

CRITO Newsletter

Center for Research on Information Technology and Organizations

University of California, Irvine

Volume 9 Number 1

IN THIS ISSUE

The E-commerce Debate

The CRITO Hour

The Impact of Management Practices on the Productivity of IT: A Firm Level Investigation by Ron Ramirez

CRITO Consortium Welcomes New Associates.

CRITO Associate Updates

Talks, Seminars and Conference Presentations

Doctoral and Graduate Student Updates

New Industry Advisory Board Members

Japan-American Institute of Management Science News

Book Review: Asia's Computer Challenge now published in Chinese

Upcoming Events

TO RECEIVE THIS NEWSLETTER AND OTHER CRITO INFORMATION ELECTRONICALLY, PLEASE PROVIDE YOUR CURRENT E-MAIL ADDRESS TO JEANNETTE REINIG AT jreinig@uci.edu

WHITHER E-COMMERCE??

Business analysts and academic scholars continue to express a variety of views regarding the future of e-commerce. Despite the recent demise of many .com startups, most analysts still believe that e-commerce will have a significant impact on the future of business. While business-to-consumer (B2C) e-commerce may have disappointed some of those with lofty, perhaps unrealistic, projections, business-to-business (B2B) e-commerce is showing signs of sustainable strength. Traditional brick and mortar companies are investing resources in B2B e-commerce to gain efficiencies in their supply chains. There are also many instances of vertically integrated firms that have added B2C capabilities to increase their consumer channels beyond mailing catalogs and physical stores. Companies are finding creative ways to support both supplier and buyer relationships with e-commerce. Although some might argue that the e-commerce revolution may have ended, it does appear that the evolution of e-commerce is just beginning.

"THE OXFORD DEBATE"

An innovation to the schedule of the CRITO Consortium's Industry Advisory Board Meeting in February of this year was an "Oxford Debate". Acting Director Dr. Jim Danziger describes it as a playful, informal debate (using turn-taking debate format) between teams arguing for and against a proposition, which is typically worded as an extreme form of the topic.

Our topic was: "**Resolved: E-commerce is the next BIG DIS-E-POINTMENT**"

For the proposition were **Steve Poltrock**, Technical Fellow from [Boeing](#) and **Jason Dedrick**, Senior Research Fellow from CRITO.

Against the proposition were **Ashwin Rangan**, CIO for [Conexant](#) and Professor **Vijay Gurbaxani**, from the Graduate School of Management and CRITO.

Each speaker did a wonderful job of arguing his side of the proposition and trying to outwit the other side. The exchange was a delight!

Here are some excerpts:

Pro: Steve Poltrock, Boeing

"What constitutes a big disappointment? It is dashed or vastly lowered expectations, based on experience. Recent examples include cold fusion and "ginger" (the scooter). E-commerce is abundantly full of such dashed expectations. Yet even for a major disappointment, there are still people who just won't give up. News in the last week: Amazon earnings lost \$1.4-1.5 billion; Disney shutting down go.com; and Infoseek, the 4th biggest portal, announces 400 layoffs."

Con: Ashwin Rangan, Conexant

"Twelve months ago, my opponent would have been on our side of this issue. But it's not about expectations. It should be about benefits. What about the joy of reconnecting with someone you haven't heard of in 20 years? Is that a disappointment? The technology is filled with possibilities. What about on-line ordering? Is there not a moment of wonder there?"

Pro: Jason Dedrick, CRITO

“The excitement of going online? It is like locking eyes with someone in a bar after a few too many; but then, in the light of day, the disappointment sets in. We’ve gotten the bait-and-switch with the e-commerce crowd. First we are told that B2C is going to be huge. Then when that fails, they tell us that they knew all along that B2B was where the real benefits would be. But when you look at B2B, it looks disappointing too. What are they going to sell us next?”

Con: Vijay Gurbaxani, GSM/CRITO

“Look at my day: I read the New York Times on my laptop; I check my stock portfolio on the Internet; I pull up interesting articles for work; I read the news on cnn.com. I couldn’t have done this before.”

“Consider another analogy of a new business model: radio. The first use of radio was point to point; it was competing with the telegraph. It took 30 years for them to figure out how to make money off of radio as AN advertiser-supported broadcasting model.”

“Amazon is selling \$3 billion a year. So they lost a few million — they’ll make it. How many of you are Amazon customers, how many of you want it to go away?”

AN AFTERTHOUGHT

We asked a professor who teaches E-Commerce “What do you think about the future of E-Commerce?” Here is his answer:

“The real potential of electronic commerce lies in its connectivity. This digital connectivity will have the capability to transform traditional businesses and organizations, just as highway networks and electric grids did in the past few decades. This transformation will be profound and will take time to achieve, as it requires the digitization of enterprise value chains, and a networked technology infrastructure streamlined with customers, suppliers, and business partners.” says Kevin Zhu, Assistant Professor in Information Systems at the Graduate School of Management and Faculty Associate at UCI.

THE CRITO HOUR



The CRITO Hour series continues. The informal hour of conversation is meant to build the sense of community within CRITO and UCI. Here are some of the interesting topics of conversation presented during recent CRITO hours.

Robert Nideffer, Assistant Professor, from the School of the Arts, presented “Exploring Issues of Agents and Agency by Proxy”.

Wanda Pratt, Assistant Professor, from the Department of Information & Computer Science, presented “Information Technology to Decrease Information Overload”.

Professor **Richard Gruner** from Whittier Law School, presented “Everything Old is New Again: Patenting

Software-Implementations of Known Business Methods”.

Joel West and **Jason Dedrick**, CRITO Researchers, presented their award winning paper: “Proprietary vs. Open Standards in the Network Era: An Examination of the Linux Phenomenon”.

Walt Scacchi presented “Understanding and (Re) Designing Organizational Systems”. Walt is a Senior Research Scientist at the Institute for Software Research in the ICS Department and has a long association with CRITO projects.

John Mooney from University College Dublin, Ireland, presented “How to be, or not to be, the eCommerce hub of Europe: these are the questions” Dr. Mooney is currently a Visiting Scholar at CRITO.

Mark Warschauer presented some key ideas on “Dissecting the Digital Divide,” (from his forthcoming MIT book with this title). Mark recently joined the UCI faculty as an Assistant Professor in the Department of Education.

Nader Bagherzadeh, Chair of UCI’s Department of Electrical & Computer Engineering and a “Layer Leader” for CAL IT2 presented “Smart Home, or What IQ Will Your Appliances Have in the 21st Century?”

If you’re interested in attending and/or presenting at the CRITO Hour, please send an email to Professor Jim Danziger, Acting CRITO Director for the Spring quarter at danziger@uci.edu.

THE IMPACT OF MANAGEMENT PRACTICES ON THE PRODUCTIVITY OF INFORMATION TECHNOLOGY: A FIRM LEVEL INVESTIGATION *by Ron Ramirez*



This research is part of the doctoral research done by Ron Ramirez, a CRITO Graduate Student Researcher.

For more information, please contact Ron at rvramire@gsm.uci.edu.

A current draft of a related paper, co-authored with Ken Kraemer, can be downloaded from the CRITO website.

Introduction

Management practices are programs that firms undertake to accomplish specific organizational goals and are comprised of a specific mix of work practices. Example goals that firms set out to achieve when implementing these programs include the improvement of customer service, product quality, and process efficiency. Complementary investments in both management practices and information technology (IT) provide a firm with the flexibility to pursue such goals as a strategic response to the complex environmental and competitive forces it faces. Yet, little is known regarding the moderating impact of these practices on the productivity of a firm's capital and labor inputs to production. Our current research investigates this issue concentrating specifically on IT inputs and three management practices utilized extensively by Fortune 1000 firms throughout the last several decades – Employee Involvement, Total Quality Management (TQM), and Reengineering (Lawler et al. 1998).

Motivation

Empirical research has shown that firm specific factors moderate the productive impacts of IT investments, accounting for up to half of IT's positive influence on firm performance (Brynjolfsson and Hitt 1995). It has been suggested that these firm specific factors include organizational practices and other intangible assets that complement investment in IT (Brynjolfsson, Hitt and Yang 2000). Unfortunately, empirical research on the moderating impacts of organizational practices is sparse.

The dearth of research extends to investigations into the moderating effects of management practices. Researchers have found that the use of management practices is positively related to firm value (Lawler et al. 1998; Hendricks and Singhal 1996), however, complementary information technology factors have not been taken into consideration. Several case studies have identified specific benefits of management practices (Shrednick,

Shutt, and Weiss 1992; Newman and Kozar 1994), however, these studies have not directly addressed IT business value nor have they investigated the overall impact on firm performance. The purpose of our research is to help fill this gap; to investigate the relationship between IT and management practices and to determine if the use of such practices moderates the productivity of IT investments. According to production theory, if the use of management practices positively moderates the productivity of IT inputs, this influence will translate into improved firm performance. We chose to study Employee Involvement, TQM, and Reengineering due to their pervasive use within Fortune 1000 firms (Lawler et al. 1998).

Investigating the moderating impacts of management practices is not only important, but is also timely given the rapid incorporation of computer networking and Internet-related technologies by both traditional and dot-com companies. Firms in the New Economy are still in the process of adapting their processes and structures to take advantage of this technology. For example, the online retail giant Amazon.com and the traditional toy retailer Toys-R-Us formed a partnership to jointly implement an innovative supply chain and fulfillment strategy that allows each firm to take advantage of its core strengths – online ordering and customer services by Amazon.com and inventory and fulfillment processes by Toys-R-Us.¹ Managers need insight into which organization structures and production processes are compatible with the new technology and how best to leverage these structures and processes for optimal firm performance. This issue arises for new technologies in general, but even more so for IT due its rapid pace of quality change.

Current Results

Current analysis has provided evidence that IT and Employee Involvement, TQM, and Reengineering are complementary investments. IT is also positively correlated with the work practices that are at the foundation of these three management practices. More importantly, current results support the expectation that management practices positively and significantly moderate the productivity of IT, ultimately increasing the performance of firms who invest in both of these factors.

The evidence is especially strong for large manufacturing firms who not only invest more often in each of these programs, but benefit from each of them as well. Small service firms also profit from management practices, especially Employee Involvement and Reengineering.

¹ Wired Magazine, 8/11/00, <http://www.wired.com/news/business/0,1367,38171,00.html>

These findings indicate that there is no ubiquitous management practice for all companies and that IT enables alternative management practices affording firms the flexibility to implement the type of program that is appropriate for their given situation.

Future Research

There are several issues we will consider in future research. First, the management practices under review share many underlying work practices. This leads us to believe that a correlation may exist with organizational concepts that are being used in today's Internet economy. For example, firms who want to achieve superior performance and survive in high clockspeed industries should implement work practices that support a high "organizational IQ" (Mendelson and Ziegler 1999). This organizational concept shares work practices that are common to Employee Involvement and TQM. Perhaps one method for achieving a high organizational IQ is to implement these management practices.

Second, the management practice data used in the current study is for 1996. The use of earlier survey data

would allow for a time series analysis to determine if the identified benefits are robust to multiple years, if their level changes over time, and if there is a lag in the receipt of benefits. Third, there may be other firm factors that influence the benefits experienced from management practices. These include culture characteristics (Detert, Schroeder, and Mauriel 2000), unionization (Reshef and Lam 1999), and industry concentration (Melville 2001).

Finally, while the use of the management practices under review is not at the same level as it once was in the past, there appears to be plenty of application opportunities in today's economy. Examples include the reengineering of telecommunications networks to incorporate voice-over-IP technologies (Sweeney 2000) and the redesign of sales force processes to incorporate new wireless technologies (Mears and Salzetti 2000). According to our initial results, the identification of such applications will provide firms the opportunity to improve the productivity of their IT investments and ultimately, their overall performance.

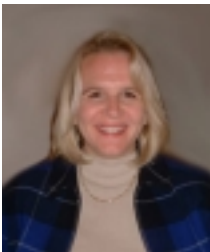


CRITO CONSORTIUM WELCOMES NEW ASSOCIATES



Dr. Michael D'Zmura's research interests lie in the areas of color vision, visual perception, attention, search and navigation, and behavior in virtual environments. Work in Professor D'Zmura's Visual Perception Lab, funded by the National Eye Institute, focuses primarily on work concerning color, perception, and attention. <http://www.cvr.uci.edu/dzmura/>

Professor D'Zmura also directs the UC Irvine VR Lab, where there are available a variety of high-end computers designed for 3D computer graphics. <http://www.cvr.uci.edu/vrlab/>.



Dr Wanda Pratt's research is at the juncture of intelligent information access and medical informatics. Critical problems in the health-care industry provide the motivation for much of her research. Professor Pratt's main interest is in developing knowledge-based methods to improve access to information, particularly health-care information. Professor Pratt's research interests span information access, information retrieval, text categorization, knowledge-based systems, artificial intelligence, human-computer interaction, and medical informatics. <http://www.ics.uci.edu/~pratt/>.

CRITO ASSOCIATE UPDATES

Papers and Publications

"The Impacts of Information Technology on Public Administration and Politics: Evidence from the "Golden Age" of Transformation". **James N. Danziger** and Kim Viborg Andersen. *International Journal of Public Administration* (forthcoming).

"Personalized Hypermedia Presentation Techniques for Improving Online Customer Relationships". **Alfred Kobsa**, J. Koenemann and W. Pohl (2001) To appear in *The Knowledge Engineering Review*. <http://www.ics.uci.edu/~kobsa/papers/2001-KER-kobsa.pdf>

"Generic User Modeling Systems". **Alfred Kobsa** (2001) To appear in *User Modeling and User-Adapted Interaction* 11(1-2), Tenth Year Anniversary Issue, 49-63. <http://www.ics.uci.edu/~kobsa/papers/2001-UMUAI-kobsa.pdf>

"Shopping Online for Freedom, Control and Fun," **Mary Wolfinbarger** and **Mary Gilly**. *California Management Review*, Winter 2001.

"Discontinuous Classroom Innovation: Waves of Change for Marketing Education". Celsi, Richard and **Mary Wolfinbarger**, April 2001, *Journal of Marketing Education*.

"Customer Relationship Management" **Paul Gray** and Jongbok Byun, April 2001.

"Productivity and the PC Revolution", Simon Gilchrist, **Vijay Gurbaxani** and Robert Town, April 2001. <http://www.crito.uci.edu/research/publications/crm.pdf>

IT Returns Summary, "The Productivity Paradox: Is it Resolved? Is There a New One? What Does It All Mean For Managers?", Prepared for the CRITO Consortium Industry Advisory Board Panel: The End of the Productivity Paradox?, **Ken Kraemer** and **Jason Dedrick**, February 2001. http://www.crito.uci.edu/itr/publications/pdf/it_prod_paradox.pdf

"Three Challenges for IS", **Paul Gray** forthcoming in *Data Base*.

Teaching, Learning and Computing Report #7: "Teacher Professional Engagement and Constructive-Compatible Computer Use", **Henry Jay Becker** and Margart M. Riel. http://www.crito.uci.edu/tlc/findings/report_7.

Globalization of E-commerce, "Gateway Computer: Using E-commerce to move "Beyond the Box" and to Move More Boxes" **Jason Dedrick**, **Ken Kraemer** and Bryan MacQuarrie, February 2001. <http://www.crito.uci.edu/git/publications/pdf/Gateway.pdf>

"Does the Data Warehouse Improve Decision Performance?", Y.T. Park and **Paul Gray**, forthcoming in the *Journal of Data Warehousing*.

TALKS, SEMINARS AND CONFERENCE PRESENTATIONS

The paper entitled "Proprietary vs. Open Standards in the Network Era: An Examination of the Linux Phenomenon" by **Joel West** and **Jason Dedrick** won best paper award for the track "Emerging Technologies" at the 34th Annual Hawaii International Conference on Systems Sciences, January 2001. <http://www.gsm.uci.edu/~joelwest/Papers/WestDedrick2001.pdf>

Paul Tallon and **Ken Kraemer** gave a presentation on "IT and Strategic Alignment" at the Southern California CIO Roundtable on April 13, 2001.

Alfred Kobsa is an invited Keynote Speaker at the 8th International Conference on User Modeling, Sonthofen, Germany, July 2001. His talk is titled "Tailoring Privacy to Users' Needs".

Ken Kraemer and **Jason Dedrick** attended the Sloan Industry Center's Conference in Boston, April 2001.

"Managing Academic Electronic Publishing: Six Case Studies" Proceeding of the European Conference on Information Systems (ECIS), **Paul Gray** and A. Hovav, June 2001.

James Danziger was Track Chair at: Foundations of Electronic Government in America's Cities: A Multidisciplinary Workshop, University of Illinois, Chicago; Chicago, Illinois, March 8 & 9, 2001.

James Danziger spoke at the Digital Government Conference, sponsored by the National Science Foundation; Marina del Rey, CA, May 24, 2001.

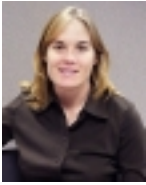
James Danziger spoke at the Conference on E-Government, Center for Studies of Competitiveness, ITAM University; Mexico City, May 31-June 1.

"The Emergence of the Posthuman Consumer and the Fusion of the Virtual and the Real: A Critical Analysis of Sony's Ad for Memory Stick" Authors: **Alladi Venkatesh**, Eminegul Karababa, and Guliz Ger, May 2001.

"The Networked Home: An Analysis of Current Developments and Future Trends" Authors: **Alladi Venkatesh**, Erik Kruse, and Eric Chuan-Fong Shih, May 2001.

DOCTORAL AND GRADUATE STUDENT UPDATES

CONGRATULATIONS! Four CRITO Graduates Student Researchers will receive Doctoral Degrees this Summer!



Erin Bradner will receive her Ph.D. in Information and Computer Science. Erin's short-term plans are to take a well-deserved two-month vacation in South America. Her long-term plans may involve a post-doc with Dr. Gloria Mark in the department of Information and Computer Science at UCI and CRITO Faculty Associate. An abstract of Erin's dissertation entitled "**Social Affordances of Groupware: Design and Use of CSCW Technologies Among Geographically Distributed Groups**" can be found at www.ics.uci.edu/~ebradner.



Nigel Melville will receive his Ph.D. in Management Information Systems. Nigel has been working at CRITO as a Research Associate. He will take an Assistant Professor position at the Carroll School of Management, Boston College in June 2001. An abstract of Nigel's dissertation entitled "**Information Technology Investment Impact and Industry Structure: Evidence from Firms and Industries**" can be found at www.gsm.uci.edu/~melville.



Paul Tallon will receive his Ph.D. in Management Information Systems. Paul has been working at CRITO this year as a Research Associate. He will take an Assistant Professor position at the Carroll School of Management, Boston College along with his colleague Nigel in June 2001. An abstract of Paul's dissertation entitled "**A Process-Oriented Assessment of the Alignment of Information Systems and Business Strategy: Implications for IT Business Value**" can be found at www.gsm.uci.edu/~ptallon.



Wayne Lutters will be defending and graduating at the end of the summer. He will receive his Ph.D. in Information and Computer Science. Wayne's dissertation examines knowledge work in a high-reliability organization. He will take an Assistant Professor position at the University of Maryland, Baltimore County starting in September. For more information on his research please visit www.ics.uci.edu/~lutters

NEW IAB MEMBERS

We are delighted to welcome **Armeen Gould, Donna Romeo and Kathleen Hayes** representing the **Whirlpool Corporation**.

Mr. Gould, Senior Manager, Marketing Intelligence, will be the main Industry Advisory Board member with involvement from Dr. Romeo, Corporate Anthropologist and Ms. Hayes, Brand Manager for Integrated Home Solutions.

A current CRITO project that particularly interests Whirlpool is "The Home of the Future". The group is interested in projects related to E-Commerce.



JAIMS: JAPAN-AMERICAN INSTITUTE OF MANAGEMENT SCIENCE

CRITO has hosted the JAIMS group for over 10 years. Established in 1972 by Fujitsu Limited, the JAIMS program provides an intensive postgraduate certificate program with a major focus on U.S. business principles and methods within a global context. Participants learn about business strategy; marketing; accounting and finance; negotiation; computer and information technology applications; regional and global business practices.

The group comes to America to hear presentations on Information Technology and Management and to make site visits to various companies. Consisting of 15-20 mid to upper level Japanese managers, the group is coming this year to hear presentations on E-Commerce, Business Strategy and the impacts of Information Technology. The workshop is set for July 16-19.

A few of the companies that the JAAMS group has visited in the past are:

ATL Products, CISCO, Sony, Canon, Transcom, Rockwell Kawasaki Motors, Conexant, RareMedium and Vans.

We would like to thank those companies that have contributed their time to CRITO and the JAAMS group for site visits. Your participation is greatly appreciated.

If you would like to participate as a Company site-visit for the JAAMS Workshop, please send an email to kkraemer@uci.edu.



Professor Ken Kraemer hosted the JAAMS group at his home for an American style BBQ.

BOOK REVIEW: ASIA'S COMPUTER CHALLENGE *now published in Chinese*



From the advent of the first mainframe computers in the United States in the 1950s to the now ubiquitous personal computer, the computer industry has grown into a \$500 billion international enterprise, affecting the way businesses compete and changing the face of the workplace.

The Pacific Rim has become a hot spot in this evolution, with the

growth of Japanese and East Asian companies posing threats and opportunities for U.S. corporate giants. How did the industry evolve into its present global structure? Why have some Asian countries succeeded more than others? In **Asia's Computer Challenge**, **Jason Dedrick** and **Kenneth L. Kraemer** delve into these questions and emerge with an explanation of the rapid rise of the computer industry in the Asia-Pacific

region. Offering a systematic comparison of the historical development of the computer industries of Japan, Hong Kong, Korea, Singapore and Taiwan, the book provides a solid basis for examining the relative influence of both government policy and market forces on the development of computer enterprises within each country. Arguing that neither a plan vs. market; nor a country vs. company dichotomy fully explains the rise of these Asian competitors or the diversity found among their computer industries, the authors identify a new force—the emergence of a global production network. Reaching beyond specific companies and countries, this book explores the strategic implications for the Asia-Pacific countries and the United States as they compete in the emerging network era. Now East Asia companies are faced with a challenge; they must make the move from low margin hardware business to high margin software and information businesses. This in turn presents American companies with the formidable task of maintaining leadership in standards, design, marketing, and business innovation.

UPCOMING EVENTS

- ▶ The **CRITO Consortium Industry Advisory Board Meeting** will be held on, **June 21-22, 2001**
- ▶ The **JAAMS Workshop** will be held on, July 16-19, 2001



UNIVERSITY OF CALIFORNIA, IRVINE, 3200 BERKELEY PLACE, IRVINE, CA 92697-4650
TEL: 949-824-6387, FAX: 949-824-8091, WEB: www.crito.uci.edu



**CENTER FOR RESEARCH ON INFORMATION
TECHNOLOGY AND ORGANIZATIONS**
University of California, IRVINE
3200 Berkeley Place, Irvine, CA 92697-4650