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Information Technology is Transforming the Heartland: Making the Case for Midwest United States

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

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

Joey F. George
Iowa State University, jfgeorge@iastate.edu

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Editors' Comments

Information Technology is Transforming the Heartland:
Making the Case for Midwest United States

Information Technology is enabling and facilitating dramatic changes in the region of the United States sometimes called the Heartland. The Midwest United States has always enjoyed an abundant water supply, thanks to the major rivers and lakes in the region. There is also a vast, well-maintained highway system, and in some cases an expanding transportation system with high speed rail (between St. Louis and Chicago). Major airports in the region facilitate travel all over the world, both to and from the Midwest, with a high degree of frequency. Further advantages include the availability and relatively low cost of land, as well as lower costs, overall, of doing business. Now Information Technology is removing barriers of time and space and Information Technology positions the United States Heartland at the center of the Global Info Sphere. Place matters less than quality of life.

A little more than ten years ago, the Midwest Association for Information Systems (MWAIS) was established to promote our understanding of Information Technology. Since then, MWAIS has held ten annual conferences hosted by: Grand Valley State University, University of Illinois Springfield, University of Wisconsin - Eau Claire, Dakota State University, Minnesota State University – Moorhead, University of Nebraska – Omaha, University of Wisconsin – Green Bay, Illinois State University, Iowa State University, and Pittsburg State University. The 11th and 12th annual MWAIS conferences are scheduled to be held at the University of Wisconsin – Milwaukee and the University of Illinois Springfield, respectively.

Journal of the Midwest Association for Information Systems (**JMWAIS**) was initially proposed at the September 13, 2013 meeting of the MWAIS executive committee and was approved at the October 18th meeting of the committee. The inaugural issue was published in January 2015. Both of these initiatives were the result of regional collaborative efforts among a number of individuals, higher education institutions, as well as governmental and private sector organizations.

For this second volume of the journal, we find it timely to highlight some strengths of the Midwest region, identify some challenges, as well as articulate ways in which technology is transforming the area and its economy. The term "knowledge economy" was first used by Peter Drucker in his 1969 book and we articulate several points related to that. We are hoping stakeholders in the region, including local and state government policy makers, private business and community leaders, not-for-profit organizations, and educational leaders all facilitate the creation of a collaborative environment to make the Midwest United States a more economically competitive region. Information technology will have to play a vital role for this significant improvement to occur given the current knowledge-based global economy. We also hope highlighting some of the strengths of the Midwest US keeps the current entrepreneurs and innovators and attracts new ones to this promising region of the country.

As of January 1st 2016, the US had a population of 322,762, 018. The twelve states of Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin, which make up the Midwest, had a population of approximately 69,965,363. This accounts for 21.67% of the nation's population (www.census.gov). This is the second most populous area after the Southern region. The Midwest is home to a relatively large number of well-educated individuals, thanks to the availability of a significant number of high quality higher education systems, which provide education at a reasonable cost in face-to-face, blended, and online modes of delivery. In fact, a number of nationally ranked programs are currently offered by higher education institutions in the Midwest region (US News and World Report's Best Graduate Schools, 2015).

We face challenges in the Midwest as well. Some states in the region, unfortunately, are losing their college age and newly graduated population, partially due to the more pleasant climates elsewhere. But more importantly, the lack of

adequate funding for new ideas forces some entrepreneurs to move to areas where more funding is available. To minimize this migration, it is essential for all stakeholders in the region to create entities such as Community Development Foundations and Technology/Business Incubators with the help of local and regional Chambers of Commerce. These resources can provide entrepreneurs and innovators with attractive assistance in terms of space, technical advice, mentoring, and financial advantages. Significant potential even exists for early stage venture capital investments in the region. Pro-growth efforts in technology and innovation areas, in turn, have the ability to impact unemployment and underemployment issues currently facing some parts of the region. Development of human capital is another major advantage which could spring these kinds of initiatives.

Information Technology and Information Systems Impact

Information technology and information systems (IT/S) are changing almost everything we do with an accelerated pace. We have already experienced and benefited from the disruptive nature of IT/S in areas such as: communication, collaboration, commerce, community organizing, culture, education, entertainment, finance, marketing, manufacturing, news media, philanthropy, publishing, retail, supply chain, and transportation. But, this is just the beginning. The availability of educational technology has significantly inspired pedagogical changes from how we educated two decades ago. Similarly, organizations of all types, have already gone through or are currently facing the transformation that comes from the usage and application of various types of information technology and systems – impacting business processes, strategic planning, and decision making.

The reality of everything digital is almost upon us. Availability of low cost data storage and high-speed retrieval, via cloud services, allows even smaller entities to provide competitive IT/S based services. It is now possible and feasible to establish high speed and relatively secure inter-firm and inter-organizational collaboration and control systems. This is also now possible for intra-firm and intra-organizational entities. Similar technologies even make it accessible and efficient for local and state governments to conduct business and provide these services to citizens.

Availability of longitudinal digital data and predictive analytic tools makes it possible to perform better analysis and provide more accurate and efficient services in areas such as health care, local and global supply chain, auditing, and law enforcement.

Recent Examples of Promising Initiatives in the Midwest

As we articulated in previous sections, the Midwest region - with its significant natural and human resources and manufacturing history - has a vital role to play in order to promote not only the region, but also the nation's economy. After all, the Midwest was the economic engine during the last century. The region should be able to transition from the old to the new knowledge-based and digital economy. A number of steps are needed to be able to do that. First, collaboration between the private and public sector entities in research and development is essential. Second, similar collaboration among industries in the region is needed to achieve economies of scale. Third, institutions of higher education and the community college systems in the region need to develop a cohesive plan for work force development, suitable for the knowledge-based economy.

Over the last couple of years, several promising initiatives have started in the Midwest region. The Digital Manufacturing and Design Innovation Institute (DMDII) (dmdii.uilabs.org) is based in Chicago and Detroit. It is a significant collaborative enterprise between the Federal Government and the public sector. It involves institutions of higher education, as well as non-profits in the Midwest and beyond. This institute is a part of the UI LABS (www.uilabs.org). The main goal of DMDII is to help and provide support for all manufacturing entities in the nation to implement digital manufacturing and design technologies. The Detroit affiliation with DMDII, in particular, is significant given the re-birth of the auto industry and IT/S investment in that area. It is hoped these efforts will push for insourcing instead of outsourcing.

Among the activities of DMDII is the creation of a series of online courses related to digital manufacturing and design. The institute has also opened multi-state (Illinois and Iowa) chapters in the Quad Cities, as well as in other municipalities (such as Rockford, Illinois).

"City Digital" (www.Citydigital.org) is an additional project of the UI Labs, currently up and running. The main focus of this project is to foster infrastructure innovation, which cities around the world can use. There is also a summer institute for sustainability and energy. Other potential areas of innovation include transportation management and logistics, as well as energy informatics.

Popular Mechanics (cf., http://www.popularmechanics.com/culture/g1859/the-14-best-startup-cities-in-america/?slide=1) listed the 14 best tech startup cities in America, and 5 of the 14 are in the Midwest. St. Louis is number one, followed by Des Moines (9), Cleveland (10), Urbana (11), and Detroit (13). *Entrepreneur* magazine (http://www.entrepreneur.com/slideshow/248148) put Kansas City and Minneapolis/St. Paul on their list of 9 hot startup cities that are not New York or San Francisco. In fact, the startup scene focused on Omaha, Des Moines, and Kansas City is referred to as the "Silicon Prairie" (https://www.themuse.com/advice/the-new-startup-scene-silicon-strip-to-silicon-mitten).

A promising trend in the Midwest region is that several states including Minnesota, Nebraska, and Michigan were among the fastest-growing states for technology related jobs during the first half of 2015 according to a Dice analysis of the Bureau of Labor Statistics (www.dice.com).

As an example, the September 24, 2015 *Chicago Tribune* issue reported that Huld (www.huld.com), a startup company that provides video analysis tools for coaches to help sport teams, moved to the Midwest. In this case, they came to Lincoln, Nebraska from the West Coast, due to the lower costs of doing business in the Midwest.

The Role of Higher Education in the Knowledge-based Economy

Corbett Broad (2012) states that "among the many strengths of higher education, the ones most frequently mentioned are the roles played by its mission that yields value to society and helps create the future." Higher education has a vital role to play in order to achieve many potential advantages the 21st century knowledge-based economy has to offer. The most significant is for the institutions to prepare and educate the workforce capable of filling the types of positions that, in many cases, are quite different than just a decade ago. These are positions that are highly knowledge-intensive. Of course basic research, new knowledge, new product development, and innovation all have significant roles to play as well.

We need to educate and train the highly skilled workers who can innovate in this very competitive and global knowledge-based economy. Higher standards in reading, writing, arithmetic, and an adequate level of technical knowledge are currently required for many occupations. Higher education is no longer a luxury for a select few of high school graduates. There needs to be closer communication, collaboration, and co-operation between higher education institutions, community colleges, and school districts. We need to prepare a much larger percentage of high school graduates to be college ready.

As Lingenfelter (2012) indicates, during the 1970's about 32% of high school graduates filled nearly 40% of the available jobs. These figures were significantly decreased by 2009 to 14% and 31%, respectively. More post high school education is not the only necessary solution. Continuing education and lifelong learning is also essential. Higher education institutions can and should prepare curriculum, such as shorter term certificates, to facilitate educating and bringing up-to-date the knowledge and skill-set of even the currently employed knowledge workers. We need to continuously supply the intellectual capital.

Rhodes (2001) states that "universities are the engines of economic growth, the custodians and transmitters of cultural heritage, the mentors of each new generation of entrants into every profession, the accreditors of competency and skills, and the agents of personal understanding and societal transformation." For sustainable growth and development, the need for high quality, widely available, accessible, and affordable higher education is clearly paramount. A college degree is needed and even graduate education is preferred for many positions. It is up to us in higher education to deliver what our communities and our region are expecting.

Overview of the contents of this issue

This issue of the journal includes three papers. Two traditional research papers and an enterprise computer security literature review.

Bordoloi, Powell, and Bordoloi look at the ongoing debate about the American healthcare reform initiative and examine how "presentation rhetoric" may affect message impact. They conducted an experiment using two rhetorically different and opposing videos related to the healthcare debate. Based on the analysis of data collected from the experiment, they concluded messages that combine text, image, and sound seem to have a stronger impact on viewers compared with presentations that do not have these characteristics.

Klein, Guo, and Zhou conducted a longitudinal study by comparing data from two surveys collected over a five year (2007 to 2012) period in China related to dimensions of information quality. Their findings show that information consumers in China rated "believability," "reputation," and "value added" as less important at the end of the five year study period than at the beginning. Their results also show that "representational consistency," and "concise representation" were rated higher at the end of the five year study period than at the beginning. They conclude that information providers in China should pay more attention to the believability and accuracy dimensions of information so that they add credibility as a provider of information.

Due to the significant growth of un-authorized access to systems and personal information, enterprise computer security has frequently been in the news over the last few years. Acuna conducted a relatively extensive literature review of enterprise computer security. Based on a content analysis approach, the paper identifies some research gaps in this area and concludes enterprise computer security is an under studied area.

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Author Biographies

Rassule Hadidi is Professor and H e a d 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.

Joey F. George is Professor of Information Systems and the John D. DeVries Endowed Chair in Business in the College of Business at Iowa State University. He previously held endowed chairs at Florida State University and Louisiana State University. His bachelor's degree in English is from Stanford University (1979), and he earned his doctorate in management from the University of California Irvine in 1986. Dr. George's research interests focus on the use of information systems in the workplace, including deceptive computer-mediated communication, computer-based monitoring, and group support systems. He was the Editor-in-Chief of *Communications of the Association for Information Systems* from 2006-2009, Senior Editor for *MIS Quarterly* in 2005, and Senior Editor for *Information Systems Research* from 2009-2013.

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