that provide the poorest communities of the world with the basics of life in the form of water, food, health care, education and shelter.” (Informant D2)

Similarly, Informant D4 describes the approach used by Water Aid to end world poverty by saying:

“Water Aid provides the poorest communities with safe water, improved hygiene and sanitation so that people are healthy and able to engage in food production and income generating activities.” (Informant D4)

When prompted to describe the approach used by Amnesty International with the aim of ending world poverty, Informant D5 provides the following:

“Amnesty International’s approach to ending absolute poverty in the poorest communities of the world is by empowering communities with knowledge of their rights to make decisions that positively impact their life.” (Informant D5)

What was evident in the narratives gathered from the majority of informants was that the current approaches DCs are using to end world poverty might either be ‘undescribed’ or ‘underdeveloped’ and not codified. Seven informants mentioned that they do not recall a time when DCs described their resource-use practices to donors and 13 informants did not think that DCs have ever published any information accessible to the public that specifically explains the approaches they use to end world poverty.

“Christian Aid uses religious establishments as a conduit to empower the people in the poorest communities of the world with the skills necessary to eradicate poverty.” (Informant D7)

When prompted to describe the approach used by Action Aid to end world poverty, informant D10 provides the following:

“Action Aid is using education to end world poverty. Like Oxfam GB, the organisation also builds infrastructures in some communities which aim to provide people with some basic necessities of life.” (Informant D10)

Of the 54 key informants interviewed, 29 endorsed Amnesty International’s approach to ending world poverty and described it as the most appropriate approach. Amnesty International encourages communities to stand for their rights and to actively get involved in the making of decisions that are likely to impact their life positively. Other DCs aim to establish infrastructures which provide communities with the basic necessities of life.

Those involved with the direct management of DCs (i.e. 10 key informants) strongly urged that DCs foster a different organisational ethos and, due to this, their approaches to end world poverty differ along with the manner in which development funds are allocated and used. They argued that DCs are impacted by the fundamental values and beliefs that shape the organisations.
4.5 Most Appropriate Siting of Strategic and Operational Control

Of the 54 key informants interviewed, 33 urged that DCs might reduce operational costs by setting up their head offices in the developing countries where projects are based and where operational costs are low. They urged that there would be costs incurred to set up and to build up teams as a short-term investment, but such costs would lead to reduced operational costs and value for money in the long-term.

“Developmental charities should consider setting up their head offices in countries where most of their projects are undertaken. Such a move will mean DCs are hands-on and a lot of overhead costs would be reduced due to the cheap cost of living in poor countries.” (Informant D28)

This narrative endorses the view shared by 33 interviewees, who urged that the executives and senior managers of DCs should stop relying on the reports and files provided to them by local leaders and third parties who allocate and use developmental funds on behalf of their organisations. They should instead base themselves in the communities where developmental projects are undertaken to watch over donor funds and have more focussed and vigorous operational control.

“My view is DCs should relocate and be on the ground full time. Let them copy businesses and set up operational offices and networks like businesses do when getting into new markets. DCs will be more cost-effective and their funds well managed and supervised if they do so.” (Informant D35)

In the same vein, the view contained in this text is endorsed by informant D26, who goes on to explain the likely benefits to DCs if their executives and senior managers were to relocate their head offices to the developing world where their developmental projects are undertaken.

“DCs should setup their head offices in the developing countries where development projects are undertaken. It’s a no-brainer that the cost of living is far lower there compared to the West. We are told more than half the population in Africa is surviving below the poverty line, which is less than a dollar a day. Head offices of charities should be where their projects are based.” (Informant D26)

The majority of informants admitted that a lot of funds would be required for DCs to establish their head offices in the communities where developmental projects are undertaken. But they maintained that this spending would be short term and that the benefits of such spending outweigh the risks and would eventually lead to reduced overhead costs and improved resource-use practices.

“The management and operational departments of DCs should be based in the poorest communities of the world where over 80% of developmental aid is allocated.” (Informant D17)

Four of the key informants interviewed provided the example of Action Aid (i.e. a DC with its head offices established in Africa) to urge that costs will be incurred by DCs to set up and to build operational teams and structures, but that after a few years the cost of administration would be far lower compared to the current operational costs incurred in western countries, where the standards of living are expensive. They further urged that if DCs relocate to the developing world, they will be putting infrastructures in place that will permanently benefit the region.

On the other hand, several of those involved with the direct management of DCs urged that it was not possible for some DCs to establish their head offices in the poorest communities of the world because: (i) the funding of developmental projects would normally have timelines (i.e. expected start and end dates), and therefore it would be illogical to set up head offices in such communities, (ii) DCs aim to train the local communities to be self-sufficient and to manage their own developmental projects and, due to this, the idea of setting up head offices in such communities would not be logical.

“I may agree with the idea of relocating the head offices of DCs to the developing parts of the world but the idea needs to be balanced against the logistics of building teams across geographical boundaries.” (Informant D1)
5. Interviewee Reviews

In this section, we demonstrate how constructed analyses are referred to key informants for reviewing in order to ascertain whether their perspectives are rightly represented or not. This review enriches constructed analyses in two areas, which are (i) providing clarification and further meanings to what interviewees mean in their interview responses and, (ii) contributing to recommendations. After this review, the next stage is the final compilation of constructed analyses, which is followed by establishing the relationship between constructed analyses, key moments and critical incidents in relation to the research questions.

When constructed analyses were presented to interviewees and asked whether or not their perspectives responding to the research questions are rightly represented, their responses are analysed as presented in the next figure.

![Figure 1: Responses of Key Informants to Constructed Analyses](image)

The shared feedbacks from interviewee reviews which provide clarification and further meaning are;

The current working practices of DCs can achieve operational reliability and validity more easily if their focus is narrowed. Those managing DCs advise that a narrow focus would lead to cutting down on the number of variables and challenges normally faced. A trusting approach does not allow for empirical evidence relating to the effectiveness of the process of achieving outcomes. A change in this approach allows evidence relating to the effectiveness of the process of achieving outcomes and strictly defines operational perimeters.

The management of DCs should be based on codified systems that grow out of structured processes, defined work plans and stipulated roles. Codified systems would clearly stipulate the level of involvement for governments and local leaders in the management of donor funds and emphasise a robust system of oversight to ensure tight and vigorous supervision of funds. The codified systems of oversight should include evaluating plans against reality, including financial plans and scheduling.

The locus of control should be locally sited in operational contexts. The strategic siting of DCs should be in the communities where developmental projects are undertaken. The benefit of this is that executives and senior managers of DCs would be practically involved in watching over donor funds and have more focus and hands-on operational control. Management approaches and supervisory practices need to be based on codified systems.

This feedback is compared to constructed analyses, key moments and critical incidents in order to establish the existing relationship to the research questions. The results gathered from these comparisons are used to effectively construct the cumulative cultural text.

5.1 A Brief Methodological Note

If we had to advise other researchers who might wish to consider this particular research methodology, then this specific approach is most suited for (i) studies aiming to answer explanatory questions which require the research strategy to be directed towards discovery and interpretation of meanings that interviewees connect
to their behaviour or actions and, (ii) studies aiming to address *constructed meanings* analysed by accretion and aggregation (Weber and Mitchell, 1995; Warburton and Saunders, 1996; Mukasa, 2016).

The underpinning principle of this approach is to focus on advancing or constructing knowledge from the natural languages of groups or societies using either a *naturalistic, interpretive or constructionist* approach (Hangen, 1997; Hall, 1997; Du Gay et al, 2013; Hilpinen, 1993). Our case-study method focuses on the use of languages *collectively* to construct and to advance knowledge.

6. Conclusions

The value of the novel approach to case studies discussed in this paper is demonstrated when meanings are developed and constructed from the natural languages of different stakeholder groups associated with DCs and, referring the constructed analyses to interviewees to provide clarification and further contribution to what they meant. This paper has demonstrated how forms of language are used as cultural artefacts to represent public understanding regarding contested issues and, has set forth grounds as to how the principal of a *constructionist* approach to Representation Theory is applied to construct analyses that represent public understanding. More importantly, the approach to case-studies emphasised in this paper allows ‘different voices’ from key informants to bring multiple foci to the area under study. Thus, the aggregated reconstructions can prove extremely useful in arriving at recommendations.

The approach has enabled us to arrive at conclusions that the current working practices of DCs can be improved upon if (i) those who manage DCs consider narrowing their focus in order to achieve operational reliability and validity more easily, (ii) that the management of DCs should be based on codified systems that grow out of structured processes, defined work plans and stipulated roles and, (iii) the locus of control should be locally sited in operational contexts.

The suggestions for future research arrived at here result from the cumulative culture text constructed from the five thematic areas explored with key informants. This study suggests that those managing DCs should consider the following:

1. Limiting the scale of projects undertaken by DCs. The many projects undertaken by DCs is a concern to stakeholders, who argue that undertaking very large projects hastily and without securing their funding is a cause for project failure or projects taking many years to achieve their defined objectives.
2. Vigorous management and supervision of development funds. Management based on files, reports or records should be replaced with legitimate evidence of performance. Most stakeholders argue that legitimate evidence of performance will help those managing DCs to replace resource-use practices perceived as expensive or unethical and to achieve cost-cutting on overheads.
3. Reviewing the role of politicians, governments and local leaders in the management of developmental funds. The role of these specific stakeholder groups should be stipulated and effectively communicated to all stakeholders before projects are undertaken.
4. DCs representing similar causes and operating in similar regions should avoid competition or operating independently.
5. Representation of all stakeholder groups at all levels of decision-making, including the encouragement of the working practices of DCs to be based on codified work plans and stipulated roles.

Whilst the interviewees’ views may be based upon individual experiences and reasoning, the methodological approach demonstrated in this paper helps us to gain an informed perspective. Namely, that some current working practices of DCs are causing concerns to stakeholders and thus need to be improved upon. Given the small-scale nature of this research, there may be issues in making generalisations. However, the issues raised by our selection of key informants are clearly important to DCs as organisations, to the recipients of charitable organisations and indeed to all stakeholders who contribute and/or have a vested interest in the operation of DCs.
All stakeholder groups should have the opportunity to debate and to contribute ideas regarding how the current working practices of their organisations could be further improved. Our case-study approach using constructed artefacts to construct a cumulative cultural text has proved extremely useful.

References


e-Surveying and Respondent Behaviour: Insights from the Public Procurement Field

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Abstract: e-Surveys have emerged as among the most widely used methods of collecting primary data from firms. In spite of their prevalence we know relatively little about how firms react to them. This paper takes a closer look at respondent behaviour during the e-survey process by analysing data from 4747 suppliers. Among the key findings are a low rate of response, fast response times and a preference for submitting responses between 08.00 and 11.00. In terms of survey completeness, respondents answered 35 of the 48 survey questions, on average, and spent approximately seven minutes doing so. The time of day at which the response was submitted and the date of response was significant in explaining survey completeness. So too was firm size and nationality. Notably, the smaller the supplier the more complete the survey response. The implications of these findings for e-surveying in the management field are discussed within.

Keywords: Survey, behaviour, response rate, procurement, suppliers.

1. Introduction

The advent of web-based surveying or e-surveying has been among the most significant methodological developments in social science over the last number of decades. Among its many attractions, e-surveying has dramatically reduced the cost of collecting primary data, eliminated the need for time-consuming manual data entry and enabled researchers to access populations that are geographically dispersed or otherwise difficult to connect with (Akl et al. 2005; Shin, Johnson and Rao, 2011; Weimiao and Zheng, 2010). It has made surveying eminently more practical for researchers with limited budgets, time and resources. Admittedly, it has also come with downsides, not least its failure to achieve response rates comparable to mail, fax and telephone survey modes (Al-Subaihi, 2008; Fisher and Herrick, 2012; Hardigan, Succar and Fleisher, 2012). Even with this and other methodological and technical caveats, e-surveying has established itself as the preferred mode of systematically gathering data in the current era.

The public procurement field has been no exception to this trend. e-Surveys of buyers and suppliers regularly appear in published articles and have become an accepted and valid means of conducting research (Flynn, McKevitt and Davis, 2015; Hawkins and Muir, 2014; Saastamoinen, Reijonen and Tammi, 2017). This has coincided with another significant development in the procurement domain, namely: buyer and supplier databases. The emergence of e-procurement has meant that most buyers and suppliers are now registered on business-to-business (B2B) and business-to-government (B2G) websites. For example, Tenders Electronic Daily (TED), which advertises government contracts available throughout European Union (EU) member states, contains the contact details for hundreds of thousands of public buyers and many millions of suppliers. Such databases are, for the first time, helping policy makers and researchers to identify their populations of interest and survey them. As an example of this, the European Commission and PwC recently undertook a survey of TED-registered firms on their tendering activity and success rates in the European public procurement market (PwC, 2014).

In spite of its growing importance as a research tool, we still know relatively little about how buyers and suppliers react to e-surveying. For instance, how quickly do they respond to the survey invitation? Do they complete the survey in a single sitting or spread it out over two or more days? How much time do they spend answering survey questions? How many survey questions do they typically answer out of the total and how many do they skip? Are there behavioural and organisational factors associated with higher rates of survey completion? If so, what are they? These are by no means trivial matters. Ultimately, they go to the heart of issues to do with the quality of our survey data and the integrity of our research and its conclusions (Bosnjak and Tuten, 2001). Missing data from unanswered questions, for example, reduces response quality and can even lead to the elimination of cases from further analysis (Sanchez-Fernandez, Munoz-Leiva and Montoro-Rios, 2012).
Until recently it was difficult to generate any meaningful data that could be used to address these questions. With mail surveys there was no way of accurately gauging how much time respondents had spent answering the questions or whether individuals answered some questions before discarding the questionnaire. Advances in off-the-shelf survey software packages, however, have opened up a whole new range of opportunities for data analytics. Their strength lies in being able to capture a series of data points related to each respondent’s engagement with the survey, including the IP address, time and date the survey was initially opened, time and date survey was finally submitted and much else besides. Using these survey software packages researchers can collect not only answers to their substantive questions but also harvest information on the behaviour of each respondent during the response process. Such para-data or meta-data is among the benefits of web-based surveying and is helping researchers to gain a fuller appreciation of the dynamics of the survey response process (Bosnjak and Tuten, 2001).

Against the backdrop set out above, the purpose of this paper is to examine the survey response process in a public procurement context. It does so using data obtained from 4747 suppliers that responded to a survey on public sector tendering (see Flynn and Davis, 2017a, 2017b for the substantive results of the study). The objectives of the study can be stated thus:

**Objective 1:** To investigate supplier respondent behaviour during an e-survey, paying particular attention to rate of response, speed of response, hour of response, duration of response and survey completeness.

**Objective 2:** To test predictors of e-survey completeness using behavioural and organisational factors.

The intended contribution of our research is twofold: (1) to provide a detailed account on the e-survey response process from a supplier perspective and (2) to identify actions that social scientists can reasonably take to enhance the quantity and quality of responses to their e-surveys. The structure of this paper is as follows. The next section reviews the body of literature on e-surveying and highlights its main foci. The third section describes the methodology of this study. In particular, it details the content of the survey instrument and how it was implemented among a population of suppliers registered on e-Tenders. e-Tenders is the official site for the advertising of government contracts in Ireland. The fourth section reports on the findings of the study, which includes both descriptive and predictive statistics pertaining to the survey response process. The fifth section discusses the import of the findings. Its contribution to survey methods in the business field is set out. Acknowledgement is also made of the limitations of the study as well as recommendations for future research on this topic.

2. **Survey literature**

There is a substantial body of research dedicated to the science of surveying. In the pre-internet period the emphasis was on techniques designed to increase response rates to mail surveys. Research by Dillman (1978), in particular, was influential in shaping our understanding of the conditions under which individuals are more or less likely to respond to survey requests. In recent years attention has turned to web-based surveys and their implications for primary data collection (Frippiat, Marquis and Wiles-Portier, 2010; Keusch, 2015). There are two major strands to this emergent research stream. The first is comparative in form, examining the effectiveness and efficiency of e-surveying relative to mail, phone and fax survey modes. The second is predictive in form, seeking to identify the factors that determine outcomes such as response rate and data quality. Each of these two strands is discussed in further detail in the sub-sections that follow.

2.1 **Comparison studies**

How e-surveying compares to the traditional survey methods of mail, fax, phone and interviewer-administered is a question that has pre-occupied methodologists over the last twenty years. The literature is replete with empirical studies comparing e-surveying with one or more of these traditional survey methods on dimensions like response rate, response speed, representativeness, resource implications and data quality (Al-Subaihi, 2008; Greenlaw and Brown-Welty, 2009; Hardigan, Succar and Fleisher, 2012; Heiervang and Goodman, 2011; Lin and Ryzin, 2012; Messer and Dillman, 2011; Millar and Dillman, 2011; Shin, Johnson and Rao, 2011; Yetter and Capaccioli, 2010). The findings to emerge from these and similar studies suggest that e-surveying outperforms the traditional survey methods on some dimensions by facilitating fast, efficient and relatively costless data collection. At the same time, the findings point to a number of caveats that need to be
attached to e-surveying, particularly as regards lower response rates. These are subject to further discussion below.

On the plus side, e-surveying is widely held to be more resource efficient than mail, phone or interview administered methods (Shin, Johnson and Rao, 2011). In many cases the cost of e-surveying amounts to little more than paying a subscription fee to a software service provider. By contrast, surveying a population sample via mail can easily run into thousands of pounds after paying for postage, stationery and labour. The time and cost of administering a survey to a large sample is higher still. Evidence of this, Lin and Ryzin (2012) determined in their study that the cost per response was $4.43 for mail-distributed surveys and $0.72 for web-distributed surveys. Similarly, Heiervang and Goodman (2011) calculated that face-to-face data collection cost four times as much per respondent as web-based data collection. As well as cost effectiveness, e-surveying is associated with reduced data collection periods. Early studies in this field detected that e-surveying generates quicker replies than the traditional mail method, thus making it time-efficient in terms of data gathering (Akl et al. 2005; Griffis, Goldsby and Cooper 2003).

It is not all positive as far as e-surveying is concerned. Direct comparisons between e-surveys and the traditional methods have typically found that the former produce lower response rates. Hardigan, Succar and Fleisher (2012), for example, achieved a response rate of 26% with a mail survey but only 11% with an e-survey. Likewise, Al-Subaihi (2008) reported that telephone contact yielded a 95% response rate as against 30% for email contact. Postal surveys also outperformed web-based surveys in Messer and Dillman’s (2011) experiment by a statistically significant margin. The same pattern can be observed across many other studies involving population cohorts as diverse as elected representatives and educators (Fisher and Herrick, 2012; Shin, Johnson and Rao, 2011; Yetter and Capaccioli, 2010). This is problematic. Low response rates increase the likelihood of non-response error i.e. making generalisations based on data drawn from respondents who are not representative of their population (Gomm, 2008). Explaining the disparity in response rates, we can point to a fatigue factor resulting from the sheer volume of research requests that individuals receive via email, as well as wariness over opening unsolicited emails from unknown senders (Sanchez-Fernadez, Munoz-Leiva and Montoro-Rios, 2012).

Apart from resource efficiency, response speed and response rate, methodologists have probed possible variations in item completion and data quality between e-surveying and the traditional survey methods. In some studies web-based surveys have produced the same or even higher levels of item completion than postal surveys (Liu, 2017; Wright and Ogbuehi, 2014), although the opposite effect has also been observed (Heiervang and Goodman, 2011). In reference to data quality, Shin, Johnson and Rao (2011) reported higher data quality from web surveys, measured in terms of item responses to closed and open-ended questions. Researchers elsewhere have concluded from their analyses that the mode of data collection has no statistically significant effect on data quality (Akl et al., 2005; Dodou and Winter, 2014). Interestingly, studies are now moving beyond the postal versus web dichotomy to probe for differences in data quality collected across different internet-enabled devices e.g. personal computers versus mobile phones (Lee, Kim and Couper, 2018; Mavletova, 2014).

2.2 Predictive studies

Another prominent line of inquiry in this field focuses on how to increase response rates to e-surveys. It has its antecedents in research carried out by Dillman (1978) into the factors that determine response rates in mail surveys. Weimiao and Zheng (2010) review the extensive body of work in this area, noting how it takes in aspects related to web survey development e.g. number of questions; web survey delivery e.g. use of pre-notifications and offering of incentives; survey population characteristics; and technical issues around the software used to collect responses. In one of the earliest studies, Cook, Heath and Thompson (2000) demonstrated that the number of contacts made with the population sample, the issuing of a pre-survey notification and personalising email correspondence had the greatest impact on final response rate. Following on, Deutskens et al. (2004) was able to confirm that shorter questionnaires have higher response rates and that incentives in the form of vouchers and lotteries can induce response in long and short e-surveys, respectively.

Latterly, scholars have developed and refined this line of inquiry. Van Veen, Goritz and Sattler (2016) returned support for the hypothesis that pre-notifying the targeted population sample of an impending e-survey increases response rate and reduces item non-response. If a prepaid cash incentive is used alongside pre-
notification, the effect becomes even more pronounced. The salutary effect of incentives on responses to web-based surveys is also illustrated by Biemer et al. (2018) in a study of US households. Soliciting engagement from potential respondents matters too, as Petrovic, Petric and Manfreda (2016) show. In their case issuing a plea for help to the population sample improved response rates. Inserting a personalised salutation into email correspondence also appears to elicit co-operation from targeted individuals (Munoz-Leiva et al., 2010; Sanchez-Fernandez, Munoz-Leiva and Montoro-Rios, 2012). In sum, we can say that investigating the determinants of responses rates to e-surveys is an area that has attracted and continues to attract interest from methodologists.

For all the empirical research that has been undertaken into e-surveying, we still know relatively little about the actual response process. As is clear from the above literature review, methodologists have concerned themselves with how e-surveying compares against the traditional survey methods as well as the tactics that should be employed to maximise response. What they have not done to any satisfactory degree is trace the response process from start to finish or detail how individuals interact with e-surveys. As a result, questions related to timing of response, length of response and behavioural and organisational factors affecting survey completion rates have gone largely unanswered. One exception to this is Wright and Ogbuehi (2014) who compared duration of survey response across administered, web-based and paper-based surveys. Their contribution notwithstanding, significant gaps in knowledge remain. The aim of this paper is to begin to address these gaps. The next section describes how the survey data used in our analysis was collected.

3. Methodology

As part of a larger study into public procurement an e-survey was carried out on suppliers competing for public contracts in Ireland. Ireland has a centralised procurement system and all public contracts valued at €25,000 or above are advertised on a government-managed website called e-Tenders. In order to be able to identify and tender for these public contracts with the Irish government, firms must first register on e-Tenders. Likewise, public buyers must have an account on e-Tenders to be able to advertise their available contracts. This is beneficial from a research perspective. Essentially, it makes it possible for researchers, with the permission of the relevant authority\(^1\), to access the relevant population. Heretofore it was a major challenge to even determine the population of buyers and suppliers operating in the public sector marketplace, never mind survey them.

At the time of the study there was approximately 60,000 registered supplier accounts on e-Tenders. Each of the 60,000 supplier representatives registered on e-Tenders was emailed and invited to participate in the research. Each email had an embedded hypertext link to our survey instrument. Two email contacts were made in total. The first marked Day 1 of the survey period. The second was on Day 12 of the survey period. The latter was sent to express gratitude to those persons who had already submitted their response and to remind persons who had yet to submit their response to please do so. Issuing a reminder has been found to be among the most effective ways to increase response rates in survey-based research (Muñoz-Leiva et al., 2010), hence its inclusion in this study. The survey period ended 31 days after contact was first made with the population of suppliers.

The survey instrument contained 48 questions relevant to public contracting (see Appendix A). It was formatted and managed using SurveyMonkey, which is a dedicated survey software package. There was five sections in the survey: background information; tendering activity; tendering ability; experience of business-friendly actions; and identifying contract opportunities. Each section of the survey had its own page. Respondents could gauge their progress by means of a completion indicator visible at the top of their screen. The design of the instrument followed best practice advice (Andres, 2012). Questions were written in simple, purposeful English. Jargon and technical language was avoided. Only closed questions were used, meaning that respondents chose from a pre-defined set of mutually exclusive answers. This was done in the interests of respondent convenience as well as reliability of measurement. For some questions the pre-defined set of answers was a drop-down menu. For others it was situated directly underneath the question and respondents were asked to tick a box. Adding variety in this way helps to break the monotony of answering a large number of formal questions.

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\(^1\) The relevant authority here is the Office of Government Procurement, Ireland.
All questions could reasonably be answered without having to consult organisational literature. Respondents did not have to disclose any information that could identify themselves or their firm. The first page dealt with contextual information about the firm e.g. size, age, turnover, nationality, sector, etc. Categorisation schemes were employed to make the subsequent data analysis easier e.g. firms could select one of four options to indicate their size: 1-9 employees; 10-49 employees; 40-249 employees; 250+ employees. After the first page the survey moved to asking questions specific to public sector tendering. A mix of numeric, binary-choice (yes/no) and Likert scale questions was used throughout. The underlying objective in all of this was to maximise response by being user-friendly while at the same time upholding the validity of the survey instrument.

The survey instrument was assessed for content validity in two ways. Initially, it was pre-tested among ten suppliers with experience of public sector tendering. Their feedback was sought on each of the 48 questions and the accompanying response sets. Apart from some recommended minor changes to question phrasing, they approved the content, structure and length of the survey. Following on from this, the survey instrument was presented to three procurement academics. Their assessment was positive in much the same way, although they did advise that several of the Likert scale items that related to tendering capabilities be re-worded. Once this pre-testing and assessment process was complete, the survey was ready for distribution.

4. Results

The results from the data analysis are set out below. Sections 4.1-4.6 concern the behaviour of respondents in terms of their rate of response, speed of response, hour of response, duration of response and survey completeness. Together these sections feed into Objective 1 of the study, which is to investigate supplier respondent behaviour during e-surveying. Section 4.7 tests behavioural and organisational predictors of survey completeness and is linked to Objective 2 of the study.

4.1 Rate of response

The total number of responses received over the 31 day data collection period was 4747, which gives a response rate of just under 8% (4747 ÷ 60000). While in absolute terms the number of responses was high, in proportional terms it was low. As with all survey research, it is not the rate of response per se that is important but rather the representativeness of respondents (Anseel et al., 2010). With this in mind we tested for representativeness by comparing the characteristics of early and late respondents (Armstrong and Overton, 1977). This test assumes that late respondents share the same characteristics as non-respondents and, as such, are proxies for non-respondents. If late respondents are not statistically different from early respondents across relevant organisational characteristics, then respondents are assumed to be broadly representative of the population from which they are drawn.

Table 1: Early versus Late Respondents

<table>
<thead>
<tr>
<th>Variable</th>
<th>Operationalisation</th>
<th>Mean score</th>
<th>Sig.</th>
<th>Early resp.</th>
<th>Late resp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm size</td>
<td>1-9 staff = 1</td>
<td>1.76</td>
<td>.09</td>
<td>2.02</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10-49 staff = 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>50-249 staff = 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250+ staff = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tendering experience of firm</td>
<td>numeric</td>
<td>12.69</td>
<td>.97</td>
<td>12.60</td>
<td></td>
</tr>
<tr>
<td>Typical value of contract tendered for</td>
<td>numeric</td>
<td>2.33</td>
<td>.69</td>
<td>2.43</td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;25k = 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25-130k = 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>130-250k = 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>250-500k = 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>500-1 million = 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 million+ = 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of contracts tendered for in 2014</td>
<td>numeric</td>
<td>7.57</td>
<td>.56</td>
<td>8.81</td>
<td></td>
</tr>
<tr>
<td>Success rate in tendering in 2014</td>
<td>1-100%</td>
<td>26.52</td>
<td>.99</td>
<td>26.54</td>
<td></td>
</tr>
</tbody>
</table>

For the purposes of our analysis we compared early and late respondents across five variables: firm size, tendering experience, typical value of contract tendered for, number of contracts tendered for in 2014 and success rate in tendering in 2014. Early respondents represented the first 100 persons to participate in the research. Their response was received within hours of the survey going live. Late respondents represented the last 100 persons to participate in the research. Their response was received over three weeks after contact.
was first made. T-tests for Equality of Means were performed in respect of each of the five variables. The tests returned no statistically significant differences (p >.05) between early and late respondents on any of the five variables (see Table 1). On this basis we are led to believe that the 4,747 respondents are representative of the population of suppliers competing for public contracts in Ireland.

4.2 Timeline of response

Referred to above, the survey period spanned 31 days. It began on Monday, 19th of January 2015 (Day 1) and ended on Wednesday, 18th of February 2015 (Day 31). Responses started to register almost immediately after emailing the survey to suppliers. By the end of Day 1 1,485 responses had been received, which is 10.2% of the final total. By the end of Day 2 an additional 1,912 responses had been received, which is 40.3% of the final total. This means that within 48 hours of the survey going live half the number of final responses had been received. Responses continued to flow in over the following days, albeit at a reduced rate. Day 3 saw 215 responses (4.5% of the final total) and Day 4 118 responses (2.5% of the final total). The number of responses reduced to double and even single digits between Days 5-11, amounting to just 4.8% of the final total.

In an attempt to generate additional responses, a reminder email with an embedded hypertext link to the survey was sent out on Friday, January 30th 2015 (Day 12). The follow-up email succeeded in bringing about an increase in response. On Day 12 282 responses were received. This resurgence continued over the next three days, with 323 responses received on the Saturday, 102 on the Sunday and 705 on the Monday. Together these four days account for 29.7% of the total number of responses. Like the pattern observed after the first mailing of the survey, the rate of response decreased sharply in the days directly proceeding the second mailing. Across the remaining fifteen days of the survey period only 261 responses were received, or 5.5% of the final total. The timeline of survey responses is depicted in Figure 1.

![Figure 1: Timeline of Survey Response](image)

4.3 Single versus multiple day response

Approximately 99% of survey responses were started and ended on the same day. In the remaining 1% of cases (n = 54) surveys were started on one day and resumed the following day or later. Of the 54 cases that did not start and end the survey on the same day, the majority submitted their response within two days after first commencing the survey. The longest interval between starting and finishing the survey was fourteen days. Table 2 provides a detailed breakdown of the figures for single versus multiple day response.
Table 2: Single versus Multiple Day Response

<table>
<thead>
<tr>
<th>Response Duration</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Started and ended on the same day</td>
<td>4693</td>
<td>98.9</td>
</tr>
<tr>
<td>Ended one day later than the start day</td>
<td>28</td>
<td>0.6</td>
</tr>
<tr>
<td>Ended two days later than the start day</td>
<td>12</td>
<td>0.2</td>
</tr>
<tr>
<td>Ended three days later than the start day</td>
<td>5</td>
<td>0.1</td>
</tr>
<tr>
<td>Ended four days later than the start day</td>
<td>1</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>Ended five days later than the start day</td>
<td>2</td>
<td>&lt;0.1</td>
</tr>
<tr>
<td>Ended six or more days later than the start day</td>
<td>6</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>4747</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.4 Hour of response

Analysis of the hour recipients started the survey provides some interesting results (see Figure 2). The most common hour for individuals to start the survey was 09.00. Approximately 18% of all survey responses were started at this time. The second and third most common hours to start the survey were 08.00 and 10.00, with each accounting for approximately 11% of responses. This leaves little doubt that the commencement of the work day was the favoured time for individuals to start responding. Outside of this three hour morning period 11.00 and 12.00 were the most popular times for respondents to start the survey. Throughout the day and into evening time i.e. from 13.00 to 23.00 there was a comparatively low but constant rate of engagement with the survey. The number of surveys started between 00.00 and 07.00 was minimal. The pattern stayed the same even when firms operating outside the GMT zone were excluded from the analysis.

![Figure 2: Hour of Response](image)

4.5 Duration of response

The amount of time taken by respondents to answer the survey questions was also investigated. To calculate it we subtracted the time at which respondents commenced the survey (hh:mm) from the time at which they ended the survey (hh:mm). This was done for all respondents except where cases extended over two or more days (n = 54). Their inclusion would have grossly inflated measures of central tendency. For example, in one case there was a fourteen day interval between a respondent starting and ending the survey. The results from this calculation are as follows. The mean time between starting and ending the survey was 9.46 minutes. The median time was 5.73 minutes. The minimum time was 0.33 minutes and the maximum time was 665.52 minutes. The distribution of values for respondents who started and ended the survey in a single day is represented in Figure 3a.
Figure 3a: Time Spent on Survey

Indicated by the maximum time, some respondents started the survey at one point during the day and returned to it several hours later. It would certainly not take anyone 665.52 minutes (11 hours) to answer 48 relatively straightforward questions. To investigate this outlier group further we isolated responses that exceeded 60 minutes between start and finish time. Sixty minutes was deemed to be the upper limit that any respondent could reasonably spend answering the questions in a single sitting. A total of 64 cases were identified that exceeded the 60 minute threshold. Closer inspection showed that these 64 cases had either started the survey in the early morning and returned to it in the afternoon or started it in the afternoon and returned to it in the late evening. When the analysis was re-run without these outliers the mean score reduced to 6.94 minutes. We believe that this is a more accurate estimate of the average amount of time that respondents spent answering the questions. The distribution of values for respondents who started and ended the survey within a 60 minute period is represented in Figure 3b.

Figure 3b: Time Spent on Survey (Adjusted)

The distribution of values in Figure 3b gives some indication of how respondents engaged with the survey. In the first instance we can see that a significant proportion of respondents, approximately 25%, did not spend much more than 3 minutes on the survey. This is because they only answered the questions on the first page.
of the e-survey before quitting prematurely. Beyond this initial cluster, half of all respondents fall within 3-8 minute range. The fourth quartile stretches from 8 to 60 minutes. The ranges are captured in Table 3

Table 3: Quartile Ranges for Time Spent on Survey

| Quartile          | Minutes
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower quartile</td>
<td>0.33 - 3.16</td>
</tr>
<tr>
<td>Lower middle quartile</td>
<td>3.17 - 5.67</td>
</tr>
<tr>
<td>Upper middle quartile</td>
<td>5.68 - 8.13</td>
</tr>
<tr>
<td>Upper quartile</td>
<td>8.15 - 59.90</td>
</tr>
</tbody>
</table>

4.6 Survey completeness

The survey contained 48 questions in total. The mean figure for number of questions answered was 35.17. The median figure was 47. Approximately 43.3% of respondents answered all 48 questions (n = 2062). This means that the majority of responses were incomplete. Incompleteness ranged from not answering any question (n = 2) to answering 47 out of the 48 questions (n = 458). As is evident in Figure 4, a relatively high percentage of respondents answered eight questions. There is an explanation for this occurrence. As referred to already, the first page of the e-survey contained eight questions relating to the characteristics of the firm. Almost a quarter of respondents (n = 998) answered these eight questions but did not progress any further in the survey. Further analysis revealed there to be statistically significant differences between these 998 firms and the 2062 firms that answered all questions (p < .05). Specifically, the former cohort were bigger in size, in terms of number of employees and revenue, and older than the latter.

Consistent with expectations, we found that the number of questions answered correlated with the length of time spent on the survey (see Figure 5). The Pearson’s Correlation Co-efficient is 0.38, which is statistically significant at p < .01. It is notable that there is in the region of 20 cases that answered the first eight questions but took 20 minutes or more between starting and finishing their involvement with the survey. This may be due to respondents dipping in and out of the survey, possibly as a result of indecision over whether to complete it. On the whole, the length of time respondents spent on the survey is proportionate to the total number of questions that they answered.
4.7 Factors affecting survey completeness

As part of the analysis we tested a number of predictors of survey completeness i.e. total number of questions answered. The first predictor we considered was date of response. We divided date of response into two waves. The first wave comprised responses that came in before the reminder notification was issued: 19/01/2015 – 29/01/2015. The second wave comprised responses that were received after the reminder notification was issued: 30/01/2015 – 18/02/2015. Our analysis found a small but statistically significant difference between first and second wave respondents on survey completeness (p < .01). First wave respondents answered 35.70 questions, on average, which is almost 1.5 more than second wave respondents (see Table 4).

Table 4: Date of Response and Survey Completeness

<table>
<thead>
<tr>
<th>Timing</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>95% Confidence Level</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First wave</td>
<td>2952</td>
<td>35.70</td>
<td>16.98</td>
<td>Lower Bound: 35.09</td>
<td>Upper Bound: 36.32</td>
<td>0</td>
</tr>
<tr>
<td>Second wave</td>
<td>1795</td>
<td>34.29</td>
<td>17.49</td>
<td>Lower Bound: 33.48</td>
<td>Upper Bound: 35.10</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>4747</td>
<td>35.20</td>
<td>17.19</td>
<td>Lower Bound: 34.68</td>
<td>Upper Bound: 35.66</td>
<td>0</td>
</tr>
</tbody>
</table>

The hour at which respondents started the survey was next considered as a predictor of survey completeness. For the purposes of analysis we grouped respondents into one of four time periods. These were: 00.00-05.00, 06.00-11.00, 12.00-17.00 and 18.00-23.00. The period of day or night respondents started the survey is statistically significant in predicting survey completeness (p < .01). Respondents who started the survey in the evening time, 18.00-23.00, answered, on average, 36 questions. This is the highest level of survey completion of the four groups. Respondents who started the survey in the afternoon, 12.00-17.00, answered, on average, 33 questions, which is the lowest level of survey completion of the four groups. Respondents in the am periods answered 35 questions, on average (see Table 5).

Table 5: Hour of Response and Survey Completeness

<table>
<thead>
<tr>
<th>Time</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>95% Confidence Level</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>00.00-05.00</td>
<td>127</td>
<td>35.18</td>
<td>16.99</td>
<td>Lower Bound: 32.19</td>
<td>Upper Bound: 38.16</td>
<td>6</td>
</tr>
<tr>
<td>06.00-11.00</td>
<td>2486</td>
<td>35.34</td>
<td>17.27</td>
<td>Lower Bound: 34.66</td>
<td>Upper Bound: 36.02</td>
<td>0</td>
</tr>
<tr>
<td>12.00-17.00</td>
<td>1148</td>
<td>33.46</td>
<td>17.65</td>
<td>Lower Bound: 32.44</td>
<td>Upper Bound: 34.49</td>
<td>1</td>
</tr>
<tr>
<td>18.00-23.00</td>
<td>986</td>
<td>36.72</td>
<td>16.29</td>
<td>Lower Bound: 35.70</td>
<td>Upper Bound: 37.74</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>4747</td>
<td>35.17</td>
<td>17.19</td>
<td>Lower Bound: 34.68</td>
<td>Upper Bound: 35.66</td>
<td>0</td>
</tr>
</tbody>
</table>
Apart from date and hour, we tested if organisational characteristics had any bearing on survey completeness. Firm size was the first organisational factor tested (see Table 6). Firm size was measured by reference to number of employees. Consistent with the current EU definition, four size categories were employed. These were as follows: 1-9 employees (micro enterprise), 10-49 employees (small enterprise), 50-249 employees (medium enterprise), and 250+ employees (large enterprise). Firm size was found to be statistically significant in accounting for variance on survey completeness (p < .01). Interestingly, firm size and survey completeness are inversely related. The bigger the firm the fewer the questions it answered. While micro-enterprises answered 37 questions and small firms 35 questions, the corresponding figures for medium and large firms were 32 questions and 28 questions respectively.

Table 6: Firm Size and Survey Completeness

<table>
<thead>
<tr>
<th>Firm Size</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Micro</td>
<td>2330</td>
<td>37.55</td>
<td>15.71</td>
<td>36.91</td>
<td>38.19</td>
<td>1</td>
<td>48</td>
</tr>
<tr>
<td>Small</td>
<td>1191</td>
<td>35.79</td>
<td>16.91</td>
<td>34.83</td>
<td>36.75</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>Medium</td>
<td>643</td>
<td>32.71</td>
<td>18.40</td>
<td>31.28</td>
<td>34.13</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>Large</td>
<td>530</td>
<td>28.05</td>
<td>19.02</td>
<td>26.43</td>
<td>29.67</td>
<td>1</td>
<td>48</td>
</tr>
<tr>
<td>Total</td>
<td>4694</td>
<td>35.37</td>
<td>17.07</td>
<td>34.88</td>
<td>35.86</td>
<td>1</td>
<td>48</td>
</tr>
</tbody>
</table>

* Does not equal group total, 4747, due to missing values.

Firm nationality was the second organisational factor tested in respect of survey completeness (see Table 7). Firms were categorised according to whether they were based in Ireland, Northern Ireland, the UK, the EU or Rest of World. Like firm size, nationality is statistically significant in accounting for variance in survey completeness (p < .01). Firms based in Northern Ireland and Ireland had the highest rate of survey completeness at 38 and 36 questions answered, respectively. By contrast, firms based in the UK and the EU answered, on average, 32 questions. Firms from Rest of World were situated between these two groups, having typically answered 35 questions.

Table 7: Firm Nationality and Survey Completeness

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
<th>Min.</th>
<th>Max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ireland</td>
<td>3275</td>
<td>36.24</td>
<td>16.61</td>
<td>35.68</td>
<td>36.81</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>Northern Ireland</td>
<td>160</td>
<td>38.51</td>
<td>17.71</td>
<td>36.05</td>
<td>40.96</td>
<td>8</td>
<td>48</td>
</tr>
<tr>
<td>UK</td>
<td>741</td>
<td>32.68</td>
<td>18.09</td>
<td>31.37</td>
<td>33.98</td>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>EU</td>
<td>296</td>
<td>32.25</td>
<td>18.03</td>
<td>30.19</td>
<td>34.31</td>
<td>3</td>
<td>48</td>
</tr>
<tr>
<td>Rest of World</td>
<td>188</td>
<td>35.09</td>
<td>17.13</td>
<td>32.63</td>
<td>37.56</td>
<td>7</td>
<td>48</td>
</tr>
<tr>
<td>Total*</td>
<td>4660</td>
<td>35.45</td>
<td>17.00</td>
<td>34.97</td>
<td>35.94</td>
<td>2</td>
<td>48</td>
</tr>
</tbody>
</table>

* Does not equal group total, 4747, due to missing values.

5. Discussion

The migration of surveys online has had a profound effect on research in the social sciences. It has drastically lowered the cost, time and effort of data collection, thus enabling large-scale studies to be carried out on limited budgets (Frippiat, Marquis and Wiles-Portier, 2010; Keusch, 2015). It has also made it easier to access geographically dispersed and difficult to identify populations. Public buyers and suppliers can certainly be described as falling into both of these categories, which is one of the reasons why researchers have often struggled to survey them. Another advantage of e-surveying is that we can now capture meta-data on the response process (Bosnjak & Tuten, 2001). In other words, it allows us as researchers to get a sense of how targeted populations engage with surveys in ways never imaginable with the traditional mail method. This is only a recent development, however, and little has been reported on it. Hence, we decided to analyse meta-data from 4747 suppliers to better understand the response process in e-surveying.

The first observation to be made is the speed with which suppliers in our study responded to the survey. Within hours of the survey being sent out almost 500 responses had been received. By the end of day two this figure had reached approximately 2400, representing over half of the final tally. The level of response reduced substantially thereafter. A reminder notification then produced an upswing and approximately 1400 new responses were received in the days directly proceeding the second contact. This type of response pattern is not without precedent. Flynn, McKevitt and Davis (2015) received a substantial proportion of total responses within the first 24 hours of emailing their survey, after which rates sharply reduced. The observed phenomenon of rapid response followed by equally rapid drop-off is in marked contrast to the traditional mail
survey. For instance, Messer and Dillman (2011) found that responses to mail surveys are low in the first week, but pick up thereafter. For practitioners, our findings on timeline of response implies that the survey cycle time can be compressed when using the web to gather data. Conceivably, 7-10 days is sufficient, with a reminder notification issued at the midway point to maximise response.

Another pattern to emerge from our analysis is the hour of day at which responses are submitted. There appears to be a preference to respond at the beginning of the workday, signalled by the fact that 40% of respondents commenced the survey between 08.00 and 11.00. This is logical given that staff tend to deal with their correspondence at the outset of the working day. The optimal time to issue e-surveys is, therefore, early in the morning. This way it will be waiting in the recipient’s inbox at a time when they are likely to be answering work-related requests. Of course, recipients can complete the e-survey any time they desire, be it inside or outside of work hours. Evident from our findings, approximately 25% of individuals opted to respond outside of regular office hours (18.00 – 07.00). This underlines one of the core strengths of e-surveying relative to the traditional mail method, namely: the flexibility it affords respondents over when and where to complete it. It is also one of the reasons why responses to e-surveys are returned at a much faster rate than mails surveys.

As researchers we hope that respondents will give due thought and consideration to our survey questions. The quality of our data and the credibility of any conclusions that we infer from it depend on a considered response. Yet the amount of time respondents spend answering survey questions is an area that is rarely if ever discussed in research studies. Instead, concern primarily rests with boosting response rate and avoiding non-response error (Weimiao and Zheng, 2010). In our study respondents spent, on average, just under seven minutes answering the survey questions. While there was 48 questions to negotiate, each had a pre-defined response set and individuals only had to select one answer. Furthermore, no typing was required. All of this would have allowed respondents with a reasonable knowledge of their firm’s tendering activities to progress quickly through the survey. The overwhelming majority of respondents finished their response in a single sitting. In only 1% of the 4747 cases did a response extend over two or more days. This points to a prosaic truth when it comes to e-surveying: very few recipients revert back to an e-survey; they either complete it on opening the hypertext link or else do not engage at all.

Among the main advantages of e-surveying is the data trail it leaves behind. This marks it apart from the traditional mail method. As Bosnjak & Tuten (2001, p. 4) have commented in respect of the latter, “we do not know whether a potential respondent received the questionnaire at all, read it, and began answering it”. This is not the case with e-surveying. In our study we were able to identify not only the approximate 43% who constituted complete responders, but also item non-responders i.e. persons who skipped several questions but still reached the end of the survey, along with “answering drop-outs” i.e. persons who answered questions at the start of the survey but then quit prematurely (Bosnjak and Tuten, 2001). The latter comprised almost 1000 respondents who ended their involvement after page one of the survey. As our findings demonstrate, there are various degrees of completion with e-surveying. What is more, premature exit and item non-response appear to be very much part of the process – something which Lynn (2008) acknowledged previously. The most effective way to combat this problem is to design surveys that are simple to understand, do not take long to complete and are relevant to the audience (Andres, 2012).

What factors influence survey completeness? This is another important question that has received scant attention in the literature on survey methodology. Our findings indicate that responses submitted early on in the survey period, for one, are associated with a marginally higher number of questions answered. They also show that evening time is best for eliciting answers from respondents and afternoon time the worst. Perhaps of most interest from a research perspective is the finding that firm size and survey completeness are inversely related. That is, the bigger the firm the fewer the questions it answers. In our study micro-enterprises, on average, answered almost ten questions more (37.5/48) than large enterprises (28/48). Despite being endowed with less resources and operating with less formalised procedures, micro-enterprises appear more inclined to engage with e-surveys and answer the questions asked. Rationalising this effect, we point to the fact that smaller firms are under-represented in public procurement markets. For instance, SMEs’ current share of the public procurement market in the UK is only 25% (House of Commons Library, 2015). Precisely because of their relative disadvantage smaller firms have more of an interest in registering their experiences of competing for public contracts. For practice, this finding means that researchers should consider exclusively targeting micro and small firms if survey completeness is their priority.
5.1 Limitations and future research

While our study sheds new light on the response process in e-surveying, it does have some limitations. To begin with, the analysis is based on data gathered from firms competing for public sector contracts with the Irish government. To what extent the results are generalizable across all business contexts is moot. For this reason it is recommended that future research obtain and analyse data on e-survey response behaviour from other jurisdictions or sectors for comparison purposes. As a starting point, we recommend research on UK-based firms given the institutional similarities between the Ireland and the UK. Moreover, business-to-government (B2G) sites in the UK like Contracts Finder, Sell2Wales, Public Contracts Scotland and eTendersNI make such data collection and analysis feasible. Performing this type of comparison would help to establish if, for example, the inverse linear relationship between firm size and survey completeness is an international phenomenon.

Another limitation of the study concerns the behavioural and organisational predictive factors we tested against survey completeness. Our use of four factors cannot be said to be exhaustive. Therefore, scholars should explore what effect other factors have on the number of questions answered and/or the likelihood of achieving a complete response. For example, incentives in the form of nominal cash sums, vouchers and lottery tickets are a popular tactic used by researchers to stimulate higher surveys response rates (Biemer et al., 2018; Millar and Dillan, 2011; Van Veen et al., 2016). It would be instructive to test the impact that these incentives have on completeness and data quality when e-surveying suppliers and buyers. As per Lee, Kim and Couper (2018) and Mavletova (2014), scholars could also examine if the type of internet-enabled device on which the survey is undertaken – PC versus tablet versus smartphone – influences total number of questions answered.

6. Conclusion

This paper set out to describe and explain respondent behaviour during e-surveys. In terms of the first objective, the results show that rates of response to e-surveys are low, speed of response is rapid, and the start of the workday is when respondents are most likely to engage. The results also show that respondents spend a relatively short amount of time answering questions, approximately seven minutes in our case, and a significant proportion either quit prematurely or else do not answer all questions asked. In terms of the second objective, explaining respondent behaviour, we find that a number of factors influence survey completeness. For instance, first-wave respondents and evening-time respondents submitted, on average, more complete surveys. Particularly noteworthy is that firm size and survey completeness are inversely related. This was an unanticipated and quite intriguing finding to emerge from our study and we recommend that future research explores it further.

References


**Anthony Flynn**
### Appendix A: Survey Instrument

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>RESPONSE SET</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No.</strong></td>
<td><strong>Section A — Background Information</strong></td>
</tr>
<tr>
<td>1  What is the legal form of your firm?</td>
<td>Sole Trader</td>
</tr>
<tr>
<td></td>
<td>Partnership</td>
</tr>
<tr>
<td></td>
<td>Limited Company</td>
</tr>
<tr>
<td></td>
<td>Unlimited Company</td>
</tr>
<tr>
<td></td>
<td>Registered Charity</td>
</tr>
<tr>
<td>2  How many staff are employed in your firm?</td>
<td>1-9</td>
</tr>
<tr>
<td></td>
<td>10-49</td>
</tr>
<tr>
<td></td>
<td>50-249</td>
</tr>
<tr>
<td></td>
<td>250+</td>
</tr>
<tr>
<td>3  What was the annual turnover of your firm for the most recent financial year in which accounts were submitted?</td>
<td>&lt; 2 million euro</td>
</tr>
<tr>
<td></td>
<td>2-10 million euro</td>
</tr>
<tr>
<td></td>
<td>10-50 million euro</td>
</tr>
<tr>
<td></td>
<td>50+ million euro</td>
</tr>
<tr>
<td>4  Which sector does your firm belong to?</td>
<td>Manufacturing</td>
</tr>
<tr>
<td></td>
<td>Services</td>
</tr>
<tr>
<td></td>
<td>Construction</td>
</tr>
<tr>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>5  How many years has your firm been trading?</td>
<td>0-5</td>
</tr>
<tr>
<td></td>
<td>6-10</td>
</tr>
<tr>
<td></td>
<td>11-20</td>
</tr>
<tr>
<td></td>
<td>21+</td>
</tr>
<tr>
<td>6  In which jurisdiction is your firm based?</td>
<td>Ireland</td>
</tr>
<tr>
<td></td>
<td>Northern Ireland</td>
</tr>
<tr>
<td></td>
<td>UK</td>
</tr>
<tr>
<td></td>
<td>Rest of Europe</td>
</tr>
<tr>
<td></td>
<td>Rest of World</td>
</tr>
<tr>
<td>7  What is the predominant market focus of your firm?</td>
<td>Local (within 30km of your base)</td>
</tr>
<tr>
<td></td>
<td>Regional (within 120km of your base)</td>
</tr>
<tr>
<td></td>
<td>National</td>
</tr>
<tr>
<td></td>
<td>International</td>
</tr>
<tr>
<td>8  Does your firm compete in foreign markets?</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Section B — Tendering Activity</strong></td>
<td></td>
</tr>
<tr>
<td>9  How many years’ experience does your firm have in tendering for public sector contracts?</td>
<td>Numeric</td>
</tr>
<tr>
<td>10 How many people are ordinarily involved in preparing a tender on behalf of your firm?</td>
<td>Numeric</td>
</tr>
<tr>
<td>11 What is the typical value of a public sector contract your firm competes for?</td>
<td>&lt;25,000 euro</td>
</tr>
<tr>
<td></td>
<td>25-130,000 euro</td>
</tr>
<tr>
<td></td>
<td>130-250,000 euro</td>
</tr>
<tr>
<td></td>
<td>250-500,000 euro</td>
</tr>
<tr>
<td></td>
<td>500-1,000,000 euro</td>
</tr>
<tr>
<td></td>
<td>1,000,000+ euro</td>
</tr>
<tr>
<td>12 How many public sector contracts did your firm tender for in 2014?</td>
<td>Numeric</td>
</tr>
<tr>
<td>13 How many public sector contracts did your firm win in 2014?</td>
<td>Numeric</td>
</tr>
<tr>
<td>14 What percentage of public sector contracts tendered for in 2014 did your firm succeed in winning?</td>
<td>1-100%</td>
</tr>
<tr>
<td>15 What percentage of your firm’s 2014 revenue has come from public sector contracts?</td>
<td>1-100%</td>
</tr>
<tr>
<td><strong>Section C — Tendering Ability</strong></td>
<td></td>
</tr>
<tr>
<td>16 Please rate your ability to influence buyer needs prior to tender</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>17 Please rate your ability to communicate value proposition to inform tender specification</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>18 Please rate your ability to promote goods and services to public sector prior to tender</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>19 Please rate your ability to satisfy qualification criteria of tender requirements</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>20 Please rate your ability to understand evaluation criteria of tenders e.g. MEAT</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>21 Please rate your ability to effectively respond to evaluation criteria</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>22 Please rate your ability to receive feedback on submitted bid and search contract award notices</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>23 Please rate your ability to successfully manage an awarded contract</td>
<td>1-5 scale</td>
</tr>
<tr>
<td>QUESTION</td>
<td>RESPONSE SET</td>
</tr>
<tr>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td><strong>Section D – Experience of Business-friendly Actions</strong></td>
<td></td>
</tr>
<tr>
<td>24 From your experience of tendering do buyers provide written feedback?</td>
<td>No Yes</td>
</tr>
<tr>
<td>25 From your experience of tendering do buyers enable online submission of tenders?</td>
<td>No Yes</td>
</tr>
<tr>
<td>26 From your experience of tendering do buyers engage with the marketplace before going to tender?</td>
<td>No Yes</td>
</tr>
<tr>
<td>27 From your experience of tendering do buyers accept reasonable variants to the specifications set down in the request for tender?</td>
<td>No Yes</td>
</tr>
<tr>
<td>28 From your experience of tendering do buyers publish Prior Information Notices (PINs) regarding future purchasing intentions on eTenders?</td>
<td>No Yes</td>
</tr>
<tr>
<td>29 From your experience of tendering do buyers advertise all supplies contracts worth 25k or more and works contracts worth 50k or more on eTenders?</td>
<td>No Yes</td>
</tr>
<tr>
<td>30 From your experience of tendering do buyers publish contract award notices on eTenders?</td>
<td>No Yes</td>
</tr>
<tr>
<td>31 From your experience of tendering do buyers divide contracts into lots?</td>
<td>No Yes</td>
</tr>
<tr>
<td>32 From your experience of tendering do buyers encourage consortium bids?</td>
<td>No Yes</td>
</tr>
<tr>
<td>33 From your experience of tendering do buyers ensure that their framework agreements give small suppliers the opportunity to compete?</td>
<td>No Yes</td>
</tr>
<tr>
<td>34 From your experience of tendering are buyers flexible in the type of proof of financial capacity they accept?</td>
<td>No Yes</td>
</tr>
<tr>
<td>35 From your experience of tendering do buyers use standard tender documentation?</td>
<td>No Yes</td>
</tr>
<tr>
<td>36 From your experience of tendering do buyers use relevant and proportionate financial capacity criteria?</td>
<td>No Yes</td>
</tr>
<tr>
<td>37 From your experience of tendering do buyers set down insurance cover requirements that are relevant and proportionate to the contract?</td>
<td>No Yes</td>
</tr>
<tr>
<td>38 From your experience of tendering do buyers allow tenderers to self-declare their financial capacity?</td>
<td>No Yes</td>
</tr>
<tr>
<td>39 From your experience of tendering do buyers allow tenderers to self-declare that they can obtain the required insurance cover?</td>
<td>No Yes</td>
</tr>
<tr>
<td><strong>Section E – Identifying Contract Opportunities</strong></td>
<td></td>
</tr>
<tr>
<td>40 Are you familiar with Irish government policy for increasing SME participation in public procurement?</td>
<td>No Yes</td>
</tr>
<tr>
<td>41 When did you last update your firm’s registration details, company profile and business alerts on eTenders?</td>
<td>Year</td>
</tr>
<tr>
<td>42 Are you aware of recent policy developments for centralising public procurement in Ireland, including the setting up of the Office of Government Procurement?</td>
<td>No Yes</td>
</tr>
<tr>
<td>43 Do you find out about contract opportunities from <a href="http://www.etenders.gov.ie">www.etenders.gov.ie</a>?</td>
<td>No Yes</td>
</tr>
<tr>
<td>44 Do you find out about contract opportunities from websites of public sector organisations?</td>
<td>No Yes</td>
</tr>
<tr>
<td>45 Do you find out about contract opportunities from press (local/national)?</td>
<td>No Yes</td>
</tr>
<tr>
<td>46 Do you find out about contract opportunities from word of mouth?</td>
<td>No Yes</td>
</tr>
<tr>
<td>47 Do you find out about contract opportunities from direct contact from a public buyer?</td>
<td>No Yes</td>
</tr>
<tr>
<td>48 What percentage of the contracts that your firm tendered for over the last 3 years was sourced through eTenders?</td>
<td>1-100%</td>
</tr>
</tbody>
</table>
Editorial for EJBRM Volume 16 Issue 1

July 2018
Editorial by the Editor: Ann Brown

This issue has four research papers, all of which offer exciting new ideas for applying business research methods. Two papers address concerns about the application of indices and surveys (quantitative methods) and the remaining two develop new ways of extending the widely applied qualitative methods of focus groups and case study.

Indices and surveys

- David B. Thornblad, Hanko K. Zeitzmann and Kevin D. Carlson focus on a specific problem of the application of index measures in cases where the denominator can become negative. It makes recommendations as to the use of alternate measures not affected by these index variables (commonly referred to as ratios).
- E-surveying is becoming an important new practical and cost effective tool in collecting data. Questions about how respondents deal with such surveys have until recently been difficult to answer. This paper uses the software tools of data analytics to examine the survey response process in a public procurement context. It does so using data obtained from 4747 suppliers that responded to a survey on public sector tendering (Anthony Flynn).

Focus groups and Case study

- Mohanad Halaweh presents a new original qualitative research method called the Discount Focus Subgroup (DFSG) method, which originated in and was developed from information systems research. This paper gives an in depth review of focus group methods and offers a modification to the original method which both streamlines the process and capture the participants views more effectively.
- DCs (Developmental Charities) have unique problems and situations. This paper reflects on a novel case-study approach used to demonstrate the added value of constructed analyses from data provided by key informants in the construction of case studies for Oxfam GB, Water Aid, Christian Aid, Amnesty International and Action Aid. The approach uses unusual methods to capture the responses of many of the various stakeholders involved in the charities’ work (Stanley Mukasa and Terry Warburton).