The authorship origins of accounting information systems and emerging technologies research: An analysis of accounting information systems journals

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Abstract. This article examines the authorship origins of accounting information systems (AIS) and emerging technologies (ET) research from 2004 to 2021 in six journals: *Journal of Emerging Technologies in Accounting* (JETA), *Journal of Information Systems* (JIS), *International Journal of Accounting Information Systems* (IJAIS), *International Journal of Digital Accounting Research* (IJDAR), *Accounting Information Systems Educator Journal* (AISEJ), and *Intelligent Systems in Accounting, Finance, and Management* (ISAFM). This study contributes to the understanding of AIS and ET research by conducting a comprehensive analysis of 1,101 research articles published in these AIS journals by authors' employer and doctoral country, employer institutions, doctoral institutions, doctoral disciplines, author type, and by AIS and ET classifications. The aim of this study is to identify the historically most productive and influential countries and institutions in the AIS and ET domain and to discover the educational and professional background of AIS and ET researchers, respectively. The findings of this study provide helpful information for job seekers, prospective Ph.D. students, researchers seeking co-authorship, and those interested in this literature and serve as a valuable supplement to the existing bibliometric analysis of AIS literature.

Keywords: Accounting information systems, emerging technologies, employer institution ranking, doctoral institution ranking, accounting information systems journals.

1. INTRODUCTION

The accounting information systems (AIS) subdiscipline of accounting has been around for many decades. AIS journals first began publishing in the late 1980s. In more recent years, technologies have become an important area of research relating to both AIS and accounting, most significantly starting in 2004 with the first issue of a journal specifically devoted to emerging technologies in accounting, JETA. In addition to JETA, multiple publication outlets share common interest in publishing AIS and emerging technologies (ET) research in accounting over the years (Chiu et al., 2019). Emerging technologies research is identified separately because of the growing importance of emerging technologies in the AACSB accreditation standards for accounting and the continuing frequency with which they are mentioned in the accounting news and upcoming changes in the CPA examination. Emerging technologies are an area of increasing importance within the profession as evidenced by the explicit inclusion of both AIS and ET in AACSB Accounting Standard 5. The recent A5 standard mentions both technology adaptation and also mastery. The standard reiterates the need for both students and faculty to develop technology agility and to engage in continual learning of new technology skills (AACSB 2018).

In addition, the widespread integration of technology across various accounting domains has prompted a growing number of accounting researchers, previously focused on areas such as financial accounting, managerial accounting, and auditing, to cultivate an interest in the realm of AIS and ET. To facilitate these new AIS/ET researchers developing a comprehensive understanding of this field and to recognize the difference between AIS and ET research, our study undertakes an extensive analysis of the authors publishing in AIS journals by employer and doctoral countries and institutions, doctoral disciplines, author type, and by AIS and ET classifications. As AIS is an important and identifiable research discipline that includes several journals with a relatively long collective publishing history, the more we know about where our research discipline and its researchers come from, the better we will understand it.

Specifically, this study examines 1101 articles published from 2004 to 2021 in the following six journals: *Journal of Emerging Technologies in Accounting* (JETA), *Journal of Information Systems* (JIS), *International Journal of Accounting Information Systems* (IJAIS), *International Journal of Digital Accounting Research*

(IJDAR), *Accounting Information Systems Educator Journal* (AISEJ), and *Intelligent Systems in Accounting, Finance, and Management* (ISAFM). These six journals represent major outlets for AIS research, which include well-known international academic publishers (IJAIS and ISAFM), section journals of the American Accounting Association (JIS and JETA), and open-source journals (IJDAR and AISEJ) (Chiu et al., 2019).

A stream of prior literature has analyzed authorship, doctoral program rankings, and faculty research productivity in accounting (Coyne et al., 2010; Stephens et al., 2011; Guffey & Harp, 2014; Hasselback et al., 2012). While AIS is mentioned as one of the topical areas in the broader accounting discipline in Coyne et al. (2010), their analysis includes only one related journal (JIS) and relied on article data from 1990 to 2009. Despite the fact that AIS as a research discipline has been around for at least four decades, no systematic examination of the origins of that body of research has been published, particularly research that identifies and discusses the sources of that broad body of research encompassing both AIS and ET.

Such research exists for other sets of accounting journals and other accounting related research disciplines, most often, the financial and auditing focused journals, or the very few highest ranked accounting journals (Needles, 1997; Prather-Kinsey & Rueschhoff, 2004; Holderness et al., 2014; Kumar et al., 2020; Grossmann et al., 2019). Some studies even target single AIS journals or groups of AIS researchers (Baldwin et al., 2000; Muehlmann et al., 2015; Ardianto & Anridho, 2018; Kumar et al., 2020). However, no studies have examined the authors' employer and doctoral countries, their doctoral institutions and disciplines, employer affiliations, and professional backgrounds comprehensively across all the accounting information systems journals, which are collectively referred to as authorship origins in this study.

Thus, the aim of this study is to develop a comprehensive multi-aspect analysis of the authorship origins with focused emphasis on AIS and ET research in accounting to fill in this gap in the AIS literature. Specifically, this study first classifies the publications in these six journals into AIS and ET articles, and then investigates authors' employing and doctoral degree granting countries to identify the leading countries of AIS and ET research, respectively. Then it analyzes the publication trend over time by country to show how the results evolving throughout time. It also ranks the top employing and doctoral degree granting institutions by historical

productivity and examines the authors' Ph.D. discipline and professional background in AIS and ET areas, respectively.

This study contributes to literature by highlighting the diverse nature of the authorship countries, institutions, and backgrounds of authors. It also identifies employer and doctoral institutions that have historically been most involved in this research domain, which has been largely ignored in the general literature about accounting journals. The results of this study are particularly useful to job seekers, to those looking to identify likely sources of co-authorship, and to those interested in this literature as a whole. It may also be useful to those desiring to pursue a Ph.D. in accounting or AIS, by providing some insight into publications generated by graduates and professors of various doctoral programs over extended periods of time. For the discipline as a whole, it will provide a useful description of authorship in the field in these journals. For institutions, this study's results may be useful for quantifying their contributions to and impact on this field. This study might also be compared and contrasted with similar research on other sets of accounting journals (Coyne et al., 2010; Stephens et al., 2011; Holderness et al., 2014; Atayah & Alshater, 2021). Here, the institutions that have specifically supported accounting information systems and emerging technologies scholarship over an extended period are identified and acknowledged for their important contributions to the field.

The remainder of this paper is organized as follows. Section two summarizes relevant literature and research questions. Section three describes the research methodology. Section four presents the research findings of the authorship origins of AIS and ET literature by country, doctoral institution, employer institution, doctoral discipline, and authorship type. Lastly, section five concludes with a summary of findings and future research opportunities.

2. LITERATURE REVIEW AND RESEARCH QUESTIONS

Bibliometric analysis is a methodology that studies bibliographic data quantitatively (Donthu et al., 2021). It is applied for a wide variety of purposes including the analysis of the scientific community and its structure in a given society to identify core research, geographic centers of expertise, key authors, and their relationships (Okubo, 1997). Such analyses can facilitate researchers understanding and evaluating a domain in which the researcher aims to make a contribution (Greener, 2022). The techniques used for this purpose typically include

the counting of papers with attribution by country, by institution and by author (Okubo, 1997). This study intends to explore such usage of bibliometric analysis in the AIS and ET literature. Therefore, in this section, the relevant literature is reviewed, and the research questions are described.

2.1. Countries and authorship analysis

Prior literature has periodically analyzed the origins of research, countries, and authorship in accounting subfields such as the international accounting area. Needles (1997) examined 768 articles published in the *International Journal of Accounting* by country, author, topic, region, and methods from 1965 to 1996. Among the top ten affiliations that contributed the most international accounting research articles, five are U.S. universities, two are European universities, two are public accounting firms, and one is an Asian-Pacific university. Prather and Rueschhoff (1996) analyzed international accounting research published in U.S. based accounting journals from 1980 to 1993. The analysis of the country of the institution of the authors showed a growing trend in U.S. co-authorship, joint foreign authorship as well as joint U.S./foreign authorship. In 2004, another study conducted by Prather-Kinsey and Rueschhoff examined international accounting research published in 41 U.S. and non-U.S. based academic journals from 1981 to 2000. The study found an increase in joint authorships and specifically in foreign/domestic joint authorships, which contributes to inspiring a broader research perspective in international accounting than single-country joint authorships.

In accounting information systems and emerging technologies literature, Mitchusson and Steinbart (1993) examined the research content, methods, and the most frequently cited authors in the *Journal of Information Systems* in 1986-1991. Muehlmann et al., (2015) analyzed authorship and institutions for research published in the *Journal of Emerging Technologies in Accounting* from 2004 to 2013. The study found a total of 116 researchers contributed to JETA research. These researchers are from 76 different institutions in Australia, Canada, Finland, Greece, Japan, The Netherlands, Portugal, Spain, Taiwan, UK, and the US. Ardianto and Anridho (2018) applied bibliometrics to review 93 AIS articles published in *The International Journal of Digital Accounting Research* and analyzed its contributing authors, contributing institutions, content, and citations analysis from 2001 to 2015. Hutchison et al. (2004) examined the author rank of

the publications in the *Advances in Accounting Information Systems* and *International Journal of Accounting Information Systems* from 1992 to 2003. Twenty years of authorship analysis on *International Journal of Accounting Information Systems* publications shows that researchers from the United States, Australian and Canadian institutions are the predominant contributors (Kumar et al., 2020). In a recent study, Atayah and Alshater (2021) reviewed emerging technologies literature in audit and tax areas indexed in Scopus, and analyzed the countries of publications, top published researchers, top ranked journals, citations and content of the literature from 1989 to 2000. While the origins and authorship have been analyzed in accounting research periodically, limited research examined the origins and authorship of AIS research in multiple journals comprehensively. This study contributes to the AIS literature by filling this gap.

2.2. Doctoral institutions and faculty research productivity analysis

A stream of accounting benchmarking and rankings studies have analyzed faculty research productivity and doctoral programs over the years. The scope of analysis such as journals selection and period of analysis differ in the literature. Coyne et al. (2010) analyzed faculty research productivity based on publication counts in 11 top accounting journals and ranked researchers' current affiliations and accounting doctoral programs from 1990 to 2009. Stephens et al. (2011) ranked accounting doctoral programs based on the volume of research published in 11 top accounting journals by each program's graduates. Hasselback et al. (2012) measured faculty research productivity for accounting doctoral graduates from 1971 to 2005 based on a Best 40 Journals List. Holderness et al. (2014) ranked doctoral programs, institutions, and individual accounting researchers based on accounting education publications from 1990 to 2012. Nuttall et al. (2018) provides citations rankings and benchmarking data for individual accounting researchers by topic and methodology based on publications in 11 top accounting journals from 2009 to 2014.

This line of research provides important and useful resources for faculty, students, and administrators in the accounting discipline, however, the extant literature on accounting doctoral institutions analysis, authorships, and faculty research rankings covers very limited AIS publications. *Journal of Information Systems* is often the only AIS journal included in the index for accounting doctoral program ranking, accounting research productivity, and research topical area and method analysis in

prior studies (Coyne et al. 2010, Stephens et al. 2011, Hasselback et al. 2012, Nuttall et al. 2018, and Barrick et al. 2019).

Compared to the accounting benchmarking literature, AIS faculty research productivity and institution ranking have been analyzed among a smaller scope of prior studies, and the majority of prior research focused on analyzing either one selected AIS journal or earlier research periods. Daigle and Arnold (2000) analyzed AIS research productivity by institution and individual faculty productivity from 1982 to 1998 in 45 information systems journals and accounting journals. Hutchison et al. (2004) examined publications in *Advances in Accounting Information Systems* and *International Journal of Accounting Information Systems* from 1992 to 2003 on multiple dimensions including authorship, employer, and doctoral institutions. There are a few recent articles that focused on bibliometric analysis, doctoral institutions ranking, faculty productivity ranking in AIS and ET areas. Guffey and Harp (2014) ranked faculties, Ph.D. programs, individual scholars, and influential articles based on citations to *Journal of Information Systems* publications. Muehlmann et al. (2015) analyzed top cited publications in *Journal of Emerging Technologies in Accounting* in Google Scholar, Web of Science and Scopus databases. Chiu et al. (2019) provided a more comprehensive content analysis of 681 publications in six accounting information systems journals with emphasis on accounting area, research methods, and its emerging technologies contributions from 2004 to 2016.

Building on prior research, this study extends this important area of AIS/ET literature and contributes to the understanding of the origins of AIS/ET research by analyzing publications in multiple AIS journals including *Journal of Emerging Technologies in Accounting*, *Journal of Information Systems*, *International Journal of Accounting Information Systems*, *International Journal of Digital Accounting Research*, *Accounting Information Systems Educator Journal*, and *Intelligent Systems in Accounting, Finance, and Management* from 2004 to 2021. These six journals have published a wide array of technology-related research in accounting. The focus of JETA is on the applications of emerging technologies and artificial intelligence in accounting. JIS and IJAIS cover a broader scope of research topics on information technologies research in accounting which also includes coverage of emerging technologies articles. Both ISAFM and IJDAR have contributed to emerging technologies research in accounting. AISEJ focuses on publishing

educational research in accounting information systems and emerging technologies. The period of analysis began in 2004 as it marks the start of more serious recognition of emerging technologies research in accounting (Chiu et al., 2019).

2.3. Research questions

The main research questions addressed in this study are as follows:

Country analysis

- RQ1: What is the geographical distribution of the authors who publish in these journals?

- RQ2: Which countries are net importers of researchers and net exporters of doctoral graduates who publish AIS and ET research, respectively, in these journals?

- RQ3: In terms of country, what patterns emerge over time in AIS and ET research, respectively?

Institution analysis:

- RQ4: Which employer institutions generate the most publications in AIS and ET research, respectively?

- RQ5: Which doctoral institutions generate the most publications in AIS and ET research, respectively?

Author background analysis:

- RQ6: How diverse are the doctoral disciplines of authors who publish in these journals and in AIS and ET research, respectively?

- RQ7: How many articles include practitioners as authors in AIS and ET research, respectively?

These research questions are examined through AIS and ET classification, pattern analysis, and ranking analysis by country, doctoral institution, employer institution, doctoral discipline, and authorship.

3. RESEARCH METHODOLOGY

This project begins with the articles published in the six AIS-related journals. These six journals are the principal English-language journals focused on AIS/ET research, ranging from A to C in the Australian Business Dean's Council (2023) journal list. These journal articles include academic theory, scientific study, and educational application. Practitioner and trade journals are excluded from this analysis as they typically lack research oriented or peer-reviewed focus, and consequently, they do not align with the type of publication outlets represented by scientific journals. Furthermore, it is worth noting that most prior related bibliometric studies have exclusively focused on scientific journals.

Article PDFs were manually collected from the journal websites and cross-checked by multiple authors. In this study, research articles were included, but editorials were excluded. The research articles count by journal includes 216 articles from JETA, 359 articles from JIS, 297 articles from IJAIS, 97 articles from IJDAR, 62 articles from AISEJ and 70 articles from ISAFM. This resulted in a total of 1,101 articles.

Article Data

Specific article data includes titles and abstracts as well as all author names and affiliations as published on the articles. Author affiliations provided on the articles were investigated to determine whether the author was an academician, a professional or practitioner, or a student. Some authors fit two categories, for example, practitioner and student.

Author Data

For each individual author, internet searches were conducted to identify whether the author had a doctoral degree at the time of publication and, if so, from which institution. University faculty profiles, Research Gate, ORCID, LinkedIN, ProQuest, WorldCat, and various other websites were used to collect data on authors' doctoral degrees.

Doctoral Disciplines

The author's doctoral disciplines were identified by examining dissertations when possible, using ProQuest Dissertations database and proprietary university dissertation databases. Authors' curriculum vitae, personal and university websites,

and LinkedIN pages were also examined where necessary, including some in languages other than English. While many authors hold a doctorate in business administration or something equally broad, they generally have a major or a further concentration in accounting, AIS, or other specific fields which is made explicit on the dissertation itself or other author-specific information sources located via Google search.

Geographic Data

The author affiliations provided on the articles and the doctoral institutions identified through searches were classified according to the country of the institution or organization. This was accomplished mostly through Internet search of the institution's name. In some cases, further investigation was needed to identify the location as some institutional names are used in multiple countries. The geographical locations of all academic institutions were identified.

Authorships

For the purpose of this study, an authorship is defined as an instance of an author authoring or co-authoring an article. Thus, an article with three co-authors who are from three different countries will result in three authorships (one for each country). We chose not to use weighted authorships as the resulting fractional differences have little meaning in the context of this study, which is focused on countries and institutions. The 1,101 articles included in this study account for 2,768 authorships, meaning, on average, articles tend to have about three authors.

Ranking

Collectively, authorships can be demographically described based on the origins (doctoral institutions, doctoral country, etc.) and the employment (including country) of the authors. The employing institutions and doctoral programs are subsequently ranked according to how many authorships they have generated.

AIS and Emerging Technologies

The rankings of countries, doctoral institutions, and employer institutions are further divided by category into those focused on AIS and those focused on ET in accounting. To achieve this description, the authors skimmed the title, abstract and content of every article to identify any emerging technologies focus. Articles' emerging technologies focus classifications were identified manually and cross-

checked by multiple authors.

Grounded in the definition of emerging technologies in prior literature (Rotolo et al., 2015; Chiu, et al. 2019; Liu et al., 2021), emerging technologies have five attributes: 1) radical novelty, 2) relatively fast growth, 3) coherence, 4) prominent impact, and 5) uncertainty and ambiguity. Research articles studying technologies with all these five attributes are classified as emerging technology (ET) articles. All other articles are classified as accounting information systems (AIS) articles. Examples of AIS articles include those that discuss AIS internal controls, enterprise resource systems (ERP), IT investment or adoption, traditional audit tools, IT risk and compliance, IT governance, performance measurement, accounting software, etc.

The classification and recognition of emerging technologies application in accounting is also consistent with the emerging technologies description of the 2022 Gartner's Hype Cycle[1], a diagram that illustrates examples of emerging technologies and the five-stage cycle of technology adoption (see Appendix A). As technology reaches a steady-state situation and becomes more mainstream and researchers continue to produce papers in that area, the research reaches its mature stage where the field is more crowded and researchers strive to find niches to distinguish their research (Gray et al., 2014)[2].

Data Quality Assurance

All data collected was cross-checked by multiple authors. Whenever the data were unclear, the entire author team discussed the data and then decided how to proceed. The datasets were built using Excel spreadsheets and a serial dating and tracking system was used for file version naming conventions, which were housed on a secure server to which only the authors have access.

Dataset Summarized

In summary, a dataset was created that includes information about each article and information about each authorship. For each article, the data include title, abstract,

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[1] In Gartner's Hype Cycle (2022), emerging technologies fall under three main themes including evolving/expanding immersive experiences (e.g. blockchain, distributed ledger technologies), accelerated artificial intelligence automation (e.g. foundation AI models using text/language models, cloud-hosted machine learning models), and optimized technologist delivery (e.g. continuous monitoring/tracking/analyzing data, cloud sustainability)

[2] Gray, Chiu, Liu and Li (2014) suggests that AIS research topics generally follow the life cycle stages similar to the generic industry life cycle that encompasses several stages including the embryonic stage, growth stage, shakeout stage, mature stage and decline stage (p.427-428).

AIS or ET designation, as well as all the authors' names and affiliations as identified on the article PDF. For each authorship, the data include author's name, affiliation at time of publication, country of affiliation, author's doctoral institution (if any), major discipline (if available), and country location. Given the diverse nature of this dataset, no adjustments were made for changes of employment affiliation or doctoral status after article publication. Thus, the data are temporally stable and do not change over time.

4. RESULTS

This section provides the results of the study and the answers to research questions in the following areas: geographic distribution of authors (RQ1), importer and exporter countries (RQ2), geographic patterns over time (RQ3), employer institution output (RQ4), doctoral program output (RQ5), doctoral disciplines (RQ6), and author types (RQ7).

4.1. Geographic distribution (RQ1)

Since these six journals represent a very international group of authors, editorial boards[3], and publishers,[4] it is not surprising that the authors who have published in these six journals are employed in many different countries and that authors have earned doctorates in many different countries.

These journals have published articles by authors employed in 55 different countries as listed in Table 1. The top three most common countries of employment by authorships are the U.S., distantly followed by Australia and Canada.

The doctoral degrees of nearly 91 percent of the authorships were identified. About 7.5 percent authorships were authors who had not earned doctoral degrees. About 1.5 percent of authorships were attributed to authors whose highest degree could not be identified[5]. The countries in which authors earned doctoral degrees are listed in Table 2 by the number of authorships. The top three countries by authorships are the U.S., Australia, and the United Kingdom.

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[3] For example, the editorial board of IJAIS includes members from 12 countries according to its website at https://www.journals.elsevier.com/international-journal-of-accounting-information-systems/editorial-board
[4] The publishers of these six journals include Elsevier, Wiley, American Accounting Association, AIS Educators Association, and University of Huelva and Rutgers University along with AECA (Spanish Accounting and Business Administration Association).
[5] University faculty profiles, Research Gate, LinkedIn profiles, ProQuest and WorldCat websites were searched for all authors. The highest degree could not be identified through any of the above sources for 1 percent of the authorships.

#	Country	Authorships	#	Country	Authorships	#	Country	Authorships
1	United States	1,859	21	Denmark	10	40	Czechia	2
2	Australia	159	21	Singapore	10	40	France	2
3	Canada	117	23	Korea, South	9	40	Iceland	2
4	United Kingdom	52	24	Iran	8	40	Israel	2
5	Germany	49	24	Qatar	8	40	Jordan	2
6	Spain	49	26	Ireland	7	40	Liechtenstein	2
7	Finland	43	26	Japan	7	40	Slovakia	2
8	China	35	26	Poland	7	40	Thailand	2
8	Italy	35	26	Sweden	7	49	Austria	1
10	Taiwan	32	30	Saudi Arabia	6	49	Fiji	1
11	Netherlands	28	31	Egypt	5	49	Kuwait	1
12	Belgium	26	31	Indoneisa	5	49	Lebanon	1
13	Brazil	22	31	Tunisia	5	49	Libya	1
13	United Arab Emirates	22	34	Ghana	4	49	Malta	1
15	New Zealand	20	34	Switzerland	4	49	St. Lucia	1
16	Greece	19	36	Croatia	3		Total	2,768
17	India	18	36	Mexico	3			
18	Malaysia	17	36	Romania	3			
19	Portugal	16	36	Turkey	3			
20	Norway	11	40	Albania	2			

Table 1. Employer countries of authors (by authorships)

#	Country	Authorships	#	Country	Authorships	#	Country	Authorships
1	United States	1,802	16	India	11	31	Slovakia	3
2	Australia	146		Malaysia	10		South Korea	3
3	United Kingdom	74		Denmark	8		Sweden	3
4	Canada	65	19	New Zealand	8		Bulgaria	2
5	Germany	47	20	Poland	7		Czechia	2
6	Spain	47		Austria	6		Croatia	2
7	Finland	45	22	Portugal	6		Israel	2
8	Italy	32		Switzerland	5		Singapore	2
	Belgium	31	24	France	5	39	Tunisia	2
	Netherlands	30		Japan	4		Jordan	1
	Russia	20		South Africa	4		Lichtenstein	1
12	Greece	17	27	Turkey	4		Malta	1
13	Taiwan	17		Iran	3		Mexico	1
14	Brazil	14		Ireland	3		Philippines	1
15	China	12		Romania	3		Sudan	1
								2,514

Table 2. Doctoral countries of authors (by authorships)

4.2. Importer and exporter countries (RQ2)

Table 3 shows the net importer countries for both AIS and ET research. These countries have more authorships by faculty than authorships by doctoral graduates. This finding suggests that these countries are employing (importing) more doctoral graduates from other countries as faculty at academic institutions than they are educating (and exporting) doctoral graduates.

The largest importer of AIS researchers is Canada with a margin of 31 authorships. On the AIS side, the list includes countries from Asia, Europe, Africa, and North and South America. On the ET research side, the most significant importer is the U.S. followed by Canada, United Arab Emirates, China, and Australia. The list continues with a mixture of European, North and South American, Asian, and Africa countries.

Net Importer Countries of CT Research				Net Importer Countries of ET Research			
Country	Faculty Pubs	Ph.D. Pubs	Diff.	Country	Faculty Pubs	Ph.D. Pubs	Diff.
Canada	63	32	31	United States	924	867	57
China	15	8	7	Canada	54	32	21
New Zealand	13	6	7	United Arab Emirates	18	0	18
Taiwan	13	6	7	China	20	4	16
Norway	7	0	7	Australia	87	77	10
South Korea	7	1	6	Taiwan	19	11	8
Malaysia	11	6	5	Portugal	11	4	7
United Arab Emirates	4	0	4	Brazil	15	9	6
Indonesia	4	0	4	India	16	10	6
Qatar	4	0	4	Singapore	7	1	6
Saudi Arabia	4	0	4	New Zealand	7	2	5
Australia	72	69	3	Ghana	4	0	4
Finland	15	12	3	Italy	30	26	4
Portugal	5	2	3	Norway	4	0	4
Iran	4	1	3	Qatar	4	0	4
Egypt	3	0	3	Sweden	4	0	4
Ireland	3	0	3	Japan	7	4	3
Brazil	7	5	2	Albania	2	0	2
Denmark	7	5	2	Egypt	2	0	2
Singapore	3	1	2	Iceland	2	0	2
Thailand	2	0	2	Iran	4	2	2
Tunisia	2	0	2	Malaysia	6	4	2
Spain	16	15	1	Mexico	2	0	2
Greece	3	2	1	Saudi Arabia	2	0	2
India	2	1	1	Croatia	3	2	1
Liechtenstein	2	1	1	Germany	32	31	1
Fiji	1	0	1	Greece	16	15	1
Jordan	1	0	1	Indonesia	1	0	1
Lebanon	1	0	1	Ireland	4	3	1
Saint Lucia	1	0	1	Kuwait	1	0	1
Libya	1	0	1	Netherlands	20	19	1
Sweden	1	0	1	Spain	33	32	1
				Tunisia	3	2	1

Table 3. Net importer countries of AIS and ET research

The net exporter countries of both AIS and ET researchers are shown in Table 4. These countries educate more doctoral graduates who publish articles in these six journals than they employ faculty publishing in these journals. Thus, they are exporters of doctoral graduates in these fields. Some countries appear on both AIS and ET lists, including United Kingdom, Russia, Belgium, France, South Africa, and Austria.

Net Exporter Countries of CT research				Net Exporter Countries of ET research			
Country	Faculty Pubs	Ph.D. Pubs	Diff.	Country	Faculty Pubs	Ph.D. Pubs	Diff.
United Kingdom	17	36	-19	Russia	0	16	-16
Russia	0	4	-4	Finland	28	33	-5
Belgium	14	17	-3	Austria	0	4	-4
France	1	4	-3	United Kingdom	35	38	-3
Netherlands	8	11	-3	Belgium	12	14	-2
South Africa	0	3	-3	Bulgaria	0	2	-2
Austria	1	2	-1	France	1	2	-1
Italy	5	6	-1	Philippines	0	1	-1
Slovakia	2	3	-1	South Africa	0	1	-1
				Sudan	0	1	-1
				Switzerland	0	1	-1
				Turkey	0	1	-1

Table 4. Net exporter countries of AIS and ET research

In AIS research, for example, the United Kingdom clearly earns far more authorships in these journals from doctoral graduates than from faculty. AIS exporters are largely comprised of European countries with the exception of Russia and South Africa.

In ET research, Russia is the biggest exporter. Note, however, that a single prolific doctoral graduate researcher from a country with few graduates in the field can affect this listing. For example, Dr. Alexander Kogan, who earned his doctorate in Russia, is currently employed in the U.S.. Finland has the second largest number of authorships generated by doctoral graduates followed by Austria, U.K., Belgium, and Bulgaria. ET exporters also includes smaller numbers from a somewhat wider geographical range including Philippines, South Africa, Sudan, and Turkey. Figure 1 provides a visual representation of the net importer countries (blue) and net exporter countries (orange) for AIS and ET research in these journals by authorships.
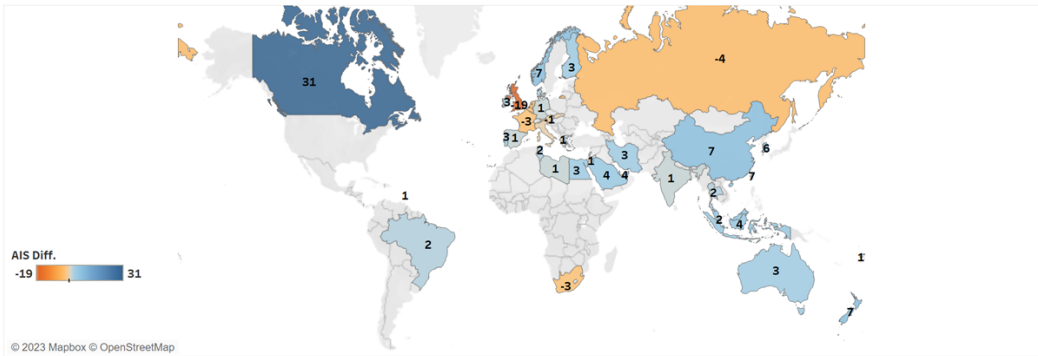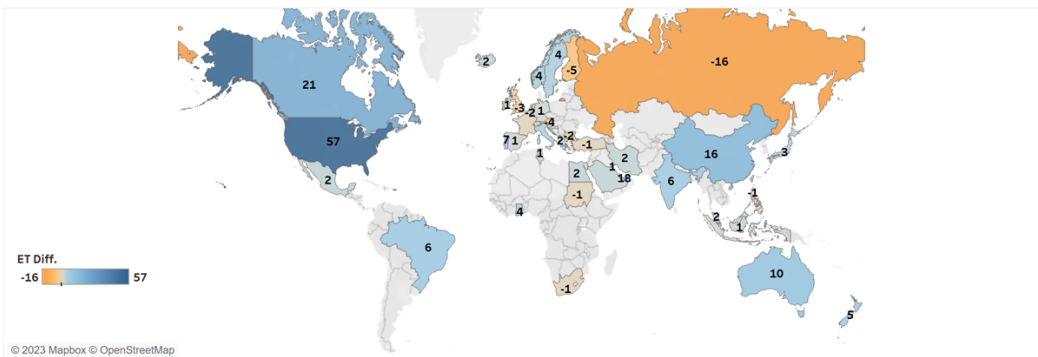
Figure 1. Net importer and net exporter countries of AIS and ET research

4.3. Geographic patterns over time (RQ3)

The top eight countries of employment in total authorships for AIS are U.S., Australia, Canada, United Kingdom, Germany, Spain, China, Finland, as shown in Table 5. However, when the data are viewed over time, it is worth noting that some of these countries have not contributed to AIS research in the most recent few years (e.g. Malaysia), and some have arrived in the middle of this period (e.g. Finland), or even the last half of this period (e.g. China, Germany, and New Zealand). The output of AIS research over time is not consistent from country to country.

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
United States	42	34	52	49	57	40	46	71	51	50	64	40	62	58	71	52	56	40	935
Australia	4	1	1	6	0	5	8	1	2	12	3	4	5	3	2	0	7	8	72
Canada	2	1	6	2	1	0	2	4	7	7	10	3	4	4	3	4	3	0	63
United Kingdom	1	2	0	0	0	0	2	0	1	2	2	1	2	0	0	1	0	3	17
Germany	0	0	0	0	0	0	0	0	0	0	3	2	0	5	0	2	1	4	17
Spain	3	0	2	0	0	3	0	3	1	0	0	0	0	2	2	0	0	0	16
China	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	1	10	15
Finland	0	0	0	0	0	0	0	4	0	5	0	0	0	0	0	1	5	0	15
Belgium	0	0	1	0	3	0	0	0	0	4	0	0	3	1	0	0	1	1	14
New Zealand	0	0	0	0	0	0	0	0	0	0	7	1	1	0	0	1	1	2	13
Taiwan	0	0	0	1	0	0	4	0	0	0	0	0	0	4	0	0	3	1	13
Malaysia	0	0	0	0	0	0	0	0	0	0	2	0	4	5	0	0	0	0	11
Netherlands	0	0	3	0	0	0	0	0	2	0	1	0	1	0	0	0	1	0	8
Brazil	0	0	0	0	0	0	0	0	0	0	4	0	0	3	0	0	0	0	7
Denmark	0	0	4	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	7
South Korea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	7
Norway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	4	7
Italy	0	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	5
Portugal	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1	0	5
Un. Arab Em.	0	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	0	0	4
Switzerland	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	4
Indonesia	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	0	1	0	4
Iran	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	4
Qatar	0	0	0	0	1	0	0	0	0	1	1	0	1	0	0	0	0	0	4
Saudi Arabia	0	0	2	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4
Egypt	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	0	0	0	3
Greece	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	1	3
Ireland	0	2	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3
Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
Romania	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	3
Singapore	0	0	0	0	0	0	0	1	1	0	0	0	0	2	0	0	0	0	3
Israel	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
India	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
Liechtenstein	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
Slovakia	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2
Thailand	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2
Tunisia	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
Austria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Czechia	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Fiji	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Jordan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Lebanon	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
St. Lucia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Libya	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Mexico	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Sweden	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Total	53	40	73	65	62	49	63	85	65	91	110	53	90	91	88	67	84	82	1,311

Table 5. AIS research over time by country of employment

The top eight countries of employment in total authorships for ET are U.S., Australia, Canada, United Kingdom, Spain, Germany, Italy, and Finland, as shown in Table 6. However, when the data are viewed over time, we notice that a few of these countries have not contributed to the ET literature in the most recent few years (e.g. Singapore), and some have arrived in the middle of this period (e.g. Italy, China). The output of ET research over time is not particularly consistent from

country to country. Note that some countries show up only in the top eight in the AIS list (China) or show up only in the top eight in the ET list (Italy). These differences may reflect a more focused area of research, either AIS or ET, in those countries. Figure 2 provides a graphical visualization of AIS and ET research over time for the top producing countries.

Country	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
United States	27	35	34	28	39	21	31	23	58	41	39	48	73	55	74	93	100	105	924
Australia	3	6	0	2	5	1	4	0	8	6	9	15	5	0	9	9	4	1	87
Canada	0	2	1	0	0	5	1	2	3	3	0	4	3	6	9	4	5	6	54
United Kingdom	3	10	1	1	3	2	0	2	1	0	2	0	0	0	2	4	0	4	35
Spain	3	6	2	0	3	6	0	0	2	0	0	2	0	0	0	1	0	8	33
Germany	1	0	0	0	1	0	0	0	1	0	0	3	1	0	4	9	4	8	32
Italy	0	0	0	0	0	0	0	2	2	0	0	3	8	3	0	2	5	5	30
Finland	11	0	0	5	4	0	0	0	2	0	0	0	0	0	0	3	0	3	28
Netherlands	0	2	0	0	4	2	0	2	0	0	0	0	5	0	1	3	0	1	20
China	0	0	0	0	0	1	1	0	1	0	0	1	0	2	2	4	4	4	20
Taiwan	0	0	0	0	1	0	0	0	0	0	2	1	0	5	1	4	0	5	19
Un. Arab Emi.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	12	18
Greece	0	3	0	7	0	1	3	0	0	0	0	0	0	0	0	2	0	0	16
India	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	3	1	9	16
Brazil	0	3	0	0	0	0	0	0	0	2	4	0	0	0	1	5	0	0	15
Belgium	0	0	0	0	0	3	3	0	0	1	0	0	0	0	0	3	0	2	12
Portugal	2	0	0	3	4	0	0	0	0	0	0	1	0	0	0	1	0	0	11
Japan	0	0	0	0	2	0	0	4	0	0	0	0	0	0	0	0	0	1	7
New Zealand	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	0	4	7
Singapore	0	3	0	0	0	2	0	1	0	0	1	0	0	0	0	0	0	0	7
Malaysia	0	0	0	0	0	1	0	0	0	0	2	0	0	0	0	2	1	0	6
Sweden	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3	6
Ghana	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
Ireland	0	0	0	0	0	0	0	0	2	0	1	0	0	0	0	1	0	0	4
Iran	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
Norway	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1	4
Poland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
Qatar	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	4
Croatia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Denmark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	3
Tunisia	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
Albania	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Egypt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Iceland	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2
Mexico	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	2
Saudi Arabia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
South Korea	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Czechia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
France	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Indonesia	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Jordan	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Kuwait	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Malta	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	50	70	40	46	66	46	43	39	81	54	60	79	97	81	105	162	139	199	1,457

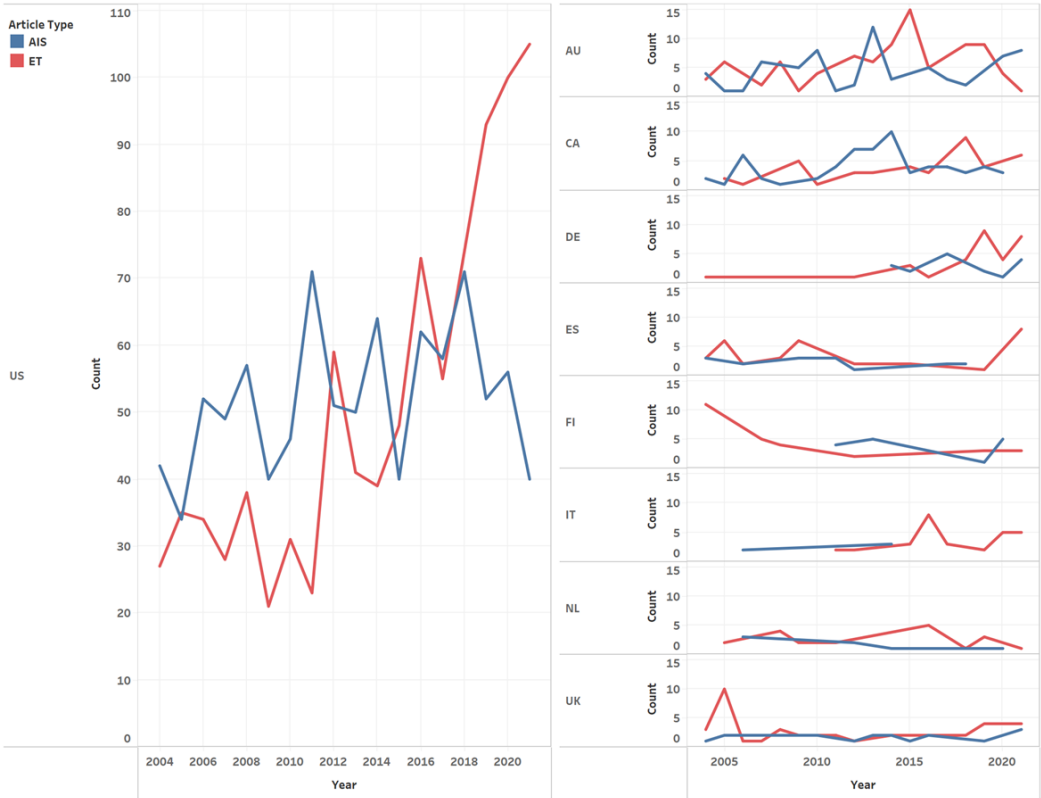Table 6. ET research over time by country of employment

Figure 2. AIS/ET research over time by top 9 countries

4.4. Employer institutions output (RQ4)

By investigating the employment institution of the authors, we identify 623 different institutions in total, among which 398 institutions contribute to the AIS domain and 422 institutions contribute to the ET domain. Table 7 shows the top institutions that have 10 or more authorships and their countries, provided in descending order in AIS and ET domain, respectively[6].

In the AIS domain, eight institutions have 20 or more authorships. These are University of Central Florida, University of Queensland, University of Waterloo, University of Arkansas, Florida Atlantic University, Rutgers University, Bentley University, and University of South Florida. The distribution of the authorships

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[6] Additional analysis results showing the contribution of each institution by year can be found at https://public.tableau.com/views/Institutioncontributionbyyear/Institutioncontributionbyyear?:language=en-US&:display_count=n&:origin=viz_share_link

among these institutions are relatively equal, ranging from 29 to 20, which indicates that research interests of AIS are widely diffused in various academic institutions.

In the ET domain, five institutions have 20 or more authorships. These include Rutgers University, University of Central Florida, University of Southern California, University of Waterloo, and Bentley University. The authorships of Rutgers University are significantly higher (about 3 times second place and 5 times third place) than the others. In addition, the second, University of Central Florida, also has almost twice as many authorships as the third place. This finding reveals that the ET research interests are mainly congregated in a few institutions, which may be attributed to certain very prolific researchers. Another noteworthy finding is that four out of these five institutions (University of Central Florida, University of Waterloo, Rutgers University, and Bentley University) are also among the top eight institutions in the AIS domain, which indicates overlapping research interests in certain schools or their researchers.

In both the AIS and ET domains, the top faculty institutions include universities from various countries. The top three institutions in the AIS domain are from three different countries (U.S., Australia, and Canada). While, in the ET domain, even though all top three institutions are from U.S., more countries and more non-US universities made it to the top affiliations list.

Comparing this list in Table 7 to the AIS rankings of accounting programs provided by Coyne et al. (2010, see their Table 3 Panel A) is interesting. Coyne et al. (2010) identifies some of the same institutions as ranking high on AIS research, e.g. Rutgers, Central Florida, Texas Tech, etc.) but otherwise the current findings show a more diverse set of employing institutions in a wider variety of countries. No doubt that this is at least partially because the current study includes many more AIS journals, articles, and authors as well as a longer time period.

Top Faculty Affiliations in CT			Top Faculty Affiliations in ET		
Affiliation	**Count**	**Country**	**Affiliation**	**Count**	**Country**
Central Florida, U. of	29	USA	Rutgers University	122	USA
Queensland, U of	26	Australia	Central Florida, U. of	42	USA
Waterloo, U. of	23	Canada	Southern Cal. , U. of	25	USA
Arkansas, U. of.	22	USA	Waterloo, U. of	22	Canada
Florida Atlantic University	22	USA	Bentley University	21	USA
Rutgers University	22	USA	Iowa State University	19	USA
Bentley University	20	USA	SUNY - lbany	18	USA
South Florida, U. of	20	USA	Queensland, U of	17	Australia
Mississippi State U.	19	USA	Melbourne, U of	16	Australia
Iowa State University	18	USA	Queensland U. of Technology	16	Australia
James Madison University	16	USA	Delaware, U. of	15	USA
North Carolina State U.	16	USA	University of Huelva	15	Spain
Monash University	15	Australia	Åbo Akademi University	13	Finland
Auburn University	14	USA	DePaul University	13	USA
Arizona State U.	13	USA	Hawai'i at Mānoa	12	USA
Florida State U.	13	USA	Siena College	12	USA
Miami University (OH)	13	USA	South Florida, U. of	12	USA
North Texas, U. of	13	USA	Cal. State U. - Northridge	11	USA
Texas Tech	13	USA	North Texas, U. of	11	USA
Baylor University	11	USA	Akron, U. of	10	USA
Brigham Young U.	11	USA	Florida Atlantic University	10	USA
Cal. State U. - Long Beach	11	USA	Hasselt University	10	Belgium
Kansas, U of.	11	USA	Kentucky, U of	10	USA
Melbourne, U of	11	Australia			
Virginia Commonwealth U.	11	USA			
Nevada - Las Vegas	10	USA			
Southern Cal. , U. of	10	USA			

Table 7. Top faculty affiliations in AIS and ET domain

4.5. Doctoral institution output (RQ5)

The analysis of doctoral institutions of the authors reveals that 91 percent of authorships are by those holding doctorates, who graduated from 347 distinct doctoral institutions. Specifically, AIS researchers received doctoral degrees from 229 different universities, and ET researchers received doctorates from 263 doctoral programs. The top doctoral institutions that have authorships equal to 10 or higher and their countries are provided in descending order in AIS and ET domain, respectively, in Table 8.

The universities listed as the top doctoral institutions in the AIS domain have doctoral programs that are more focused on AIS research. The top ten doctoral

institutions have greater than or equal to twenty-five authorships, including University of South Florida, Texas A&M University, University of South Carolina, Arizona State University, Michigan State University, University of Texas at Austin, University of Arkansas, University of Tennessee, University of Queensland, and Virginia Tech. Three of these universities, University of South Florida, University of Queensland, and University of Arkansas, are also among the top eight faculty affiliations in the AIS domain.

Some institutions have more ET focused doctoral programs. The top eight doctoral institutions for ET have greater than twenty-five authorships. These are Rutgers University, University of California — Los Angeles, University of South Florida, Virginia Tech, University of Missouri, University of Arkansas, Case Western Reserve University, and University of Central Florida. Similar to the findings of faculty affiliation analysis, the authorships of Rutgers University far exceed all others, which reveals that both the faculty and the doctoral graduates of Rutgers University have put much effort into ET research in particular. In addition, three of these eight universities (University of South Florida, Virginia Tech, and University of Arkansas) are also listed in the top ten institutions in the AIS domain, which indicates that the doctoral programs in these three institutions have dual foci of both AIS and ET, while most doctoral programs tend to have a single focus on either AIS or ET, generally.

Even though compared to the top faculty affiliations, the top doctoral institutions are less international in both AIS and ET domain, some non-US countries, such as Australia, Canada, Russia, Finland, and Spain are in the list. In addition, the non-US institutions represented in the top ET doctoral institutions (14.7 percent) is slightly more than those in the top AIS doctoral institutions (5.3 percent).

Top Doctoral Institutions in CT			Top Doctoral Institutions in ET.		
Ph.D. School	Count	Country	Ph.D. School	Count	Country
South Florida, U. of	42	USA	Rutgers University	102	USA
Texas A&M U.	39	USA	UCLA	39	USA
South Carolina, U. of	35	USA	South Florida, U. of	35	USA
Arizona State U.	31	USA	Virginia Tech	30	USA
Michigan State U,	30	USA	Missouri, U. of	29	USA
Texas - Austin	30	USA	Arkansas, U. of	26	USA
Arkansas, U. of	29	USA	Case Western Reserve U.	26	USA
Tennessee, U. of	29	USA	Central Florida, U. of	26	USA
Queensland, U of	28	Australia	SUNY - Albany	23	USA
Virginia Tech	25	USA	Indiana U.	21	USA
Illinois, U. of	24	USA	Queensland, U of	20	Australia
Kentucky, U. of	24	USA	Stanford U.	19	USA
Missouri, U. of	23	USA	Purdue University	17	USA
Central Florida, U. of	20	USA	Waterloo, U. of	17	Canada
Rutgers University	20	USA	Arizona, U. of	15	USA
Texas Tech	20	USA	Kansas, U. of	15	USA
Minnesota, U. of	19	USA	Texas - Austin	15	USA
Florida State	17	USA	USSR Academy of Sciences	15	Russia
Indiana AU.	17	USA	Åbo Akademi University	14	Finland
Nebraska, U. of	17	USA	Southern California, U. of	14	USA
Cal. - Irvine	16	USA	Texas A&M U.	13	USA
Georgia State U.	16	USA	Kentucky, U. of	12	USA
Kent State U.	16	USA	South Carolina, U. of	12	USA
Oklahoma State U.	14	USA	Tennessee, U. of	12	USA
Arizona, U. of	13	USA	Illinois, U. of	11	USA
Colorado, U. of	13	USA	Minnesota, U. of	11	USA
Southern Illinois U.	13	USA	Oklahoma, U. of	11	USA
Case Western Reserve U.	13	USA	Pittsburgh, U. of	11	USA
Kansas, U. of	12	USA	Southern Cross University	11	USA
Mississippi State U.	11	USA	Alabama, U. of	10	USA
North Texas, U. of	11	USA	Bentley University	10	USA
Utah, U. of	11	USA	Nebraska, U. of	10	USA
Waterloo, U. of	11	Canada	Southern Illinois U.	10	USA
Connecticut, U. of	10	USA	Universidad de Sevilla	10	Spain
Florida Atlantic U.	10	USA			
Iowa, U. of	10	USA			
Ohio State U.	10	USA			
Purdue University	10	USA			

Table 8. Top doctoral institutions in AIS and ET domain

4.6. Doctoral disciplines (RQ6)

After examining the doctoral institutions, we investigate authors' doctoral disciplines. Generally, the authors obtained doctoral degrees from a variety of

disciplines. Specifically, we classify their doctoral disciplines into nine categories and summarize the author distributions in Table 9. In general, the majority of the authors (70 percent) hold accounting or AIS doctorates. This is followed by information systems related degrees (15.5 percent), including management information systems, decision science, and information management; computer science and engineering degrees (5.1 percent); other business degrees (3.4 percent), such as management and marketing; economics degrees (2.5 percent); finance degrees (1.1 percent), math or statistics related degrees (0.9 percent), and education degrees (0.6 percent). The authors with relatively unique background are classified as the "Other" category, which includes degrees from social science, healthcare, communication, and immunology. Similar pattern can be observed in AIS and ET articles, respectively. One noteworthy finding is that 72.8 percent of the AIS authors have accounting/AIS degrees, while this number goes down to 67.3 percent for ET authors, which indicates that ET authors have slightly more diverse doctoral backgrounds compared to the AIS authors. Specifically, there are more computer scientists/engineers, other business and finance researchers, mathematicians/statisticians, and educators contributing to ET research, while more economists contribute to AIS research in accounting.

Discipline	CT		ET		Total	
Accounting/Accounting Information Systems	863	72.8%	832	67.3%	1,695	70.0%
Management Information Systems/Information Science	185	15.6%	190	15.4%	375	15.5%
Computer Science/Engineering	37	3.1%	87	7.0%	124	5.1%
Business/Management	37	3.1%	45	3.6%	82	3.4%
Economics	32	2.7%	29	2.3%	61	2.5%
Finance	9	0.8%	18	1.5%	27	1.1%
Math/Statistics	8	0.7%	13	1.1%	21	0.9%
Education	6	0.5%	8	0.6%	14	0.6%
Other	9	0.8%	15	1.2%	24	1.0%
Total	1,186		1,237		2,423	

Table 9. AIS and ET authorships by authors' discipline

4.7. Author type (RQ7)

The author type analysis reveals the number of authors who are academicians, professional practitioners, or students. Table 10 shows the distribution of academic, professional, and student authors in AIS and ET domains, respectively, and in total. Generally speaking, academic authors are the major contributors (89.6 percent), followed by students (6.5 percent), and professionals (3.3 percent). The same

pattern repeats in both AIS and ET domains separately. A noteworthy finding is that ET attracts more (about double) authorship from professional and student authors compared to AIS research, which may be because professionals could be more sensitive to the new technologies they encounter in work and young students are naturally more interested in emerging technologies.

Author Type	CT	%	ET	%	Total	%
Academic	1,225	93.4%	1,256	86.2%	2,481	89.6%
A/S	3	0.2%	9	0.6%	12	0.4%
Student	57	4.3%	122	8.4%	179	6.5%
P/S	1	0.1%	4	0.3%	5	0.2%
Professional	25	1.9%	66	4.5%	91	3.3%
	1,311		1,457		2,768	

Table 10. Distribution of academic, professional, and student authorships

We also investigate how the contributions of different types of authors change over time, shown in Table 11 and Figure 3. In general, the contributions of academic and professional authors increase gradually with the peak in 2021, while the student authors are more active during the period between 2011 and 2021, peaking in 2019. In the AIS domain, the contributions across all types of authors maintain relatively stable with fluctuations throughout the full period. In the ET domain, the contributions of all types of authors increase significantly in the recent years, which start to outweigh the AIS contributions since 2018.

Author Type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
Academic	95	95	106	99	121	84	103	112	123	132	155	116	160	152	176	189	221	242	2,481
A/S	1	3	0	1	1	0	0	0	0	1	1	1	0	0	0	1	0	2	12
Student	3	6	4	7	4	10	3	9	10	8	9	10	20	13	12	31	1	19	179
P/S	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	3	5
Professional	4	6	3	3	2	1	0	3	13	4	4	5	7	7	5	8	1	15	91
Total	103	110	113	111	128	95	106	124	146	145	170	132	187	172	193	229	223	281	2,768

Table 11. Distribution of academic, professional, and student authors over time
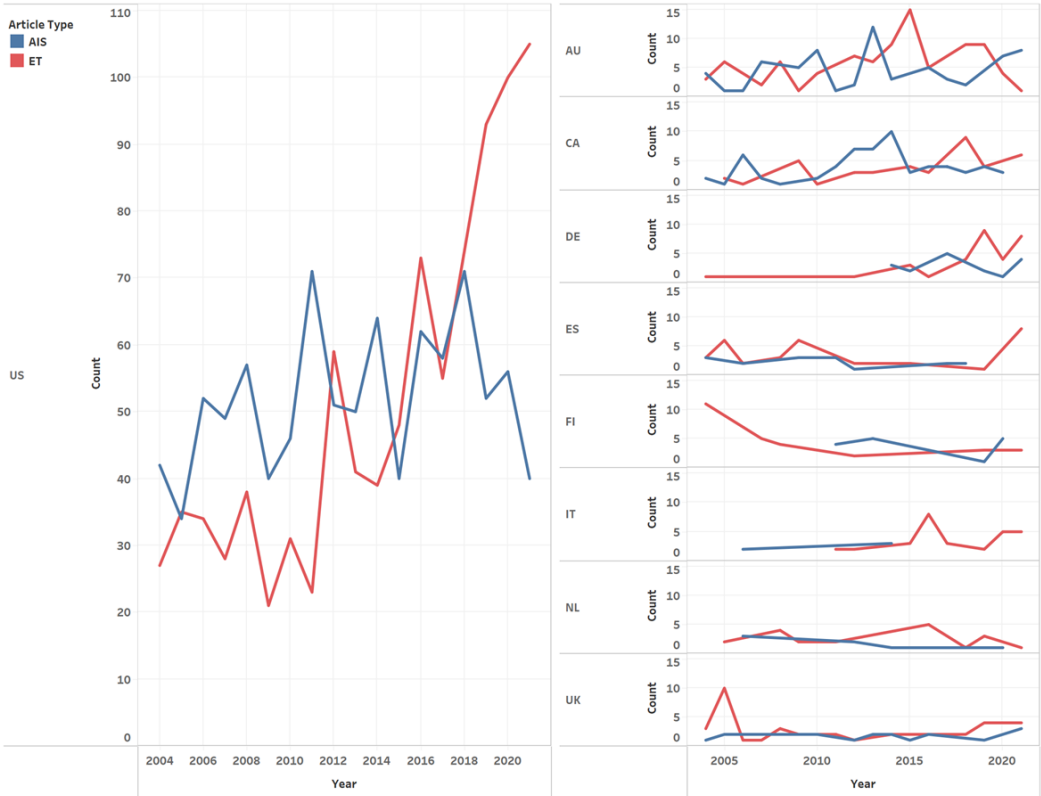
Figure 3. Distribution of academic, professional, and student authors in AIS and ET articles over time

4.8. Summary

The results show that AIS and ET research have originated from authors at a variety of employer institutions in many countries who were educated at a diverse set of doctoral programs across the world. Most articles are generated by academicians with doctorates, unsurprisingly. However, the diversity of the backgrounds or origins of the authors is encouraging. Hopefully, this diversity encourages more diverse authors to contribute to the future and provides a useful example of accounting research domains that are not solely the home of authors from a narrow set of institutions, doctoral programs, or countries of origin.

5. CONCLUSION

The research encompassed by AIS and ET, as evidenced by the six journals examined, is provided by authors with diverse backgrounds. While the majority of the authorships are generated by authors who earned doctorates in the U.S. and authors who are employed in the U.S., many other countries are represented both by doctoral institutions and also by employer institutions. The authors are employed in 55 different countries by over 600 different employers (RQ1). These authors earned doctorates from 347 different doctoral institutions in 44 countries. Some countries export more authorships (as doctoral institutions) and others import more authorships (as employing institutions) (RQ2). This study highlights the diversity of the doctoral institutions and employer institutions that are the origins of the authors who produced and supported AIS and ET research over this period. While the majority of research comes from authors employed in the U.S., then Australia and Canada, many authors are employed by institutions in other countries, and many have been educated in doctoral programs of other countries. Even though most of the journals studied are based in the U.S., either completely or partly, these results illustrate the international nature of the discipline. Clearly, these journals and research domains are global in nature, which is good for the accounting discipline generally.

Regarding AIS and ET research separately, the output over time is not consistent country by country (RQ3). Clearly, employer institutions in some countries generate more AIS research than ET research and vice versa (RQ4). In the AIS domain, eight institutions have 20 or more authorships (up to 29 maximum). The distribution of the authorships among these institutions is relatively equal, suggesting that AIS research interests are widely spread across different academic institutions.

In the ET domain, five institutions have 20 or more authorships. However, Rutgers University has about three times as many authorships as the University of Central Florida, which has about twice as many authorships as the third university. Unlike AIS, ET research interests are concentrated unequally in fewer institutions. Of course, most of these top five ET institutions are also on the top 20 list of AIS institutions, therefore AIS and ET research interest overlaps at many institutions.

A similar pattern holds true for doctoral institutions (RQ4). Some institutions focus more on AIS and others focus more on ET, as expected, and some do both. The

doctoral institution with the most AIS authorships is University of South Florida, closely followed by Texas A&M University, and University of South Carolina. The doctoral institution with the most ET authorships is Rutgers University and no other doctoral institution has generated even half as many authorships. This illustrates the nature of the two sister disciplines that make up the body of this literature. Some institutions focus more on improving what is (AIS) and others focus more on improving what can be (ET). While an institution's focus over time can evolve, it's helpful to know at which doctoral programs the research in each sister discipline is strongest. Future research may be fruitful in identifying sub areas (e.g. AIS ontologies, or systems security, or artificial intelligence or autonomous auditing) more finely as some institutions maybe tend to support research groups that are very focused on a specific topic (e.g. textual analysis or AIS fraud alerts).

Interestingly, these authors hold doctoral degrees in many fields, not just accounting or AIS, although these account for most authorships (RQ6). A close second field is management information systems/information science, followed more distantly by computer science, engineering, business, management, and economics. Still, a few authors have doctorates in seemingly unrelated fields such as biotechnology, chemistry, communication, curriculum and instruction, healthcare, immunology, political science, philosophy, physics, physiology, psychology, and sociology. These results are another measure of the diversity of the origins of accounting information systems research. This literature crosses both borders and also breaches traditional disciplinary silos.

While most authors are academicians, the practitioner and student authors are more interested in ET than in AIS (RQ7). This may reflect both the students' and the practitioners' higher engagement with AIS than with ET. It also gives us a small glimpse into which firms may be more amenable to research by their employees. These firms maybe be more open to academic research, generally, or they are the most interested in bridging the gap between academicians and practitioners. An exploration of this could be a fruitful area of future research.

Future research may address this discipline diversity by measuring the multidisciplinary nature of this body of research. Furthermore, future research can extend this study to other variables, such as gender, to rankings of individual output of authors by authorships or weighted articles and also examine the impact of publications in relation to origins, authorship, doctoral institution, and employer

affiliation of the researchers. Other interesting areas of future research include the nature of co-authorships in AIS and ET, and ranking institutions by citations.

The findings of this study provide potentially useful information for a variety of readers interested in the AIS domain in general. The diverse nature of these institutions and the varied backgrounds of the authors provide insight into the origins of AIS and ET scholarship that readers may find useful in identifying potential employer institutions, doctoral programs to research for potential applications, and possible future co-authors. Understanding the origins of this body of literature helps deepen our understanding of the field and its major subdomains focusing on AIS and ET research.

This study has some limitations. For example, the focus here was on authorships and not weighted articles. Given the nature of publishing and tenure requirements at the majority of institutions identified, the parsing of authorship into fractional articles would not provide enough additional information to change the results. However, the authors acknowledge the fact that some institutions have tenure and promotion standards that emphasize single authored or lead authored articles. Another limitation that we recognize in this study is that our results are not adjusted for faculty who have retired or are deceased. Future research which focuses on the authors rather than the institutions should include a weighted articles measure.

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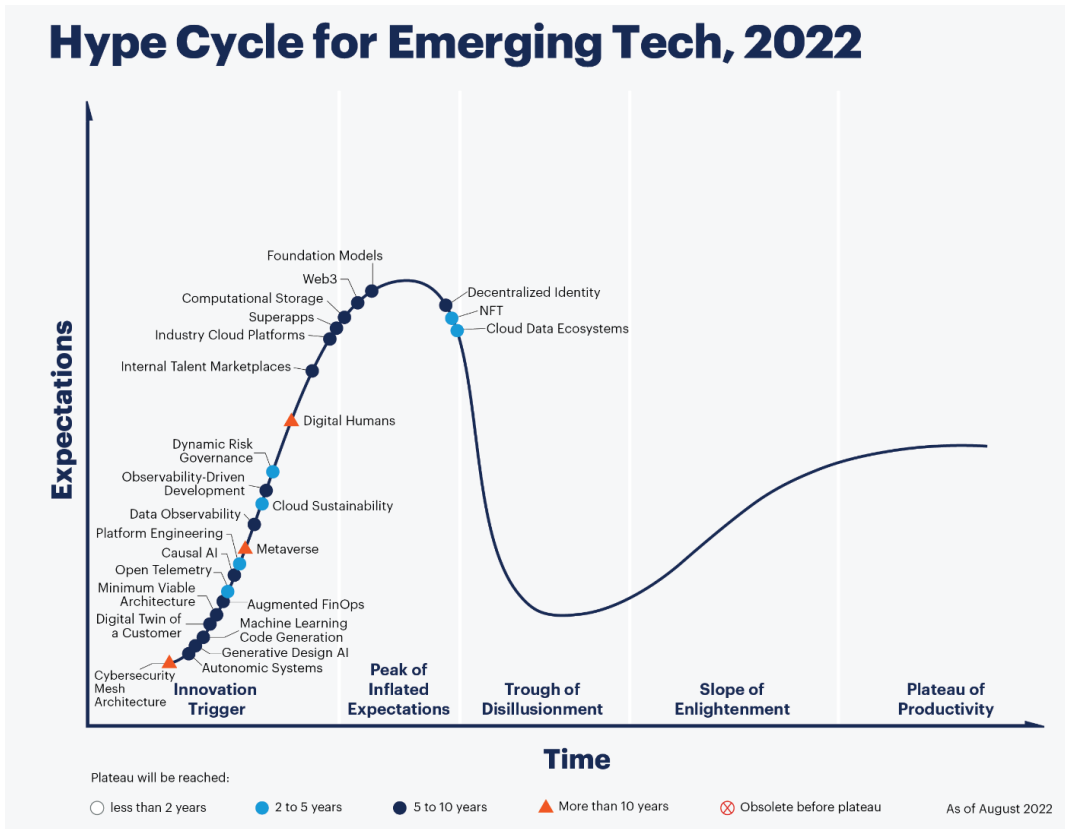
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Appendix A

Gartner's Hype Cycle (2022)

Hype Cycle for Emerging Tech, 2022

Expectations

Foundation Models
Web3
Computational Storage
Superapps
Industry Cloud Platforms

Decentralized Identity
NFT
Cloud Data Ecosystems

Internal Talent Marketplaces

Digital Humans

Dynamic Risk Governance
Observability-Driven Development
Data Observability
Platform Engineering
Causal AI — Metaverse
Open Telemetry
Minimum Viable Architecture
Digital Twin of a Customer
Cybersecurity Mesh Architecture

Cloud Sustainability

Augmented FinOps
Machine Learning Code Generation
Generative Design AI
Autonomic Systems

Innovation Trigger | **Peak of Inflated Expectations** | **Trough of Disillusionment** | **Slope of Enlightenment** | **Plateau of Productivity**

Time

Plateau will be reached:
○ less than 2 years   ● 2 to 5 years   ● 5 to 10 years   ▲ More than 10 years   ⊗ Obsolete before plateau

As of August 2022

The 2022 Gartner Hype Cycle identifies 25 must-know emerging technologies to assist enterprise architecture and technology innovation leaders.