

# [Mis summary essay](https://assignbuster.com/mis-summary-essay/)

emManagement Information System EBC 2003 Summary of the Course Literature Summary – Management Information System – Josef Stenten Task 1 – Taxonomies of Information Systems Mastering the three worlds of information technology By Mc Afee 3 roles of executives in managing IT: 1) select technologies, 2) nurture adoption, 3) ensure their exploitation Building an Effective IT Model – IT in a historical context: IT is the latest in a series of general-purpose technologies (GPTs), innovations so important that they cause jumps in an economy’s normal march of progress. GPTs deliver greater benefits as people invent or develop complements that multiply the power, impact, and uses of GPTs. Complements are organizational innovations, or changes in the way companies get work done. Examples: o Better-skilled workers o Higher levels of teamwork o Redesigned processes o New decision rights – But: IT not with same relationship with the four organizational complements than other process GPTs have The Three Categories of IT 1) Function IT (FIT): includes technologies that make the execution of stand-alone tasks more efficient.

Assists with the execution of discrete tasks. Ex. : word processors, spreadsheets, CAD systems Characteristics: Can be adopted without complements; impact increases when complements are in place Capabilities: o Enhancing experimentation capacity o Increasing precision 2) Network IT (NIT): provides a means by which people can communicate with one another. Facilitates interactions without specifying their parameters. Ex. : e-mail, instant messaging, blogs, groupware.

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Unlike FIT, network IT brings complements with it but allows users to implement and modify them over time. Characteristics: Doesn’t impose complements but lets them emerge over time; doesn’t specify tasks or sequences; accepts data in many formats; use is optional Capabilities: o Facilitating collaboration o Allowing expressions of judgment o Fostering emergence (the appearance of high-level patterns or information because of low-level interactions) 3) Enterprise IT (EIT): type of IT application that companies adopt to restructure interactions among roups of employees or with business partners. Ex. : CRM, SCM, electronic data interchange. EIT is implemented top-down, with disruptive character, complements can’t be created slowly Characteristics: imposes complements throughout the organization; defines tasks and sequences; mandates data formats; use is mandatory Capabilities: 2

Summary – Management Information System – Josef Stenten o Redesigning business processes o Standardizing work flows: Once a complementary business process is identified, it can be implemented widely and reliably along with the EIT o Monitoring activities and events efficiently Managing the Three Types of IT Across the three IT categories, executives have three tasks: 1) IT selection – Should start with the organization’s needs, not with the technology ? nside-out approach – set IT priorities: FIT delivers productivity and optimization, NIT increases collaboration, EIT helps standardize and monitor work 2) IT adoption: the work of putting the technologies they have invested in to productive use – Manager’s main responsibility: help create the complements that will maximize IT’s value – FIT: challenge is to identify the right complements – NIT: easy adoption (voluntary), managers should not intervene too often – EIT: hart to adopt; resistance from employees, stronger oversight needed.

Successful EIT adoption if key issues about configuration have been decided at the outset. 3) IT exploitation: extract the maximum benefit from technologies once they are in place – Companies can best exploit FIT by fine-tuning organizational complements – Exploitation often easier than adoption – exploiting EIT sometimes requires adding a new FIT on top of it IT as competitive advantage? IT becomes valuable, rare, inimitable, and non-substitutable with its successful implementation because of the managerial challenges inherent in its implementation process. 3 Summary – Management Information System – Josef Stenten

Task 2 – The Impact of IT on Organizations and Markets The Impact of Information Systems on Organizations and Markets By Gurbaxani & Whang Aim of study: Analyzing the impact of IT on two attributes of firms: Firm size and the allocation of decision-making authority (centralization vs. decentralization), considering agency theory and transaction cost theory. Premise: firm size and allocation of decision-making authority among the various actors in a firm are, to a considerable degree, determined by the costs associated with acquiring, storing, processing and disseminating information.

Agency Theory: View of the firm as a nexus of contracts among self-interested individuals. The firm represents a set of agency contracts under which a principal (entrepreneur) employs agents (employees) to perform some service on his behalf. The agent’s interest to maximize his own profit leads to a conflict between the agent’s and the principal’s interest, causing the agency costs. Agency costs: costs incurred as a result of discrepancies between the objectives of the principals and those of agents.

Possible solutions to agency problem: – Owner can create contract in which payment is only made when output exceeds a prespecified level – Salesperson can pay a fixed amount to the owner and keep the remainder ? of uncertainty is risk born by salesperson. – Owner can hire another person to monitor the salesperson all the time ? monitoring costs – bonding costs: costs the salesperson takes upon himself to reduce agency conflict; thus efforts undertaken at the expense of his own utility – Residual loss: partial loss of the principal’s welfare ?

Agency costs are the sum of monitoring & bonding costs and the residual loss Agency Costs and Firms: Managers are agents who may act in their own interests at the expense of the shareholders; also manager-employee conflicts and conflicts between different departmental managers within a firm Firm strategies against agency problems: – direct monitoring – Efficient or semi-efficient contracts – Outside labour markets, proxy fights, and takeover activities – Institutions such as banks, accounting firms, and insurance companies – Cultures and norms within the organizations – Human nature Summary – Management Information System – Josef Stenten Decision Rights in Organizations: – Decision information costs: Sum of Information processing costs (communication and documentation) and Opportunity costs due to poor information. They increase as a decision right is moved higher in the hierarchy, away from where information is most easily available. Decision information costs increase the more they move up the organizational pyramid (the more centralization), but agency costs increase the more decisions are decentralized. Internal coordination costs: combined costs out of agency costs and decision information costs – The firm structure determines whether decisions should be centralized or decentralized; production operations could be completely decentralized, while financial functions should be centralized.

Transaction Cost Theory The firm is a substitute for the market mechanism, created to reduce the market’s transaction costs (ex ante and ex post costs) Transaction Costs: “ market transactions cost” (external coordination costs) mean the coordination costs involved in using an outside market. – method to reduce market transaction costs: integrate vertically – 2 categories of market transaction costs: o Operational costs: Search costs, transportation costs, inventory holding costs, communication costs o Contractual costs: Costs of writing contracts; costs of enforcing contracts ?

External coordination costs / market transaction costs Economies of Scale in Operations – Production economies – Informational economies of scale – Network externalities: when firms can achieve increased gains as they increase the geographical scope of their operations The Size of a Firm – firms size is defined along two dimensions: vertical and horizontal Vertical Size: the range of the value chain which the firm spans using its own hierarchy.

Main advantage: reduction of market transaction costs. But: Higher internal coordination costs and operations costs Horizontal Size: the number and corresponding share of markets in which the firm sells its final goods and services. Positively correlated with the geographic scope, the product line, and the firm’s market share. Leads to lower operational costs (better scale economies), but higher internal coordination costs.

Impact on external coordination costs is not clear and may vary between businesses. Organizations and Information Systems Roles of information systems: a) operations – increases scale economies, b) transaction processing, c) decision support, d) monitoring and performance evaluation, e) documentation and communication a) Operations: IT benefits regarding 1) economies of scale, and 2) higher flexibility b) Transaction Processing: Cost-effective IT has driven down market transaction costs; e. g. y facilitating the creation of value-added partnerships (VAPs) d) Monitoring/ Performance Evaluation: availability of cost-effective monitoring devices reduces agency costs. 5 Summary – Management Information System – Josef Stenten e) Documentation/ Communication: IT decreases internal coordination costs. Ex. : organizationwide database management systems like WANs and LANs c) Decision support: IT reduces decision information costs by allowing decision makers costeffective access to information and tools like simulation and modelling for analyzing the retrieved information.

The improvement in decision quality in turn increase operational efficiency Impacts of Information Technology on an Organization 1) IT and Decision Rights: Recall: Decision rights should be located where the sum of decision information costs and agency costs are minimized. Two possibilities are possible: a. More centralization: by a more cost-effective way of information processing, quality and speed of upper management’s decision-making processes is improved. This may move decision rights more upward in organizational hierarchy b.

More Decentralization: IT improves monitoring and performance measurement, reducing agency costs and thus induces the decentralization of decision rights. ? A firm may use IT to centralize some decision rights while decentralizing others, leading to a hybrid structure. The net effect of cost-effective IT on the location of decision rights is not clear 2) IT and Firm Size: Recall: Both vertical and horizontal firm size are determined by trading off external coordination costs, internal coordination costs, and operational economies of scale.

IT changes the underlying cost structure of a firm and has therefore a direct impact on optimal firm size. Again different possibilities: a. Vertically smaller: Cost-effective IT reduces external coordination costs and can lead firms to turn to markets rather than integrate vertically with factor suppliers b. Vertically and horizontally larger: smaller external and internal coordination costs. More control through IT has increased the degree of vertical integration or the scope of firm activities. . Horizontally larger: reduction of internal coordination costs and market transaction costs, accompanied by the scale economies of production and information. These scale economies are possible due to network externalities and savings in horizontal market transaction costs (more control) ? The net effect of IT on firm size can vary from situation to situation, depending on the cost structure of the firm and the modes of synergy generated by integration.

Conclusion – The direction of trends in the location of decision making is not definitive and depends on other organizational and environmental factors. – When IT plays a significant role in reducing internal coordination costs, a firm may find it advantageous to grow horizontally and vertically – Reduction in market transaction costs ? more VAPs, leading to operational scale economies and lower internal coordination costs by choosing to be vertically small and horizontally large. A firm’s use of IT can either increase or decrease the horizontal or vertical dimension of firm size 6 Summary – Management Information System – Josef Stenten Task 3 – Strategic Information System Information Technology and Sustained Competitive Advantage: A Resource-Based Analysis By Mata et al Introduction – The field of strategic management focuses on understanding sources of sustained competitive advantages for firms. Factors with an important impact on the ability of firms to obtain sustained competitive advantage: o Relative cost position of a firm o A firm’s ability to differentiate its products o The ability of firm’s to cooperate in strategic alliances – Additional source of sustained competitive advantage: IT – Purpose of paper: Develop and apply a model that specifies the conditions under which IT can, and cannot, be a source of sustained competitive advantage ? pply resource-based view IT and Competitive Advantage: Previous Literature – Traditionally: focus on the ability of IT to add economic value to a firm by either reducing a firm’s costs or differentiating its products or services. But: adding value to the firm ? being a source of sustainable competitive advantage Types of competitive advantages: 1) Sustained competitive advantage: When a firm is implementing a strategy that is not simultaneously implemented by many competing firms and where these other firms face significant disadvantages in acquiring the resources necessary to implement this strategy. ) Temporary competitive advantage: When a firm is implementing a valuable strategy currently pursued by few competing firms, but where these competing firms do not face significant disadvantages in acquiring the resources necessary to implement this strategy 3) Competitive parity: a valuable strategy being simultaneously implemented by several competing firms 4) Competitive disadvantage: implementing a strategy that is not valuable (does not reduce its costs or increase its revenues) The create-capture-keep paradigm ?

Focuses on the role of IT-based customer switching costs as a source of sustained competitive advantage for firms selling IT applications Switching costs – Are created when customers make investments (e. g. , employee technical training) that are specific to a particular supplier of IT. – Once these switching costs are created, IT suppliers can increase the price, reduce the level of service, or in other ways extract additional value out of their relationships with their captured customers. As long as the cost to customers of switching suppliers is less than the extra value that is being extracted from this relationship by a supplier, customers will continue purchasing IT from that supplier. 7 Summary – Management Information System – Josef Stenten ? IT suppliers should attempt to create unique IT that requires specific investments by customers, to be used by customers. They then become “ captured” by their switching costs.

Given these switching costs, suppliers are able to “ keep” customers – There are at least three reasons why this “ create-capture-keep” approach is unlikely to be a source of sustained competitive advantage for IT suppliers 1) Customers will usually be able to anticipate the risk of being captured by an IT supplier if investments specific to that supplier are made. Customers will only be willing to make these kinds of specific investments if they receive some form of guarantee that a supplying firm ill not take unfair advantage of these investments. Then, customers are not really “ captured” 2) IT suppliers that do exploit their customers’ switching costs will often gain a reputation for being untrustworthy. The effects of this type of reputation can be devastating 3) The number of options for customers to obtain IT has increased over time. IT would have to be absolutely unique and absolutely essential to the customer to become a source of sustainable competitive advantage (little chance) ? onopoly situation – many firms once using the “ create-capture-keep”-paradigm were recently forced to change their strategy The Resource-Based View of the Firm The resource-based view of the firm is based on two underlying assertions: 1) That the resources and capabilities possessed by competing firms may differ ? Resource heterogeneity 2) That these differences may be long lasting ?

Resource immobility To 1) Resource heterogeneity: If a firm possesses a resource or capability that is not currently possessed by competing firms, the condition of resource heterogeneity is met, and a firm may obtain at least a temporary competitive advantage To 2) Resource immobility: A mobile resource (for which firms without the resource face no cost disadvantage in developing, acquiring, and using the resource compared to firms that already possess and use it) can only be a source of temporary competitive advantage.

If a firm without that resource does face these costs, then the firm that already possesses that resource can have a sustained competitive advantage – the requirement that firms must face a cost disadvantage in developing, acquiring, and using a resource in order for that resource to be a source of sustained competitive advantage does not imply that the only way to gain such advantages is through cost leadership strategies (a firm may use a wide range of strategies, including cost leadership, product differentiation, strategic alliance strategies, diversification strategies, and vertical integration strategies). Under what condition will a firm’s heterogeneously distributed resources and capabilities be a source of sustained competitive advantage? Three broad categories: 1) The role of history: can play at least two roles in increasing the cost of imitating a successful firm’s resources and capabilities: a. a firm’s ability to develop or acquire resources and capabilities in a low-cost way may depend on a firm being in the “ right place at the right time” in history b. some of the firm’s resources and capabilities can only be developed over long periods of time. 8

Summary – Management Information System – Josef Stenten 2) Causal ambiguity: when there is causal ambiguity (the ambiguity concerning the nature of the causal connections between actions and results) about the source of competitive advantage, imitation becomes more costly: a. These sources of advantage may be taken for granted and are unspoken, tacit attributes of the firm ? “ invisible assets” (organization culture, standard operating procedures etc. ) b. Sources may be a large number of small decisions and actions in the firm, rather than a few large decisions.

These little decisions are, again, almost invisible to imitating firms 3) Social complexity: Firm attributes such as an organization’s culture, its reputation among customers and suppliers, its trustworthiness and so forth are generally beyond management’s ability to change rapidly. Rather, they evolve over time A resource-based model of competitive advantage The impact of resource heterogeneity and immobility on competitive advantage can be organized into a model, which is organized with reference to a set of three questions about a firm’s resources and capabilities: Summary – Management Information System – Josef Stenten Applying the Resource-Based View to Attributes of IT – With model in place, it is now possible to examine the ability of IT to generate sustained competitive advantages for firms. – Five specific attributes of IT have been suggested as possible sources of sustained competitive advantage for firms. 1) Was customer switching costs, already discussed.

The other four are: 1) Access to capital: The capital needed to develop and apply IT – whether in the form of debt, equity, or from retained earnings – has been suggested as a source of sustainable competitive advantage for at least some firms. Logic: (1) IT investments can be very risky, and thus the capital needed to make these investments can be very costly. (2) IT investments can require huge amounts of this risky capital – Two kinds of uncertainty as major sources of risk: a) Technological uncertainty: risk that an IT investment may not meet its expected performance targets in a timely way. . Failure to obtain the anticipated IT results because of implementation difficulties ii. Higher than anticipated implementation costs iii. Longer than anticipated implementation time iv. Technical performance below what was anticipated v. Incompatibility of the developed IT with selected hardware and software b) Market uncertainty: risks related to the customer’s acceptance of new IT products and services ?

Market and technological uncertainty is usually resolved once a first-mover has been able to successfully implement a system 2) Proprietary technology: secrecy only alternative for keeping IT proprietary and thus keeping it as a source of sustainable competitive advantage. Problems: Workforce mobility, reverse engineering, and formal and informal technical communication all act to reduce the secrecy surrounding proprietary technology 3) Technical IT skill: refer to the know-how needed to build IT applications using the available technology and to operate them to make products or provide services. highly mobile, as are they are often codifiable knowledge (“ can be communicated from its possessor to another person in symbolic form, the recipient becomes as much “ in the know” as the originator”) ? are valuable, but usually not both heterogeneously distributed across firms and highly immobile 4) Managerial IT skills: include management’s ability to conceive of, develop, and exploit It applications to support and enhance other business functions. Ex. ability to… a) Understand and appreciate the business needs of other functional managers, suppliers, and customers b) To work with these functional managers, suppliers, and customers to develop appropriate IT applications c) To coordinate IT activities in ways that support other functional managers, suppliers, or customers d) To anticipate the future IT needs of functional managers… – these managerial IT skills are valuable, developed over a longer time period, and often a socially complex process ? ource of sustainable competitive advantage 10 Summary – Management Information System – Josef Stenten Conclusions and Implications – Of the five attributes of IT, only managerial skills are likely to be a source of sustained competitive advantage. Customer IT-based switching costs, access to capital, proprietary technology, and technical skills are all valuable, but not likely to be a source of sustained competitive advantage – Important implications for both researchers and For IT managers: o The other attributes are not competitively unimportant o Firms cannot gain source of sustained competitive advantage by “ playing games” with customers (mistreatment will lead to falling performance) o Managers should seek to develop close relationships with managers in other business functions and with managers in other firms. Using IT to gain source of sustained competitive advantage is not likely to be easy 11 Summary – Management Information System – Josef Stenten Task 4 – Enterprise Resource Planning 12 Summary – Management Information System – Josef Stenten 13 Summary – Management Information System – Josef Stenten 14 Summary – Management Information System – Josef Stenten Enterprise resource planning systems: comparing firm performance of adopters and nonadopters By James E.

Hunton et al Introduction – ERP reflects an innovative business strategy, as ERP adoption involves business process improvement, best practices implementation, intra-enterprise integration and interenterprise coupling – Potential benefits of an ERP system include productivity and quality improvements in key areas such as: ? Customer service ? Product reliability ? Knowledge management – Capital market participants believed ERP adoption would improve future firm performance, as investors reacted positively to ERP announcements (Hayes et al) – Poston and Grabski examined the effect of ERP on firm performance ?

Significant decrease in the ratio of employees to revenues ? Reduction in the ratio of COGS to revenue ? No significant improvement in the residual income ? They suggested a contradiction: ERP systems appear to yield efficiency gains in some areas, higher offsetting cost-to-revenue increases elsewhere leave residual income unaffected – Robertson and Gatingon suggested another way to look at productivity paradox: increased spending in IT yields efficiency and effectiveness improvements, firms will pass on financial gains to consumers through decreased prices in a competitive marketplace.

The research result indicate that ERP adopters performed significantly better than non-ERP adopters, primarily due to declining performance of non-ERP adopters Hypothesis formulation ERP system and innovation Researchers have yet to provide compelling evidence that IT investments equate to measurable, positive value for business organizations Dos Santos argues that non-innovative technologies (those that maintain the status quo) are not likely to improve a firms market value or financial performance, whereas innovative technologies (those that improve business process) are expected to enhance value and performance.

There is a positive relationship between innovative IT investments and performance It is considered innovative if they facilitate key business process improvements, such as ? More accurate, comprehensive and available organizational intelligence from internal and external information sources at greatly reduced costs ? Greater speed and accuracy in identifying problems ?

Fewer intermediate human nodes ? Reduced number of organizational levels ? Less time being consumed in the decision making process ERP systems are perceived to be innovative IT investments, as they observed a positive reaction from investors when firms announced that they were planning to implement an ERP system Financial analysis ignificantly increased mean earnings forecast revisions when they learned that a firm was planning to implement ERP. – – – 15 Summary – Management Information System – Josef Stenten However whether ERP systems positively impact performance in the long run remains unanswered. ERP systems and firm performance – ERP firms exhibited efficiency gains in some areas, but increased costs elsewhere seemed to offset such gains. Productivity paradox indicates little or no relation between IT investment and financial performance – Financial performance of adopters might or might not improve significantly, depending on a host of exogenous factors such as competitive intensity, industry heterogeneity, demand uncertainty and adoption rate of competitor firms – Nevertheless the performance of non-adopters would be expected to deteriorate by comparison in a competitive marketplace H1: Longitudinal financial performance of firms that have not adopted ERP systems will be significantly lower than ERP-adopting firms.

Financial performance indicator – One way to evaluate firm performance is through financial statement analysis – Return on Asset (ROA) is frequently used by researchers as a measure of firm performance – ROA incorporates both firm profitability and efficiency – The combined effect can be separated into return on Sales (ROS), income per dollar of sales? profitability and asset turnover (ATO), sales generated per dollar of assets ? fficiency Interaction of firm size and health: large firm effect – A firm must have sufficient resources or access to resources to withstand the strain of ERP implementation – It can take several years to achieve a positive payback and desired ROI – Firm size is a key contextual factor to consider when postulating the impact of ERP on firm performance – In general large firms ossess higher level of resources and hold greater ability to attract additional resources than small firms – Thus large firms can more easily absorb and withstand ERP implementation costs – However potential performance improvements are greater for relatively unhealthy, as compared to healthy, large firms H2a: For relatively large ERP-adopting firms, there will be a significant negative association between firm health and performance Interaction of firm size and health: small firm effect – Small firms have greater variability which equates to increased loan and investment risk coupled with an economy of scale disadvantage – Small/unhealthy firms may run into considerable obstacles with regard to acquiring needed financial resources to complete full ERP integration. ? They might be forced into partial implementation of the ERP system – Capital market participants would react more positively to ERP announcements from small/healthy firms.

H2b: For relatively small ERP-adopting firms, there will be a significant positive association between financial health and performance 16 Summary – Management Information System – Josef Stenten Results – Study results indicated that ROA, ROI and ATO were significantly lower for non-adopters than adopters – Large/unhealthy adopters experience better ROI than large/healthy adopters – Small/healthy firms that adopt ERP systems demonstrate better performance than small/unhealthy firms. – A comparison of ERP adopters and non-adopters sheds light on the productivity paradox, suggesting that financial gains arising from ERP adoption may be passed on to customers in the form of lower prices; hence the performance of non-adopters declines by comparison. Potential ERP adopters should be aware of performance improvement limitations that may result from a combination of size and health – One recent method of increasing affordability is the use of application service providers (ASPs), where an ASP firm offers to host and maintain the ERP systems and the service recipient pays a fee to use the system. 17 Summary – Management Information System – Josef Stenten Paradigm Shift – E-Business and Business/System Integration By M. Lynne Markus Business Integration – Business Integration is the creation of tighter coordination among the discrete business activities conducted by different organizations, so that unified business process is formed – Can take place within a single organization, as when various activities are synchronized into a new process ? internal business integration – Or business integration can take place across organizations ?

External business integration Business process reengineering (BPR) is a methodology for achieving internal business integration. ? It involves a Top-Down approach to business process redesign that often results in major improvements by eliminating gaps in the work efforts of two or more departments and duplication of efforts across these units. No generally accepted methodology for external integration as yet exists ? Different companies often operate autonomously ? There is no higher authority to orchestrate a top-down approach – The Business Problem Companies seek out business integration because the customer demand it, common business scenarios involve ? Presenting ‘ one face to the customer’ ?

Having ‘ global inventory visibility’ that the company knows whether products are ‘ available to promise’ to customer From the suppliers side being easy to do business with I often referred to as ‘ customer relationship management’ CRM, integrating all the processes associated with a customer relationship Philosophy of CRM requires computer based systems that combine operational data about products, prices , customer order etc. regardless of the suppliers geographic dispersion or internal management structure. Implementing CRM faithfully usually requires other kinds of changes- such as the restructuring of sales territories, incentives, and marketing responsibilities- in addition to computer based tools The business integration required for ‘ available to promise’ capability is often called ‘ supply chain management’ SCM –

The origins of the lack of Business Integration When companies first started to grow t very large and to produce diversified product lines, simple centralized management structures could not cope with the complexity ? the management philosophy of decentralization was born Companies realized that serving customers effectively required an approach that coordinates their internal efforts across product divisions and functions. ‘ clean sheet’ approach: companies should forget about the ways they had always done things and should figure out how to do things most efficiently and effectively see through customers eyes. BPR’s reasons to fail ? Didn’t follow philosophy enough ? The degree of human resistance to major organizational changes was too great 18

Summary – Management Information System – Josef Stenten companies information system could not easily be adapted to the redesigned business process ? Smart companies achieve business integration through a combination of new management philosophies like BPR, CRM and SCM on the one hand and system integration applications like ERP systems and CRM software in the other Systems Integration System Integration refers to the creation of tighter linkages between different computerbased information systems and databases One way to integrate system is to build a software bridge, or interface, between two programs, so that data from one system is more or less automatically transferred to another system ? –

When there are many system exchanging data with each other, there are many interfaces It can become extremely expensive and time consuming for an organization to maintain all the interfaces. Generally when an organization has many systems, it need a better approach to integration than building many discrete interfaces Data warehousing An organization generally leaves its ‘ source’ systems alone Instead a company makes extracts from these systems on a regular basis and loads them into a ‘ warehouse’ from which all sorts of analyses can be done using standard set of analysis tools. Disadvantage usually not detailed enough to support integration of operational business processes. – 19 Summary – Management Information System – Josef Stenten –

ERP systems The different computer based applications – such as sales order entry, inventory, and accounting systems- all use a common database. As a result when a sales order is entered, the financial system is automatically updated Because detailed data are stored, possible to do sophisticated analysis Most companies with integrated packages like SAP will also need a data warehouse to facilitate routine management reporting and decision support analysis. Disadvantage of frequently requiring a great deal of business process change (reengineering) and organizational disruption. Re-architected Systems Re-architect the system so that an intermediate layer is created between applications programs and databases.

Use of commercial ‘ off-the-shelf technologies called middleware and enterprise application integration or EAI (this applications are modified to call the middleware, which then calls the database) It allows a particular program to be replaced without changing the database It reduces maintenance burden, instead of having to maintain a separate interface between each system and all other systems it connects to Requires a vast amount of technical expertise and it’s still in its ‘ shakedown’ phase – 20 Summary – Management Information System – Josef Stenten 21 Summary – Management Information System – Josef Stenten The trouble with Enterprise Software By Cynthia Rettig

It departments spend 70% to 80% of their budgets just trying to keep existing systems running It department tend not to be innovative leaders within organizations, but rather conservative forces, viewed by business executives as cost sinks and liabilities It structure is so dense and extensive that its often a miracle that it works at all The Proliferation of Complexity (Die Verbreitung der Komplexitaet) – The use of data as fodder for more and more analysis and fact-based decision making intensified – Management became accustomed to the idea that buying more computers and software would continue to cut costs and improve operations – ERP systems are more likely to succeed at relatively straightforward tasks such as procurement and order processing ? as problems get more complex so does the software that solves them – Management expect to be able to customize their software to fit their needs ? Software is infinitely malleable’ – This is in theory true: As ERP becomes comprehensive and complex, the costs and risks involved in changing it increases as well – Often these systems introduced new levels of complexity, often without eliminating the older system (known as legacy systems) they were designed to replace – The concept of a single monolithic system failed for many companies ? Different divisions often made independent purchases and other systems were inherited though mergers and acquisitions. ? Many companies ended up having several instances of the same ERP system or variety of different ? In the End ERP system became just another subset of legacy systems they were supposed to replace The Cost of Implementation – Costs had been based on per workstation usage – But additional costs with installation harges, companies had to hire consultants to get the software running – 75% of ERP implementations were considered failure – There is little statistical evidence whether the benefits of ERP implementations outweigh the costs and risks – Researchers even have suggested that ERP implementations are so difficult that those who actually complete them with relative success gain a competitive advantage. – Customizing the software could lead to in house bugs and glitches that were hard to foresee and expensive to fix. – Customization made changing the software later far more difficult and in some cases prohibitively expensive The vagaries of data (Laune) – The data the software processes and generates is another constant and growing problem 22 Summary – Management Information System – Josef Stenten Single systems have error rates of 50% or more from myriad (unzaehlig) sources, everything from mistyped data to stale information to data placed in the wrong fields within database structure

The next new thing – Service-oriented architecture (SOA): proposes to overcome the problems involved with updating and changing legacy systems by building modular cross-system business processes. – These processes would connect the relevant pieces of functionality from various IT systems, thereby making it easier to change processes to adapt to new business goals. – Many difficult technical problems must be solved before SOA can become the backbone for a new strategic architecture including robust protocols for accessing the applications, highquality integrated data stores and a sound methodology for managing the overall process. – Core value proposition of SOA is that it provides companies with standardized systems offered by different vendors. – Companies would purchase business modules for their core processes.

They would then be able to change these processes easily, snaping out and in functional pieces of code from enterprise systems in Lego-like fashion – Software doesn’t work like legos. For one thing a unit software code is not similar to other software code in terms of scale or functionality – SOA uses subsets of code from ERP and other enterprise systems, they do not escape the complexity Advice – Closer communication and collaboration between the IT and business sides of the organization – Business executive should be more proactive, could educate themselves more about technology. 23 Summary – Management Information System – Josef Stenten Task 6 – Enterprise Resource Planning Investing in the It – that makes a competitive Difference By A. Mc Afee and E.

Brynjolfsson Since the mid 1990s a new competitive dynamic has emerged – greater gaps between the leaders and laggards in an industry, more concentrated and winner-take-all markets This accelerated competition has coincide with a sharp increase in the quantity and quality of IT investments The internet and enterprise IT are now accelerating competition within traditional industries in the broader US economy, not because more products are becoming digital but because more processes are. Company’s unique business process can now be propagated with much higher fidelity across the organization by embedding it in enterprise information technology. – To answer the question how IT spending affect the nature of competition and the relative performance of companies within an industry, they focused on three indicators: Industry concentration: In a concentrated or winner-take-all industry, just a few companies account for the bulk of the market share. Turbulence: In a turbulent market, the top-selling company one year may not dominate the next year.

A sector is turbulent if the sales leaders in it are frequently leapfrogging one another in rank order. Performance Spread: The spread in gross profit margin between the companies performing in an industry. The spread is large when the leaders and laggards differ greatly on standard performance measures. Looking at the data they found that the changes in dynamics were indeed greatest in those industries that were more IT intensive All indicators rose markedly in the mid 1990s for high-IT industries coinciding with the surge in IT spending. An overabundance of new technologies is not the fundamental driver of the change in dynamics they’ve documented.

Instead, the field research suggests that business entered a new era of increased competitiveness in the mid 1990s not because they had so many IT innovations to choose from but because some of these new technologies enabled improvements to companies operating models and then made it possible to replicate those improvements. The firm with the best process will win in most or all markets. At the same time, competitors will be able to strike back much more quickly: Instead of simply copying the first mover, they will introduce further IT based innovations These innovations will also propagate widely, rapidly, and accurately because they are embedded in the IT system.

Success will prompt these companies to make bolder and more frequent competitive moves, and customers will switch from one company to another in response to them, As a response performance spread will rise, as the most successful IT exploiters pull away from the pack. 24 – – Summary – Management Information System – Josef Stenten And yet turbulences will intensify as the remaining rivals use successive IT-enable operating model changes to leapfrog one another over time This puts the onus on manager to be strategic about innovating and then propagating new ways of working. Competing on digital process – To survive in this more competitive environment the mantra for any CEO should be ‘ Deploy, innovative, and propagate’ – First deploy a consistent technology platform ? then separate from the pack by cominh up with better ways of working ? inally use the platform to propagate these business innovations widely and reliably – Deploying IT serves two distinct roles: as a catalyst for innovative ideas and as an engine for delivering them Deployment: the management challenge – Determining which aspects of their companies operating models should be globally (or at least widely) consistent, then using technology to replicate them with high fidelity – You have to tackle to barriers to deployment: fragmentation and autonomy – Deployment efforts heighten the tensions – present in every sizable company – between global consistency and local autonomy. Innovation: IT-enabled opportunities – Data analysis drawn from enterprise IT applications, along with collective intelligence and other Web 2. 0 technologies, can be important aides not just in propagating ideas but also in generating. They can complement and speed the search for business process innovations – Web 2. 0 applications that bring collective wisdom to the fore can also uncover potential business innovations Propagation: top down and bottom up – Part of the attraction of enterprise systems has been the opportunity for management to impose best practices and standardized procedures universally – Innovation does not necessarily emanate from HQ, use wikis or web 2. 0 applications to share ideas among people. ? innovations flows through the company without central management The role of decision right – Even as some decisions become centralized and standardized, others are pushed outward from headquarters.

Senior executives do play a primary role in identifying and propagating critical business process, but line managers and employees often end up with more discretion within these processes to serve customer needs and to apply tacit, idiosyncratic or relationship specific information that only they have. – They don’t expect that enterprise IT will inevitably lead to one best way to execute core processes. In fact, it can prompt a great deal of experimentation and variation, as companies try to understand who has the most relevant knowledge to make decisions and where ultimately, to site decision rights. 25 Summary – Management Information System – Josef Stenten Maximizing return on talent – As corporate IT facilitates the implementation and monitoring of processes, the value of simply carrying out rote instructions will fall while the value of inventing better methods will rise. In some cases that may even lead to a ‘ superstar’ effect, as disproportionate rewards accrue to the very best knowledge workers – An analysis showed that organizations successfully using IT were significantly more aggressive in vetting new hires: they considered more applications – They gave their employees more discretion in how to do their jobs while linking their compensation and rewards – The costs of managing talent in this way might be high, but the payoff increases exponentially if you can leverage the talents of a high performing manager at one location to maximize results in thousands of sites worldwide. Three conclusions 1. It has sharpened differences among companies instead of reducing them 2.

Line executive matter, highly qualified vendors, consultants and IT departments might be necessary for the successful implementation of enterprise technologies themselves, but the real value come from the process innovations that can now be delivered on those platforms. Fostering the right innovations and propagating them widely are both executive responsibility-ones that can’t be delegated away 3. The competitive shakeup brought on by IT is not nearly complete, even in IT intensive US economy. They expect to see these altered competitive dynamics in other countries, as well, as their IT investment grows 26 Summary – Management Information System – Josef Stenten 27 Summary – Management Information System – Josef Stenten 28 Summary – Management Information System – Josef Stenten Lecture – MIS Seminar Enterprise 2. 0 Enterprise 2. : The Dawn of Emergent Collaboration By McAfee Web 2. 0 are significant because they can potentially knit together an enterprise and facilitate knowledge work in ways that were simply not possible previously Most of the information technologies that knowledge workers currently use for communication fall into two categories: Channels – such as e-mail and person-to-person instant messaging where digital information can be created and distributed by anyone, but the degree of commonality of this information is low ? only viewable by the few people who are part of the thread Platforms – like intranets, corporate Web sites and information portals.

These are, in a way, the opposite of channels in that their content is generated or at least approved by a small group, but then is widely visible – production is centralized, and commonality is high. Problems with IT-communication tools: – Many users are not happy with the channels and platforms available to them – Knowledge workers used e-mail thought o Overused in their organization o Felt overwhelmed by it o Felt that it diminishes productivity – More fundamental problem, current technologies for knowledge workers aren’t doing a good job for capturing knowledge – The channels can’t be accessed or searched by anyone else, and visits to platforms leave no traces. Only small percentage of most people’s output winds up on a common platform – Within most companies most knowledge work practices and output are invisible to most people. – New platforms have been appeared that focus not on capturing knowledge itself, but rather on the practices and output of knowledge workers Enterprise 2. 0 technologies: Blank SLATES Platforms that companies can buy or build in order to make the practices and outputs of their knowledge workers visible. Acronym SLATES indicates the six components – Search: – Users must be able to find what they are looking for – Intranet page layouts and navigation aids can help with this but users are increasingly bypassing these in favor of keyword searches – Internet searches more successful then orderly intranets 29

Summary – Management Information System – Josef Stenten Links – Taking advantages of the information contained in links between Web pages – Links are an excellent guide to what’s important and provide structure to online content; – Search technology works best when there is a dense link structure that changes over time and reflect the opinions of many people – This is the case in the internet but not on most of the intranet where links are made only by the relatively small internal Web development group – Many people have to be given the ability to build links – Best way to accomplish this, let intranet be built by a large group rather than a small one.

Authoring – Most people have something to contribute, whether its knowledge, insight, experience, a comment, a fact, an edit, authorship is a way to elicit these contributions – Blogs let people author individually and wikis enable group authorship – Content on blogs is cumulative ( individual posts and responses to them accumulate over time), while on wikis its iterative (people undo and redo each other’s work) – When authoring tool are deployed and used, the intranet platform shifts from being the creation of a few to being the constantly updated, interlinked work of many – Group authorship can lead to convergent and high quality content i. e.

Wikipedia Tags – Intranets need more categorization of content – Outsource the work of categorization to their users by letting them attach tags – Don’t try to impose an up-front categorization scheme; they instead let one emerge over time as a result of users action – The categorization system that emerges from tagging is called a folksonomy ( a categorization system developed over time by folks) – Their main advantage is that they reflect the information structures and relationships that people actually use, instead of the ones that were planned for them in advance – Design tags to useful intranet and internet pages to keep track and as a reminder of content – As a result, patterns and processes in knowledge work would become more visible Extension – Take tagging one step further by automating some of the work of categorization and pattern matching – They use algorithms to say to users : “ If you likes that, then by extension you’ll like this” Signals – Final element of the SLATES infrastructure is technology to signal users when new content of interest appears – A novel technology called RSS ( usually refers to ‘ really simple syndication’) generate a short notice each time they add new content – The notice usually consist of a headline that is also a link back to the full content – Software for users called “ aggregators” periodically queries sites of interest for new notices, downloads them, puts them in order and displays their headlines 0 Summary – Management Information System – Josef Stenten With RSS users no longer have to surf constantly to check for changes Enterprise 2. 0 Ground Rules – As technologists built Enterprise 2. 0 technologies that incorporate the SLATES components they seem to be following two intelligent ground rules: 1. Their offerings are easy to use 2. Does not impose any preconceived notions about how work should proceed or how output should be categorized or structured. They built tools that let these aspects of knowledge work emerge – Their different approaches to structure, however, do not mean that 2. 0 technologies are incompatible with older ones.

Existing channels and platforms can be enhances by SLATES components They have the potential to let an intranet become what the Internet already is: an online platform with constantly changing structure built by distributed, autonomous and large selfinterested peers. – Enterprise 2. 0 technologies are subject to network effects: as more people engage in authoring, linking and tagging, the emergent structure becomes increasingly fine-grained. – They can make large organizations in some ways more searchable, analyzable and navigable than smaller ones, and make it easier for people to find precisely what they’re looking for. The Role managers will play – employees should use the 2. 0 without being directed – Fours aspects illustrate that use of Enterprise 2. 0 technologies Is not automatic and depends greatly on decision made and actions taken by managers: 1.

A receptive Culture – The business needs a fertile Culture in which to cultivate new collaboration practices 2. A common Platform – Make choice about the degree of fragmentation of the platform, this depends on how they evaluate the trade-offs between commonality and customization – One common platform works in most cases better then a collaboration infrastructure consistent of many inaccessible 3. An informal Rollout – No formal rollout of the new tools – Instead encourage a few to start blogging and creating wiki pages with the hope that the content they generated would be compelling enough to draw people in – Still for any company building a ew collaboration infrastructure, online norms and cultures certainly will evolve, whether or not explicit policies are in place at the start 4. Managerial Support – Make sure the new platform would be used once it was in place – You have to give people a starting point that they can react to and modify; you can’t just give them a blank workspace Challenges and Opportunities – Two potential threats: 31 Summary – Management Information System – Josef Stenten 1. Busy knowledge workers won’t use the new technologies despite training and prodding 2. Knowledge workers might use Enterprise 2. 0 technologies exactly as intended, but this may lead to unintended outcomes.

Intranets today reflect one viewpoint – that of management – and are not platforms for dissent or debate Chris Agyris noted a distinction between peoples espoused theories and their theories- in- use Espoused theories: I’m interested in learning improvement and empowerment. I want to give the people in my company all the tools they need to interact” Theory-in-use, driven by the need to remain in unilateral control and the desire to suppress negative feelings ? Conflict of these theories but latter one wins, which explains why so many corporate empowerment initiatives fail These tools like 2. 0 reduce management’s ability to exert unilateral control and will be used to express some level of negativity Enterprise 2. 0 can be should down and be influenced by people in authority If managers want 2. technologies to succeed, they have to at first encourage and stimulate use of the new tools and then refrain from intervening too often – Enterprise 2. 0 technologies have the potential to usher in an new era by making both practices of knowledge work and its outputs more visible. 32 Summary – Management Information System – Josef Stenten Task 7– The Productivity Paradox The productivity paradox of information technology By Erik Brynjolfsson The relationship between information technology and productivity is widely discussed but little understood After reviewing and assessing the research to date, it appears that the shortfall of IT productivity is as much due to deficiencies in our measurement and methodological tool kit to mismanagement by developers and users of IT

Dimension of the Paradox – Productivity is the fundamental economic measure of a technology’s contribution – The lack of good quantitative measures for the output and value created by IT has made the MIS managers job of justifying investments particularly difficult – The disappointment in IT has been chronicled in articles disclosing broad negative correlations with economy wide productivity Economy wide Productivity and the Information Worker – While in the past office work was not very capita intensive recently the level of IT capital per (‘ white-collar’) information worker has begun approaching that of production capital per (‘ blue-collar’) production worker, concurrently the ranks of information workers have ballooned and the ranks of production workers have shrunk – On closer examination the alarming correlation between higher IT spending and lower productivity at the level of the entire US economy is not compelling because so many other factors affect productivity – IT capital is on average a complement for white-collar labor, even as it leads to fewer bluecollar workers – Unfortunately more direct measures of office worker productivity are exceedingly difficult Four Explanations for the Paradox – Productivity paradox: Why IT capital has not clearly improved firm-level productivity in manufacturing and services? – The various explanations that have been proposed can be grouped in four categories 1. Mismeasurement of outputs and inputs 2. Lags due to learning and adjustment 3. Redistribution and dissipation of profits 4.

Mismanagement of information and technology – The first two explanations point to shortcomings in research, not practice, as the root of the productivity paradox – It is possible that benefits of IT investment are quite large, but that a proper index of its true impact has yet to be analyzed – If significant lags between cost and benefit exist then short-term results look poor but ultimately the payoff will be proportionately larger – The other two points are rather pessimistic, they propose that there really are no benefits, now or in the future 33 Summary – Management Information System – Josef Stenten The redistribution arguments suggests that those investing in the technology benefit privately but at the expense of others, so no net benefits show up at the aggregate level Final type of explanation examined is that we have systematically mismanaged IT

Measurement Errors – Output is not being measures correctly – Productivity and output statistic can be very unreliable – The types of benefits managers attribute to IT – increased quality, variety, customer service, speed and responsiveness – are precisely the aspects of output measurement that are poorly accounted for in productivity statistics, as well as in most firms accounting numbers. – This can lead to systematic underestimates of IT productivity – Because information is intangible, increases in the implicit information content of products and services are likely to be underreported compared to increase in materials content – Some analysts remain skeptical that measurement problems can explain much of the slowdown. They point out that by many measures; service quality has gone down, not up. Lags –

A second explanation for paradox is that the benefits from IT can take several years to show results on the “ bottom line”, technologies may not have an immediate impact In general while the benefits from investment in infrastructure can be large, they are indirect and often not immediate According to models of learning-by-using, the optimal investment strategy sets short term marginal costs greater than short-term marginal benefits This allows firm to ride the learning curve and reap benefits analogous to economies of scale If only short term costs and benefits are measured, then it might appear that the investment was inefficient If managers are rationally accounting for lags, this explanation for low IT productivity growth is particularly optimistic. Redistribution – It may be beneficial to individual firms, but unproductive rom the standpoint of the industry as a whole or the economy as a whole – IT rearranges the shares of the pie without making it any bigger – For instance IT may be used disproportionately for market research and marketing activities which can be very beneficial to the firm while adding nothing to total output – Information is particularly vulnerable to rent dissipation, in which one firms gain comes entirely at the expense of others, instead of creating new wealth – Advance knowledge of demand, supply, weather, or other conditions that affect asset prices can be very profitable privately even without increasing total output – Firms with inadequate IT budgets would lose market share and profits to high IT spenders

Mismanagement – A fourth explanation is that on the whole, IT really is not productive at the firm level – The decision makers are not acting in the interest of the firm, instead they are increasing their slack, building inefficient systems, or simply using outdated criteria for decision making 34 Summary – Management Information System – Josef Stenten Managers may have difficulties bringing the benefits to the bottom line if output targets, work organization and incentives are not appropriately adjusted. The result is that IT might increase organizational slack instead of output or profits The fact that firms continue to invest large sums in the technology suggests that the individuals within the firm that make investment decisions are getting some benefit or at least believe they are getting some benefit from IT ? gency theory Conclusion – Only by understanding the cause of the “ productivity paradox” can we learn how to identify and remove the obstacles to higher productivity growth – The business transformation literature highlights how difficult and perhaps inappropriate it would be to try to translate the benefits of It usage into quantifiable productivity measures of output – Intangibles such as better responsiveness to customers and increased coordination with suppliers do not always increase the amount or even intrinsic quality of output, but they do help make sure it arrives at the right time, the right place , with the right attributes for each customer. Just as managers look beyond ‘ productivity’ for some of the benefits of IT, so must researchers be prepared to look beyond conventional productivity measurement techniques 35 Summary – Management Information System – Josef Stenten Information Technology and Economic Performance By Dedrick Debate over IT and productivity Whether IT-led economy would lead to permanent improvement in the prospects for economic growth, or whether it was a temporary phenomenon Assessment of the contribution of those inputs (IT and non-IT capital) to outputs Inputs Process Outputs Outcomes • Economic growth • Labor productivity • Profitability • Consumer welfare • Labour • Capital • Capital Deepening • technical progress • labor quality • Country • Industry • Firm

IT investment: investment in computers and telecommunications, and in related hardware, software and services Economic performance: o Country level: Economic growth (GDP growth), labor productivity growth o Firms: labor productivity growth, profitability Growth accounting: allocate shares of output to the various inputs to production