Journal of the Midwest Association for Information Systems (JMWAIS)

Volume 2019 | Issue 1 Article 1

2019

Management Information Systems (MIS) Curricula Development, Management, and Delivery - Possible Sharing Economy Solutions

Rassule Hadidi
University of Illinois at Springfield, rhadi1@uis.edu

Daniel Power
University of Northern Iowa, daniel.power@uni.edu

Journal of the Midwest Association for Information Systems

Volume 2019 | Issue 1 Article 1

Date: 01-31-2019

Management Information Systems (MIS) Curricula Development, Management, and Delivery - Possible Sharing Economy Solutions

Rassule Hadidi
University of Illinois Springfield, rhadi1@uis.edu

Daniel J. Power
University of Northern Iowa, Daniel.Power@uni.edu

Abstract

Effective use of information systems and modern business processes in private, public, and not-for-profit organizations is essential for them to become and remain successful enterprises. Higher education institutions often face challenges in keeping curriculum up-to-date as well as recruiting qualified faculty who can rapidly develop and deliver curriculum that prepares graduates who can utilize newer technologies, business models and processes. When developing new curriculum, we need to focus on our two main stakeholders – students and employers. Our evolving workforce needs and requires lifelong learning. Academic institutions need to adapt to these rapid changes and be agile and flexible in curriculum development and delivery. Several studies have looked at the knowledge and skill set of the current MIS graduates and future MIS professionals. Issues of rapid updating of curriculum and securing qualified faculty are a bit murkier and not addressed adequately in the MIS curriculum related literature. The current gap in expectations is difficult to fill with the traditional curriculum development and implementation cycle. We address these critical issues and suggest possible solutions.

Keywords: MIS curriculum development, curriculum management, curriculum challenges, industry and academic expectations gap, sharing economy solutions

DOI:1017705/3jmwa.000044

1. Introduction

Effective use of information systems and modern business processes in private, public, and not-for-profit organizations is essential for them to become and remain successful enterprises. Rapid and significant technological changes, newer business models, and processes often make it difficult for employees in organizations to remain up to date. Academic MIS departments often face challenges in keeping curriculum up-to-date as well as recruiting qualified faculty who can rapidly develop and deliver curriculum that prepares graduates who can use newer technologies and adapt business models and processes. Current challenges facing MIS curriculum development, management, and delivery is not a new phenomenon. The topic has been written about for more than four decades. Dickson, Benbasat, and King (1982) identified several major curriculum related challenges. Among them, the fact that in addition to technical skills, the information systems curricula should include managerial and organizational topics. By conducting a co-citation analysis of MIS scholarly contributions between 1980-1985, Culnan (1987) arrived at a similar conclusion that "while technology and technical issues may have once been central to MIS, the empirical evidence provided by this study suggests that current MIS research has a strong organizational and managerial focus" (p. 348). Given that the MIS field is just a little more than fifty years old, many of the issues related to the MIS curricula are due to the relatively newness of the field and rapid technology and organization change.

The technological and business process skills of MIS graduates quickly become obsolete unless they are regularly updated. Similarly, MIS curricula becomes outdated unless it is frequently and rapidly revised to keep up with new innovations. Maintaining an appropriate balance between technical and business knowledge is a major challenge facing MIS curricula development, management, and delivery. As pointed out by Downey, McMurtrey, and Zeltmann (2008) "For MIS curriculum designers, the results are clear. MIS is not a watered down computer science curriculum, rather it is a highly technical major that incorporates business fundamentals and prepares graduates for the key roles of managing people and technology in business organizations" (p. 361). A related challenge is the gap between what industry professionals expect and what academic institutions can provide.

Historically, at many institutions MIS curricula both at the graduate and undergraduate levels focused more on business applications of the technology. Several studies have looked at the knowledge and skill set of the current MIS graduates and future MIS professionals as a guideline to design an MIS curriculum. For example, Topi et al. (2015) surveyed a small number of Master's students from several universities around the world to identify the preferences of respondents regarding their desired knowledge and skill sets. This study indicated that the respondents prefer "individual foundational skills and high-level business competences more than technical or lower-level managerial competences" (p. 1). Downey, McMurtrey, and Zeltmann (2008) examined the critical skill needs of undergraduate MIS majors then mapped those skills into their proposed curriculum. Chie (2002) developed an undergraduate MIS degree program partially based on practitioners' expectations collected from several organizations in the Midwest United States region who employ MIS graduates from the program. Results of Chie's study reveal that "employers are looking for individuals with a strong systems orientation and a good understanding of an integrative business value-chain" (p. 151).

Kumar, Shah, and Smart, (2017) used the concept of "backward design" (Wiggins, & McTighe, 2005, p. 7) and developed an MS in IS curriculum that incorporates technology, communication, and business domain skills. Other studies have looked at the job title of MIS professionals to develop curriculum that fits the jobs' functions. Denton, Kleist, and Surendra (2005) used quality function deployment (Cohen, 1995) to demonstrate that MIS curriculum development is assuring quality. Drinka and Yen (2008) used a modified version of the Capability Maturity Model (Hurst, 2007) concepts to redesign an undergraduate MIS degree program. A major outcome of these studies is guidance to design a curriculum with an appropriate balance between technical and business knowledge.

Existing literature about MIS curriculum development, management, and delivery does not address the issues of rapid updating of the curriculum; how to fill the gap between industry and academic expectations; and the means of securing qualified faculty to deliver the courses. Further, these issues are difficult to adequately address with the traditional curriculum development and implementation cycle. We review the historical efforts in developing IS/MIS model curricula, then address these three critical issues.

2. IS/MIS Model Curricula

The Association for Computing Machinery (ACM), the Data Processing Management Association (DPMA – now known as AITP), the Association for Information Systems (AIS), the Community of European Management Schools (CEMS), and the International Federation for Information Processing Technical Committee for Education (IFIP) in collaboration with the British Computer Society (BCS) have developed IS/MIS model curriculum, some of them as early as the 1970's.

2.1 Undergraduate Model Curricula

Davis (1990) presented four model curricula initiatives. The ACM model was originally a Master's level curriculum that was first proposed in 1972 and was revised in 1982. An undergraduate version of the curriculum was also published. IFIP in collaboration with BCS developed a more practically oriented curriculum in 1974 with a revision published in 1987. The focus of CEMS was to standardize a portion of the curriculum among the major schools of management. The DPMA developed a two-year and a four-year undergraduate curriculum in 1981 (DPMA, 1981) that was revised in 1986 (DPMA, 1986).

Since the 1980's, several of the above associations and other organizations have combined forces to jointly develop IS/MIS model curriculum. Couger, Feinstein, and Dangermond (1994) described the process they used for soliciting input by representatives from ACM, DPMA, ICIS, and the newly formed AIS at the 1994 ICIS conference about an undergraduate IS model curriculum. The requested inputs dealt with critical issues such as the required courses and the balance between technical and behavioral topics. Other issues raised were the minimum support for offering sustainable programs as well as ways to regularly update the curriculum. In 1995, the above efforts resulted in the publication of the first undergraduate IS model curriculum jointly developed and recommended by ACM, DPMA, ICIS, and AIS (Couger et al., 1995). This model curriculum not only provided detailed guidelines for courses and curriculum development but also discussed the need for updating of the curriculum via electronic media and resources needed to be able to offer high quality undergraduate degree programs. In 1997, the above model curriculum was revised by ACM, AIS, and AITP (Davis, Gorgone, Couger, Feinstein, & Longenecker, Jr., 1997). This revision was reviewed at eleven national and international meetings and received input from more than 1,000 individuals from academia and industry.

The IS 2002 undergraduate model curriculum was published in January 2003 (Gorgone at al., 2003). This curriculum recognized the need for the coverage of "the information systems function" and "systems development" (p. 3). This curriculum also articulated major characteristics of IS professionals such as business background, analytical and critical skills, communication skills, ethical behavior, and ability to develop and implement systems that make overall organizational improvements. One characteristic of IS 2002 was that it was proposed mainly for North American schools. Another issue was that this model curriculum was only a slight modification of the 1997 curriculum (Topi et al., 2007). A revised model curriculum was developed in 2009 that was considered a major revision of the 1997 model (Topi et. al., 2009). This was a joint effort between representatives from AIS, ACM, AITP, and IFIP. Eight principles guided the development of this curriculum: i) it was based on consensus among the broader IS community, ii) it was designed based on competency requirements of graduates for entry level positions, iii) the model was designed as a guideline for faculty to design their own courses and degree programs, iv) sound educational methodologies was considered in the design of the curriculum, v) the model was developed with ample flexibility for easier adoption by various programs, vi) the model was not geared towards any specific domain, vii) the model included the core of content that is common to all information systems programs, and viii) the model was designed to suit positions that require both the curriculum core and electives (Topi et al., 2009). The latest version of the undergraduate IS model curriculum was published in 2010 (Topi et al., 2010). Like the 2009 curriculum, this model includes significant details about various courses, the domain core, IS core and electives as well as general electives. The core consisted of seven commonly offered courses in the IS area at that time. There were eleven elective courses for students to choose from. The curriculum included a specific level of topical coverage for each of the eighteen courses.

It is apparent that the IS/MIS undergraduate curriculum has been continuously evolving for almost fifty years. It has been almost nine years since the last model was updated. The pace of model curriculum update cannot match the technological and business process changes we have seen in the last two decades. The next section summarizes curricula development evolution at the graduate level.

2.2 Graduate Model Curricula

The first known Master's in Information Systems model curriculum with full course objectives and descriptions was developed by ACM curriculum committee on computer education for management (Ashenhurst, 1972). This curriculum consisted of thirteen courses focusing on information systems development. The courses were grouped into four categories: "analysis of organizational systems; background for systems development; computer and information technology; and development of information systems" (Ashenhurst, 1972, p. 372). This curriculum included courses that could be offered as a part of an MBA degree program.

The ACM curriculum committee published a revised model curriculum almost ten years after the initial version (Nunamaker, Couger, and Davis, 1982). This curriculum focused on "people needs, skill needs, tool needs" (p. 783) and included ten IS courses that covered both technology and organizational issues for the MS or MBA in IS. Four of the courses were identified as a minor area of emphasis for general MBA degrees. The focus of this curriculum was to prepare systems designers. The model articulated faculty and hardware/software requirements to deliver this curriculum.

In 1998 almost sixteen years after the publication of the ACM model curriculum, a joint committee of ACM and AIS representatives was appointed (Davis et al., 1998) to recommend a new curriculum guideline for a Master of Science (MS) in IS. At the time there were about fifty MS in IS programs in the U.S. – about half of them were in Colleges of Business and the other half in other colleges (Davis et al., 1998; Gorgone & Gray, 1999). The committee planned to recommend a curriculum where its graduates would have the following characteristics: "broad business and real-world perspective; communication, interpersonal, and team skills; analytical and critical thinking skills; integrated IT and business foundations, a core of IS, and specific skills leading to a career" (Davis, 1998, p. 438, Gorgone & Gray, 1999). This curriculum degree structure consisted of Information Technology (IT) foundations, business foundations, an IS core, integration, career track courses (Gorgone & Gray, 1998, p. 1101, Gorgone & Gray, 1999).

A joint committee of representatives from ACM and AIS published the MSIS 2000 (Gorgone et al., 2000) model curriculum and guidelines for MS programs in IS that was endorsed by seven other professional organizations including AITP, DSI, SIM, and IAIM. This curriculum guideline was intended for programs in the U.S. and Canada. The foundation of this curriculum included courses in the "foundations, core, integration, and career tracks" (Gorgone et al., 2000, p. 1).

Gorgone, Gray, Stohr, Valacich, and Wigand (2006) published a new MSIS model curriculum six years after the publication of the 2000 model curriculum. Like the previous model, this curriculum was also endorsed by several other professional organizations. This was the fourth collaboration effort between AIS and ACM and it was speculated that MSIS programs would begin to receive separate accreditation in a few years (Gorgone et al., 2006). This curriculum was also geared towards programs in the U.S. and Canada. The major differences between the 2000 and 2006 curricula include the addition of an IS technology and an IS management course. In addition, more emphasis was placed on "business processes, emerging technologies, globalization, human-computer interaction, impacts of digitization" (Gorgone et al., 2006, p. 8).

The first globally focused, comprehensive MSIS model curriculum, MSIS 2016, was published in 2017 (Topi et al., 2017), about ten years after the 2006 model. In addition to its global perspective, this curriculum is based on 88 competency areas and received input from the global IS community for its development. The model is based on nine information systems competencies: "business continuity and information assurance; data, information, and content management; enterprise architecture; ethics, impacts, and sustainability; innovation, organizational change, and entrepreneurship; IS management and operations; IS strategy and governance; IT infrastructure, and system development and deployment" (Topi et al., 2017, p. iv). The model also articulates individual foundation courses and areas of domain competencies. The curriculum includes U.S. and European models and requires at least 30 semester hours based on U.S. credit hours or at least 60 ECTS credits based on the European standard.

One of the above 88 competencies (No. 42) is "innovating by exploiting an emerging method or technology" (Topi et al., 2017, p. 21). The competency and domain of practice articulated in the model curriculum can be used to develop specialized programs or certificates such as an MS in Data Science or a certificate in Business Intelligence, or a certificate in Blockchain technology and applications.

3. Curricula Development, Management, and Delivery Challenges – Possible Solutions

IS/MIS curricula has developed over the last fifty years. A few findings of the review are: i) the curriculum has continuously evolved; ii) technology and business processes and models are changing a lot faster than the professional organizations and academic institutions can update their curriculum; iii) maintaining an appropriate balance between technology and business fundamentals coverage in the curriculum is still a challenge; iv) industry and academic expectations gap has not been fully addressed in many of the model curriculum partially due to the fact that when we develop the curriculum we do not pay timely attention to employers of our graduates; v) the rapid technological changes will continue to strain faculty and financial resources to be able to offer up-to-date and sustainable curriculum in many institutions. We need to find new and innovative ways to remedy or at least minimize the impacts of these challenges. A question to ask is can innovative ideas from the sharing economy help?

The sharing economy phenomenon disrupted traditional business models and continues to do so. Can similar concepts impact MIS curriculum development, management, and delivery? Perhaps so. Can a star faculty member serve multiple institutions? Can an excellent and innovative course developed by a highly qualified faculty member fulfil a required course for multiple programs or institutions' curricula? Can different MIS programs share access to newer technologies so that they are used more efficiently? Some technology sharing is already happening via cloud services in several areas including enterprise resource planning systems. Can Colleges of Business advisory board members take turns and provide a monthly class lecture and in return a faculty member would serve a few hours a month at the business to help solve an urgent business problem or respond to a technology opportunity? Can sharing economy concepts help fill the gap between industry and academia expectations and at the same time make MIS programs more affordable?

Although most likely we are still at the early stages of developing a sharing economy, its implications are already very broad. Ride and space sharing services have paved the way for other innovations such as home meal and WiFi sharing services and on demand staffing needs to name a few. Are any of these services similar to what MIS departments do? Of course, a question to ask is whether the sharing economy concepts will be acceptable to the public if similar ideas can be used by the MIS departments. Perhaps the following survey results may shed some light to help answer this question. A recent PWC (2015) survey of U.S. adults familiar with the sharing economy may help predict the acceptability of sharing in MIS departments. In the study 86% of the respondents agree that the concept of a sharing economy application "makes life more affordable," 83% agree that it "makes life more convenient and efficient," and 76% agree that "it's better for the environment" (p. 9). About 78% of the respondents "agree that the sharing economy reduces waste" (p. 21).

Implications of the sharing economy for the labor force is a more serious challenge and potential problem. If a much larger percentage of services are performed by a temporary and part-time labor force, or if a much larger number of tools are shared instead of each individual household owning one – what will be the effect on production and the labor that goes into that production? Similarly, in the case of education, if a smaller number of courses and degree programs are developed by a very highly qualified faculty and thousands of individuals enroll in the same course, as some have advocated, what is the quality of the overall learning experience? What are the implications for faculty? As we describe below, there are ways to use some concepts of the sharing economy while maintaining and even improving the overall quality of curriculum development, management, and delivery.

The question we need to ask ourselves is not how, when, and the extent to which technology will further disrupt MIS education. Rather, we must ask: what are the best approaches to take advantage of educational technology to improve MIS curriculum and provide education more effectively? In particular, the networking and peer-to-peer concepts of the sharing economy are useful models to learn from and perhaps emulate.

Humphreys (2012) points out that technology has changed at least two things about higher education. First, students today learn differently than prior generations and second, educators currently work differently due to the availability and accessibility of various types of educational technologies. A recent survey (Dahlstrom, Brooks, Grajek, and Reeves, 2015) indicates that about 49% of all undergraduate students took at least one fully online course in 2014. Further, about 81% of the undergraduate students indicated that some of their courses were taught partially online and partially face-to-face, known as blended course delivery.

Using educational technologies in higher education in general and by MIS programs should not occur simply because they are available. Rather, we need to focus on ways to use technology to facilitate and improve not only learning and helping students to succeed but also in the overall process of curriculum development, management, and delivery. Instead of taking a few years to update and publish a model curriculum, we need to more effectively rely on blogs or similar tools to update curriculum every semester. We also need to find ways to more effectively develop and deliver learning content and materials. This can be done using the sharing economy concept of collaboration among content providers and among consumers of the content following the networking and peer-to-peer models.

Major drivers encouraging sharing economy applications are more productive use of underutilized resources and assets, increased flexibility, reduced waste, creating a better balance between the supply and demand for various services, saving the environment, lowering the cost of services to make them more affordable, making services more convenient, and generating part-time employment revenue. One could argue that these drivers play a role in higher education as well.

Real-time and live curriculum update facilitate better management of curriculum development. Similarly, the availability and wide dissemination of open source content enhance the quality and quantity of educational resources. These new resources can be incorporated in e-learning as well as face-to-face instruction. E-learning allows students and faculty to learn and teach any time, from anywhere, using many different platforms. Demand for certain courses and degree programs is rapidly changing. In some program areas demand is decreasing, while for others demand is increasing. More students could be served in the under enrolled courses. Many state governments are reducing financial support for higher education and the costs of providing high quality education are increasing. We suggest that it is time to seriously consider facilitating ways to better utilize the available "seats" in fully online and even blended courses if geographic distance permits. This change can begin sharing, at least, by higher education institutions within the same state system and then expand sharing further. The need for high quality and widely available technical programs such as MIS is increasing and of paramount importance. The process of course and curriculum updating in many institutions is not adequately agile. We in higher education need to more intelligently use our available resources to manage our curriculum.

Overall cost per credit hour decreases as the number of individuals enrolled in a class increases and quality most likely will not suffer if an appropriate enrollment cap is placed on each course in the curriculum. Sharing will help make the course costs lower and more affordable. We are not advocating high enrollment in face-to-face, online, or blended courses to bring the costs down. We strongly believe in delivering high quality curriculum with a significant amount of faculty and practitioner input, guidance, and interaction with students, and frequent interactions among students. It is also important to have interactions when creating the course contents, and a sufficient level of technical, library, and career services support. We also believe that if courses are shared among various institutions, it is more likely that they will be offered on a more regular frequency that makes it more convenient for potential students to take the required courses and graduate in a timely fashion.

Sharing economy applications and e-learning are here to stay and will likely grow in terms of reach and range of services. Websites like CourseHero.com, TeachersPayTeachers.com, Udemy.com and Khanacademy.org foreshadow the sharing in education. Those Universities and educators who adopt sharing applications and participate in their development will most likely benefit the most. Forward-looking individuals, institutions, cities, and regions need to envision their environment from the existing networked global village point of view and plan their future educational infrastructure development accordingly. The majority, if not all, of our successes come from individuals who use their entrepreneurial spirit to develop new applications, products, and services and find ways to better serve needs of communities. We need to take these realities into consideration when we think about and consider IS/MIS curriculum development, management, and delivery (Hadidi & Power, 2017).

We can and should use analytic tools to measure effectiveness of sharing economy models. Similarly, we need to use "emerging technologies" (Grajek, 2016, p. 11) such as course and learning analytics to evaluate effective teaching and learning. We need to use "predictive analytics" (Baer and Campbell, 2012) to better understand students' learning habits so that we can design more effective instructional and learning content. Some course management systems have already implemented this kind of capability in their platforms. These steps will help to identify at risk students to improve learning outcomes and hence to increase their success. It will also improve the performance and accountability of our degree programs and certificates. Along with the use of educational technology to improve teaching and learning, we need new paradigms in degrees and learning. In response to rapid technological and business process changes, with input from industry professionals, we need to develop rigorous and relevant shorter length executive courses and certificates for full-time professionals. We still see that in many of our colleges, departments function as independent silos. Little, if

any joint curriculum development occurs. Too often turf battles still govern curriculum. Collaboration between faculty in technical areas and communication programs, collaboration in systems analysis and design courses with marketing and psychology would be ideal.

These transformative goals can be achieved by collaboration and team work among departments, colleges, and institutions. These sharing goals can also be achieved by developing group projects and learning activities among learners as well as facilitating more interactions for learners with various types of digital educational materials including interactive learning games, case studies, and simulation that can now be more easily created and disseminated (Hadid & Power, 2017). Transforming business and MIS higher education is a shared responsibility of faculty, administrators, industry professionals, and business leaders. To create 21st century models for higher education, we believe that various partnerships are essential. These partnerships should go beyond departments, colleges, and institutions. We suggest a consortium of state or regional-wide institutions of higher education along with alumni, and various for-profit, not-for-profit, governmental, non-governmental, and other types of organizations to collaborate on program development and delivery. We can create better, more robust programs and certificates that meet the widespread need for MIS degrees and continuing education.

4. Overview of the contents of this issue

This issue of the journal includes four traditional research articles.

Cindy Zhiling Tu, Joni Adkins, and Gary Yu Zhao present a theoretical model based on Protection Motivation Theory that identifies key factors affecting employees' plans to follow their employers' BYOD required security policies. Due to the critical nature of systems and data security in organizations, this is a very timely and useful article for professionals and academics as well.

Gaye Kiely, Ciara Heavin, and Patricia Lynch look at reasons behind the lack of interests from female students to select IS/T as a field of study and a future career. They develop a descriptive explanatory model to look at the female student decision-making process with respect to the selection of their field of study and future career. Given the importance of and the emphasis on the need for STEM educated individuals and the imbalance currently existing between the number of female and male IS/T professionals, almost all over the world, this is a very interesting article.

Roxanne Vroegindeweij and Arthur Garvalho investigate the need for cognitive computing in the healthcare domain. They have used the Technology Acceptance Model and specifically looked at potential uses of systems such as IBM Watson in this domain. They interviewed healthcare professionals in the Netherland and present their interesting results.

Joey George and Jie Luo study the relationship between media type and its effects on user's ability to accurately detect deception. Their data-driven study suggests that HR experts did not perform any better than novices in their ability to detect deception. Their analysis indicates that both experts and novices will do better in deception task detection when they use audiovisual types of communication compared with just audio.

We appreciate and wish to acknowledge the contributions of reviewers for this issue of the journal, including Gaurav Bansal (University of Wisconsin, Green Bay), Mari Buche (Michigan Technological University), Yi "Maggie" Guo (University of Michigan, Dearborn), Barbara Klein (University of Michigan, Dearborn), Alanah Michell (Drake University), Neetu Singh (University of Illinois Springfield), Ryan Schuetzler (University of Nebraska, Omaha), Troy Strader (Drake University), Ishwor Thapa (University of Nebraska, Omaha), and Xiaodan Yu (University of International Business and Economics, Beijing, China).

References

Ashenhurst, R. (Ed.) Curriculum recommendations for graduate professional programs in information systems. *Communications of. ACM* 15, 5 (May 1972), 364-398.

Baer, L., & Campbell, J (2012). From Metrics to Analytics, Reporting to Action: Analytics' Role in Changing the Learning Environment. In Oblinger, D. G. (Editor) Game Changers – Education and Information Technologies, 53-66. EDUCAUSE.

Chie, I. C., (2002). Developing a Management Information Systems (MIS) curriculum: Perspectives from MIS practitioners. *Journal of Education for Business*, January/February, 151-158.

Cohen, L. (1995). Quality function deployment. New York: Prentice-Hall.

Couger, J. D., Feinstein, D. L., avid; and Dangermond, J. (1994). Trying to hit a moving target: Report on proposed joint ACM/DPMA/AIS/ICIS undergraduate IS curriculum update. ICIS 1994 Conference Proceedings. http://aisel.aisnet.org/icis1994/71.

Couger, J. D., Davis, G. B., Dologite, D. G., Feinstein, D. L., Gorgone, J. T., Jenkins, A. M., Kasper, G. M., Little, J. C., Longenecker, Jr. H. E., and Joseph S. Valacich, J. S. (1995). IS'95: Guideline for undergraduate IS curriculum, *MIS Quarterly*/*September*, 341-359.

Culnan, M. J., (1987). Mapping the intellectual structure of MIS, 1980-1985: A co-citation analysis. *MIS Quarterly*, 11(3), 341-353.

Dahlstrom, E., Brooks, D. C., Grajek, S., & Reeves, J. (2015). ECAR Study of Students and Information Technology, research report, Louisville, CO, ECAR, December 2015.

Davis, G. B. (1990). Models for the Information Systems Curriculum. A panel presentation, ICIS Conference Proceedings. http://aisel.aisnet.org/icis1990/19

Davis, G. B., Gorgone, J. T., Couger, J. D., Feinstein, D. L., and Longenecker, Jr., H. E. (1997). Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems, Association of Information Technology Professionals.

Davis, Gordon; Feinstein, David; Stohr, Ted; Valacich, Joseph; Wigand, Rolf; Gorgone, John; and Gray, Paul, "The Master's Degree Program in Information Systems" (1998). ICIS 1998 Proceedings. 61. http://aisel.aisnet.org/icis1998/61

Denton, J. W., Kleist, V. F., and Surendra, N. (2005). Curriculum and course design: A new approach using quality function deployment. *Journal of Education for Business*, November/December, 111-117.

Dickson, G. W., Benbasat, I., and King, W. R. (1982). The MIS area: Problems, challenges, and opportunities. *Data Base*, Fall 1982, 7-12.

Downey, J. P., McMurtrey, M. E., and Zeltmann, S. M. (2008). Mapping the MIS curriculum based on critical skills of new graduates: an empirical examination of IT professionals. *Journal of Information Systems Education*, 19(3), 351-363.

DPMA 1981. DPMA model curriculum, 1981. Park Ridge, Illinois: Data Processing Management Association.

DPMA 1986. DPMA model curriculum, 1986. Park Ridge, Illinois: Data Processing Management Association.

Drinka, D. and Yen, M. Y. (2008). Controlling Curriculum Redesign with a Process Improvement Model. *Journal of Information Systems Education*, 19(3), 331-342.

Gorgone, John and Gray, Paul, "Master of Science in Information Systems Status Report of the Joint ACM/AIS task Force on Graduate IS Curriculum" (1998). AMCIS 1998 Proceedings. 377. http://aisel.aisnet.org/amcis1998/377

Gorgone, John and Gray, Paul, "The Master of Science in Information Systems Curriculum" (1999). AMCIS 1999 Proceedings. 64. http://aisel.aisnet.org/amcis1999/64

Gorgone, John; Gray, Paul; Feinstein, David L.; Kasper, George M.; Luftman, Jerry; Stohr, Edward A.; Valacich, Joseph S.; and Wigand, Rolf (2000) "MSIS 2000: Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems, "*Communications of the Association for Information Systems*: Vol. 3, Article 1. DOI: 10.17705/1CAIS.00301 Available at: https://aisel.aisnet.org/cais/vol3/iss1/1

Gorgone, John; Davis, Gordon B.; Valacich, Joseph S.; Topi, Heikki; Feinstein, David L.; and Longenecker, Herbert E. (2003) "IS 2002 Model Curriculum and Guidelines for Undergraduate Degree Programs in Information Systems," *Communications of the Association for Information Systems:* Vol. 11, Article 1. DOI: 10.17705/1CAIS.01101 Available at: https://aisel.aisnet.org/cais/vol11/iss1/1

Gorgone, John T.; Gray, Paul; Stohr, Edward A.; Valacich, Joseph S.; and Wigand, Rolf T. (2006) "MSIS 2006: Model Curriculum and Guidelines for Graduate Degree Programs in Information Systems, "*Communications of the*

Association for Information Systems: Vol. 17, Article 1. DOI: 10.17705/1CAIS.01701 Available at: https://aisel.aisnet.org/cais/vol17/iss1/1

Grajek, S. (2016). Digital capabilities in higher education, 2015: E-learning. research report. Louisville, CO, ECAR, 1-16.

Hadidi, R. and Power, D. (2017). Implications of the Sharing Economy for Online and Blended Education. *Journal of the Midwest Association for Information Systems (JMWAIS)*: Vol. 2017: Iss. 1, Article 1.

Humphreys, D. (2012). The questions we need to ask first: Setting priorities for higher education in our technology-rich world. In Oblinger, D. G. (Editor) Game Changers – Education and Information Technologies, EDUCAUSE, pp. 25-36.

Hurst, J. (2007). Capability maturity model and its applications, white paper, GIAC (Global Information Assurance Certification) Organization.

Kumar, A., Shah, V. and Smart, K. (2017). Moving forward by looking backward: Using backward design to develop an innovative MSIS program. Proceedings of the twenty-third Americas Conference on Information Systems, Boston.

Nunamaker, Jr., J. F., Couger, J. D., and Davis, G. B. (Eds.). "Information Systems Curriculum Recommendations for the 80s: Undergraduate and Graduate Programs," *Communications of the ACM* (25:11), November 1982, pp. 781-805.

PWC (2015). The Sharing Economy – Consumer Intelligence Series. Retrieved from: http://www.pwc.com/cis, December 2016.

Topi, Heikki; Valacich, Joseph S.; Kaiser, Kate; Nunamaker, Jr., Jay F.; Sipior, Janice; de Vreede, Gert Jan; and Wright, Ryan T. (2007) "Revising the IS Model Curriculum: Rethinking the Approach and the Process, "*Communications of the Association for Information Systems*: Vol. 20, Article 45. DOI: 10.17705/1CAIS.02045 Available at:https://aisel.aisnet.org/cais/vol20/iss1/45

Topi, H., Valacich, J.S., Wright, R.T., Kaiser, K.M., Jay F. Nunamaker, J., Sipior, J.C., and Vreede, G.-J.d. "Revising the IS Model Curriculum: New Outcome Expectations," *Communications of AIS* (23) 2008, pp 591-602.

Topi, Heikki; Valacich, Joseph S.; Wright, Ryan T.; Kaiser, Kate; Sipior, Janice C.; Nunamaker, Jay F.; Wagner, Christian; and BjornAndersen, Niels, "IS 2009: Changing the Course for Undergraduate IS Model Curricula" (2009). ICIS 2009 Proceedings. 149. http://aisel.aisnet.org/icis2009/149.

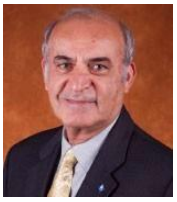
Topi, Heikki; Valacich, Joseph S.; Wright, Ryan T.; Kaiser, Kate; Nunamaker, Jr., Jay F.; Sipior, Janice C.; and de Vreede, Gert Jan (2010) "IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems," *Communications of the Association for Information Systems*: Vol. 26, Article 18. DOI: 10.17705/1CAIS.02618 Available at: https://aisel.aisnet.org/cais/vol26/iss1/18.

Topi, H., Karsten, H., Brown, S. A., Carvalho, J. A., Donnellan, B., Shen, J., Tan, B. C.Y., and Thouin, M. F. (2015) Current MSIS Students' Views on Program Outcomes. IAIM Conference Proceedings. Available at: http://aisel.aisnet.org/siged2015/9.

Topi, H., Karsten, H., Brown, S. A., Carvalho, J. A., Donnellan, B., Shen, J., Tan, B. C. Y., and Thouin, M. F. (2017). MSIS 2016 Global Competency Model for Graduate Degree Programs in Information Systems. *Communications of the Association for Information Systems*, 40(18). DOI: 10.17705/1CAIS.04018 Available at: http://aisel.aisnet.org/cais/vol40/iss1/18

Wiggins, G. P., and McTighe, J. (2005). Understanding by Design. Association for Supervision and Curriculum Development (ASCD).

Author Biographies



Rassule Hadidi is Professor and Head of the Management Information Systems Department at the College of Business and Management, University of Illinois Springfield. His current research areas of interest include online and blended teaching and learning pedagogy and its comparison with face-to-face teaching; MIS curriculum development and quality assessment; cloud computing and its applications for small and medium-sized enterprise; and quality of online information. He is the First Hanson Professional Services Faculty Scholar; served as the President as well as the At-Large Director of the Midwest Association for Information Systems and is the founding Managing Editor of the Journal of the Midwest Association for Information Systems.

Daniel J. Power is a Professor of Information Systems and Management in the College of Business Administration at the University of Northern Iowa. Power serves as the editor of the Journal of the Midwest Association for Information Systems (JMWAIS), DSSResources.com, PlanningSkills.com, and Decision Support News. His research interests include the design and development of decision support systems and how these systems impact individual and organizational decision behavior.