Building IT/IS strategic objects by focusing on the IT/IS economic concept and holistic integrated management approach

Dr Munir El Khatib
Ajman University of Science and Technology
drmunir.k@gmail.com

Abstract

The majority of decision makers from all business and organizational levels have absolute agreement about the essential role of IT in enforcing business in a new paradigm. Decision making and its life cycle is not an exception. It will be transformed too, and in both directions (top – down and bottom – up) by enforcing IT innovation and domination. Businesses are directed by growing corporate business ideology. This corporate ideology forms the basis from which most, if not all, of the company's goals, initiatives, and ultimately direction, are derived. This same ideology developed different planning methodologies where IS are among its products, meanwhile IT has greatly contributed to the evolution of the planning methodologies.

Thus, IT has defined its business interrelation, and its value as an essential business variant. This variant added itself to the requirements of business success as “success in business also requires the mastering of IT.”

In this paper, the researcher highlighted:
1) The IT/IS strategic focus through the IT impact analysis on business strategy and operations
2) The Main business-IT/IS transformation strategic approaches (strategic blocks): Enterprise Resource planning (ERP), Supply chain management (SCM), Customer relationship management (CRM) & Partner relationship management (PRM), and Business intelligence (BI) from the:
   a) IT/IS economic concept in Building IT strategic objects and
   b) Holistic integrated management approach through the mechanism of Integrated enterprise management (IEM) and it’s pillars (Building foundation layers, Sense and response, and IT-business transparency)

To conclude that

The IT role as a management tool is bounded to the following:
“The IT potential to provide a reliable, executable plan to carry out the IEM strategy to action is conditional. This condition requires a full understanding of the present and future enterprise state and direction”

Methodology: the author had embarked on a combined methodology: “case study analysis” empowered by “interview/questionnaire”.

Keywords: IT/IS strategic objects, IT/IS economic concept, Integrated enterprise management (IEM), Enterprise Resource planning (ERP), Supply chain management (SCM), Customer relationship management (CRM) & Partner relationship management (PRM), and Business intelligence (BI).

Definition of the terms is explained in tables 5a to 5e.

This approach is implemented in the UAE government e-government strategy and foundation project where all the building blocks were made as separate projects integrated and interconnected within the master plan.

Introduction:

For more than half a century, computers were predominantly used as a computational tool, but in the last few years, IT has moved from offices and labs to the desktops and briefcases. The majority of decision makers from all business and organizational levels had absolute agreement about the essential role of IT in enforcing business in a new paradigm.
With the e-hype, Information technology is and will continue to be one of the key factors driving progress in the 21st century - it will transform the way we live, learn, work, and play. Advances in computing and communications technology are creating a new infrastructure for business, scientific research, and social interaction.” Such an orientation is very clear in many government efforts like President’s Information Technology Advisory Committee (PITAC) in USA. Many European countries formed their committees on the national or the European Union (EU) level to meet the new forces of change represented by the IT influence, interaction and transformation, expanding to affect all aspects of organization, from the basic operational level to the highest strategic level.

Decision making and its life cycle is not an exception. It will be transformed too, and in both directions (top – down and bottom – up) by the enforcing IT innovation and domination.

The figure below shows the relation between the four factors of decision making and the relevant positioning of IT/IS with the management, the organization, and the external environment.

---

**Research methodology:**

Oriental mentality in general is sensitive to criticism, consequently the methodology adopted for data collection required careful consideration to ensure valid data was collected. In “Madar research journal October 2002”, Mr Kamali recognized the Absence of transparency, bureaucracy, inadequate databases and lack of respect for numbers.

Due to organization specifics and cultural concepts, in addition to the stated above research challenges, the researcher - in order to be unbiased - had embarked on a combined methodology: “case study analysis” empowered by “interview/questionnaire”

Due to direct role and involvement, case study analysis allowed the author to have direct control over events resulting from direct role and involvement, and long field experience, direct and easy access to all selected projects and related documents, and focus on a contemporary phenomenon, making, the details covered not only the decisions taken, but why and how they were taken, and the available alternatives.

In addition to the information gathered from the case studies, there was a need to analyze some organizational aspects which are directly related to the identifications and assessments.

1- **Literature Review:**
Advances in computing and communications technology are creating a new infrastructure for business, scientific research, and social interaction."

The role of IT in business is to support business operations, decision making, and strategic competitive advantage.

From an information delivery point of view, IT evolution has the following sequence:

### 1-1 The evolution of IT role:

<table>
<thead>
<tr>
<th>Era</th>
<th>Characteristics</th>
<th>When?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Processing (DP)</td>
<td>Operational control systems Transaction processing</td>
<td>1960’s →</td>
</tr>
<tr>
<td>Management Information Systems (MIS)</td>
<td>Control and planning systems Problem solving and decision support</td>
<td>1970’s →</td>
</tr>
<tr>
<td>Strategic Information Systems (SIS)</td>
<td>Systems critical to business operations and competitive advantage</td>
<td>1980’s →</td>
</tr>
<tr>
<td>Possible “Fourth Era?”: Organizational IS Capability</td>
<td>IT/IS permeates organization Inseparable from enterprise Delivers sustainable competitive advantage</td>
<td>Now? →</td>
</tr>
</tbody>
</table>

Table 1: The evolution of IT role, Adapted from Ward and Peppard (2002), Strategic Planning for Information Systems, John Wiley and Sons

### 1-2 IT potentials:

Information technology advances and the realization of its potential contributions and their applications are dependent on the visualization that the potential exists. Therefore, from an IT management view: IT developed in five eras

<table>
<thead>
<tr>
<th>Era</th>
<th>Major (new) Roles</th>
<th>Application Innovations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting</td>
<td>IS dominance</td>
<td>Batch systems (DP)</td>
</tr>
<tr>
<td>Operational</td>
<td>Business management involvement</td>
<td>Online systems</td>
</tr>
<tr>
<td>Information</td>
<td>End user involvement</td>
<td>Interactive decision support (MIS)</td>
</tr>
<tr>
<td>Network</td>
<td>Business management ownership</td>
<td>Strategic information systems (SIS)</td>
</tr>
<tr>
<td>Internet</td>
<td>Top management leadership</td>
<td>Web-based applications</td>
</tr>
</tbody>
</table>

Table 2: the five areas of IT development, Adapted from Martin et al (2002), Managing Information Technology, Fourth Edition, Prentice Hall

### 1-3 IT/IS strategic focus

<table>
<thead>
<tr>
<th>Viewpoint focus</th>
<th>IS</th>
<th>IT</th>
</tr>
</thead>
<tbody>
<tr>
<td>strategy distinction</td>
<td>IS strategy deals with what to do with information</td>
<td>IT strategy designates how technology is to be applied in the delivery of information</td>
</tr>
<tr>
<td>Business unit</td>
<td>IS strategy must be planned at a Strategic Business Unit (SBU) level (Should be cross-referenced between units)</td>
<td>IT strategy more likely to be an enterprise level endeavor</td>
</tr>
<tr>
<td>Structure deliverables</td>
<td>IS Strategy containing statements of demand (Probably separate for each SBU)</td>
<td>IT Strategy including supply elements</td>
</tr>
</tbody>
</table>

Table 3: source: gathered information from “master of information technology management program” (Prof. Ray Trygstad - fall 2003)

Table 3: IT/IS strategic focus, The table shows that IS strategy drives IT strategy.
1-4 IT impact analysis on business strategy and operations

Applegate et al (2008) analysis of the IT impact on core strategy and core operations produced 4 variants: strategic, turn around, factory, and support, as per the following characteristics:

<table>
<thead>
<tr>
<th>(factory) Low impact on core strategy-high impact on core operations:</th>
<th>(strategic) High impact on core strategy-high impact on core operations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improve performance of core processes</td>
<td>• Transform organization or industry</td>
</tr>
<tr>
<td>• Led by business unit executives</td>
<td>• Led by senior executives and board</td>
</tr>
<tr>
<td>• Process reengineering</td>
<td>• Change management</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>(support) Low impact on core strategy-low impact on core operations:</th>
<th>(Turn around) High impact on core strategy-low impact on core operations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Improve local performance</td>
<td>• Identify and launch new ventures</td>
</tr>
<tr>
<td>• Local level oversight</td>
<td>• Led by venture incubation unit</td>
</tr>
<tr>
<td>• Grassroots experimentation</td>
<td>• New venture development</td>
</tr>
</tbody>
</table>

Table 4: The four variants produced of IT impact on core strategy and core operations.

1-5 The IT/IS economic concept:

To execute successful data operations there is a need to apply a “needs assessment plan”, then for the outcome to be sorted by required criteria. Here the fundamental economic concept “deploy resources to fulfill desires” is applicable. Dan Remenyi, Ann Brown, Rene Pellisier (2012), argues that information economics works along the same principles of “supply and demand”, where the demand is represented by the IS or the system side (it have desires to be fulfilled), and the supply is represented by the IT or the technology side (where resources are deployed to fulfill the desires). The demand side of information covers the IS, where operational, managerial, and strategic needs are identified and summarized, whereas the supply side of information covers the IT side where the needs are met using appropriate technology. This leads to the importance of identifying the demand specification, before implementing an appropriate system.

Pellissier’s concept emphasize the delivery of information value chain, from business data to information to business intelligence, through a transformation process deploying the IS and IT, in terms of information economics. Dan Remenyi, Ann Brown, Rene Pellisier (2012), defined the information delivery process as “the end-to-end process of converting raw data, which large organizations have in abundance, into meaningful information, which is required to support and enhance successful decision making”. Within the dynamics of information driven society, we have a flood of raw data but a deficiency in specific information. And the above is the driving force of IT to deliver business intelligence (knowledge).

2- Building IT/IS strategic objects

In its constant desire to seek innovation and a competitive edge, organizations moved through four quadrants of information delivery systems. These quadrants are relevant to the IT evolution role derived by the corporate ideologies mentioned above to meet the rising needs. These quadrants are

Quadrant 1: Office automation (OA)
Quadrant 2: Data Base applications (DB)
Quadrant 3: system applications (OLTP – especially ERP)
Quadrant 4: business intelligence (BI) (data warehousing and mining)

*Extended classification of information delivery system* added a fifth quadrant presenting the shift in the dynamic models in quadrant 3 evolving technologies and the consequent movement toward quadrant 4

Quadrant 5: ERP extensions (CRM, SCM, E-commerce)

The first four quadrants correspond to the four software categories (resulting from the information delivery systems). These categories are:
New products are added to each quadrant, old products in each quadrant are continuously improving, some products obtain additional facilities enabling them to shift from one quadrant to another – as in case of quadrant 5. This leads to subdivide each quadrant product type to mature and growth products (see Table 5), where “mature product is a lower than average future implementation percentage relative to the rest of the products in specific quadrants” (pellissier 2002). Businesses have a high usage of matured OA and DB applications, quadrant 3 ERP have a lesser usage because it’s a big size businesses application, and the BI quadrant have even a lesser usage because all its application are considered growth products. Taking the time of introduction of the product to market as another analysis factor, explains the lesser usage of ERP, BI and ERP extension products. The vendors of these products have recently been targeting medium size companies, that will raise the overall percentage of usage.

“Objects of strategy such as business units, industries, supply chain, customer relationships, organizational structures and so forth – are held together by a “glue” and that glue is essentially information - Philip Evans and Thomas Wurster (2011)

In compliance with information economics, information delivery classification and development, and the accordingly changing IT role with different software category, we conclude the following sequence:

<table>
<thead>
<tr>
<th>Software Category</th>
<th>IT role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Office Automation</td>
<td>Automation</td>
</tr>
<tr>
<td>2 Databases</td>
<td>coordination</td>
</tr>
<tr>
<td>3 Management IS</td>
<td>Integration</td>
</tr>
<tr>
<td>4 Strategic IS</td>
<td>strategic enabler</td>
</tr>
<tr>
<td>5 Business intelligence</td>
<td>strategic differentiator</td>
</tr>
</tbody>
</table>

The change in demand led to change in supply, and the change in supply led to change in the role of IT. The two together – the change in demand and the change of the role of it – led to change in the IT role from the technological sphere to the business sphere and mainly the business management sphere, where the economical aspect is among the main criteria.

Based on the above the role of IT in the enterprise is developed in five main historical levels, five main technological roles and five main business economical roles. They are

Block one: Automation
Block two: Coordination
Block three: Integration
Block 4: Strategic enabler
Block 5: Strategic differentiator

In the following five tables (5a to 5e) the author is going to link the five blocks to the five levels to the five roles, to make the holistic integrated management approach: Integrated enterprise management (IEM)

**Table 5a: Block one : The Automation role:**

<table>
<thead>
<tr>
<th>Quadrant number</th>
<th>Quadrant One</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrant name</td>
<td>OA</td>
</tr>
<tr>
<td>Software category</td>
<td>Personal productivity tools and utilities</td>
</tr>
<tr>
<td>Definition</td>
<td>“the application of computer and telecommunication technology to improve the productivity of clerical and managerial office workers”</td>
</tr>
<tr>
<td>Quadrant number</td>
<td>Quadrant Two</td>
</tr>
<tr>
<td>-----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Quadrant name</td>
<td>DB</td>
</tr>
<tr>
<td>Software category</td>
<td>Transactional databases</td>
</tr>
<tr>
<td>Definition</td>
<td>“collection of data organized to serve several applications efficiently by centralizing the data and minimizing redundant data” laudon and Laudon (2012)</td>
</tr>
<tr>
<td>Functions</td>
<td>Centralize interrelated data and manage it efficiently, users access data via application programs, organized to meet the organization structured</td>
</tr>
<tr>
<td>Application Categories</td>
<td>Mature: Desktop DB, Hybrid DB, Enterprise DBMS</td>
</tr>
<tr>
<td>Growth: Object relational DBMS, Object oriented DBMS</td>
<td></td>
</tr>
<tr>
<td>Development</td>
<td>Multidimensional DB model representing multidimensional structure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quadrant number</th>
<th>Quadrant Three</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrant name</td>
<td>OLTP and ERP</td>
</tr>
<tr>
<td>Software category</td>
<td>Standard operational applications</td>
</tr>
<tr>
<td>Definition</td>
<td>OLTP (ERP) “many IS’s that work together with aim of coordination efforts throughout the organization in order to share information, automate processes, and produce access information in real time environment. Deloitte consulting (2010)</td>
</tr>
<tr>
<td>Functions</td>
<td>Consists of On-line transaction processing (OLTP) provided within one integrated solution (ERP)</td>
</tr>
<tr>
<td>Application Categories</td>
<td>Mature :ERP</td>
</tr>
<tr>
<td>Development</td>
<td>Online analysis or (architecture) platform (OLAP) consisting of a wider range of applications than the popular ERP</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Quadrant number</th>
<th>Quadrant Four</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrant name</td>
<td>OLAP and BI</td>
</tr>
<tr>
<td>Software category</td>
<td>Strategic information delivery</td>
</tr>
</tbody>
</table>
Definition

Data warehouse are “database with tools that stores current and historical data throughout the organization” laudon and Laudon (2012)
“data warehouse includes query and analytical tools, and graphical reporting facilities (data mining)

Functions

It provides insight into the activities of the competition. Extract, reconcile, organize, and exploit data from operational system in a way that makes a business sense, knowledge discovery, and analytical software

Application Categories

Mature: Strategic Decision support system Growth: Data warehousing, OLAP, Data mining.

Development

Present and projected behavior of stakeholders, technologies, markets, products and services, and general environment

Table 5e: Block five: The strategic differentiator role:

<table>
<thead>
<tr>
<th>Quadrant number</th>
<th>Quadrant Five</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quadrant name</td>
<td>ERP extensions</td>
</tr>
<tr>
<td>Software category</td>
<td>Organizational IS Capability</td>
</tr>
<tr>
<td>Definition</td>
<td>CRM is “a robust sales force automation application” Vaas (2009) SCM is “anything to do with the planning, sourcing, making and moving of raw materials as travel through the pipeline to become finished products” MacDonald (2000) E-commerce is “the buying and selling of products and services using computers and internet. Turban (2012)</td>
</tr>
<tr>
<td>Functions</td>
<td>Contract management, Sales research, Customer, Customer and product info, Marketing encyclopedias, Product configuration engines.</td>
</tr>
<tr>
<td>Application Categories</td>
<td>Mature : Growth: CRM SCM E-commerce</td>
</tr>
<tr>
<td>Development</td>
<td>The growing importance of CRM, SCM, and E-commerce.</td>
</tr>
</tbody>
</table>

Integration and interconnectedness: Integrated enterprise management (IEM)

ICT developments in general, and mainly: Internet-intranet-extranet, web technology, and multimedia. In addition to software application development: especially ERP, CRM, SCM and e-commerce. Enforced the development of more dynamic businesses and hypercompetitive markets. This enforces enterprises to increase responsiveness and flexibility. Responsiveness to customers and flexibility to change: (1) business strategies, (2) The underlying business processes, and (3) The supporting IT infrastructure

IEM is defined as “The synchronization and coordination of business processes to keep up with the changes requires enterprises to be managed more holistically. I call this holistic approach integrated enterprise management”.
To support this holistic approach and integrated management in modern enterprises, IT needs to be redefined by itself. “Fundamental to this redefinition is the realization of the change in IT role in the modern enterprise” - Craig Dillon (2000). The IT role is no longer hidden in internal operations support and automation. In the E-business era, IT is the customer interface and the enabler of present and future business strategies.

**A- Building foundation layers:**
- ERP previously viewed as an integrated multi-module application software packages, designed to serve multiple business functions, in order to integrate information solutions across the enterprise, through single software program that runs off one database. This database gives the management a common view of the company and its processes, allowing ERP to be viewed as the foundation layer for enabling IEM
  - SCM which is viewed as an ERP extension, will add considerations of the supply chain stakeholders (suppliers, manufacturers, wholesalers, distributors, stores, consumers and end users), when added the integrated IEM.
  - CRM which is viewed as another ERP extension; it is the overall process of marketing, sales, and service within any organization. CRM will help bringing together lots of pieces of information about customers, sales, and marketing effectiveness, responsiveness, and market trends to increase customer’s loyalty. While CRM is gaining its importance as the new competitive edge, after technical innovations and quality lost its sharpness. Gaining customers’ loyalty means gaining all the CRM stakeholders, and integrating CRM to the IEM in this context is essential.
  - Shop floor integration: is the process of automating shop floor processes with ERP system and the IT infrastructure as a whole, by joining together their activities in real time. This requires automation of the shop floor process certain systems like:
    - computer numerical control (CNC)
    - programmable logic controllers (PLC)
    - manufacturing execution systems (MES)
    - supervisory control and data acquisition
    Shop floor integration is usually derived from the trend in the manufacturing world toward mass customization.
    With this integration, SCM manager can better manage logistics, and accounts manager can better manage CRM through follow up of state of the client order.
  - Business intelligence (BI): to use the capabilities of data warehousing and data mining in organization to integrate complete knowledge bases to be used for strategic analysis and decision making.
    - capable to store current and historical data throughout the organization
    - motivated toward Just-in-Time (JIT) information delivery systems
    - to be standardized and consolidated to be used across the organization
    When a certain point within the knowledge base becomes:
      - an area of interest
      - a strategic benefit in the long run
      - or expected to be a field of its own
    Then BI, supported by data mining trends, will try to discover its hidden patterns and trends.
    All these products and services may not come from the same vendor, leading to the need for enterprise application integration (EAI) middleware. Such EAI middleware is available and aids this process. EAI enables multiple ERP systems to operate together to gain flexibility in case of expanding or downsizing

**B- Sense and response:**
E-business draws a close relationship between buyers and sellers in B2B and B2C, that requires a smooth sharing of information between suppliers, shippers, and buyers leading to direct and automated access to information, and transfer of information between members in the supply chain.
“This will be redefining supply chain dynamics, relationships, economics, and expectations”.

This confirms the need for: (1) flexible enough companies, (2) To sharpen the skill of “sense and response”, to be ready for quick respond to new threats and opportunities.

C- IT-business transparency

Each of IT and business better know its own purpose, logic, capabilities, and features. But what it may not be clear is

From the IT side is:
- How IT systems are used in the enterprise?
- How IT serves businesses?
- What is IT contribution to business competitive advantage?

From the business side:
- How change in IT can benefit the enterprise
- How IT change can best serve business competitive advantage?

Therefore, Transparency is a required advantage between people working in the enterprise. Business people need easy access to relevant information, and IT people have to deliver knowledge management and business intelligence systems to enable this.

D- IT as a Management Tool

The IEM sees the enterprise as unified entity where IT is the supplier with the capability to assist change strategy, tactics, products, procedures, and enterprise structure more quickly than any non IT based change concept. IT potential to provide a reliable, executable plan to carry out the IEM strategy to action is conditional. This condition requires a fully understanding of the present and future enterprise state and direction.

IT changed position: E-business changed the IT position from the hidden places to the first thing a customer sees.

IT exceeds its role: IT department can no longer be concerned solely with the technical aspects of IT

With the e-business environment domination, companies that do not have IT heavily involved in strategy and planning are misleading

◊ Through the historical development of economies, knowledge has been a decisive factor in formulating outstanding decisions which led to outstanding organizations.

◊ Information processing and analysis in a competitive form can be achieved only by using the best aligned to business strategy IS, to specify the information needs, and the most appropriate IT to supply the information needs.

◊ Growing corporate business ideology drives business goals, initiatives, directions and mainly planning methodologies, where IS is a product of the planning methodologies and IT has greatly contributed to the evolution of the planning methodologies.

◊ IS and IT supports means for organizations to gather and analyze the needed information for managing the business, in addition to managing and utilizing large complex systems to provide strategic advantage.

◊ IT has defined its business interrelation, and its value as an essential business variant in the form “success in business also requires the mastering of IT”, this is evident in the following facts:

1) In a reverse delegation, MIS and SIS systems mangers are promoted to the steering organization committee, due to the increasing difficulty in delegating authority to technical decision makers resulting of the increased strategic role of IS in today’s life of organizations. This allows the IT executive to report to the CEO and be a key player in the corporate strategy team, and provides management with technical issues as a key to business success.

2) The competitive nature of business and not the IT, should be understood as the driving force behind the business evolution
Conclusion:
This paper reviewed the evolution of IT role, the IT potentials and application innovation, the IT/IS strategic focus, IT impact analysis on business strategy and operations, and the IT/IS economic concept to formulate the five building IT/IS strategic objects based on the IT role and business economic role. Integrating the five blocks to the five levels to the five roles, to make the holistic integrated management approach - Integrated enterprise management (IEM) sees the enterprise as unified entity where IT is the supplier with the capability to assist change strategy, tactics, products, procedures, and enterprise structure more quickly than any non IT based change concept.

References:

Acumen Insights (2009), Strategic information systems knowledge


Craig Dillon (2000), iS3C May 01, 2000 Making the Pieces Fit, Top-to-Bottom management


Dan Remenyi, Ann Brown (2012), “the make or break issues in IT management


GCN.com (2011), Understanding the Federal Enterprise Architecture


http://erp.ittoolbox.com/pub/erp_overview.htm

http://www.amrresearch.com

http://www.frontlinehq.com/crm.htm

http://www.intuitivemfg.com/FAQ/G_whatiserp.htm

http://www.ittoolbox.com/help/crmoverview.asp

http://www.outsourcing-law.com/what_is_outsourcing.htm


J, Morabito & E,A. Stohr (2003); Stevens institute of technology; enterprise system management.

Laudon & Laudon (2012), Essentials of management information systems. 10e, Prentice-Hall, New Jersey

Management consulting (2002), publishing of ILO, p 449-551


NASCIO (2011), Enterprise Architecture development tool kit v 3.0

Philip Evans and Thomas Wurster; (2011); Summary: Blown to Bits: How the new economics of information transform strategy; Harvard business school press; p xi

R. Adams, D.Wong, D. Latimore, (2003); Business and IT operational models in financial services: beyond strategic alignment; IBM business consulting services IBM.com/bcs

Ray Trygstad - fall 2011) gathered information from “master of information technology management program”

Turban (2012), Electronic Commerce 2012: Managerial and Social Networks Perspectives, 7/E, ©2012 • Prentice Hall