

# Developing Core Competencies for tomorrow's E-Commerce Professionals

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## Outline

- ▶ An E-Commerce Application
- ▶ Attributes of E-Commerce Innovation
- ▶ Core Competencies of E-Commerce Professionals
- ▶ A Topic Portfolio for E-Commerce Programs
- ▶ How to Teach Core Competencies?

## A Data-Intense Location-based Real Estate Application

- ▶ *Sprint and Smarter Agent:*  
 consumers/professionals can learn about real estate anytime, anywhere
- ▶ recently sold homes retrieves info on
  - ↳ last sold price,
  - ↳ last sold date,
  - ↳ taxes and square footage
- ▶ Smarter Agent includes a GPS mapping function
  - ↳ user can see location and
  - ↳ all of recent home sales in area on same map
  - ↳ user can search by city and state for multiple areas of interest
  - ↳ save properties to their phone, or call an agent for live support

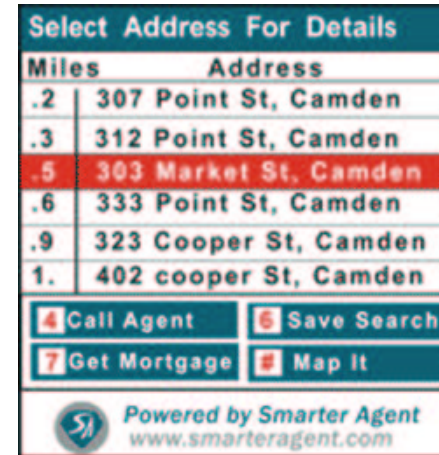


## Some Screenshots

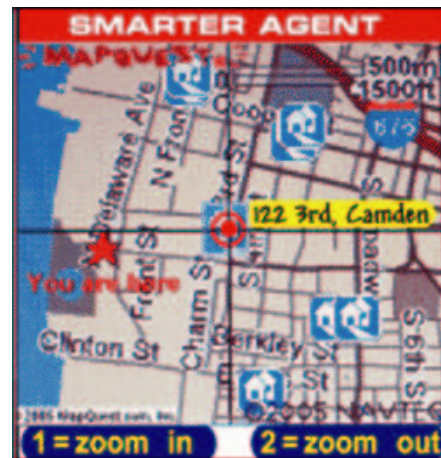
Menu



Property List



Map



Property Details



## Attributes of E-Commerce Innovation

### (1) administrative:

- ↪ focus on firm's major business process,
- ↪ extends to products and services,
- ↪ facilitate integration or coordination among business partners

### (2) technical:

- ↪ ITs having strategic relevance for gaining competitive advantage,
- ↪ digital info flows instead of physically-based business activities,
- ↪ new ways of doing business

### (3) flexible:

- ↪ adaptable to fit enterprise's goals and objectives
- ↪ new features accommodate diffusion of E-Business
- ↪ tailor to specific needs and enhance for meeting new functionality

(4) median centrality:

- ↳ unlikely to disrupt major routines severely
- ↳ but no minor impact (change in supply, distribution ,skills)

(5) highly radical:

- ↳ profound changes to adopting enterprise and its partners
- ↳ integration of firm's front end to back-end systems
- ↳ conflicts between Internet channels and traditional supply chains
- ↳ challenge for synergising inventory, transportation, distribution

(6) highly uncertain:

- ↳ innovative use distinguishes superior from poor performers
- ↳ security breaches
- ↳ protection of innovations difficult
- ↳ lack of commitment to innovations

(7) highly pervasive:

- ↪ almost every employee affected
- ↪ retraining to assume new responsibilities

(8) highly communicable:

- ↪ E-Business innovation is complex
  - ↪ coordination of several units and collaboration of many firms
  - ↪ online communities can easily exchange experiences
- ▶ superior E-Commerce innovativeness results in higher profit ratios
  - ▶ superior E-Commerce innovativeness results in lower cost ratios
  - ↪ it remains to bring up innovative E-Commerce professionals

Source:

- Y. Zhuang: Does Electronic Business Create Value for Firms?. Journal of Electronic Commerce Research, Vol. 6(2), 2005.

## EC Professionals: Creative, Innovative All-Rounders

### (1) business know-how (organisational, management-related skills)

- ↳ organisational structure, strategy, culture, environment
- ↳ ethics,
- ↳ environmental constraints,
- ↳ project management

### (2) relationship know-how (human and interpersonal skills)

- ↳ team-facilitation,
- ↳ relationship/expectation management,
- ↳ peer networking
- ↳ effective communication and decision-making

(3) conceptual know-how (abstraction and modelling skills)

- ↪ conceptual modelling: UML, E/R, OO, semi-structured
- ↪ model opportunities and recognise limitations
- ↪ fluid interactions

(4) technical know-how (problem-solving skills)

- ↪ system development
- ↪ programming/scripting/querying (e.g. JAVA, Perl, SQL)
- ↪ IS management, database systems, Web-based systems
- ↪ security expert
- ↪ broad expert knowledge providers

Sources:

- E. Cash, P. Yoong, S. Huff: The Impact of E-commerce on the Role of IS Professionals, *Advances in IS*, Vol. 35(3), pp. 50-63, 2004.
- C. Murphy: Reinventing the CIO. *Informationweek*, No. 768, pp. 48-62, 2000.
- D. Lee, E. Trauth, D. Farwell: Critical Skills and Knowledge Requirements of IS Professionals. *MIS Quarterly*, Vol. 19(3), pp. 313-340, 1995.

## Creating Competency in Business

- E-Commerce: Foundations and Practices
  - ↳ principles, theories, technologies, applications in e-environments
  - ↳ impact of innovations on business practices, legal issues and ethics
- Electronic Finance
  - ↳ overall picture of e-commerce applications in financial sector
  - ↳ creative destruction of e-finance, development of e-banking,
  - ↳ e-wealth management, e-brokerage, e-insurance
  - ↳ electronic financial markets, virtual market-space, B2B finance
- Online Business Models
  - ↳ Business and Consumer-oriented e-Commerce, online-Communities
  - ↳ e-Logistics, e-Government, e-Procurement, e-Services, e-Tailing
  - ↳ Web advertising and Web Publishing
  - ↳ Supply Chain Management & e-Fulfilment
  - ↳ Multimedia and Webcasting on the Web

- Mobile Commerce
  - ↳ wireless/mobile communication, limits/strengths/opportunities of m-devices
  - ↳ market development for mobile applications and value added services
  - ↳ business and pricing models for m-commerce applications
  - ↳ mobile data management and synchronisation, UID for m-commerce
  - ↳ mobile banking, mobile payment services, ubiquitous computing
  
- Knowledge, Event and Innovation Management
  - ↳ Knowledge Process, KM as a Business Strategy, Metrics, Knowledge Economics
  - ↳ ITs for Event Management, Event Planning, Production and Design
  - ↳ innovation types, models of innovation processes, innovation strategies
  
- Principles of Public Management
  - ↳ political/administrative systems, different levels of governments
  - ↳ boundaries for managerial paradigm within public administrations
  - ↳ managerial tools in public admins, public governance at (inter)national level

- E-Government
  - ↳ channelling government services to citizens and clients, inter-agency collaboration,
  - ↳ strategic use of technology security and privacy, data sharing
  - ↳ transformation of relations between citizens and the state
  - ↳ interoperability, cooperation infrastructures, infrastructural services
  - ↳ domains of responsibility, domain gateways
  - ↳ service agreements and monitoring, distributed identity and access management.
- Economics of E-Commerce
  - ↳ theoretical models and studies of "old economy" industries
  - ↳ monopoly pricing, price discrimination, product differentiation, barriers to entry
  - ↳ network externalities, search, first-mover advantages
  - ↳ e-industries, analogies to previous technological revolutions, current case studies
  - ↳ bubbles in asset markets, macroeconomic effects of the Internet
- E-Marketing
  - ↳ create customer centric strategies for e-businesses,
  - ↳ forms of communications (web, e-mail, mobile) to augment customer experience
  - ↳ effectively implement marketing strategies using e-technology
  - ↳ quantitative techniques to implement interactive marketing strategies

## Creating Relationship Competency

- E-Commerce Law
  - ↳ law principles applicable to computers, Internet and e-commerce companies
  - ↳ protection of software, web site, databases and domain names
  - ↳ e-contracting, e-licensing of intellectual property,
  - ↳ lending against assets associated with e-commerce, and electronic payments
  - ↳ consumer protection and privacy
- E-Commerce Ethics
  - ↳ perspectives of E-Commerce, practices of E-Commerce companies
  - ↳ impact on other businesses and investors and customers,
  - ↳ trademarks, copyrights, patents
  - ↳ enacting legislation, court battles, self-regulation
- Interpersonal Communication
  - ↳ practices and processes: perception, interpretation and expression
  - ↳ contexts: economic, political, cultural and organisational environments
  - ↳ strategies and technologies
  - ↳ roles and significance of interpersonal communication

- Technologies for Business Communication
  - ↳ effective communication using information and communication technologies
  - ↳ information storage and retrieval systems, fibre optics, teleconferencing
  - ↳ global telecomm., intranets, extranets, email, groupware, virtual organisations
  - ↳ comm. protocols, service options, network operations, bandwidth, data transfer
  
- Project Management
  - ↳ scope/time/cost management, activities, objectives, artifacts
  - ↳ project management tools, systems and approaches
  - ↳ quality/human resource/risk/procurement management
  - ↳ security management models and practices
  
- Customer Relationship Management
  - ↳ concepts and context of CRM, understanding customers
  - ↳ information gathering, collation, analysis and evaluation
  - ↳ managing customer relationships, developing CRM strategies
  - ↳ selecting identification, acquisition, growth and retention of customers

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## Creating Conceptual and Technical Competency

- Database Management Systems
  - ↳ database modelling, database design, database implementation
  - ↳ data definition, manipulation and querying, query languages
  - ↳ database constraints, distributed databases, transaction management
  - ↳ object-oriented databases, XML databases
- Internet and E-Commerce Security
  - ↳ security services, mechanisms and threats, network security
  - ↳ secret/public-key encryption, key management, authentication
  - ↳ digital signatures, electronic mail security, Internet protocol security
  - ↳ secure socket layers, intruders, firewalls, malicious software
  - ↳ security awareness in organizations, security training
- Conceptual Modelling
  - ↳ requirements analysis, natural language mapping, ER-modelling
  - ↳ acquisition, representation and data mining of business rules
  - ↳ modelling of complex business and Web-based data

- Data Warehousing, Decision support & Data Mining
  - ↳ multi-dimensional database technology, on-line analytical servers
  - ↳ on-line analytical processing and user analysts, patterns of data mart development
  - ↳ association rules, link analysis, spam detection, recommendation systems
  - ↳ extracting structured data from the Web, data visualization, stream mining
- Multimedia Computing
  - ↳ broad range of creative technologies and their applications
  - ↳ medium types, color basics, coding, data compression, audio/video technologies
  - ↳ storage systems, optical media, digital watermarking, multimedia databases
  - ↳ authoring tools and industrial standards such as JPEG, MPEG, RealMedia, SVG
- Design and Development of Web-based Information Systems
  - ↳ business benefits of Web presence, planning and designing a Web presence
  - ↳ styling, modelling, querying Web-based data, roll-outs and updates, Web services
  - ↳ HTML, XML, DTD, XML Schema, CSS, XPath, XQuery, XSLT, XForms

- Web Programming
  - ↪ building blocks for Internet services and emerging enterprise applications
  - ↪ networking technologies and programm. techniques, Web-server implementations
  - ↪ JavaScript, Java Server Pages, Enterprise Java Beans, Web-service protocols
  
- Ontologies and the Semantic Web
  - ↪ layers of the semantic web, RDF, RDF Schema, SPARQL, OIL, OWL
  - ↪ basics of knowledge representation and description logics, intelligent agents
  - ↪ practical issues in ontologies, common problem in ontology development
  
- Internet Payment Systems
  - ↪ banking systems, foreign exchange, settlement systems, e-payment security
  - ↪ digital certificates, credit card security, stored value cards, micropayments
  - ↪ e-cash, p2p-payment systems, e-banking, m-payments, virtual money, e-invoices

- Geo-spatial information for E-Business Applications
  - ↳ spatial perspectives of businesses, characteristics of/Web-access to geo-spatial info
  - ↳ GIS for storing, manipulating and analysing geo-spatial data,
  - ↳ visualizing spatial information, implementing GIS in business
  - ↳ data analysis for informed business decision-making
  - ↳ distributing GIS-enabled services over the web
  
- Smart card and RFID technologies
  - ↳ smart card and radio frequency identification technologies for e-businesses
  - ↳ card types in e-commerce, healthcare, transportation, national identification
  - ↳ architecture, standards, system level information, card programming, Java cards
  - ↳ RFID concepts and fundamentals, design and architecture of RFID systems
  - ↳ middleware functionality, capabilities, related standards, e-applications

## How to Create Creativity?

- ▶ self-critical, collaborative, approachable teaching:
  - ↳ motivating, stimulating, controversial?, convey desire to self-study
  - ↳ use real-world examples, explain benefits, opportunities, limitations
  - ↳ creative, critical, research-based thinking
- ▶ exposure to knowledge through:
  - ↳ lectures, self-study, case studies, excursions
  - ↳ using traditional, audio-visual, computer-based learning materials
- ▶ understanding of knowledge through:
  - ↳ assignments, self-study, tutorials
  - ↳ (small) group discussions, real-life experiences
- ▶ application of knowledge through:
  - ↳ (group) projects, internships, championships
  - ↳ roleplays, real-time interactive laboratory experiments
  - ↳ research and/or case study

## Executive Education!

- ▶ open-enrollment and custom learning solutions
- ▶ executives come to:
  - ↳ initiate new or intensify existing collaborations,
  - ↳ recharge thinking,
  - ↳ enhance individual management skills,
  - ↳ extend their domain knowledge,
  - ↳ learn to apply new competencies for corporate advantage
- ▶ development opportunities grounded in:
  - ↳ field-based research,
  - ↳ closeness to practice,
  - ↳ actionable learning for individuals,
  - ↳ enhanced performance through sustainable results for companies

## Conclusion

- ▶ attributes of E-Commerce are dynamic and demanding
- ▶ E-Commerce Professional must meet these demands
  - ↳ up-to-date, innovative, curious, knowledge-oriented All-Rounders
- ▶ a successful teaching program must have the same attributes
  - ↳ address all core competencies in sufficient depth
  - ↳ exhaust geographical advantage for industry/government contacts
  - ↳ make electives suitable for a variety of different specializations
  - ↳ enable professionals to update their domain knowledge