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Achieving Alignment Between IS Research and IS Curriculum: Toward Stronger IS Discipline Identity

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ABSTRACT

The IS discipline identity discourse has traditionally been focused on the IS research. With considerable effort devoted to the IS curriculum development, it has not been seriously considered in the discussions on the IS identity. Here we argue that IS students and their recruiters, along with IS faculty, are key internal stakeholders of the IS discipline. As such they are engaged in the process of co-creating the IS discipline teaching identity through IS curriculum creation and consumption. We propose that a stronger identity of the IS academic discipline can be achieved through alignment between three elements: IS research, IS curriculum, and the needs of IS practitioners. We examine the degree of alignment between IS curriculum standards and key IS research subareas identified in extant research, and point out directions for future research and curriculum development.

Keywords

IS identity, IS curriculum, IS research

INTRODUCTION

When meeting colleagues at an academic conference, information systems (IS) academics usually ask each other “What are your research interests?” Yet, when an academic is having lunch with a business or IT professional, the ice-breaking question often is “So, what do you teach?” Thus, as faculty at higher education institutions, we identify ourselves by what we research in our relations with academic peers, and by our teaching competencies when dealing with the broader community.

Similarly, the identity of the IS discipline is largely shaped by these two key factors: what the IS academics research and what they teach. While significant attention has been devoted to the issue of the IS discipline identity, related discourses have traditionally focused on the research component (Benbasat and Weber, 1996; Benbasat and Zmud, 2003; Orlikowski and Iacono, 2001; Robey, 1996). Although teaching often consumes as much time as research, and is an equally important part of tenure and promotion evaluations for many IS academics, the role of IS curriculum in shaping the identity of the IS academic discipline is rarely considered. Moreover, when teaching is mentioned as a means of dissemination of IS research findings and thus boosting the relevance of the IS research, it is rarely considered an equal partner in determining the identity of the IS discipline.

With this dichotomy of interests for those in academia – including the students who are consumers of what is taught – this paper aims to compare what is currently being taught in the IS curriculum to what is currently being researched in the IS discipline. The goal of the study is to determine if the two are different, and if so, why are they different? Suggestions for ways to close the gap among the differences that exist will be explored. In this paper, we extend the Stakeholder Approach to Identity Construction proposed in Sidorova et al. (2008) to include such important stakeholders as IS students and employers of the IS program graduates, and propose a 3-way alignment model of the IS discipline identity.

The 3-way alignment model suggests that the IS discipline will be able to establish a strong identity if it achieves alignment among the three elements: 1) IS research topics, 2) IS curriculum, and 3) the needs of IS practitioners. We then examine the status quo in relation to the alignment between two of these elements: IS research topics and IS curriculum. Based on the review of the current research and the standard IS curriculum, we identify existing gaps in the alignment between IS research and curriculum. We then propose directions for improving the alignment among the IS research and curriculum, which may result in more relevant IS research and in stronger, more innovative IS courses.

IDENTITY DEBATES IN IS

Like many other organizational sciences, the IS academic discipline has long engaged in self-examination in the effort to establish its identity and consequently its legitimacy. While relevant discussions date back to the 1970s and 1980s (Mason and Mitroff, 1973; Weber, 1987; Van Gigh & Le Moigne, 1989), the recent discourses that most notably shaped the current view of the IS discipline identity include the focus vs. diversity debate (Benbasat & Zmud, 1999, Robey and Markus, 1998),

the IT artifact and the IS identity debate (Orlikowski & Iacono, 2001; Benbasat & Zmud, 2003; Robey, 2003; Agarwal & Lucas, 2005) and the rigor vs. relevance debate (Applegate & King, 2001).

The diversity debate in IS was concerned with the value of diversity versus a dominant paradigm in IS research (Benbasat and Weber, 1996; Robey, 1996). While three different sources of diversity have been identified, including diversity in the addressed problems, diversity in theoretical foundations and reference disciplines, and diversity in methods (Benbasat and Weber, 1996), the late 1990s debate was concerned primarily with the diversity in theoretical paradigms and reference disciplines (Sidorova et al., 2007).

The issues of diversity in the addressed problems resurfaced in the form of the identity debate in the early 2000s. Benbasat and Zmud (2003) expressed concerns that IS research was lacking a core theory and that the resultant diversity of research ideas, techniques, and researchers was fragmenting and damaging the discipline. This has resulted in a lack of cumulative research in IS. The authors proposed that the “IT artifact” should be at the core of the IS discipline, with a focus on issues directly related to the development, use, and effect of IT (Benbasat and Zmud, 2003). This sparked a debate with some agreement about the need for a better defined core (Alter, 2003). However, Alter felt that the IT artifact was too restrictive and suggested that a “work system” model should be the center for IS research. Others disagreed much more strongly (Agarwal and Lucas, 2005) and indicated that such a narrow focus on the IT artifact could have potentially dangerous consequences for the field and instead suggested that IS research should also include a macro focus on the transformational nature of technology.

Finally, the rigor vs. relevance debate dealt with competing pressures experienced by IS scholars to produce highly rigorous research while maintaining practical relevance. Benbasat and Zmud (1999) felt that the IS discipline was so concerned with the scientific rigor of its research, that it was overlooking its relevance, which could further weaken the discipline. They proposed that IS researchers should select topics related to the interests of key stakeholders, looking to practice to identify topics, focusing on outcomes rather than inputs and portray the research in ways that might make it utilized by practitioners. Davenport and Markus (1999) suggested that IS discipline should emulate medical and legal professions.

Lytinen (1999) and Lee (1999) weighed in on the discourse, some fearing that a reactive correction to relevance would be at the expense of rigor. They felt that an alternative to the problem was with a more balanced perspective of rigor and relevance that utilized non-positivist methodologies. The need for rigor in IS research was reaffirmed, but attempts to find ways to make that research more relevant were discussed. It was suggested that performing research that is of interest to practitioners, or that is taught to students would make the field more relevant without the expense of rigor.

Interestingly, all three debates have focused primarily on the IS research. While references to teaching and curriculum were made as a part of the rigor vs. relevance debate, teaching and textbooks were considered as a means of dissemination of academic research (Straub and Ang, 2008). Furthermore, the teaching and the curriculum in the IS field were assumed to be influenced by the IS discipline academic identity, rather than shaping such identity.

The identity discourse was extended through several empirical investigations of IS literature (Vessey et al., 2002; Sidorova et al., 2008; Taylor et al., 2010). Not surprisingly, the empirical investigations (Vessey et al., 2002; Sidorova et al., 2008; Taylor et al., 2010) also assumed the research focused view of the IS academic identity. Interestingly, the IS curriculum discourse has taken place in parallel, yet was rarely related to the identity debate. In the next section we examine key stakeholders of the IS discipline and seek to challenge such a research-centric view of the IS discipline identity.

STAKEHOLDERS OF THE IS DISCIPLINE

The role of stakeholders in establishing organizational identity has long been recognized by organizational researchers (Gioia et al., 2000; Scott and Lane, 2000). Building on the work of Scott and Lane (2000), Sidorova et al. (2008) proposed a Stakeholder Approach to Identity Construction of the IS Discipline. The approach suggests that the identity of the IS discipline is established through a process of negotiations among the most influential stakeholders, who construct and communicate the desired image of the IS discipline, and other stakeholders, who express how they view the IS discipline identity through reflected stakeholder appraisals (Sidorova et al., 2008). While not claiming to provide an exhaustive list of stakeholders, Sidorova et al. (2008) identify the following stakeholders of the IS discipline: editors of IS journals, influential scholars, influential industry executives, IS scholars, academic administration, scholars from other disciplines, IT professionals, and funding institutions. Notably, although not surprisingly considering the focus of the paper, IS students and recruiters of IS graduates are not named among the stakeholders.

Yet, graduating students are the most obvious and arguably the most important output of the majority of academic institutions. IS students are also the ones who spend significant time directly interacting with IS academics, and who then go on to tell the story of what the IS discipline is to the rest of the world through their job interviews and future careers. This

makes students co-creators of the IS discipline identity and important stakeholders of the IS discipline. What then is the identity of the IS discipline as reflected by the student stakeholders? Here we argue that the curriculum development is a critical aspect of the IS discipline identity creation.

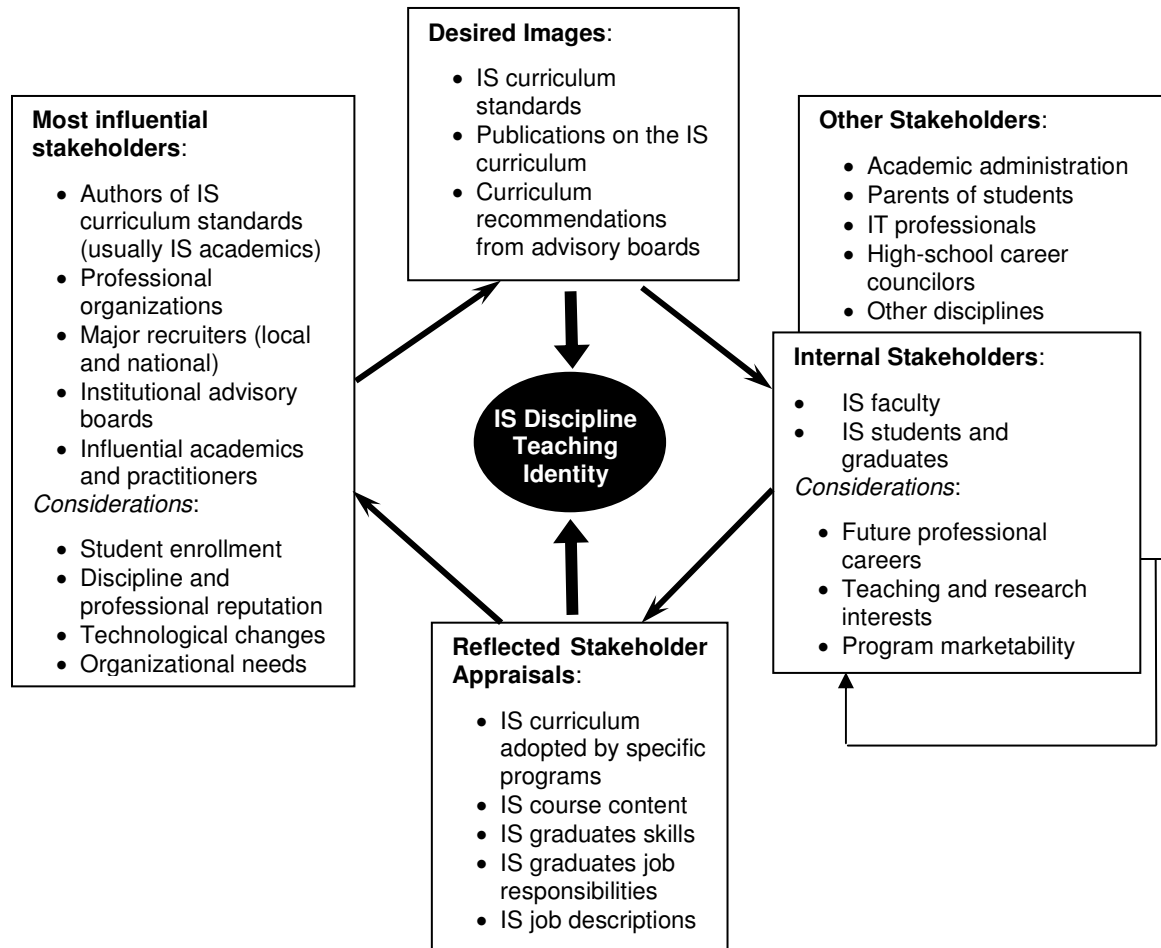


Figure 1. Stakeholder Approach to Identity Construction through Curriculum Development.
Adapted from Scott and Lane, 2000, p. 45 and Sidorova et al., 2008, p. 470.

Similar to the creation of the IS research identity, IS curriculum is developed through a complex process of negotiation among many stakeholders (see Figure 1). The desired images of IS as a teaching discipline are projected by the most influential stakeholders, both academic and professional, in the form of IS curriculum standards (usually developed by IS academics) (Gorgone et al., 2006; Topi et al., 2010), bodies of knowledge developed by professional organizations, lists of top IT skills, IT jobs and issues reflecting the views of IT industry leaders (Downey et al., 2008; Gorgone et al., 2005; Kesner, 2008). The desired image of IS teaching is also expressed in recommendations of institutional advisory boards, as well as in curriculum-related articles published by IS academics (Merhout et al., 2008).

Internal stakeholders (IS faculty, students and graduates) are the most likely to identify with the IS discipline, as represented through the IS curriculum, and they reflect the IS teaching images projected by the influential stakeholder by developing program-specific curricula, preparing course syllabi, and in the case of students, selecting major and registering for courses and thus expressing their preference for certain curriculum. The IS teaching identity as represented in the internal stakeholder appraisals is likely to reflect their concerns for future professional careers, in case of IS students, and teaching interests and research interests, as well as the marketability of their programs, for the IS faculty (see Figure 1).

Other key stakeholders that impact the creation of the IS teaching identity include academic administrators, parents of students, IT professionals, even high-school career counselors and IS faculty. Figure 1 shows the stakeholder approach for teaching identity construction within the IS discipline.

THE THREE WAY ALIGNMENT MODEL OF IS IDENTITY

Following the arguments presented in the previous section, IS scholars are simultaneously involved in the creation of the two parallel identities, the research identity and the teaching identity (Figure 2).

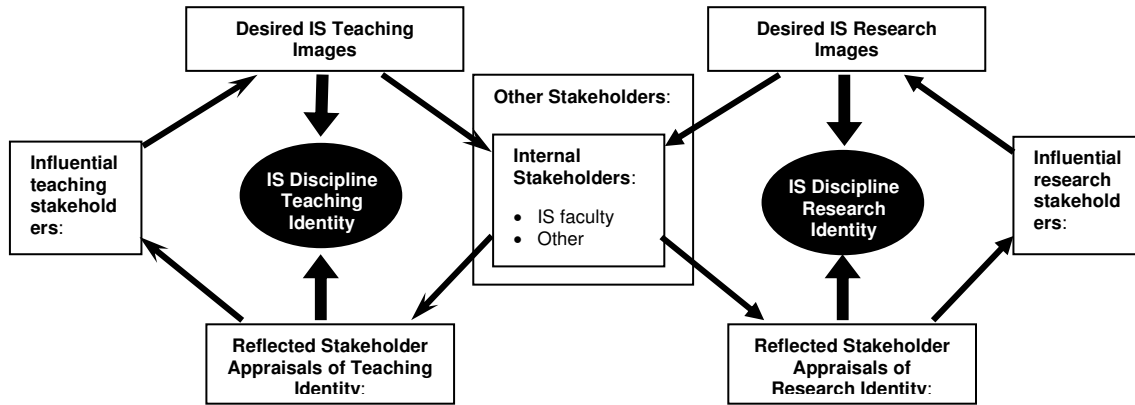


Figure 2. Parallel identity creation processes in the IS discipline

While some of the stakeholders involved in these processes are different, IT practitioners appear as important stakeholders in both of these processes, although perhaps their stake is higher in the case of the teaching identity negotiation. Moreover, projected images of the IS discipline teaching identity is likely to influence their perceptions of the IS discipline research identity and vice versa. Discrepancies in the two identities are likely to lead to confusion on the part of the internal and external stakeholders, and result in an overall weaker identity of the IS discipline.

Therefore, here we argue that alignment between IS discipline research and teaching identities is key to strengthening the legitimacy of the IS discipline. Furthermore, because anecdotal evidence suggests that IS practitioner needs are usually better reflected in the IS teaching identity, achievement of the alignment between teaching and research identities is likely to be instrumental in a closer alignment with the practitioner needs as well. Therefore, we propose that to strengthen the identity of the IS discipline, IS academics should seek to achieve alignment among the three elements: IS research, IS curriculum, and the needs of the IS practitioners (Figure 3).

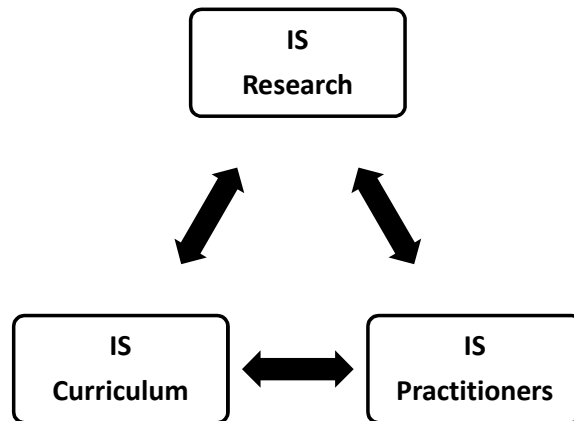


Figure 3. The IS discipline three-way alignment model.

Because of the dynamic nature of the IS field, the three-way alignment is likely to remain a moving target. However, IS academics can help improve the alignment by treating IS research and IS curriculum as related and equally important aspects of IS discipline identity creation. Joining the IS identity and the IS curriculum development discourses could be the first step in such a direction. In the next section we initiate a conversation about the relationship between the intellectual core of IS research and IS curriculum by relating the current IS curriculum development to the prevalent IS research topics.

IS RESEARCH TOPICS VERSUS IS CURRICULUM – A CRITICAL EXAMINATION

Examining IS Research Topics

During the past decade, empirical investigations of the IS research topics have been carried out by several IS researchers (Vessey et al., 2002; Sidorova et al., 2008; Taylor et al., 2010). Here we will focus on the results of one such investigation, although comparisons with results of other works on the nature of the IS research should be undertaken in the future.

Sidorova et al. (2008) used latent semantic analysis to examine abstracts of research published in three premier IS research journals in the period between 1985 and 2006. As the result of their analysis, the authors identify five core research areas in IS, including: information technology and organizations; IS development; IT and individuals; IT and markets; and IT and groups. In addition, Sidorova et al. (2008) also provide a list of 13 key research sub-areas, including IS development, IS management, value of IT, IT adoption and use, IT and markets, IT for group support, measurement instruments, IS discipline development, Decision Support Systems, HR issues in IS, virtual collaboration, project and risk management, and IT use by individuals, as well as 100 specific research topics.

The conclusion of Sidorova et al. (2008) was that the core of IS research lies at the boundary of technology and organizations. The research subareas and associated research topics identified in their study are particularly useful as they provide adequate granularity to allow comparison with topics taught as a part of the IS curricula. Due to space limitations, this study will focus on the 13 sub-areas identified as part of the IS core research areas for purposes of comparison with IS curricula.

Examining IS Curriculum

Ever since early IS curriculum models were introduced in the 1970s, the work on IS curriculum development at both undergraduate and graduate levels has continued (Gorgone et al., 2003), with the most notable recent IS curriculum recommendations including the “IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems” (Topi et al., 2010) and the MSIS 2006: Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems (Gorgone et al., 2006).

IS2010 (Topi et al., 2010) was produced by a joint ACM and AIS task force and provides curriculum recommendations in terms of core courses and electives. IS2010 is designed to be used by a variety of IS programs, as it recognizes several different career paths and recommends different course offerings for each of the career path concentrations. IS2010 core courses include: Foundations of Information Systems, Data and Information Management, Enterprise Architecture, IS Project Management, IT Infrastructure, Systems Analysis and Design, and IS Strategy, Management and Acquisition. Depending on the career path concentration, IS2010 recommends a subset of the elective courses. While IS2010 does not claim to provide an exhaustive list of electives, examples of such electives offered in the guidelines include Application Development, Business Process Management, Collaborative Computing, Data Mining/Business Intelligence, Enterprise Systems, Human-Computer Interactions, Information Search and Retrieval, IT Audit and Controls, IT Security and Risk Management, Knowledge Management and Social Informatics (Topi et al., 2010).

The MSIS 2006 curriculum was also developed by a joint committee representing AIS and ACM, and received endorsements of eight professional organizations (Gorgone et al., 2007). The guidelines are designed to fit graduate programs in IS, primarily at North American higher education institutions, where students are prepared for a variety of career paths from consulting to data administration. MSIS 2006 curriculum is structured around two sets of core courses, the technology courses and the management courses (see Table 2). In addition, the guidelines discuss the need for foundational courses and as well as business foundation courses. IT is however at the core of MSIS 2006 courses that are most critical for the formation of the IS discipline identity; therefore, we focus on these courses in the future discussion.

IS 2010 courses (Topi et al., 2010)		IS research sub-areas (13-factor solution) (Sidorova et al., 2008)	Common elements*
IS 2010.1	Foundations of Information Systems	Value of IT, IT Management*, IT and market, IS development	
IS 2010.2	Data and Information Management	IT Development*	Query languages, database design and data modeling
IS 2010.3	Enterprise Architecture	IT management* IS development*	IS planning Data modeling
IS 2010.4	IT Infrastructure	IS development*	Networks, Infrastructure, Standards
IS 2010.5	IS Project Management	Project and Risk Management, Virtual collaboration	
IS 2010.6	Systems Analysis and Design,	IS Development, Project and Risk Management, Virtual collaboration, Value of IT	
IS 2010.7	IS Strategy, Management and Acquisition	IT Management, Value of IT, IT Project and Risk management	
IS 2010 Elective	Application Development	IS Development*	Languages, prototyping, database design
IS 2010 Elective	Business Process Management		F100.58 Business Process Reengineering**
IS 2010 Elective	Collaborative Computing	IT for Group Support, Virtual Collaboration	No course description in Topi et al., 2010
IS 2010 Elective	Data Mining/Business Intelligence	IS development*, Decision support systems	Expert systems, intelligent systems, document management, DSS concepts
IS 2010 Elective	Enterprise Systems	IS management IT adoption and use IT use by individuals	ERP and IS implementation User participation in systems development, Training
IS 2010 Elective	Human-Computer Interactions	IT Use by Individuals	Individual differences, learning
IS 2010 Elective	Information Search and Retrieval		No course description in Topi et al., 2010
IS 2010 Elective	IT Audit and Controls	IT Development*	Control
IS 2010 Elective	IT Security and Risk Management	Project and Risk Management	F100.88 Security
IS 2010 Elective	Knowledge Management		F100.21 Knowledge management, F100.91 Knowledge-based systems

Table 1. Comparison of the IS2010 undergraduate curriculum with IS research subareas and topics.

*** Key common areas are identified only for cases of partial correspondence between sub-area and courses.**

Comparison and Gap Identification

A comparison of the IS2010 and MSIS2006 to the research sub-areas¹ identified in Sidorova et al. (2008) (see Tables 2 and 3) suggests that there is some degree of correspondence between what IS academics research and what they teach (or what they should teach according to the recommendations). At the undergraduate level, the courses that are best supported by the extant IS research include Foundations of Information Systems, IS Project Management, Data and Information Management, Systems Analyses and Design, IS strategy, Management and Acquisition and Collaborative computing. Notably, there appears to be scarce research on topics corresponding to such key courses as IT infrastructure, Enterprise Architecture, Business process management, and IT audit and control. Another observation is that the IS development research subarea appeared to be most relevant for many of the IS2010 courses. Yet Sidorova et al. (2008) findings suggest that the intensity of research on the related topics decreased over the past two decades, which points to potential increasing misalignment between IS research and curriculum. The graduate MSIS curriculum is more managerially focused, and thus is more closely aligned with such research sub-areas as Value of IT, IT and Markets and Project and risk management. The courses that are less supported by IS research include IT infrastructure and Enterprise Models.

The identified gaps point to the fruitful directions for future research, which may include placing additional focus on such topics as IT infrastructure management, enterprise architecture, and business process management. On the other hand, several IS research sub-areas (Sidorova et al., 2008) were not well represented in IS2010 or MSIS2006 courses, which points to fruitful directions towards enrichment of the IS curriculum. For example, issues of IS adoption and use have been widely researched, but are barely represented in the IS courses. Similarly, HR issues in IS might be something that students expecting to enter the IS field should be educated about.

IS 2010 courses (Gorgone et al. 2007)		IS research subareas (13-factor solution) (Sidorova et al. 2008)	Common elements
MSIS2006.1	IT Infrastructure	IS development	Networks, Infrastructure, Standards
MSIS2006.2	Analysis, Modeling and Design	IS Development, Project and Risk Management, Virtual collaboration, Value of IT	
MSIS 2006.3	Enterprise Models	IT management, Value of IT	ERP, SCM, F100.58 Business Process Reengineering
MSIS2006.4	Emerging Technologies and Issues	IT and Markets, Virtual Collaboration	
MSIS2006.5	Project and Change Management	IS development, Project and Risk Management	
MSIS2006.6	Policy and Strategy	IT management, Value of IT*, HR Issues in IS	
MSIS 2006.7	Integrated Capstone	Value of IT*	
MSIS 2006.8	Implications of Digitization	HR Issues in IS*	F100.88 Security, F100.67 Ethics
MSIS2006.9	Human Computer Interaction	IT Use by Individuals	

Table 2. Comparison of the MSIS2010 graduate curriculum with IS research topics and research subareas.

*Partial correspondence

CONCLUSIONS, CONTRIBUTIONS AND DIRECTIONS FOR FUTURE RESEARCH

In conclusion, a careful examination of the key stakeholders of the IS discipline suggests, that the IS curriculum is a key component in the creation of IS discipline identity and that the development of a stronger IS discipline identity is predicated on achieving alignment among the three key elements: IS research, IS curriculum and the needs of the IS practitioners. A comparison of the IS research sub-areas and IS curriculum standards suggests that while some degree of correspondence

¹ We used the course content outlined in the IS2010 (Topi et al. 2010) and MSIS2006 (Gorgone et al. 2007) and the specific research topics associated with the research subareas

exists between the IS research and IS courses, bringing the two closer together may benefit research, as well as teaching. While the comparison presented here is highly subjective and based on the authors understanding of the IS curriculum recommendations and of the IS subareas, we believe that a broader discussion on the alignment between IS research and IS curriculum is in order, and will benefit the IS discipline as a whole.

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