Technology, as the main engine of the economy growth, has an undeniable in the health of today’s economy in the US and around the globe. Amazon is becoming the most valued company in the history of human kind. Majority of Fortune 500 companies they are considered to be “tech” companies and never been in existence even two decades ago. Technology management is embedded into the fabric of companies and a successful management of technology becomes the most valued competitive advantage.

A closer look at the combination of the companies in the Fortune 100 shows only 12% of Fortune 500 companies in 1955 are in the 2016 list. Disruptive technologies like big data are changing the competitive landscape and resulting unseen success stories and the creation of extremely valuable startups like Uber, Netflix, and Airbnb. At the same time, technology managers are facing new challenges like cyber security and rapid accumulation of wealth in the society.

While using disruptive technologies are important to create a competitive advantage, it’s also important to remember technology management is more than technology itself. Many aspects of technology management are technology agnostic and will remain relevant to the success of organization in both private and public sector. Reducing the cost of operations throughout the supply chain through operational excellence, developing new products and markets, adapting to technological and business changes, improving customer experience, and streamlining administrative processes are a just few examples.

Technology management has never been this critical for the success of a society. This is the prime time for researchers to ask critical questions and challenge the status quo and focus their research on solving the problems which may have not been even relevant a decade ago but are extremely important today.
Dr. Stephanie Bryant specialized in Digital Communication Systems successfully defended her dissertation, “Assessment of Health Data Transformation Capabilities of Health Information Networks in Early Endorsers of a Nationwide Learning Health System” on February 23, 2018 under supervision of Dr. Elaine Seeman.

Dr. Dana Troutman specialized in Manufacturing Systems successfully defended her dissertation, “Integrating Digital Design Technologies and Lean Manufacturing to Meet Aerospace Organizational Needs and Improve Performance” on March 9, 2018 under supervision of Dr. Marion Schafer.

Dr. Bryan Waineo specialized in Manufacturing Systems successfully defended his dissertation, “Correlation of Input and Resulting Audit Measures for an Automotive Axle Shim Selection Process using a Montel Carlo Simulation Assessment of Accuracy” on March 2, 2018 under supervision of Dr. Todd Waggoner.

Dr. Rebecca Schmeeller specialized in Human Resource Development and Industrial Training; Successfully defended her dissertation, “Strategy Simulation, Student Engagement and Student Perceptions” on May 22, 2018 under the supervision of Dr. W. Tad Foster.

UPDATES IN SPECIALIZATION

Quality Systems

Quality 4.0

Last November, hundreds of quality professionals gathered in Dallas, Texas to discuss the impact of disruptive technologies on the world of quality. The conference title was “Quality 4.0 Summit on Disruption, Innovation, and Change” and it was held by American Society for Quality (ASQ). This conference and many similar gatherings are the signs of a wide awareness and anxiety among quality practitioners that cutting edge technologies in the field of Big Data Analytics, Intellectual Intelligence and Robotics, Autonomous Cars, and Internet of Things (IoT) are changing the competitive landscape and industrial paradigms so deeply and rapidly that yesterday’s best practices in the realm of quality might lose their value and relevance. Such disruptive technologies are applied more and more to solve conventional quality problems for which we have always used conventional quality tools and techniques. Study show Quality improvement and monitoring is among the top 5 applications of IoT in industry today (Jacob, 2017).

Quality 4.0 is defined as a digital strategy for quality management success (IQS, 2018). In this context digital strategy is above and beyond digitizing the existing manual process and should involve a comprehensive approach to rethink quality leveraging disruptive Technologies. Applying Machin Learning and detecting operational quality in large scale and Text Analytics to detect quality issues and concerns communicated in social media are just a few examples of new quality benchmarks. The question is how ready are we as quality professionals to leverage such technologies to rethink quality?

References:

Manufacturing Systems

Industry 4.0

The first industrial revolution started by the inception of steam power and then advanced to the second revolution through introduction of assembly line and mass production. Computers changed the world of manufacturing through large scale automations and started the third industrial revolution. Disruptive technologies in past decade or so revolutionized the manufacturing for the fourth time. Disruptive technologies including 3D printers, cyber-physical systems, IoTs, cloud computing, big data analytics, and advancements in material science created an environment in which the power is much more decentralized. In this environment even the competencies which are considered “core” for manufacturing experts are completely changing and that’s why large industrial conglomerates like GE wants all new hire engineers to learn how to code (Madeline Farber, 2016)

Four design principles are governing the Industry 4.0 including: Interoperability (machines’ ability to communicate via IoT), Information transparency (aggregating raw sensor data to higher-value context info), Technical assistance (ability of assistance systems to support humans), and decentralized decisions (cyber physical systems’ ability to make autonomous decisions) (Hermann, Pentek, & Otto, 2016)

Industry 4.0 is new, promising, disruptive, and like any new technological concept facing many challenges including: new business models which have not been tested, the challenges facing conventional organizations to adopt new paradigms and adopt a learning culture, the impact of decentralization which may create silo effect within an organization, and more than anything the difficulty of recruiting and grooming new talents. (Mustapha Zaouini, n.d.)

References:
**Human Resource Development & Industrial Training**

Virtual Human Resource Development in the Workforce

In 1989, Malcolm Knowles made a prediction that technology would become one of the most predominant forces to affect adult learning in the 21st Century. This assertion couldn’t be more accurate as we are now fully immersed in a digital culture. Technology is embedded in our daily lives and our workplace has progressively transitioned from leveraging individual software applications to using a bevy of robust systems. We now use supply-chain management tools to maximize competitive advantage; organizational intranets and social media platforms to onboard new employees; and learning spaces to engage the workforce.

In recent years, technology has become critical to organizational efficiency. Technological advances have even made it possible to connect the traditional systems we use to learning initiatives. This practice has been coined: Virtual Human Resource Development (VHRD) and describes, “a media-rich and culturally relevant web-environment that strategically improves expertise, performance, innovation, and community building through formal and informal learning” (Bennett, p. 362, 2009). What does this mean for HRD in global enterprise? In a nutshell, VHRD is the intersection between knowledge management and alternative work strategies (both of which are emerging areas for HRD research). Knowledge management analyzes how knowledge is acquired, while alternative work strategies (AWS) enables flexibility in how and where work occurs (p. 366).

Pervasive information-sharing might contribute to success in organizations that know how to leverage it, but technology can only be effective if it is used to support the strategic alignment and mission of the organization. HRD professionals focused on implementing new organizational tools will benefit now and in the future by balancing the desire to push technological boundaries while supporting the most valuable corporate asset they have: the human resource.

References:


**Digital Communication**

Mobile Cloud Applications

Mobile Cloud Computing is one of the trends in the mobile revolution, incorporating both mobile computing and cloud computing, giving ideal administrations for mobile clients. The applications involved in Mobile Cloud Computing include mobile business, mobile learning, and mobile medicinal services. The underline issues and related methodologies for mobile cloud computing have been distinguished. The future of mobile revolution depends on evaluating current problems and their solutions. In a worldwide mobile market, mobile applications have significant importance and carry phenomenal values. Different mobile applications have taken advantage of Mobile Cloud Computing.

The development and growth of mobile computing are more than only the up and coming age of phones or tablet PCs. Mobile Cloud Computing combines correspondence mediums with the vast dimensions of the internet in a convenient appliance. These devices can benefit and enhance many parts in helping, and notwithstanding enhancing, numerous parts of People’s day to day lives. The invention and rapid adoption of the PC put the power of computing in the hands of the general public.

The PC impacted people first at work, then at home and spreading the popularity of computers to a noteworthy advance in the development of computing. Not long after came the across the board utilization of cellular technology, which was made possible by a quickly developing user interfaces, progressions in handset innovation, and moreover pricing.

As the PC was in the advancement of computing, the cell transformation was a significant advance in the development of communication. Simultaneous with the cell boom came the across the board utilization of the Internet, helped by streamlined access through Internet specialist co-ops, the extensive and developing number of individuals with access to a PC, the essential development of the web browser as an institutionalized introduction layer, and explosive growth of content making it all worthwhile.
Construction Management

The largest developments in the construction industry are very small, nanosized. Concrete is the most widely used material in the world. Almost all construction projects use concrete. However, making concrete is a very energy-intensive process. So any improvement in reducing the carbon footprint of concrete is needed. Two recent developments are very promising. One uses the most common polymer, cellulose, and the other uses a very common food industry byproduct, olive stones. Purdue University researchers are studying adding cellulose (wood nanocrystals) to concrete has resulted in stronger concrete. The cellulose is a byproduct of several industries. They have progressed to the point of real-world tests. Concrete hardens via a hydration process, and some cement never hydrates in traditional concrete. One author states “the good thing about cellulose nanocrystals is it kind of creates a rail for the water to go into a particle.” This increases the hydration rate of the cement. Research has progressed to the point of full scale real-world testing on a bridge in California.

The other major development in concrete is from Mercedes del Rio’s team in a paper entitled “Viability of using olive stones as lightweight aggregate in construction mortars.” Olive stones are a byproduct of the olive industry in Spain. Most lightweight aggregates require large amounts of energy to produce. Olive stones being a food industry byproduct have low embodied energy compared to the traditional lightweight aggregates. “The only particularity of these new lightweight mortars with olive stones is that they need a higher water/concrete ratio than other lightweight mortars with other type of lightweight aggregates, but this does not affect their mechanical resistances.” This research is promising for the creation of lightweight structural or insulated concretes.

Truly the major developments in the construction industry are very small.

References:
Concrete infused with wood nanocrystals is stronger
Nanowerk, Posted Feb. 22, 2018
https://www.nanowerk.com/nanotechnology-news/newsid=49484.php

Olive stones can be used to make more sustainable building materials
Nanowerk, Posted March 23, 2018
CAMPUSS NEWS

All Campuses

Spring 2018- Fall 2019 Registration

Below are a few dates to keep in mind for Summer 2018 and Fall 2019 Registration:

- **BGSU Registration Calendar**
  https://www.bgsu.edu/content/dam/BGSU/registration/documents/register/registration-calendar.pdf

- **East Carolina University Calendar**

- **Indiana State University Registration Calendar:**
  PRIORITY REGISTRATION: April 16-29: available for graduate students and seniors who have at least 90 earned hours of credit
  OPEN REGISTRATION: April 30
  https://www.indstate.edu/academic-affairs/academic-calendar

- **North Carolina A&T State University**
  http://www.ncat.edu/registrar/academic-calendar/Spring%202019%20Academic%20Calendar_27.pdf

- **University of Central Missouri**
  https://www.ucmo.edu/calendar/summary.cfm

New Contact Information

- **BGSU (Bowling Green State University)**
  - Academic Calendars: http://www.bgsu.edu/registration-records/academic-calendars.html
  - Course Search: https://webapp.bgsu.edu/ClassSearch/search.htm
  - Contact:
    - Pamela Keppler
      - Phone: 419-372-5439
      - Email: pamelak@bgsu.edu

- **ECU (East Carolina University)**
  - Academic Calendars: http://www.ecu.edu/cs-acad/fs/online/senate/fscalend.cfm?RenderForPrint=1%27A=0
  - Office of the Registrar: http://www.ecu.edu/cs-acad/fs/online/registrar/RegSched.cfm
  - Course Search: https://pirateport.ecu.edu/portal/
  - Contact:
    - Admission: Amy Frank FRANKA@ecu.edu
    - CMGT Registrations: TaylorA@ecu.edu
    - All other Registrations: MSTECHSYSTEMS@ecu.edu

- **ISU (Indiana State University)**
  - Academic Calendar: https://www.indstate.edu/academic-affairs/calendar
  - ISU: Office of Registration and Records Dates and Other: http://www.indstate.edu/registrar
  - Schedule of Classes: https://prodinteract.indstate.edu/pls/prod/bwckschd.p_disp_dyn_sched
  - Contact:
    - Administrative Assistant PhD in Technology Management (Consortium)
      - Marti Mix marti.mix@indstate.edu
NCAT (North Carolina A&T State University)
- Academic Calendar 1: http://www.ncat.edu/registrar/academic-calendar/
- Dynamic Schedule: https://ssbprod-ncat.unccecs.edu/pls/NCATPROD/bwckschd.p_disp_dyn_sched
- Contact:  
  - Admission: Angelica Gathings agathing@ncat.edu
  - Registration: Trevor Taylor taylort@ncat.edu
  - Phone: 336-285-2379 (Admission) and 336-256-0355

UCMO (University of Central Missouri)
- Dates & Enrollment: https://www.ucmo.edu/registrar/dates/enroll.cfm
- Deadlines: https://www.ucmo.edu/registrar/dates/enroll_deadlines.cfm
- Dynamic Schedule: https://banner.ucmo.edu:4443/BANP/bwckschd.p_disp_dyn_sched
- Contact:  
  - Ms. Ashley Caldwell acaldwell@ucmo.edu
  - Phone: 660-543-4621

Bowling Green State University

The School of the Built Environment was approved by the BGSU Board of Trustees in October 2017. The school will bring the Department of Architecture and Environmental Design and the Department of Construction Management together so significant synergies can be realized. A School of the Built Environment is unique in the state of Ohio, and indeed a rare entity throughout the world. Our faculty and advisory boards believe that the school will benefit our students by reflecting the close relationship among the designers and builders in the industry. Dr. Arsenio Rodrigues, who is a registered architect, is coming to BGSU as the founding director of the School of the Built Environment. Within the school, Dr. Robert Austin will serve as the chair of construction management and Dr. Andreas Luescher as the interim chair of architecture and environmental design. Dr. Wil Roudebush’s service as interim chair for both construction management and architecture and environmental design over the past few years is appreciated. Beginning spring semester 2018, Dr. Arsenio Rodrigues, will lead the new School of the Built Environment as director.

Reference

East Carolina University

College Wins Historic $2 Million Grant for Computer Science

The College of Engineering and Technology has been awarded a $2 million grant from the National Science Foundation (NSF) to research new ways to teach computer science and to improve graduation and retention rates within the discipline. The five-year grant, awarded to the College’s Department of Computer Science, is the largest total ever awarded to the college. Dr. Venkat Gudivada, chair of the Department of Computer Science, is the principal investigator. The award allows the department to research curricular innovations, faculty development and diversity in student learning. Results will be widely disseminated to other universities that are looking to update how they educate students in computer science and other related disciplines. Data gathered by Code.org shows North Carolina has 18,623 open computing jobs, which is 4.5 times the average demand rate in the state. However, North Carolina had only 1,284 computer science graduates in 2015. According to Gudivada, it’s imperative to find unique and innovative ways to keep students energized and engaged in the discipline.

Reference
Indiana State University

MET students honored by state ASME organization

Two mechanical engineering technology students, Nick Reth, junior, and Phillip Williams, senior, were selected as this year’s Outstanding ASME Student Members by the state organization of the American Society of Mechanical Engineers – Indiana Section (ASME). The selection was based on their significant contributions to ASME and their community through their leadership involving professional development such as industry plant tours and work associated with Caterpillar, Toyota, and Cummins.

Reference

Alumna attains grant for ISU students

Desiree Edwards, HRD ’15, attained funding through her company, Briljent, for ISU’s Females in Technology (FiT) to pursue professional development opportunities. As a past president and current FiT Advisory Council member, Desiree continues to give back through involvement in student career development activities by participating in events such as FIT for the Future, AlumLinks, TECH Connections, etc. Desiree has achieved great satisfaction in her role as a human resources generalist at Briljent, a woman-founded organization that provides business and technology solutions. “I hope the generosity of the Luminous Fund [at Briljent] can flow to other stakeholders and encourage the same passion of giving. I cannot express the importance of finding an organization to work for whose mission and culture are built around the fundamentals of what you believe in,” said Desiree. “For me, that’s equality, diversity, and the belief that what the company is doing is supporting a greater cause. Every day the employees of Briljent proudly come into work knowing what they do has a vast impact on the communities we live and work in.”

Reference

North Carolina A&T State University

N.C. A&T Professor Secures $2 Million Grant to Convert Bio-Waste to Fuel

Chemistry professor Debasish Kuila, Ph.D., has been working on a way to convert animal and food waste to carbon-neutral gasoline. Now, thanks to the University of North Carolina (UNC) System’s Research Opportunities Initiative (ROI), he has a $2 million grant to help. Kuila, together with his interdisciplinary team, has been working to develop a sustainable technology that will lower the environmental footprint and subsequently the costs of the agricultural enterprise while generating fuel of immediate value to farmers. “Treating and disposing of bio-waste is an expensive, pervasive and challenging issue for North Carolina farmers,” explains Dr. Kuila. “The fact we can make needed fuel from bio-waste minimizes environmental issues and cost with an incentive for more state-wide biogas production and its utilization.” The project will demonstrate proof-of-concept for a highly efficient, modular gas-to-liquids (M-GTL) technology that uses solar energy to convert biogas, i.e. animal and food waste, to gasoline. The resulting M-GTL prototype will be used to attract robust private and public funding for scale-up and commercialization. Kuila’s team includes Shyam Aravamudhan, Ph.D., of the Joint School of Nanoscience and Nanoenegineering, Lijun Wang, Ph.D. of the Department of Biological Engineering at N.C. A&T, Michel Gagne, Ph.D. in the Department of
Chemistry at the University of North Carolina at Chapel Hill, and Fanxing Li, Ph.D., and Milad Abolhasani, Ph.D. of the Department of Chemical & Biomolecular Engineering at North Carolina State University.

Reference

University of Central Missouri

UCM Board Sets FY19 Budget, Affirms 'Department to School Restructuring Plan'

Pending future changes in state appropriations for Missouri’s public colleges and universities, the University of Central Missouri Board of Governors has adopted its Fiscal Year 2019 budget, holding undergraduate resident tuition at a 1 percent increase, effective this fall. It also targets a $17.4 million budget reduction over FY18, based on the projected decrease in revenues and various mandatory cost increases. Action was taken during the plenary session April 27, at which time the board also affirmed a proposed academic reorganization that will maintain the four-college structure, but transition from a departmental to a school model as an ongoing measure to create efficiencies and generate savings. Another initiative affirmed by the board relates to the new Student Success Continuum model that realigns academic student support services to a central location.

Roger Best, executive vice president and chief operating officer, presented the budget proposal during a work session on April 26. He noted that the projected total unrestricted revenue for FY19 is approximately $141.6 million. Although Missouri Gov. Eric Greitens proposed $50.1 million in state appropriations for UCM for the next fiscal year, the projected total revenue is based on proposed funding by the House of Representatives of $54.3 million. The governor, however, annually restricts 3 percent of appropriations for higher education, so the net expected appropriation for FY19 is $52.7 million.

Reference:
GENERAL INFORMATION

The consortium program is offered in cooperation with Bowling Green State University, East Carolina University, Indiana State University, North Carolina A&T State University, and the University of Central Missouri. The doctoral program meets the needs of today’s technical professionals. An academically rigorous program of study, the Doctor of Philosophy Program in Technology Management offers research and scholarship experiences and in-depth study in a specialization selected from the areas of:

- Construction Management
- Digital Communication System
- Human Resource Development and Industrial Training
- Manufacturing Systems
- Quality Systems

For Additional information about the PhD in Technology Management, visit our website at http://technology.indstate.edu/consortphd/
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Cyrus Hoseini was admitted to the PhD program in spring 2012. He specializes in Quality Systems.
Gordon Vincent, is PhD Candidate and his specialization is Construction Management
Mohammed Al-Ghzawi, is PhD student and his specialization is Digital Communication
David Kirkland, is PhD student and his specialization is Human Resource Dev. & Industrial Training