What's in a Name? An Examination of Information System Degree Programs in AACSB International Accredited Schools

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Information Systems (IS) as a discipline has a multitude of names in academia. Information systems, management information systems, computer information systems, and information technology are just some of the names that refer to the same or similar discipline. With the continuing growth of technology in academia and practice, this paper answers the call for continued identification of the naming conventions of IS programs in AACSB International accredited schools. The names found are compared with data from previous studies. The results provide evidence that although IS programs have become more commonplace, there is still no move towards name standardization.

INTRODUCTION

A rose by any other name would smell as sweet.
Romeo and Juliet

The discipline of Information Systems continues to suffer from an identity crisis in the academic community due to the various names used to distinguish one major from another. Commonly identified names include Computer Information Systems (CIS), Management Information Systems (MIS), Information Systems (IS), and Business Information Systems (BIS). Although much time has been devoted to developing model curricula for IS programs in business schools (Topi et al., 2010), there is no uniformity in the department that oversees the degree or in the name of the major (Pierson, Kruck, & Teer, 2008). In some cases, the name reflects the newest trends in technology or buzzwords at the time of formalizing (e.g., Business Informatics). The name choice may also intend to indicate a message about the emphasis of the program. For example, some suggest that "CIS" is technical and "MIS" is managerial, though the evidence does not support these assumptions. Or, the name may be chosen for convenience,

expediency, or even for political reasons (Gambill, Clark & Maier, 1999; Heinrichs & Banerjee, 2002). Additionally, Information Technology (IT) is often considered to be synonymous with IS when describing the discipline.

This multitude of names can lead to great confusion among many different groups. Students interested in computer-related programs may not understand what the IS/IT program is if they do not know what the name means. This could lead to declines in enrollment and misfit of major for the students. Employers can also be affected. Many calls for job applications list academic majors for which the recruiters are looking. If the IS/IT program is not named similarly, the employers could miss out on students that have the desired skills. Administrators and funders may also succumb to this confusion. It is likely challenging to properly allocate funds to a program that is poorly understood. Finally, other stakeholders, such as family, parents, and friends are affected. Many IS/IT majors have to offer additional explanation when asked what they are studying. This is especially true when multiple people are learning IS/IT at different schools with different names for the programs.

Given the confusion that may arise from the multitude of names, there has been some limited push for standardization. The argument for naming standardization is not a recent development; scholars have raised the issue for decades (Gambill et al., 1999). However, academia has not responded to this call. Pierson et al. (2008) and Apigian and Gambill (2010) show that there are still wide variations in the naming conventions of computer-related majors in schools of business. It is possible that this confusion is another factor affecting enrollment in IS/IT programs, especially given that many students lack knowledge about the IS/IT field already (Koch & Kayworth, 2009). In addition, IS/IT programs have historically done an ineffective job marketing the major to students, parents, peers, and counselors who have little knowledge of the major or the expanding career opportunities (Walstrom, Schambach, Jones, & Crampton, 2008).

Pierson et al. (2008) stated that a future extension of their work in identifying computer-related major names would be a periodic review of the major names in AACSB International accredited institutions with comparisons to their findings. This study addresses this call by reviewing the computer-related major names of AACSB International accredited schools in the United States and compares them with the results of Pierson et al. (2008) and with Apigian and Gambill (2010). This evaluation provides an opportunity to spot any trends in major names during this time span and to determine if the IS/IT field has begun to standardize the naming conventions. Following previous studies, the incidence of computer-related majors in accredited business schools are investigated and their names are examined. Additionally, the names and prevalence of computer-related graduate programs are analyzed to provide deeper insight into the field in academia.

BACKGROUND

Since the first appearance of IS/IT programs in academic institutions in the 1960's, "the identification of the specific skills required for the variety of IS positions" has never been an easy task (Brookshire, Hunt, Yin, & Crews, 2007, p. 81). Briskly evolving technology requires educators to constantly be aware of the changing landscape and seek new content and evolving topics that perhaps should be added to the curriculum (Noll & Wilkins, 2002; Srinivasan, Guan, & Wright, 1999). Due to this persistent evolution, the definitions of IS and IT have consistently fluctuated with the changing technologies and business needs. Rapidly evolving technology requires educators to continually scan the horizon for new content and evolving topics that perhaps should be added to the IS/IT curriculum (Noll & Wilkins, 2002; Srinivasan et al., 1999). One characterization suggests the academic field of IS/IT is comprised of two broad areas of activity within organizations (Topi et. al., 2010, p. 373):

> (1) acquisition, deployment, management, and strategy for information technology resources and services (the information systems function; IS strategy, management, and acquisition; IT infrastructure; enterprise architecture; data and information) and (2) packaged system acquisition or system development, operation, and evolution of

> infrastructure and systems for use in organizational processes (project management, system acquisition, system development, system operation, and system maintenance). The systems that deliver information and communications services in an organization combine both technical components and human operators and users. They capture, store, process, and communicate data, information, and knowledge.

IS/IT as a field of academic study has existed under a variety of different names. The different labels reflect historical development of the field, different ideas about how to characterize it, and different emphases when programs were begun (Topi et. al., 2010).

Previous Studies

It is little wonder that confusion still exists about the IS/IT field. To a layperson, "Information Systems" and "Information Technology" sound and seem similar. IT is the term most frequently used in organizations and popular media (e.g., "The IT Crowd," a television show). Yet, IS and related terms are the most common in academia, e.g., "MIS" (Pierson et al., 2008). Without clear definitions of the areas and understanding the differences between them, the differences in names mean nothing.

A formal recognition of the multitude of program names in IS/IT began in the 1990's. Gambill et al. (1999) surveyed college and universities with a four-year computer-related undergraduate major in the school of business in the United States. At that time, 186 schools were identified as meeting this criterion. From the 69 responses received, ten different program names were identified. CIS (39%) and MIS (38%) were the most common responses. Additionally, both IS (10%) and BIS (4%) were used by multiple institutions.

In 2008, Pierson et al. examined the websites of the AACSB International accredited schools in the United States to determine if each school offered an undergraduate major in IS/IT or a related field, and if so, what the major's name was (Pierson et al., 2008). They collected data in 2004 and 2007 in order to compare it over time and identify any trends. In 2004, they identified 295 AACSB International accredited institutions with undergraduate computer-related majors. In 2007, this number climbed to 306. As shown in Table 1, the names of programs stayed equivalent over this period, with less than a 1% difference in the three most common names.

TABLE 1
COMPARISON OF 2004 AND 2007 DATA ON UNDERGRADUATE MAJOR NAMES

Program	% - 2004	% - 2007	Difference
Management Information Systems	41.0%	40.5%	-.5%
Information Systems	20.0%	20.6%	.6%
Computer Information Systems	17.6%	18.0%	.4%
Other	21.4%	20.9%	-.5%

(Pierson et al., 2008)

In 2010, Apigian and Gambill (2010) conducted a review of colleges and universities that offered a four-year undergraduate degree in IS, regardless of accreditation. Within the 240 institutions they identified as having a program in Information Systems, they found 24 distinct program names across a total of 324 degrees or concentrations (some of the schools offered more than one IS specific degree). Just like Pierson et al. (2008), they found that the most commonly used program name was Management Information Systems (see Table 2).

TABLE 2
DISTRIBUTION OF NAMES FOR COLLEGE PROGRAMS

Program	Number	Percent
Management Information Systems	117	36.1%
Information Systems	60	18.5%
Computer Information Systems	54	16.7%
Business Information Systems	24	7.4%
Accounting Information Systems	23	7.1%
IS & Operations Management / IS Decision Sciences	13	4.0%
Other	33	10.2%

(Apigian & Gambill, 2010)

With the constant changes that occur in the field of IS/IT and the ever-present call to standardize the naming conventions in the field, it is more important than ever to determine if significant changes have occurred during the past years.

METHODOLOGY

During winter of 2014/2015, the websites of the 509 AACSB International accredited schools[1] in the United States were examined to determine if each school offered an undergraduate major and/or a graduate program in IS/IT or a related field, and if so, the major's name. The purpose of this investigation was threefold: to determine the frequency that IS/IT-related undergraduate majors occur in accredited business schools, to determine the frequency that IS/IT-related graduate programs occur in accredited business schools, and to ascertain the names of both of these levels of programs.

Data Collection

The AACSB International is an organization that accredits institutions worldwide. Following previous studies examining IS/IT majors, this study is limited to accredited schools in the United States. These institutions vary in their labeling of programs of study. For this study's purposes, as it was for Pierson et al. (2008), the term "major" is used to refer to programs labeled as "concentrations," "options," and "emphases" as well as "majors." Jointly administered programs, such as interdisciplinary programs involving multiple departments or colleges, were excluded from the data collection. Additionally, a number of schools offer multiple relevant degrees; for example, as of April 2015, Baruch College offers both a MBA in IS and a MS in IS[2]. In these cases, each of the relevant programs are included in the analysis.

Due to the time spent collecting the data, it is possible that some changes in the website information of the schools could have occurred. For example, a major might have been added or the name might have changed. The same may be the case with the list of accredited schools; additions or deletions may have been applied.

FINDINGS AND DISCUSSION

The findings of this study appear in two sections. The analysis of the undergraduate programs and comparison with past data appears first. 2004 and 2007 data are from Pierson et al. (2008). 2010 data are from Apigian and Gambill (2010). The second section contains the analysis of the graduate programs and the overall IS/IT program findings.

Undergraduate Programs

Of the 509 AACSB International accredited schools investigated, 300 schools (58.9%) were identified as having an IS/IT-related program. Of these 300 schools, 284 schools (94.7%) have an undergraduate degree program, leaving 16 schools with only a graduate-level program. As shown in Table 3, compared to 2004 and 2007, in 2015, there are fewer institutions with undergraduate IS/IT programs and the proportion of programs has also declined.

TABLE 3
AACSB INTERNATIONAL ACCREDITED USA INSTITUTIONS WITH UNDERGRADUATE IS/IT PROGRAMS

	2004[a]	2007[a]	2015
Number of AACSB International accredited institutions	417	456	509
AACSB International accredited institutions with Undergraduate IS/IT-related majors	295	306	284
Percentage of total AACSB International accredited Undergraduate schools that offer IS/IT-related majors	70.7%	67.1%	55.8%

[a] (Pierson et al., 2008)

In 2015, 317 majors are offered in the 284 schools identified. Table 4 presents the names of computer-related undergraduate majors from 2004-2015, the number of occurrences of each name, and its percentage of the total number of related majors. There are no differences in the rank order of the names across the studies, with the exception of Information Technology. The most common names in each study year, ranging between three and five names, account for at least 76% of the total names.

TABLE 4
UNDERGRADUATE MAJOR NAMES OF IS/IT PROGRAMS IN AACSB INTERNATIONAL ACCREDITED USA INSTITUTIONS

Major Name	2004[c]		2007[c]		2010 [a]		2015	
	#	%	#	%	#	%	#	%
Management Information Systems	121	41.0	126	40.5	117	36.1	102	32.2
Information Systems	59	20.0	64	20.6	60	18.5	69	21.8
Computer Information Systems	52	17.6	56	18.0	54	16.7	46	14.5
Information Technology	n/a	n/a	n/a	n/a	n/a	n/a	13	4.1
Business Information Systems	n/a	n/a	n/a	n/a	24	7.4	11	3.5
Others [b]	63	21.4	65	20.9	69	21.3	76	24.0

[a] The 2010 data is not restricted to AACSB International accreditation. (Apigian & Gambill, 2010)

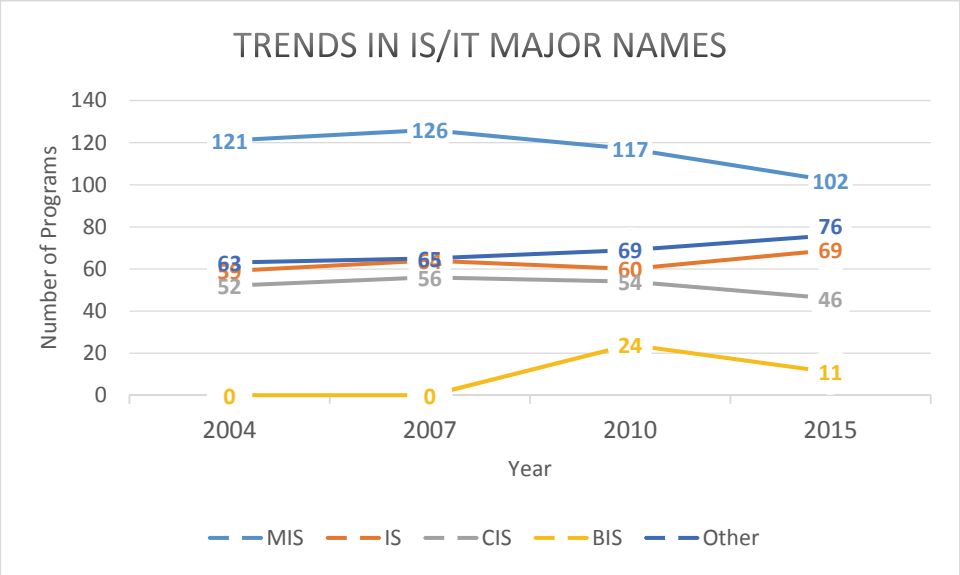
[b] "Others" refers to program names with fewer than 10 occurrences, except for 2010, where it includes fewer than 24 occurrences

[c] (Pierson et al., 2008)

There are noticeable changes in the naming conventions of IS/IT undergraduate majors. (see Figure 1) Management Information Systems is still the most common name, but its prevalence is in decline. 2015 provides the lowest number and percentage of all four time periods. Information Systems has received an

upturn, though its proportion is only 1.2% higher than in 2007. Computer Information Systems, like MIS, is in decline. CIS has lost 10 programs since its highest point in 2007.

FIGURE 1
TRENDS IN IS/IT MAJOR NAMES



2004 and 2007 data (Pierson et al., 2008)
2010 data (Apigian & Gambill, 2010)

Of interest are the program names that are filling in the void left by the decline of MIS and CIS. In addition to Information Technology joining the top five most common names in 2015, the Others category comprises 49 distinct program names (see Table A1 in Appendix A for the list). This means that there are 54 distinct names among the 284 accredited schools.

Graduate Programs

Of the 300 AACSB International accredited schools identified as having an IS/IT-related program, 134 schools (44.7%) have a graduate-level degree program. 184 degree programs are offered by these 134 schools. Table 5 shows the most common names for graduate IS/IT programs.

TABLE 5
GRADUATE PROGRAM NAMES OF IS/IT PROGRAM IN AACSB INTERNATIONAL ACCREDITED USA INSTITUTIONS

Major Name	Number	Percent
Information Systems	66	35.9%
Management Information Systems	37	20.1%
Computer Information Systems	11	6.0%
39 Others, each < 10 occurrences	71	38.6%

Interestingly, the top three program names are the same in the undergraduate and graduate programs. The only differences are in the two most common names: Information Systems and Management Information Systems are in switched positions between the two levels. Like the undergraduate majors, the graduate programs include a wealth of names. The Others category comprises 39 distinct program names (see Table A2 in Appendix A for the list). There are 42 distinct names among the 134 accredited schools. This is a greater dilution of the names than that of the undergraduate majors (Graduate: 1 name for every 3.2 schools; Undergraduate: 1 name for every 5.3 schools).

When combining the data from the undergraduate majors with the graduate programs, an overall snapshot of academia is shown. Table 6 shows the frequency of names across all academic levels. As with the undergraduate majors, Management Information Systems is the most commonly used name for IS/IT programs. The second, third, and fourth most common names are also identical with the undergraduate programs' naming conventions. In sum, there are 76 different names across 501 programs.

TABLE 6
OVERALL MAJOR/PROGRAM NAMES OF IS/IT PROGRAMS IN AACSB INTERNATIONAL ACCREDITED USA INSTITUTIONS

Major Name	Number	Percent
Management Information Systems	139	27.7%
Information Systems	135	27.0%
Computer Information Systems	56	11.4%
Information Technology	19	3.8%
Information Technology Management	17	3.4%
Business Information Systems	13	2.6%
Information Systems Management	11	2.2%
69 Others, each < 10 occurrences	114	22.0%

Years ago, the call was made for standardization in the naming criteria for IS/IT programs in academia. This call has not been answered. The data show a widely diverse set of distinct names among all levels of academia. The Information Systems field is no closer to this goal than it was in 1999 (Gambill et al., 1999) (1999: 1 name for every 6.9 programs; 2015: 1 name for every 6.6 programs).

Limitations

This study is not without limitations. First, and probably most importantly, is the reliance on program information posted on websites. There was no practical way to determine if the information was current. It is possible that program names had changed or were in the process of changing since the last website update. It is also possible that the program was no longer being offered, but was still being shown on the institution's website for catalog maintenance purposes.

The decision to include only schools with active AACSB International accreditation in the United States can be considered a limitation. There are a number of IS/IT programs that exist in non-AACSB International accredited schools in the United States. However, since previous research has employed similar data collection of accredited schools, it is believed the sampling is appropriate for this analysis (Apigian & Gambill, 2010; Gambill et al., 1999; Pierson et al., 2008). Additionally, it is possible that an IT/IS program exists inside an accredited school, but is not located within the business school. If this is the case, that program would not have been included in the present analysis since it is outside of the scope of the project. Finally, it is also possible that IT/IS programs identified in the business schools and included in this analysis are essentially computer science or computer engineering degrees. Future research should examine each program's individual courses to determine the proper classification.

CONCLUSION

The findings concerning the naming conventions of IS/IT programs in 2015 show that standardization of names in the field has not occurred. Additionally, it is likely further away from this goal than in the past. With the number of computer-related disciplines increasing and the issue of accreditation, it is more important than ever for educators in the IS field within business schools to enter into discussions with the aim of standardizing the name of majors within the field. Having the same name for majors that have the same mission and basic requirements could reduce confusion and increase enrollments. Students would choose the correct major for themselves in the beginning, rather than discovering IS/IT at a later date. However, the current naming trends can best be described by the words of Jean-Baptiste Alphonse Karr: "The more things change, the more they stay the same."

ENDNOTES

1. http://www.aacsb.edu/accreditation/accredited-members/global-listing.aspx?F_Country=United+States
2. http://zicklin.baruch.cuny.edu/faculty/cis/programs

REFERENCES

Apigian, C. H., & Gambill, S. E. (2010). Are We Teaching the IS 2009 Model Curriculum? *Journal of Information Systems Education*, 21(4), 411–420.

Brookshire, R. G., Hunt, C. S., Yin, L. R., & Crews, T. B. (2007). An End-User Information Systems Curriculum for the 21st Century. *Journal of Computer Information Systems*, 47(3), 81-88.

Gambill, S., Clark, J., & Maier, J. (1999). CIS vs MIS vs...: The Name Game. *Journal of Computer Information Systems*, 39(4), 22–25.

Heinrichs, L. R., & Banerjee, D. (2002). In Search of the Typical IS Program. *Issues in Information Systems*, 3, 243–249.

Koch, H., & Kayworth, T. (2009). Partnering with the Majors: A Process Approach to Increasing IS Enrollment. *Journal of Information Systems Education*, 20(4), 439–449.

Noll, C., & Wilkins, M. (2002). Critical skills of IS professionals: A model for curriculum development. *Journal of Information Technology Education: Research*, 1(1), 143–154.

Pierson, J., Kruck, S., & Teer, F. (2008). Trends in Names of Undergraduate Computer-Related Majors in AACSB-Accredited Schools of Business in the USA. *Journal of Computer Information Systems*, 49(2), 26–31.

Srinivasan, S., Guan, J., & Wright, A. L. (1999). A new CIS curriculum design approach for the 21st century. *Journal of Computer Information Systems*, 39(3), 99–106.

Topi, H., Valacich, J. S., Wright, R. T., Kaiser, K., Nunamaker Jr, J. F., Sipior, J. C., & de Vreede, G.-J. (2010). IS 2010: Curriculum guidelines for undergraduate degree programs in information systems. *Communications of the Association for Information Systems*, 26(1), 59.

Walstrom, K. A., Schambach, T. P., Jones, K. T., & Crampton, W. J. (2008). Why Are Students Not Majoring in Information Systems? *Journal of Information Systems Education*, 19(1), 43–54.

APPENDIX A: MAJOR/PROGRAM NAMES

TABLE A1
NAMES OF THE PROGRAMS IN THE 2015 UNDERGRADUATE "OTHERS" CATEGORY

Accounting and Information Systems	Accounting Information Systems
Accounting/Information Systems	Applied Information Management Systems
Business Administration Information Systems	Business Analytics
Business Analytics and Information Systems	Business Computer Information Systems
Business Informatics	Business Systems
Computer and Information Technology	Computer Information Systems and Accounting
Computer Management and Information Systems	Computer Science and Business
Computer Science and Information Systems	Cyber Security
Database Administration	e-business and Information Systems
Enterprise Information Systems	Health Informatics and Information Management
Information and Decision Science	Information and Decision Sciences
Information and Technology Management	Information Management
Information Security and Assurance	Information System and Technology
Information Systems and Business Processes	Information Systems and Decision Sciences
Information Systems and Information Technology	Information Systems and Operations Management
Information Systems and Security	Information Systems and Technologies
Information Systems and Technology	Information Systems and Technology Management
Information Systems Management	Information Technology and Systems
Information Technology Management	Network Engineering
Network Technologies	Operation Management Information Systems
Operations and Information Management	Operations and Technology Management
Project and Supply Chain Management	Project Management and Business Analysis
Supply Chain and Information Systems	System Engineering
Systems Management	Telecommunications and Information Management
Web Development	

TABLE A2
NAMES OF THE PROGRAMS IN THE 2015 GRADUATE "OTHERS" CATEGORY

Accounting and Information Systems	Accounting and Information Technology
Business Computer Information Systems	Business Informatics
Business Information Systems	Computer and Information Systems
Computer and Information Systems Security	Computer Information Systems and Information Technology
Computer Management and Information Systems	Computer Science and Information Systems
Computing and Information Systems	Information and Decision Sciences
Information and Operations Management	Information and Technology Management
Information Assurance	Information Management
Information Systems and Operations Management	Information Systems and Technology
Information Systems Audit and Control	Information Systems Auditing
Information Systems Management	Information Systems Technology
Information Systems Technology Management	Information Technologies
Information Technology	Information Technology and Decision Sciences
Information Technology and Management	Information Technology Management
Management Information Technology	Management of Information and Technology
Management Science and Information Systems	Managing Information Technology
Operations and Information Management	Operations and Technology Management
Operations, Business Analytics and Information Systems	Project Management
Systems Development	Telecommunications System Management