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Summer 7-19-2017

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Completed Research Paper

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Abstract

Testing new and existing theories with surveys has been popular for many decades within the field of management information systems. Scholars can choose to develop survey items themselves or reuse survey items from existing studies. When survey items are reused without justification, the connection between theory and measurement is not made explicit.

We present a procedure that facilitates selection and justification. Our procedure covers the selection of survey items, when one could choose from a pool of existing items and the justification of the selected set of survey items. We draw upon bibliometric theory and develop a rating that combines the relevance of the paper that presents the reused survey items, with the relevance of the survey item sources. We demonstrate our procedure by operationalizing sub-constructs of information technology capability and address potential concerns of our procedure.

Our study provides an initial step towards a procedure that facilitates scholars with selecting and justifying their survey items, while at the same time, provides insight for peers regarding the connection between theory and measurement.

Keywords: *survey item selection, information technology capability, IT capability, survey development, citations per study, survey design, bibliometric, citation analysis.*

Introduction

Testing new and existing theories with surveys has been popular for many decades within the field of management information systems (MIS). For example, Pinsonneault and Kraemer (1993) found a steady growth of survey-based research between 1984 and 1987 within the MIS field. More recently, King and He (as cited in Sivo et al. 2006) found that almost half of the articles published between 1999 and 2004 in *MIS quarterly, Information Systems Research* and *Journal of Management Information Systems* relied on surveys as their primary data collection method.

A survey enables scholars to measure constructs[1] that cannot be observed directly. For instance, a scholar can group several questions together to achieve a measure of the construct: "happiness". These groups of questions are referred to as a set of items within a survey. A survey enables a scholar to collect data in a

[1] In this paper we refer to reflective constructs instead of formative constructs. For an explanation of the difference between formative and reflective constructs we refer to Jarvis et al. (2003).

standardized manner and allows scholars to test their hypotheses by extrapolation of the results to a wider population (Rattray and Jones 2007).

Developing a survey is not a trivial task (Fallowfield 1995; Stone 1993). Survey items can either be created or reused from an existing set of items. Assuming literature guidelines have been followed, creating new survey items would not differ widely from reusing existing items (Bollen and Lennox 1991). One could draw on existing observations or experience of others, because there is no compelling reason why survey items should not be reused (Fallowfield 1995; Stone 1993). Furthermore, replicating studies is important because it tests the robustness of a theory, which may lead to accepted knowledge (Santhanam and Hartono 2003).

In general, scholars can choose from multiple sets of survey items that measure the same construct. For example, consider operationalizing the construct 'IT infrastructure' using a questionnaire. A scholar can choose from at least six studies from four countries (Chen et al. 2014; Fink 2011; Kim et al. 2011; Lu and Ramamurthy 2011; Ravichandran and Lertwongsatien 2005; Zhang et al. 2013). Without justification of the selected set of survey items, the connection between theory and measurement is not made explicit. Since a true test of a study's usefulness depends on proper replication, extension and generalization (Rosenthal 1991), studies that do not explicitly discuss their selection process, may fall short in revealing their line reasoning. As a consequence, poor coherence between theory and measurement could then result from relying on existing survey items, despite of the quality of that study (Nielsen 2014).

In this paper, we develop present a four-step procedure, which represents a first step towards mitigating the above-mentioned issues and facilitating the: (1) selection of survey items, when one could choose from a pool of existing items and (2) justification of the selected set of survey items. Our procedure relies on principles of bibliometric theory (Price 1976) and we develop a bibliometric rating that combines the relevance of the paper that presents the reused survey items, with the relevance of the reused survey item sources. We demonstrate our procedure by operationalizing sub-constructs of information technology (IT) capability and address potential concerns of our procedure. By applying this procedure, scholars can narrow down their survey items selection from a pool of available items and justify their selection procedure. In addition, scholars provide extra insight to peers regarding the development of their survey.

Related work

Every discipline needs to frequently review their research methods to ensure rigorous research and publication. Even though several research fields frequently use surveys as their main research data collection method, not all scholars fully justify the inclusion of each survey item. Indeed, scholars that create their own set of survey items, justify their inclusion process. However, scholars that reuse survey items from existing studies do not explicitly discuss their selection process. As a consequence, not knowingly, the interpretation of their results may hinge on their survey item selection. Furthermore, when no evidence is provided to justify inclusion, the interpretation of their results may be questioned (Nielsen 2014).

Survey item selection

In general, survey design literature is either coarse-grained or fine-grained. Coarse-grained studies focus on the entire process of survey design. For instance, several studies describe the survey design process from conceptualization to scale development (Brace 2008; Siniscalco and Auriat 2005).

By contrast, fine-grained studies focus on one particular topic. For instance, testing the reliability and validity of survey items. For an example of a fine-grained study, regarding the validity of survey items, we refer to work of Jenkins and Dillman (1995).

A myriad of choices

In this study, the goal of survey item generation is to select or create a set of items, where the (co)variation among the items is caused by an underlying latent construct. For a multidimensional construct this would mean a set of items for each individual sub-construct (MacKenzie et al. 2011).

Scholars can either create new or choose to reuse existing survey items. An exemplary study of survey item creation is Bharadwaj et al. (1999). They operationalized the sub-constructs of IT capability by creating survey items using a Delphi process. Their Delphi panelists consisted of IT management and experts from various fields (i.e. academia, consulting practice and industry). Bharadwaj et al. (1999) validated their created items with focus groups.

Other scholars choose to reuse a set of survey items from existing studies. Selecting a set of survey items from a pool of existing survey items should be done with care. Two issues might arise when selecting from existing survey items. First, adapting the existing items might alter psychometric properties of the survey item (Fallowfield 1995). Second, choosing the right survey item out of a myriad of existing survey items (Siniscalco and Auriat 2005). The first issue received ample attention of scholars, in comparison with the second issue (Table 1).

Issues arising when reusing survey items	Procedure to address the issue	Issue addressed by
1) Adapting survey items might alter psychometric properties of original survey item.	Testing reliability and validity of survey items.	Jenkins and Dillman (1995), Jobe and Mingay (1989), Rattray and Jones (2007), Roberson and Sundstrom (1990).
2) Choosing the right survey items out of multiple options.	No repeatable procedure found.	Stone (1993).

Table 1. Issues that arise when survey items are reused.

A notable exception that attempts to address the second issue is: Stone (1993). Stone (1993) mentions how one could relate each existing set of survey items to match one's research objectives. While Stone (1993) presents interesting general suggestions, the scholar does not present a repeatable procedure.

Dealing with selection

Related work on survey items selection is scarce. Given the nature of our quest, we expand our related work to the field that deals with selection of scholarly work: bibliometrics. Bibliometric theory posits that scholarly work that has been consulted frequently in the past, are more likely to be consulted compared to work that has been consulted infrequently (Price 1976).

In general, bibliometrics are used to study scholarly contribution (e.g. scientific artifacts) and are commonly used in many fields (Price 1976; Wagner et al. 2011). In general, scholars that study bibliometrics are interested in the properties of documents (Borgman and Furner 2002). Some property examples are: publication year and number of citations received. Interest in bibliometrics is not limited to scholars. Organizations and funding agencies also seek to identify other indicators of scholarly performance besides relying on the reputation of the journal (Meho and Yang 2007).

One of the best known bibliometric approaches is citation analysis (Borgman and Furner 2002). Citing is the practice of referencing previously published work and can be done for several reasons (Peterson 2006). A few reasons to cite would be: to give positive credit to the authors and to substantiate one's own claims. However, scholars often criticize the use of citations as a basis for scholarly performance. Meho and Yang (2007) elaborate on often heard criticisms: (1) limitations of a journal's database – an article that is not included in the database cannot be found, (2) impact factor – these factors are influenced by a few heavily cited articles and type of articles (i.e. literature reviews tend to receive more citations), (3) cronyism – friends and colleagues that cite each other's work to influence their citation count.

Many citation analyses exercises evaluate contribution by counting the total number of citations, without context or theoretical justification, which continues the debate of its utility, usability, reliability and validity (Cronin and Sugimoto 2014). In an attempt to capture more of the context, the citedness rate – the number of citations a study receives over a period of time – was developed (Borgman and Furner 2002).

Since the advent of second-generation Web search engines, more sophisticated measures rather than raw citedness have emerged (Borgman and Furner 2002). A few examples are: relational link analysis, evaluation link analysis and Google's PageRank algorithm (Meho and Yang 2007).

Relational link analysis evaluates a link in its context (Borgman and Furner 2002). Links between documents are counted and used as indicator for the level of connectedness, strength of the relationship and direction of the relation (Borgman and Furner 2002). The more controversial version is evaluative link analysis, where the link counts are used to evaluate impact and produced ranked lists, were an order of importance is suggested (Borgman and Furner 2002).

Search engines can also be used to deal with selection. These engines use an index to catalog websites or other web-related artifacts. The search query of each user is matched with the search engine's catalog, the search results are sorted according to the search engine's algorithm, and presented to the user. However, this does not abate the criticism mentioned by (Meho and Yang 2007). For instance, if a search engine does not know the existence of a website, the site is not indexed. Non-indexed websites do not show up in the search results, which may bias the search results (Vaughan and Thelwall 2004).

Google's search engine[2] is one of the most frequently used search engines (Beel et al. 2009). Their search engine sorts its search results based on several factors including the PageRank algorithm (Brin and Page 2012). In its essence, PageRank is an iterative algorithm that counts the number of incoming links (also known as: backlinks) to a website and sorts the search results according to relevance. To give some approximation of a link's relevance, their algorithm classifies incoming links from websites with a high PageRank as more relevant than incoming links from websites with a low PageRank. The search results are sorted on highest PageRank and are served to the user. Though Google's search algorithm takes many more factors into account, the core of the ranking algorithm is based on PageRank (Cho and Roy 2004). After Google's success, most major search engines adopted a similar raking approach (Cho and Roy 2004).

In summary, dealing with selection can be facilitated by evaluating the context in which artifacts exist (in our case scholarly work that presents the survey items). In the next chapter we present a four-step procedure that facilitates survey item selection from a pool of existing studies. We will link scholarly work and determine their relative importance based on citations and citedness to deal with the issue of selection.

A four-step procedure

This section presents a four-step procedure that facilitates survey item selection when one could choose between multiple sets of existing survey items. To the best of our knowledge no similar procedure exists that specifically deals with survey item selection. Therefore, this procedure can be viewed as an initial procedure towards survey item selection. An overview of our procedure is displayed in Table 2. Each step is explained separately. Furthermore, we also explain the points of attention per step. A point of attention elaborates on possible challenges that a scholar might experience when dealing with selection. To overcome these challenges, we also present our recommendations.

Step	Explanation of each step
1	Collect existing studies that operationalize the focal construct
2	Calculate the rating of the survey presenter and survey sources
3	Plot the ratings of all survey presenters
4	Manually select a set of survey items from the pool of survey presenters

Table 2. Overview of survey item selection procedure.

Step 1: Collect existing studies that operationalize the focal construct

In this step the scholar searches and collects existing studies that operationalize the focal construct. Examples of existing studies are journal articles, conference papers and dissertations. For a study to become eligible for inclusion, the existing study has to present the set of survey items used to operationalize the focal construct. Henceforth, these studies are called *survey presenters*. When survey presenters explicitly

[2] http://www.google.com/

refer to other studies as their sources to operationalize their focal construct, these sources are also eligible for inclusion. Henceforth, these sources are called *survey sources*.

Attention point: To prevent selecting the 'best out of the worst' survey items available, a structured review of past literature should be conducted. For a systematic procedure that facilitates a literature review, we refer to the literature reviewing guidelines from Webster and Watson (2002).

Step 2: Calculate the rating of the survey presenter and survey sources

To facilitate selection between studies that operationalize the same construct, we combine two existing concepts derived from literature: relevance (Brin and Page 2012) and recentness (Borgman and Furner 2002). We define relevance per study based on the number of references received from peers. This corresponds conceptually with Google's PageRank algorithm (Brin and Page 2012). The second variable, recentness, is defined as the difference between current date and the study's publication date. This corresponds conceptually with citedness rate (Borgman and Furner 2002). The rating is calculated by dividing relevance by recentness.

Each study *i*, whether it is a survey presenter or survey source, has an individual rating defined as R_i^{self}. R_i^{self} is defined as: citations received per year for study *i*. If, however, a study is a survey presenter, we also rate their survey sources. This rating, referred to as R_i^{ref}, represents the average rating of all studies referenced by a survey presenter.

If *i* is a *survey presenter,* R_i^{self} can be calculated as:

(1) $$R_i^{self} = \frac{1}{\sum_{j \in SP} \frac{C_j}{CD - PD_j}} * \frac{C_i}{(CD - PD_i)}$$

Where,

SP = set of survey presenters
C_i = citations received for study *i*
CD = current date
PD_i = publication date for study *i*

Additionally, we account for the survey sources referred to by *i*, which can be calculated as:

(2) $$R_i^{ref} = \frac{1}{|RI_i|} * \sum_{j \in RI_i} R_j^{self}$$

Where,

RI_i = set of all referred items by *i*.
If *i* is a *survey source,* R_i^{self} can be calculated as:

(3) $$R_i^{self} = \frac{1}{\sum_{j \in SS} \frac{C_j}{CD - PD_j}} * \frac{C_i}{(CD - PD_i)}$$

Where,

SS = set of all survey sources
C_i = citations received for study *i*
CD = current date
PD_i = publication date for study *i*

Thus, for a study to be labeled as a survey source, a survey presenter has to explicitly refer to that study as the source of their survey items. An implication of this referral is that a survey presenter could also be a survey source.

Attention point: since the calculation is dependent upon citations and uses no other weighting scheme (e.g. journal impact factor, or influence of the author on the field), manually assessing the survey presenters is an explicit and separate step in this procedure.

Step 3: Plot the ratings of all survey presenters

To facilitate selection this step requires plotting the ratings of all survey presenters. The plot presents a graphical overview of the dispersion of the ratings. The ratings (R_i^{self}, R_i^{ref}) can be used as coordinates in a graph, where R_i^{self} can be plotted on the horizontal axis and R_i^{ref} on the vertical axis. The ranges of the axes are determined by the rating of the survey presenters and survey sources.

Once all survey presenters are plotted, the plot can be interpreted. Studies receive a high rating (i.e. R_i^{self}) when they were published relatively recently, while at the same time accumulating many citations. When a survey presenter also relies on survey sources (i.e. R_i^{ref}) that are published a few years ago and these survey sources accumulated many citations, then that survey presenter receives a higher value for both for R_i^{self} and R_i^{ref}.

Conversely, studies receive a low rating (i.e. R_i^{self}) when they were published many years ago and accumulated fewer citations. When that survey presenter also refers to survey sources (i.e. R_i^{ref}) that are published many years ago and accumulated fewer citations, then that survey presenter receives lower values for both R_i^{self} and R_i^{ref}.

Attention points: any selection made purely based on the plot would disregard uniqueness of each survey presenter. Therefore, we recommend to not select survey items solely based on the plot. The plot is simply a graphical overview of all survey presenters relative to each other. Another point of attention is that recently published work has a smaller chance of receiving as many citations as their seasoned counterparts. This may be disadvantageous for recent work, while they may present a considerable improvement upon conventional work and convey new insights. Therefore, we recommend to manually examine each survey presenter carefully.

Step 4: Manually select a set of survey items from the pool of survey presenters

A set of survey items can be selected in two sequential steps. First, determine which survey presenters have the largest distance from the plot's origin. Secondly, start with the survey presenter identified in step one and continue to manually assess the applicability of all survey presenters till the plot's origin is reached.

When the origin is reached the scholar can face one of three situations. First, a single appropriate set of survey items has been found. Second, the scholar has to choose between multiple favorable candidates. Third, no appropriate a set or combination of sets has been found. An overview of our manual selection procedure is presented in Figure 1. For each assessment, we recommend to match each set of survey items to one's research objectives as mentioned by Stone (1993).

In the *first* situation we recommend to select the favorable set of survey items that was identified during the manual assessment.

In the *second* situation the scholar could face two additional situations: (1) the sets of survey items are largely the same and (2) the sets of survey items are largely different from each other. In the situation where the survey items are largely the same we recommend to select the survey presenter that has the largest distance from the origin and select their survey items. In contrast to the survey presenter that is located close to the plot's origin, the survey presenter with a large distance from the plot's origin might have withstood the test of time. The scholar could use the plot to justify this selection. In the situation where the survey items differ from each other, we recommend to combine the favorable sets of survey items to create a new set of survey items. Several scholars in the information systems (IS) field adopted this method (Aral and Weill 2007; Lu and Ramamurthy 2011; Ravichandran and Lertwongsatien 2005). However, by combing two sets of survey items into one measurement instrument, scholars must be aware that the psychometric properties of the original instrument could change.

In the *third* situation we recommend to create new survey items. When existing sets of survey items or combination of sets cannot be reused, for instance because the focal construct is novel, one can opt to create new survey items.

Attention points: Studies that do not present their survey sources and studies that created their own survey items but have not (yet) been cited by peers, require special attention during manual assessment. In both cases these survey sources receive a value of zero for R_i^{ref}, but could still convey relevant knowledge.

Furthermore, even though survey items are reused, we still recommend to compare the reliability and validity of the reused items with the original survey items and pre-test each set of survey items before inclusion. For literature regarding pre-testing survey items we refer to the work of Hak et al. (2004).

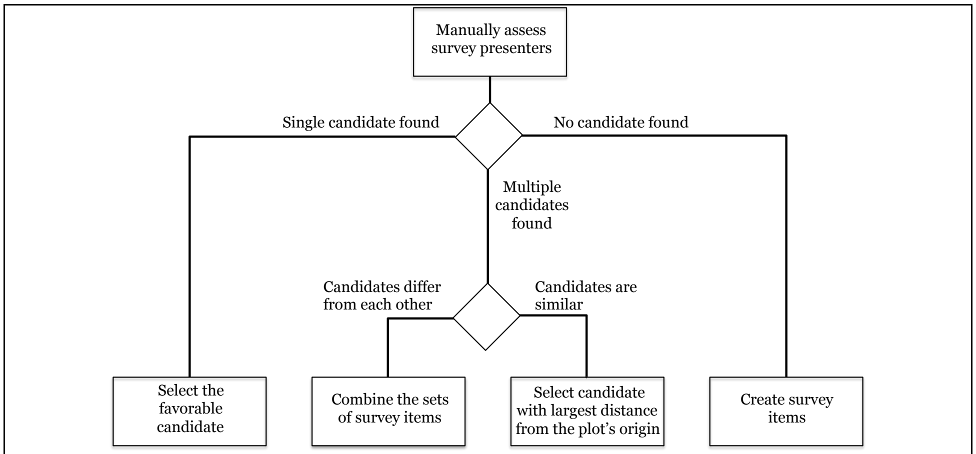

Figure 1. Decision tree during manual assessment.

Application

To test our four-step selection procedure we provide an example by operationalizing information technology (IT) capability. The goal of this application is twofold. First, systematically select a set of survey items for existing studies. Second, justify our choice of selection.

For this application we follow the definition provided by Bharadwaj (2000), who defined IT capability as the way an organization deploys and leverages IT in conjunction with other resources. In general, studies that conceptualize IT capability often include *IT management* and *IT infrastructure* (Chen et al. 2014; Fink 2011; Kim et al. 2011). Hence, we also utilize these two concepts to operationalize IT capability.

Step 1: Collect existing studies that operationalize the focal construct

To operationalize IT capability, we searched EBSCO on 'subject' and 'title' search. Studies that were included operationalized IT management and or IT infrastructure and adhered to two criteria. First, each study had to include a survey. Recall these studies are referred to as *survey presenters*. Secondly, when the survey presenters explicitly stated their sources used to operationalize 'IT management' and or 'IT infrastructure', these sources were also collected. Recall that these sources are referred to as *survey sources*. Based on these two criteria we selected 13 studies. Six studies operationalized IT infrastructure and seven studies operationalized IT management.

Step 2: Calculate the rating of the survey presenter and survey sources

All ratings of the six studies that operationalized IT infrastructure and seven studies that operationalized IT management are presented in appendix A. In our operationalization of IT capability, we were not confronted with the situation that a survey presenter was also labeled as survey source. In this situation, a study is both a survey presenter and a survey source and the calculation remains the same.

Step 3: Plot the ratings of all survey presenters

The ratings of survey sources (R_i^{self}, R_i^{ref}) presented in appendix (Table 4) are used as coordinates in Figure 2. This figure depicts the ratings of survey presenters that operationalize IT management and IT infrastructure separately.
Recall that a study receives a high rating (i.e. R_i^{self}) when they were published relatively recently, while at

the same time accumulating many citations. An example thereof would be Ravichandran and Lertwongsatien (Figure 2). Compared to other studies that operationalized IT infrastructure, Ravichandran and Lertwongsatien accumulated many citations in a short period of time.
An example of a study that receives high ratings for both R_i^{self} and R_i^{ref} is Lu and Ramamurthy (Figure 2). Compared to other studies that operationalized IT management, Lu and Ramamurthy and their survey sources accumulated many citations in a short period of time. Conversely, studies plotted near the origin, received lower ratings (i.e. R_i^{self}) and also relied on survey sources with low ratings (i.e. R_i^{ref}) (Figure 2).

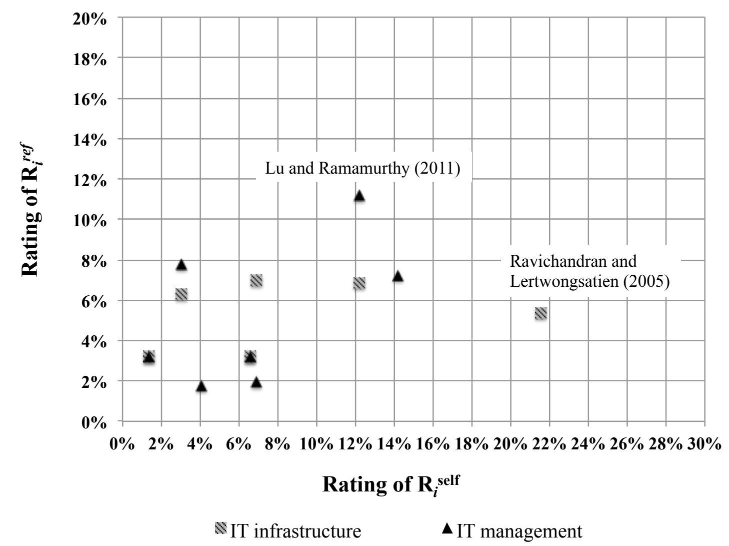

Figure 2. Plotting the ratings of survey presenters (R_i^{self}, R_i^{ref}).

Step 4: Manually select a set of survey items from the pool of survey presenters

After manual assessing all survey presenters we found a single set of survey items for each sub-construct. We selected the survey items presented by Ravichandran and Lertwongsatien (2005) and Lu and Ramamurthy (2011) for IT infrastructure and IT management respectively. Table 3 provides an overview of the ratings per survey presenter. All detailed ratings can be found in appendix A.

The actual set of questions selected to operationalize IT infrastructure can be found in Ravichandran and Lertwongsatien (2005, p. 270). The actual set of questions selected to operationalize IT infrastructure can be found in Lu and Ramamurthy (2011, p. 954).

Survey presenters	IT capability sub-construct	Rating survey presenter	Rating survey sources
Ravichandran and Lertwongsatien (2005)	IT infrastructure	22%	5%
Lu and Ramamurthy (2011)	IT management	12%	11%

Table 3. Example results - selected survey presenters for survey development.

Discussion

The goal of our procedure is to facilitate (1) survey item selection when one can choose from a myriad of items and (2) justification of the selected survey items. By applying this procedure scholars can provide more insight to their peers regarding their survey design.

However, no procedure should be applied without caution. There is no absolute 'right' or 'wrong' for choosing one set of survey items above another. As mentioned, our procedure merely facilitates the justification of the selection process. In addition, one could examine the construct definitions provided by the survey presenters and check whether they are in accordance with one's own definitions.

The current sample size of 13 studies might be too small to fully test the intricacies of the prescribed procedure. Although the sample size might be small, we believe this study can serve as a first step towards justified survey item selection.

The rating used to calculate the scores of both the survey presenters and survey sources is based on citations received and age of the study. The rating might be inflated due to self-citing (Meho and Yang 2007). Citation counting does not take the 'sentiment' of the citation into account. For instance, when an article is cited often for being wrong, its importance can be misleading (Neylon and Wu 2009). We believe that the last step in our procedure, the manual assessment, corrects for this issue.

Future research could improve the context of each reference with a weighting scheme per survey source. For instance, there might be quality differences between journal articles, workshop articles, conference articles and dissertations.

Furthermore, other scholars might consider alternative metrics to replace the number of citations. Nevertheless, our four-step selection procedure remains applicable. For instance, the citations could be replaced by the five-year mean impact (FYMI) factor calculated by the Association of Business Schools (ABS 2010). The rating of a study (R_i^{self}) could then be explained by reasoning that high-impact journals attract high quality contributions. Though the FYMI factor evades self-citing, it may suffer from cronyism (Meho and Yang 2007).

The sample of this study may limit the generalizability of this study. We only included papers from the IS domain into this study. Testing this procedure outside the IS domain can provide us with a richer understanding. Since the use of surveys is not limited to the IS field, we encourage researchers from other fields to expand upon this study.

Despite the threats to validity, we lay down an initial procedure for selecting survey items when one could choose from a myriad of items. Ultimately, this may lead to a hardened and robust procedure that will facilitate scholars with selecting and justifying their survey items.

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Appendix A – Example results

When a survey presenter relied on multiple survey sources, the ratings of the survey sources are presented in percentages on the same row. For instance, Kim et al. (2011) relied on three survey sources to operationalize IT infrastructure. The survey sources are shown in the column *Survey sources* and are presented as numbers within prentices. Each prentices is explained below Table 4.

Sub-constructs	Survey presenters that refer to survey sources		Survey sources are reused by survey presenters	
IT infrastructure	*Survey presenters*	R_i^{self}	*Survey sources*	R_i^{ref}
	Chen et al. (2014)	7%	(1), 3%	3%
	Fink (2011)	3%	(2), 6%	6%
	Kim et al. (2011)	7%	(3), 7%, (4), 6%, (5), 8%	7%
	Lu and Ramamurthy (2011)	12%	(1), 3%, (6), 11%, (2), 6%	7%
	Ravichandran and Lertwongsatien (2005)	22%	(7), 10%, (4), 6%, (8), 0%	5%
	Zhang et al. (2013)	1%	(1), 3%	3%
IT management	*Survey presenters*	R_i^{self}	*Survey sources*	R_i^{ref}
	Aral and Weill (2007)	14%	(9), 6%, (10), 8%	7%
	Chen et al. (2014)	7%	(1), 3%	3%
	Fink (2011)	3%	(5), 8%	8%
	Kim et al. (2011)	7%	(11), 3%, (12), 2%, (13), 4%, (14) 0%, (15), 1%, (16), 2%, (17), 3%	2%
	Lu and Ramamurthy (2011)	12%	(1), 3%, (18), 19%	11%
	Wang et al. (2012)	4%	(19), 2%	2%
	Zhang et al. (2013)	1%	(1), 3%	3%

Table 4. Ratings of both survey presenters (R_i^{self}) and survey sources (R_i^{ref}) are presented in percentages.

(1) Bharadwaj et al. (1999), (2) Weill et al. (2002), (3) Broadbent et al. (1999), (4) Duncan (1995), (5) Byrd and Turner (2000), (6) Ross et al. (1996), (7) Armstrong and Sambamurthy (1999), (8) Ravichandran and Lertwongsatien (2000), (9) Rockhart et al. (1996), (10) Weill (1992), (11) Boynton et al. (1994), (12) DeSanctis and Jackson (1994), (13) Karimi et al. (2001), (14) Li et al. (2003), (15) Ryan et al. (2002), (16) Sabherwal (1999), (17) Segars and Grover (1999), (18) Mata et al. (1995), (19) Tiwana et al. (2003).