

# IMPORTANCE OF LITERATURE PROFILING: AN ARCHIVAL ANALYSIS WITH ILLUSTRATIVE EXAMPLES FOR IS RESEARCHERS

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## Abstract

*The importance of a thorough and systematic literature review has long been recognised across academic domains as critical to the foundation of new knowledge and theory evolution. Driven by an exponentially growing body of knowledge in the IS discipline, there has been a recent influx of guidance on how to conduct a literature review. As literature reviews are emerging as a standalone research method in itself, increasingly these method focused guidelines are of great interest, receiving acceptance at top tier IS publication outlets. Nevertheless, the finer details which offer justification for the selected content, and the effective presentation of supporting data has not been widely discussed in these method papers to date. This paper addresses this gap by exploring the concept of 'literature profiling' while arguing that it is a key aspect of a comprehensive literature review. The study establishes the importance of profiling for managing aspects such as quality assurance, transparency and the mitigation of selection bias. And then discusses how profiling can provide a valid basis for data analysis based on the attributes of selected literature. In essence, this study has conducted an archival analysis of literature (predominately from the IS domain) to present its main argument; the value for literature profiling, with supporting exemplary illustrations.*

*Keywords: Systematic literature review, profiling, archival analysis, sampling of literature papers.*

# 1 INTRODUCTION

A comprehensive literature analysis can result in a detailed understanding of the status of a research field. It is recognised that the rigorous review of literature is an important scientific task (Bandara, Furtmuller, Gorbacheva, Miskon, & Beekhuyzen 2015) as “*new knowledge is often created in the process of interpreting and combining existing knowledge*” (Vom Brocke et al. 2009, p. 3). This can be a complicated and challenging activity (especially for novice researchers); “*much like a jigsaw puzzle*” (Beekhuyzen 2008, p. 1). The progression of domain knowledge, theory maturation, and the emergence of future research themes are just three of the expected outcomes of a comprehensive literature review (Webster & Watson 2002). Extracted prior studies can be further analysed and presented with the aim of painting a more vivid picture about the status of the topic area’s research within the selected scope (Bandara, Miskon, & Fielt 2011).

Literature can be analysed in various ways as demonstrated by Booth, Papaioannou, and Sutton (2012) who present a range of approaches, terms and philosophical lenses to reviewing literature (Bandara et al. 2015). In all types of literature reviews, providing some details of the sample of papers included is critical, and we argue for this to be a core area that should be included in the results and presentations of all literature reviews (in IS and other domains). This approach is often referred to as ‘literature profiling’ which is viewed as “*a useful activity as it helps the identification of major research issues and paradigms*” (Mustafee, Katsaliaki, & Taylor 2010, p. 544) and it “*should augment, not replace, the traditional literature review*” (Porter, Kongthon, & Lu 2002, p. 353). This study is aligned with the definition provided by Porter et al. (2002, p. 1) who state that research profiling is the “*broad scan of how contextual literature can extend the span of science by better linking efforts across research domains. Topical relationships, research trends, and complementary capabilities can be discovered, thereby facilitating research projects*”. Profiling is applied by analysing and interpreting the meta-data pertaining to the article itself (such as the year and place of publication) in tabular or graphical form. Strong profiling supports the creative and critical analysis of data and data displays which are key elements in data comparison and the identification of important and accurate patterns and themes (Whittemore & Knafl 2005). Profiling will progress the passive nature of a literature review to become an “*active means of generating and refining new ideas and concepts on which to conduct research*” (Bragge, Relander, Sunikka, & Mannonen 2007, p. 1).

Literature profiling can help in creating a vivid picture from the pool of included papers, and brings multiple benefits. A literature review can be considered a standalone research method (Fink 2010). Thus, just as one expects to have transparency of the sample of other methods (i.e. details of the sample in a survey and/ or case study and respondent selection in a case study etc.), it is natural to expect that studies based on literature reviews will also vividly describe the sample they have included. This provides quality assurance, transparency and the mitigation of selection bias (Galliers & Whitley 2007). Literature profiling can be completed across multiple perspectives using different attributes of the included papers. These alone can assist researchers to visualise trends and patterns. For example, looking at the author and co-author network which helps illustrate the various geographic regions and academic institutions interested in a particular research domain. Publication attributes can also be used in the analysis to dissect the overall sample into interesting strata’s to seek different views and patterns. For example, based on publication year of published papers, one may be able to identify when different themes appeared (or disappeared); this demonstrates the thematic development and trends of the topic area of interest.

The aim of this paper is to highlight the need for profiling of the sample of papers in all literature reviews, and to provide detailed guidance through illustrative examples on how to do so. For this, the researchers use a literature review approach themselves, where prior literature review publications from a pre-defined scope of reputed IS outlets have been selected as the core data set for this study. The researchers have investigated ‘what’ and ‘how’ selected papers report on literature profiling, and present their findings with four main observed categories. This paper provides a list of different aspects to consider in literature profiling efforts, with pointers to references and vivid examples from prior publications.

In the remainder of this paper, the overall literature review approach designed and executed for this study is presented, including an introduction of the methodology applied for this research and the tools that were used within these steps. Following this, the findings on literature profiling are presented with a discussion of the different profiling approaches uncovered across the captured literature. Finally, this paper concludes with a discussion on the limitations of this study and an outlook to future research.

## 2 RESEARCH APPROACH

A staged, iterative archival analysis approach as summarised in Figure 1, was designed and executed here.

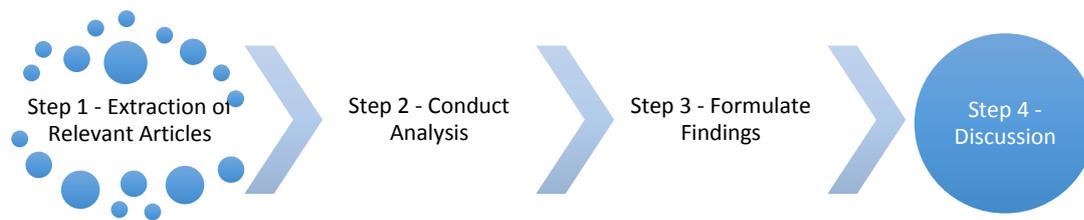


Figure 1. Staged approach to this study

### 2.1 Step 1 – Extraction of Relevant Articles

Step 1 is primarily concerned with searching for and the extraction of relevant papers, which took place in multiple iterations. Due to the aim and scope of this study, the papers selected here were extracted from the ‘Senior Scholars Basket of Eight’<sup>1</sup> journals and the Association for Information Systems (AIS) electronic library (AISEL<sup>2</sup>) of scholarly publications. The Association for Information Systems (AIS) is an international professional organization serving as the premier global organization for academics specializing in Information Systems, and its electronic library is a central repository for research papers and journal articles relevant to the Information Systems academic community. These literature sources are considered the most relevant publications in the IS field. The search commenced with the Basket of Eight journals and then extended to the AISEL.

In order to return papers that can be classed as a literature review, and not result with papers with just a literature review as part of a broader paper, the search was conducted using keywords only. Initially, a keyword search was performed on the phrase “literature review”. As the core area of interest for this study was on how literature reviews reported on the sample pool of papers’ characteristics (the profiling of the literature they report on); an additional search with the terms ‘research profil\*’<sup>3</sup> OR ‘profile’ OR ‘meta review’ was used when searching in the target outlets (Basket of Eight journals and AISEL). Note that the search only included English language articles published between the years of 2010 and 2015 (inclusive). This time span was selected in this initial search round, to maintain feasibility and gather the most recent publications as the starting point of this search strategy (which was later on extended with backward referencing). 143 papers were extracted here.

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<sup>1</sup> See <http://aisnet.org/?SeniorScholarBasket> for further details (last accessed on Feb 28, 2015). The journals listed here include *European Journal of Information Systems*, *Information Systems Journal*, *Information Systems Research*, *Journal of the Association for Information Systems*, *Journal of Management Information Systems*, *MIS Quarterly*, *Journal of Strategic Information Systems*, and *Journal of Information Technology*.

<sup>2</sup> See <http://aisel.aisnet.org/> - for further details (last accessed on Feb 28, 2015).

<sup>3</sup> The asterisk symbol ‘\*’ used in the Boolean keywords of the search string combination allows for the inclusion of derivatives in the search criteria. This was done for a more robust search and to gain a better picture of what profiling is.

## 2.2 Step 2 – Conduct Analysis

Step 2 is dedicated towards the design and conduct of the analysis. The researchers needed to have a clear understanding of what literature profiling is before they could commence their analysis ('literature profiling' as per this paper is defined in Section 1 above) and devise a way to extract the relevant content from the pool of papers captured. The analysis took place in an inductive manner, where each paper was read and examples of literature profiling was extracted by two researchers. Duplicates and non-relevant articles were removed.

The researchers followed two rules while checking for relevance:

- Articles which qualified for this study had to be a standalone literature review article and not contain only a mere 'Literature Review' section within the paper, and
- The paper needed to present at least one profiling aspect as part of their findings/reporting.

Only publications, which met these conditions, were retained for further analysis and numerous papers were excluded because they did not conform to the rules mentioned above. On this basis, a total of 63 articles were selected from the original pool of 143 papers.

Following Leedy and Ormrod (2001), the researchers also looked at including additional papers that did not fall within this main search strategy. These were sourced by backward searching from the extracted papers and also from peer recommendations (after discussions and presentation of this study seeking further feedback from IS researchers), and were included only after a relevancy check conducted by at least two coders in the research team. A total of 12<sup>4</sup> papers were added to the original data set and included papers such as; Whitley and Galliers (2007) (which was included from backward searching of extracted papers) Lacity, Khan, Yan, and Willcocks (2010) (which was peer recommended). A final set of captured papers included in the analysis totalled to 75<sup>5</sup>. Figure 2 illustrates the number of relevant articles extracted from this search strategy.

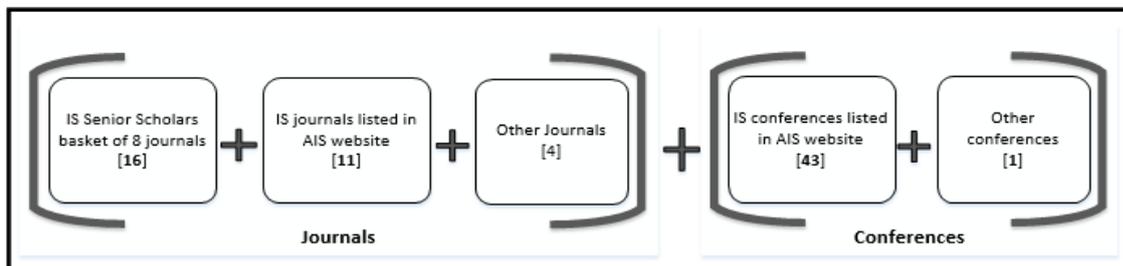


Figure 2. Number of papers and originating sources

Guidelines were created to define the research procedures for the extraction, analysis and presentation of the study results. The researchers (at least two at all times) validated these results by crosschecking each other's work against the rules defined above. Results from **Steps 3 and Step 4**; Formulate Findings and Discussion are presented in the next section.

## 3 FINDINGS

The content of each paper was reviewed one by one; the researchers compiled a list of different profiling techniques found in the pool of 75 papers. These were then grouped based on similarities observed in the meta data used, to form the categories reported herein.

<sup>4</sup> These include papers from Basket of Eight Journals (5), AISeL website (1) and others (6) comprising of journals and conferences not part of the IS Basket of Eight and AISeL (e.g. The Database of Advances in Information Systems), yet relevant and within the IS domain and/or highly cited by IS papers.

<sup>5</sup> The complete list of 75 papers has not been included in the reference list due to space constraints, and can be obtained from the authors on request.

It was evident that approaches to literature profiling can be predominantly grouped into four categories with a focus on 1) Authors (for example, most popular Authors); 2) Dissemination (for example, most popular publication outlet; conference or journal); 3) Article Meta-Content (for example, number of articles based on a research method); or 4) Citation (for example, the most cited authors or publications). Hence, the researchers have grouped these different literature profiling approaches under these four broad categories: Author specific, Dissemination specific, Article meta-content specific and Citation specific; refer to Tables 1, 2, 3 and 4 below. These categories provide varied perspectives on the interpretation of ‘literature profiling’. It is worthwhile noting that even though the approaches have been divided into four individual categories, they can also be applied in any combination to support the underlying research questions (see Section 3.5 ‘Complex Profiling’).

Figure 3 below, displays the breakdown of all the literature profiling approaches identified across the four categories mentioned earlier. Based on the pool of identified papers (75 in total), some statistics have been provided to demonstrate the distribution of these papers across the different sub/categories; refer to Figure 3. Kindly note: that some of the articles are used in multiple categories as they mention more than one profiling aspect. Classification of articles; by Research Methods/Design/Approach (36%), by Outlet (27%), and based on Topic/Sub-Topic (25.3%) were the top three (sub)/categories of profiling observed in the pool of IS literature included in this study.

Further developing this analysis; Tables 1, 2, 3 and 4 below, detail the various profiling techniques identified from the pool of 75 papers under review for this study. The first column, “Profiling technique”, presents the unique profiling technique applied for that category (Dissemination, Author, Article meta-content and Citation) across the pool of articles. The second column “Technique Description” provides a brief explanation of the applied profiling technique. The third column lists example publications where the particular techniques have been applied<sup>6</sup>. The final column “% used” calculates the percentage of the total articles that utilise these specific profiling approaches [% Used = Number of articles with the specific profiling aspect / Final number of articles selected \* 100 (these are rounded to the nearest 10)].

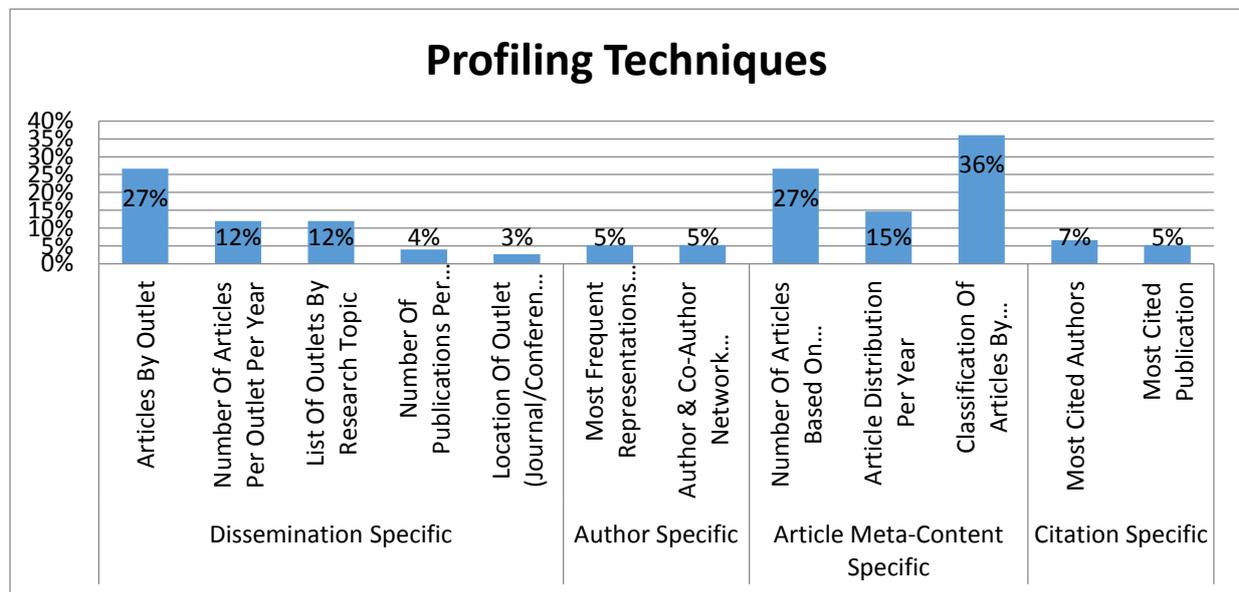


Figure 3. Distribution of different Profiling Techniques

<sup>6</sup> Only selected examples are listed here, due to space constraints- a full table that maps all 75 papers across these categories can be obtained from the authors on request.

### 3.1 Dissemination specific profiling techniques

A publication outlet can be considered as one of two sources. First, it can be related to a *specific outlet* that consists of domain-specific journals (such as CAIS, MISQ, EJIS), academic conferences (such as PACIS, ICIS, ECIS) or Industry professional non-peer reviewed sources (such as Gartner, APQC, BP Trends). The second publication source relates to academic research *databases* in which the journal/conference papers are hosted (such as AISEL, Pelgrave Science Direct). A list of dissemination specific literature profiling techniques as reported in prior IS studies are displayed in Table 1 below.

Dissemination Profiling Technique Applied	Technique Description	Example studies which apply this technique	Frequency across dataset
1 Frequency (count) and percentage of literature published at a specific outlet	This provides the reader with statistics on the outlets that have published articles for a specific research topic	Bengtsson and Ågerfalk (2011, p. 99) Pouloudi, Poulymenakou, and Pramataris (2012, p. 349) Cao, Chang, Yu, and Yang (2014, p. 472)	27%
2 List of outlets by research topic	Highlights which outlet published the most amount of articles pertaining to a particular research topic.	Cao et.al. (2014, p 471) Berger, Klier, Klier, and Probst (2014, p. 150) Tarrell et al. (2013, p. 4)	12%
3 Number of publications per database	Provides the reader with the number of publications returned from each database	Hänel and Felden (2011, p. 5) Horita, Degrossi, de Assis, Zipf, and de Albuquerque (2013, p. 7) Najaforkaman and Ghapanchi (2014, p. 6)	4%
4 Number of articles per outlet per year	The number of relevant articles published by an outlet per year	de Vaujany, Walsh, and Mitev (2011, p. 401) Matavire and Brown (2013, p. 125)	12%
5 Location of Conference	Physical location of a conference by Country	Whitley and Galliers (2007, p. 443) Galliers and Whitley (2007, p. 26)	3%

Table 1. *Dissemination Specific Literature Profiling Techniques*

As presented in Table 1, this study has uncovered five different profiling techniques that are dissemination specific. The first technique highlights the popularity of a particular outlet (journal, conference) as it provides the total number of relevant articles per outlet. When researching for a particular topic, it is easy to identify which outlets to target as this allows a researcher to see which outlets publish articles on a certain research topic. This can present an opportunity for certain outlets to expand their publication base. For example, Bengtsson and Ågerfalk (2011, p. 99) provide the distribution of the number of articles retrieved from various journals and conferences along with the number of relevant articles pertaining to the research topic in a table format. Pouloudi et al. (2012, p. 349), focus mainly on data for one journal (MCIS) and they use a tabular format to show the popular research topics of interest to the Mediterranean IS research community. They also display each research topic by year and a total and percentage to show which ones ranked the highest. Cao et al. (2014, p. 472), focus on Internet Finance Journals and use a table to demonstrate the most popular research topics in a pool of 74 articles reviewed. According to Pouloudi et al. (2012, p. 349): “*The rationale for their profiling was to identify the main focus of research interest in MCIS published works and, through this, trace potential differentiations in the priorities set in the Mediterranean research agendas*”. Cao et al.’s (2014) main aim was to “*summarize the current domestic research progress and trends...*”. This type of profiling helps identify topics, which have had the most publication and identify gaps of where the future research focus can be directed.

The second technique lists the number of outlets that publishes articles on a specific research topic. This provides the researchers with a list of the most relevant outlets to focus on within a particular research domain. For example, Cao et al. (2014, p 471) use a table to demonstrate the number of

articles published based on a research area by a particular journal. Tarrell et al. (2013, p. 4) use a graphical representation to show how many publications were available for a research topic by different journals and conferences. This can be used to show the broad interest of the research topic across the IS and IS-related research communities. This type of profiling can also help identify which outlets are preferred for a particular research topic and the outlets where the research is not yet established (Berger et al. 2014, p. 150) so researchers know which outlets to target.

The third technique groups the number of articles retrieved from various databases (e.g. Proquest, AISEL) based on a research topic. This helps to demonstrate trends amongst the different outlets and databases as to the distribution and publication of a particular research topic, and gives an indication on which outlets (databases and their subscribed sources, and disciplines) their topic of interest has (or has not) received interest/ support. For example, Hänel and Felden (2011, p. 5) display a table of the total number of articles retrieved from each of the databases along with various search strings used. Horita et al. (2013, p. 7), use a table to show how many papers were found under each database. They also showed the number of relevant papers by research area and a percentage of both total and number of papers used.

The fourth technique allows the researchers to view a list of articles per outlet per year. This helps in analysing trends amongst the different outlets for a given timeframe. For example, de Vaujany et al. (2011, p. 401) present the number of investigated articles per year from two leading IS journals MISQ and EJIS between 2003 and 2009, as a bar chart. This helps the authors “*check historical imprint against recent publication*” (de Vaujany et al. 2011, p. 401). Matavire and Brown (2013, p. 125), use a table to demonstrate the number of articles by an outlet over a period of 13 years. They then use a figure to show the breakdown of the number of papers per year for the same duration.

The fifth identified technique allows the researchers to highlight specific geographical trends of conferences. Whitley and Galliers (2007, p. 443), present a table of ECIS conference locations by year to highlight that certain locations were selected in order to bring the European community together and promote international exposure.

### 3.2 Author specific profiling techniques

Table 2 presents Author specific literature profiling techniques, which focus on reporting aspects of Author meta-data.

Author Profiling Technique Applied	Technique Description	Example Literature Reviews which apply this technique	Frequency across dataset
1 Author & co-author networks	Details of the Authors and their Institution affiliation and location	Truex, Cuellar, Takeda, and Vidgen (2011, p. 428) Pouloudi et al. (2012, p. 351)	5%
2 Author publications based on country/region	Displays the Country origin of research and publication activity.	Stein, Galliers, and Whitley (2014, p. 6 & 7) Pouloudi et al. (2012, p. 351) Najaforkaman and Ghapanchi (2014, p. 8) Coursaris and Bontis (2012, p. 3)	5%

Table 2. Author Specific Literature Profiling Techniques

Two specific literature profiling techniques which utilise Author related information were identified during the analysis phase.

The first technique helps the researcher and reader understand the co-authorship network. This can show how authors from different countries/regions have worked together towards the same research topic. This will also show how authors have been cited, and how new(er) work is based on prior work. This number may include some duplicate counts corresponding to authors who have published multiple papers. For example, Truex et al. (2011, p. 428) explored the academic social network. They collected the author and co-author data to help identify the top 10 researchers, which was then

mapped using a mapping tool, Pajek<sup>7</sup>. Truex et al. (2011, p. 427) also use a table to show the number of times an author has co-authored to show a list of most popular co-authors. This technique can show researchers the close-knit community of authors who have worked together, giving them insights into where they may reach out when seeking academic collaborators or expertise in the topic.

The second technique helps demonstrate which regions are most prominent in a particular research area. Since this is based on the main authors' country, this number may include some duplicate counts corresponding to authors who have published multiple papers. Stein et al. (2014, p. 6 & 7) look at the top four contributing nations based on a research topic. This helps highlight the country where the majority of the authors have come from or where a topic has or has not yet geographically penetrated. This also emphasises trends between various geographical regions, those that focus on journal publications as opposed to those that focus on conference proceedings. Pouloudi et al. (2012, p. 351), focus on the trend of author communities that participated in MCIS between years 2006-2011. The authors present a table consisting of countries of primary author's academic institutions that participated in MCIS from 2006 to 2011. Their aim was to highlight the growth in participation of non-Mediterranean academic institutions. Najaforkaman and Ghapanchi (2014, p. 8) present the percentage of research papers authored in different continents as a pie chart. This highlights the most prominent geographic regions that published papers on Electronic Medical Record systems.

### 3.3 Article Meta-Content specific profiling techniques

In the context of this study, article meta-content captures information about the details within an academic or professional published article (see Table 3).

Article Meta-Content Profiling Technique Applied	Technique Description	Example Literature Reviews which apply this technique	Frequency across dataset
1 Publications classified by research method	This categorises papers based on the various methods or frameworks applied	Bengtsson and Ågerfalk (2011, p. 100) de Vaujany et al. (2011, p. 404) Fielt, Bandara, Miskon, and Gable (2014, p. 1024)	36%
2 Number of Articles based on Topic/sub-topics/categories	Publications are categorised based on the topic or sub-topic (can also be themes) they report on. They are displayed using frequencies or percentages.	Merschbrock and Munkvold (2012, p. 214 & 215) Pouloudi et al. (2012, p. 348) Yang and Tate (2012, pp. 45 - 47)	27%
3 Article distribution/year	Lists the number of articles published per year	Hänel and Felden (2011, p. 6) Niehaves and Plattfaut (2010, p. 5) Yang and Tate (2012, p. 45)	15%

Table 3. Article Meta-Content Specific Literature Profiling Techniques

The first technique categorises the resources based on the type of research method used in the target papers. These are primarily based on pre-defined frameworks. For example, Fielt et al. (2014, p. 1024), categorise the extracted papers into various research methods that have been applied in IS literature reporting on shared services by utilising the classification framework developed by Chen and Hirschheim (2004) along with other frameworks used for sub-categorisation. *“The purpose was to ascertain the nature of the research by deriving a descriptive overview of the reported research approaches in the IS shared services literature, as well as to build a point of reference for future research on the topic when authors seek examples and justifications for their selected approaches and their design”* (Fielt et al. 2014, p. 1023). Similarly, de Vaujany et al. (2011, p. 404) use method descriptions by Choudrie and Dwivedi (2005), which was derived from a method framework

<sup>7</sup> Pajek is a program, for Windows, for analysis and visualization of large networks.

developed by Orlikowski and Baroudi (1991), that has been applied to articles about IT adoption from various journals. This is represented in the form of a bar graph.

The second technique provides the reader with some overview statistics on the number of relevant articles available for a particular research topic. Certain papers explore a research topic through various sub-topics, to provide the reader with a better understanding of the breakdown of the key elements of a topic. It also helps demonstrate which topics/subtopics have been researched multiple times, thus, classifying them as predominant within the domain. For example, in order to provide an in-depth review of the topic of interest, mapping the profile of Mediterranean IS research, Pouloudi et al. (2012, p. 348), have categorised IS research topics based on predefined classifications by Dwivedi and Kuljis (2008) and Palvia, Pinjani, and Sibley (2007). The aim was to identify the main focus of research interest in published work (Pouloudi et al. 2012). Yang and Tate (2012, pp. 45 - 47) have divided their research topic of Cloud Computing into three broad categories based on the extracted articles. Each category has been further broken down into sub-categories to obtain a better understanding of key areas of research interest and basis for comparison of findings. These have been presented in a tabular format.

The third technique helps the reader by highlighting, with a trend analysis, the number of articles published based on the research topic per year. This can lead to interesting discussions while interpreting the peaks and troughs within these trends. For example, Yang and Tate (2012, p. 45) present the total number of resources per year, between 2008 and 2010, for their topic of research; Cloud Computing, as a graph. They then discuss the possible reasons of the distribution. Niehaves and Plattfaut (2010, p. 5) present the distribution of articles for collaboration in the context of BPM between 1999 and 2008, in a table, to highlight the trends in the published literature.

### 3.4 Citation specific profiling techniques

Table 4 presents citation focused literature profiling techniques, which focuses on reporting aspects of Author and Publication.

Citation Profiling Technique Applied	Technique Description	Example Literature Reviews which apply this technique	Frequency across dataset
1 Most Cited Authors for a research area	Statistics which show how many times an author has been cited	Stein et al. (2014, p. 6 & 7) Truex et al. (2011, p. 427) Whitley and Galliers (2007, p. 445)	5.3%
2 Most cited publications	Lists the publications that have the most citation count	Fischer (2011, p. 8) Gorbacheva (2013, p. 3) Lang, Hall, and Landrum (2010, pp. 5-7)	6.7%

*Table 4. Citation Specific Literature Profiling Techniques*

The first technique simply looks at how many times a particular author has been cited in the research area. This will allow one to easily identify the most popular authors or thought leaders within the research domain. For example, Stein et al. (2014, p. 6 & 7) report on the trend of top cited authors, based on their institutions, over two decades. This helps highlight which authors were popular and what the popular research areas were and also how the research community has evolved. Whitley and Galliers (2007, p. 445), only focused on the ECIS journal and use a table to show how many times an author was cited as well as the number of citations over a period of time.

Similar to identifying the most cited authors, the second technique highlights the most viewed resources pertaining to a research topic. This approach is applied based on the citation count, usually found while searching for resources in search engines such as Google Scholar. This technique helps the reader identify any potential seminal papers and/or thought leaders in a particular research area. For example, Fischer (2011, p. 8) lists the number of resources that have been cited by at least 4 or more other resources, thus strengthening their resource base. Lang et al. (2010, pp. 5-7), use a table to showcase the 25 most cited articles published in the top MIS journals. They also use a graphical

representation of the citations over a period of time. By using such techniques, one can deduce if the field is evolving.

It can be argued that even though citation counts may be helpful in identifying the key resources, it does not necessarily provide a researcher with the entire picture. Those resources published closer to the year of study, even though they are important, may not be cited a large number of times (yet). Lang et al. (2010) state their results “*indicate that articles published in top MIS journals are not citing newer work*” (Lang et al. 2010, p. 7). Perhaps, if the context was changed to identifying “how many times each resource has been cited per year”, it might provide a fair(er) representation. Gorbacheva (2013, p. 3) demonstrates this aspect in her study by grouping publications by journal and lists the average times each journal article was cited per year.

### **3.5 Complex Profiling**

Within the pool of 75 identified papers, the researchers have observed that some of the profiling techniques mentioned in Tables 1-4 were combined together to represent the formulated findings. This style of literature profiling is classified as Complex Profiling within this paper. It is a visual representation (often matrix like) of a combination of multiple profiling techniques, providing a more comprehensive interpretation of the data. Some examples of this profiling technique are briefly discussed below.

Pouloudi et al. (2012) uses a combination of different Dissemination profiling techniques (as described in Table 1). They use a tabular format to show the popular research topics of interest to the Mediterranean IS research community, they also display each research topic by year and a total and percentage to show which ones ranked the highest. Pouloudi et al. (2012) also combine Article Meta-Content profiling techniques as presented in Table 3; where they present the breakdown by the year, along with the research topic, which helps the reader identify the distribution of resources across a timeline.

Gorbacheva (2013, p. 3) uses a table to demonstrate which were the most cited articles within various databases. The table details various relevant articles grouped by Journal name along with the citation count and average citation count per year for each listed article. This table gives a good overview of the extracted articles in relation to the Journal it was published in along with the number of times it was cited. Average citation count per year gives a fair representation of the citation count especially for articles closer to the year of study.

Stein et al. (2014) present an overview of institutions (based on author location) researching selected topics and how they have evolved across two decades. They use a combination of Author profiling techniques (Author publication based on country or region) along with dissemination profiling (Frequency/ count and percentage of literature published in a specific outlet) in a tabular form. According to the authors, “*the trends observed in the most frequent institutions and authors publishing at ECIS suggest some interesting dynamics between ECIS participation and publishing in leading IS journals*” (Stein et al. 2014, p. 6).

## **4 DISCUSSION AND CONCLUSIONS**

The goal of this study was to highlight the importance of profiling in a literature review and to provide some guided examples. We argue that literature profiling is an essential aspect that all IS structured literature reviews must report upon. Literature profiling strengthens the literature review process by identifying major trends and patterns within a research domain. Profiling provides transparency to the reader as well as the researcher by interpreting meta-data and showing what has happened in the field to date. It helps highlight the progression of domain knowledge, support in theory maturation, and help better position emerging future research themes (Webster & Watson 2002).

This study has applied a staged, iterative archival analysis approach to derive its findings, and the research presents how literature extraction, analysis, reporting and interpretation had taken place. The

study findings illustrate how prior IS literature studies have presented profiling aspects, grouping them into four main categories; profiling based on 1) Authors, 2) Dissemination, 3) Article Meta-Content, and 4) Citation. These were further categorised into sub-categories, as depicted in Figure 1 and described herein.

The literature analysis conducted in this research has revealed that over 77% of the articles included in this study, reported on the Article meta-content profiling category (see Section 3.3); 60% of the articles' content contained some form of dissemination profiling (see Section 3.1); and Author and Citation profiling, (each) was observed in 12% of the papers included<sup>8</sup> (see Section 3.2). This demonstrates that the majority of profiling approaches observed in IS literature reviews fall under the article meta-content and dissemination categories. Future studies could focus more on author and citation profiling aspects as these had very little presence observed. By focusing on this, it can help show how authors from different countries/regions may have worked together towards the same research topic. This will also show how the research topic has evolved over time and how authors have been cited, and how new(er) work is based on prior work.

This paper views literature profiling as a key aspect of comprehensive literature reviews. It discusses the need for literature profiling to provide a valid basis for data analysis of the attributes of the selected literature, with supporting exemplary illustrations. It offers a good foundation, especially for novice researchers, on descriptive ways of interpreting meta-data of selected literature.

It is important to note that the categories defined in this paper were based on profiling aspects presented in the pool of 75 identified papers. The researchers acknowledge that literature profiling may not be limited just to the defined categories as positioned in this study. The researchers acknowledge there may be other profiling aspects that have not been addressed in this paper.

Future researchers may elect to broaden the scope of this analysis by including additional search terms, such as “meta-analysis” and “meta-approach”. The research could also be extended to include a 10-15 year time period to make the study more comprehensive. Future work can focus on deriving a clear set of guidelines on how to achieve literature profiling. Further, this study analysed literature profiling techniques only within the IS domain. The research could be further extended to other domains to test and mature the above categories and confirm the results in future work.

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<sup>8</sup> Kindly note: some of the articles are used in multiple categories as they mention more than one profiling aspect.

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