Shaping IT Capabilities to the Business Strategy
Capitalizing on Emerging Technologies and Trends

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Keywords: IT architecture, Enterprise architecture, IT governance, Socio-technical system, Systemic effect, Emerging technologies, Cloud Computing, Mobile Computing, Consumerization of IT.

Abstract: IT progressively has evolved providing greater opportunities to optimizing business processes and to enabling new business models and services. The fast pace of IT advancement drives considerable prospects for business improvement and growth. The strategic alignment of IT capabilities to organizational business strategy, as content and processes, ensures further IT governance to seize opportunities for improvements and to maximize revenue. Utilizing a well deliberated framework -Operating model, Enterprise architecture, and IT engagement model- the paper explores the impact of emerging technologies on the alignment process. Currently, companies across the globe are going through a very disruptive technology development: Consumerization of IT - when new technologies emerge first in the consumer market and then, after mass acceptance, are employed largely by business organizations. Consumerization of IT, along with workforce mobility, reliable, accessible and affordable remote computing, are forcefully reshaping the corporate IT lanscape, affecting the relationship between enterprise IT, knowledge workers, corporate users, and consumers. This paper confers the impact of these trends on the IT domain and specifically emphasizes on the dynamic forces interlinking IT capabilities with the business agility, growth and asset utilization.

1 FRAMEWORK FOR ALIGNING IT TO BUSINESS STRATEGY

Increasingly we have witnessed how business success and economic opportunities steadily depend on IT-enabled capabilities and IT-driven business transformations. In today's global digital economy, the technology and business domains are colliding forcefully than ever and new business models and growing prospects emerge. The IT and especially emerging technologies profoundly change how companies create value both within specific industries, and through industry boundaries.

In order to understand why corporations develop IT architecture, it is important to know their business mindset when doing so, which ultimately begins with a discussion on *strategy*. Some authors state that strategy cannot be planned, since doing so would suggest a controlled environment. These theorists state that strategy happens in an uncontrolled environment, thus it is more useful to consider it to be *an art* or *tool* over *a plan*.

1.1 Identifying Core Components of Business Strategy

In the 1970s, the strong competition in several key industries (appliances, automakers, and banking sector) up surged a new concern about the business operating environment. The traditional long range planning lost its position to strategic planning, which allowed businesses to consider changes to its surroundings.

Strategic planning forced businesses to look beyond its own walls into the greater fluidity of the ever growing global marketplace. A holistic analysis of the factors related to the external environment – customers and competitors- and the internal environment –the organization- is needed for maintaining finest management practices. According to the online business dictionary "…the objective of strategic management is to achieve better alignment of corporate policies and strategic priorities." "A brilliant strategy or breakthrough technology can put any company on the competitive map, but only solid execution can keep it there." (Neilson, Martin and

Powers, 2010). Through structural changes or efforts focused on performance improvement produce normally short-term gains. Instead, concentrating on the three major sections formulating this process: *Strategic Thinking*, *Strategic Planning*, and *Strategic Momentum* is far more powerful and successful (Swayne, Duncan and Ginter, 2006):

Strategic Thinking: This is a stage the organization should grasp both the detailed view of itself -what it does well, and what seems to be lacking, and systematic picture of the external environment.

Strategic Planning: First at this phase a situational analysis, based on the first stage findings a SWOT analysis -strengths, weaknesses, opportunities, and possible threats- should be performed. Next steps will include formulating a strategy, and determining ways of its implemention.

Strategic Momentum: The final stage should evolve the strategic plan implementation. The organization needs to not only keep in mind who has been working towards strategy implementation, but must also keep in mind as well changes in the external environment.

The essence of *Strategy* according to Harvard Business School professor and one of the world's most advancing thinkers on strategy Michael Porter is *"about being different,"* which means a company to choose for their core business different and unique set of activities or to perform already known activities in a different way. With a set of activities, different from those of the other competitors in an industry a company winning strategy means creation of "unique and valuable position" on the market. Creating strategy also means making tradeoffs and combing the unique activities to fit well together and reinforce one other.

1.1.1 Industry Analysis

Referring again to Michael Porter, the structure of an industry is embodied in five forces that collectively determine industry profitability and should be considered in strategic formulation: Rivalry among Existing Competitors, Bargaining Power of Buyers, Threat of Substitute Products or Services; Bargaining Power of Suppliers; Threat of New Entrants. The shared power of the five forces varies for different industries as does the profitability (Porter, 2008). The model exposes comprehensive outer view of the organization with its traditional direct competitors and the correlation with four other forces within its market environment. The industry analysis framework suggests that industry

differences can be analyzed a priori by managers using the Porter's analytical framework, and based upon the results of this analysis, executives can decide whether to enter an industry or forgo investment.

The Threat of New Entrants force represents the extent to which the industry is open to entry by new competitors, or whether significant barriers to entry make it creates comfortable shelter so the existing firms need not to worry about competition from outside. The Threat of Substitute Products or Services force denotes the extent to which the products or services marketed by the company are subject to potential substitution by different products or services that fulfill the same customer needs and expectations. The Bargaining Power of Buyers force signifies the extent to which customers of those organizations in the industry have the ability to put downward pressure on prices, highly concentrated buyers (such as Wal-Mart) and low switching costs typically conspire to increase the bargaining power of buyers. The Bargaining Power of Suppliers force represents the magnitude to which the firms or individuals who sell production input to the organizations in the industry have the ability to maintain high prices. The Rivalry among Existing Competitors force represents the magnitude to which fierce battling for position and aggressive competition occur in the industry. The term *hypercompetition* refers to industries characterized by fierce rivalry among existing firms and very rapid pace of innovations leading to fast obsolescence of any competitive advantage and a consequent need for a fast cycle of innovations. The consumer electronic industry -mobile smart devices in particular- is the most current example, as is the ICT industry in general.

1.1.2 Industry Analysis and the Role of IT

Scholars and experts who have embraced industry analysis to search and identify IT-dependent strategic initiatives and opportunities advise to consider information systems effects on one or more of the industry forces, thereby tipping it to the company's advantage or preventing foreseeable losses.

Investment in and the use of specialized emerging technologies and/or applications could raise or increase barriers to entry in the industry. In so doing the existing firms would reduce the threat of new entrants. This particular option is most likely applicable in IT intense and highly regulated industries such as Healthcare, Banking, and Finance.

The widely adoption of Internet technologies, and more specifically products and services searches, e-commerce and online transactions utilization contribute steady to dynamically shifting power away from suppliers, so toward buyers. As much as the Internet based systems and applications help firms strengthen their bargaining position toward either suppliers or buyers, they also could reduce their bargaining power just before either one.

Innovative emerging technology executions by creative companies, whether incumbents or new entrants, could speed up immediate changes into the basic of industry competition. A glaring example of this dynamic was presented by the advent of online retailing in the late 90-ties and early 2000, and later with the individualized entertaining industry.

Essentially advances in the IT are transforming the industry structure and alter each of the five competitive forces, create the need and opportunity for change, hence, industry attractiveness as well.

While Porter's five competitive forces model is truly important when strategic planning and managerial decisions are taken, the impact of the key internal forces clearly associated with the information technology are particularly critical to the operational effectiveness and shapes the organizational business strategy and benefits.

1.2 The Sociotechnical Systems Model

Technology has become the heart and soul of every business and it has a powerful effect on competitive advantage in costs optimization, enhancing product and services differentiation, or spawning new business options. Every product on the market has physical and information content and the tendency today is towards increasing the information component of products. Naturally, IT is deeply involved in all aspects of the information component, and yet IT is increasingly involved in the physical component likewise – manufacturing processes become automated, faster, more efficient and precise with IT. The IT transforms the products and affects the overall value activities of an industry. Starting from traditionally information intensive accounting, and continuing to performing optimization and control functions, and furthermore - judgmental, executive decision functions, the significance of IT is becoming ever more strategic for companies' competitive advantage. How to align the IT to the business strategy and to gain value turning the great strategy into a great performance is a "mature way of doing business" in the information age.

To explore the complexity of the problems inside organizations, and to avoid unrealistic expectations when aligning the IT to the business strategy, a formal methodology of examining and evaluating IT capabilities in the organizational context should be applied. In IT, "*capability* is the ability to marshal resources to affect a predetermined outcome" (McKeen, Smith and Singh, 2005). The core IT capabilities are discussed later in the paper and they are critical to meet the enduring challenges of uniting business strategy and IT vision, delivering IT services, and designing an IT architecture.

The contemporary Information Systems approaches incorporate multidisciplinary theories and perspectives with no dominance of a single discipline or model. Gabriele Picolli in his Information Systems for Managers text features IT as a critical component of a formal, sociotechnical information system designed to collect, process, store, and distribute information (Picolli, 2012). Kenneth and Jane Laudon in Managing the Digital Firm, define Information Systems as Sociotechnical Systems incorporating two approaches: *Technical* and *Behavioural*, with several major disciplines that contribute expertise and solutions in the study of Information systems (Laudon and Laudon, 2014).

The notion of above definitions is based on the Sociotechnical theory work developed by Tavistock Institute in London in mid-50s and 60-ties. The IT Sociotechnical approach not only visualizes the concept, but reveals the impact of new technologies and processes –the technical subsystem- on the entire work system, and the dependencies and interactions between all other facets and components of the sociotechnical system. According to Picolli any organizational Information System can be represented as a Sociotechnical system which comprises four primary components that must be balanced and work together to deliver the information processing functionalities required by the organization to fulfill its information needs. The IS Sociotechnical model validates the most important components, and at the same time illustrates primary driving forces, within organizations: structure, people, process, and technology. The first two – *people* and *structure* – shape the *social subsystem*, and represent the human element of the IS. The latter two – *process* and *technology* (more specifically IT) – contour the *technical subsystem* of the IS and relate to a wide range of IT resources and services intertwined with a series of steps to complete required business activities.

The sociotechnical system approach is instrumental in helping policy and decision makers to strategize and manage organizational change particularly by the introduction of a new IT. The easiest to envision, justify and manage change is *automation*. It occurs when an IT innovation modifies existing processes without affecting the social subsystem sphere. Thus, this change requires little executive sponsorship and involvement, while the financial benefits can be estimated with some precision. The further change impacts primarily on the people component of the sociotechnical model. It takes place when the information intensity of the processes being performed is substantially changed due to introduction of new IT. This level of change – *informate* - affects mainly employees and most likely the customers, and would require executive sponsorship and greater management involvement to provide appropriate training and overcoming the human tendency to resist changes while at the same time seeking to take advantage of available market opportunities.

The advanced change incorporates the previously described changes, while also causes organizational structure disruptions. The magnitude of this – *transform* – change shakes all dimensions of inner components interactions: it transforms the way how organization selects, utilizes and manages IT; it results in a change in the reporting and authority structure of the organization; it manifests a novel way of tasks' accomplishment or/and a new set of tasks or processes. The later change requires significant managerial and executive involvement with a steady championship by the top management team for both signaling purposes and to provide the necessary political impetus to complete the transition.

The Sociotechnical system approach not only validates the four critical components of the Information system interdependency, but proves that none of them works in isolation. They all interact, are mutually dependent, and consequently are subject to *"systemic effects"* - defined as any change in one component affecting all other components of the system. "Every business decision triggers an IT event," this quote from 2003 by Bob Napier, former HP's CIO is still valid: when addressing business issues like productivity, service quality, cost control, risk management, and ROI the decision-makers have to consider the appropriate corresponding modifications in the IT domain.

The process of changes and reciprocal adjustment of both technical and social subsystems should continue to interplay and growing closer until

a mutually satisfying results are reached. However, the model in reality could not be with equal subsystems' changes. It should grow from micro to macro level to reflect crucial influences of the external environment, including regulatory requirements, social and business trends, competitive pressures, interoperability with partnering institutions, especially when we analyze the role of the IT systems.

1.3 Unfolding the notions of Operating Models and Digitized Platform

The process of enterprise architecture design requires a holistic view of the organization. Following such approach makes possible to explore how business processes, information flow, systems, technology and predominantly business strategies and priorities interact and contribute value to the organization. Hence, understanding the organizational synergy in detail provides the means to define two important choices related to the organization's business operations:

- How *standardized* its business should be across operational units?
- How *integrated* its business processes should be across those units?

Any organization operates in one of the four possible operating models, based on the business processes selection as illustrated by Weill and Ross from MIT Center for Information Systems Research in their IT Savvy textbook (Weill and Ross, 2009). Which one is considered as "the right one" depends on the organization executives' strategic decision:

- In the *diversification model* - low standardization and low integration - organizations operate in a decentralized mode with independent transactions, unique units with few data standards across local autonomies, most IT decisions are made within the units;
- The *coordination model* - low standardization, high integration - is used by organizations that deliver customized services and solutions by unique business units, while accumulating and providing access to integrated data across the divisions. The decisions should be made in consensus for designing IT infrastructure and integrated services, while IT applications decisions are processed within individual units;
- Organizations implementing the *replication model* - high standardization, low integration - typically provide high operational autonomy

to their business units while requiring highly structured and standardized business processes. All decisions related to IT infrastructure, applications and services are centrally mandated;

- Organizations operating in *the unification model* - high standardization, high integration - are centralized managed with highly integrated and standardized business processes. The Enterprise IT is highly centralized and all decisions are made centrally.

In the information age, when the business decisions and success depend on the quickly delivered precise information, IT unquestionably needs to serve as a platform for the business operations. For that reason, the Weill and Ross describe the cocept of Digitized Platform (DP) as an "integrated set of electronic business processes and the technologies, applications and data supporting the processes." Therefore the DP becomes a prerequisite to compete in the digital economy and it should be used for achieving growth and profitability.

The Digitized Platform and the Operating Model are multi facets interrelated. First a company needs to have a vision what they want to do (business strategy), and then to think over how IT can help to create a platform to accomplish their vision for progress and profit. Weill and Ross exemplify the IT role in this process "IT can do *two things* very well – *integration* and *standardization*." Integration – delivers data access across a business, while the standardization – reduces variation in business processes and increases quality, efficiency, and predictability in the operations (Ross and Beath, 2011). By identifying what the company wants to integrate and standardize, actually defines its Operating Model. In fact, the Operating Model establishes the objectives and the requirements for the specific company's Digitized Platform.

Let makes this real by illustrating with two examples how two different well-defined operating models bring together specific requirements to companies' Digitized Platforms and benefit them to achieve remarkable success.

In order to support its business strategies to innovate and remain on leading position in the industry, Procter & Gamble (P&G) not only spends 3.4 percent of revenue, more than twice the industry average on innovation, but has created the most efficient and effective utilization of IT by employing a "Diversification" operating model. To accomplish that feat, P&G created Global Business Services

(GBS), an internal shared services organization, to provide a base of over seventy common, repetitive, non-unique services for of the company's 250 world-wide units. GBS delivers shared services ranging from core IT systems to advanced collaborative tools that allow researchers, marketers, and managers to gather, store, and share knowledge and information, such as:

- Web 2.0 based social networking and collaborative tools such as PeopleConnect and ConnectBeam allow over 8000 researchers and scientists from inside and outside the company to work together while reducing research and development costs.
- Microsoft integrated services that include instant messaging, unified communications, Microsoft Live Communications, Web conferencing with Live Meeting, and content management with SharePoint. The integrated services help P&G to reduce the time and effort necessary to share data and information between employees and others involved in the company's R&D activities.
- Cisco Systems' TelePresence technologies have revolutionized the company collaborations throughout all 70 major global locations. P&G required Cisco to build individual video studios to particular specifications that portrayed the distinct characteristics of each location, to make users more comfortable and more accurately to reflect the diversity of employees at each location. The TelePresence system helps P&G to accelerate the decision making and faster speed to market, while reduce business travel costs and increase resource utilization.

Obviously, P&G business success is derived from its efforts in product innovation and collaboration, developed and supported by company's constantly evolving digitized platform. The listed above collaborative systems illustrate how well-planned advanced technologies stimulate sharing knowledge, ideas, innovations and support teamwork across company's world-wide spread autonomous businesses.

A further example of a different operating model is the ING DIRECT Bank *replication* operating model. ING DIRECT operates internationally, and it does not offer any tangible product, but predominantly on-line or phone bank products and services. Although the business processes / services in the bank's branches world-wide are the same, there is no need of interaction between the separate offices as they serve primarily local clients. So there

is low need of business processes integration. However, the offered services in all counties are identical and by standardizing the core business activities, ING DIRECT establishes a Digitized Platform that includes standard systems and processes which are very easy to replicate. As a result, ING DIRECT implements its systems for weeks only, avoiding any risks and downtime caused by untested and unknown applications, and thus significantly reduces bank's implementation costs, increases its business efficiency and outcomes.

2 THE KEY DOMAINS OF AN ALIGNED ENTERPRISE ARCHITECTURE

In general, "… enterprise architecture (EA) is a holistic design for an organization, aligning the current state of IT capabilities, processes, and resources to enable business strategy" (High, 2014). In the Federal Enterprise Architecture document, the CIO Council refers to the EA as the "glue' that ties business and IT strategy together and that allows them to drive each other. The best practice to conceive and manage EA function is by identifying the key domains, specific for every company.

At times, these key architectural domains are shaped with a broader vision in mind and consist of different sub-fields. Randy Heffner from Forrester Research in his report depicted four interrelated facets of EA that provide short- and long-term effectiveness of delivering business technology solutions: business architecture, information architecture, application architecture, and infrastructure architecture (Heffner, 2010). In the Common Approach to Federal EA, six sub-architectural domains delineate the types of analysis and modeling that is necessary for an EA to meet stakeholders' requirements: strategic, business services, data and information, enabling applications, host infrastructure, and security (EO of the US, 2012). Peter High in his World Class IT Strategy book illustrates seven facets in cascading logic from strategy to technology: strategic intentions, business context, business value, business process, data architecture, application architecture, systems (IT) architecture (High, 2014). In all three previously described models, and likewise in other not specified here, the two key EA domains are actually: the Business architecture and the IT architecture. And for each of them we may add

particular sub-domains reflecting organization's or industry's specifics. Such approach will simplify and will provide better alignment of different architecture life-cycles in some of these domains as well will reflect more precisely diverse business requirements.

Later on, the business of IT will be discussed with emphasis how IT architecture could be designed, built, and utilized more efficient and with greater value for the company. With escalating IT operational costs and the inability to get adequate value from the IT investments, firms are striving to convert their IT from a strategic liability to strategic asset. According many recent surveys from Gardner, Forrester, and CISR most of the IT budgets are spent for keeping the existing applications and infrastructure running. Many firms typically spend over 80% of their IT budget for supporting the existing systems, and the budget for renovation or new systems, if exists, is below 20%. The widely adopted piecemeal approach results in set of isolated systems wired together to meet the next immediate need. And while there are some valuable IT-based products and services in the company IS environment, the organizations find that it takes longer and longer to test and integrate the new patches with the existing systems, increases vulnerability to systems outages, and makes more difficult to respond to changing business conditions. Reversing such company's IT fortunes requires different thinking from the type that "helped" the organization to create its messy legacy.

The current digital economy has introduced urgency around the need to plan and manage IT strategicaly. To succeed in this approach and with the needed business transformations, the management must pursue four activities to ensure that the company generates stratigic business value from IT. These four activities – Commit, Build, Run, and Exploit - constitute the "IT value creation cycle." (Ross, Beath and Quaadgras, 2011).

In recent years, the IT units have professionalized their *Build* and *Run* IT activities by developing service catalogs, calculating and monitoring unit costs, standardizing project methodologies, defining and implementing technology standards, and working with business partners to manage demands. While improved IT *Build* and *Run* activities generate measurable business benefits, they are just the first step in producing sustained business success. Companies that have achieved a reasonable level of maturity in their *Build* and *Run* activities can greatly enhance the strategic value of IT by developing more

effective *Commit* and *Exploit* activities and as a result to excel at all four by implementing seamless handoffs from one activity to the next.

Commit involves allocating business and IT resources to enact the company's strategic priorities. This requires the firm to articulate its stratigic priorities in terms of its operational requirements and to direct resources accordingly. This activitiy actually demostrates how well the Business – IT alignment works in every company. At the enterprise level, *Commit* can be political challenging as the senior executives have to fix what is broken in their management and the use of IT. In a nutshell, IT and business leaders have to introduce new ways of thinking about and funding IT that would later lead to building a digitized platform. As previously has been difined the IT architecture domain could be consider interchangeable as Digitalized Platform (DP). *Exploit* involes driving additional benefits from existing business architecture and technology capabilities. Effective *Exploit* leverages digitized platforms to continuously improve corporate performance, profitable growth and business opportunities.

The IT unit of the future will not own all *Commit, Build, Run,* and *Exploit* activities, but IT and business leaders will need to coordinate and balance well all four activities to ensure that the company generates strategic business value from IT. Every company can decide which accountabilities belong inside the IT unit, and which can best be enacted outside IT. Maturing the four IT value creation activities will demand development and coordination of new capabilities, not only in IT but throughout the enterprise. However the firms are not equally successful in harvesting dividends from the advanced IT capabilities, or driving benefits from their digitized platforms.

2.1 Directing IT Funding to Strategic Business Needs

The IT funding and investment decisions are important and challenging part of the previously discussed Commit activities since the systems are implemented, they become part of the firm's legacy: their ongoing support requires time and money, their influence and constrains dictate how business processes are performed. IT funding decisions are long-term strategic decisions that implement the company's operating model.

Weill and Ross intense research on multiple IT successful or failed firms' shows that three important factors are affecting the IT funding and investments in any IT-savvy firms:

- *Defining clear priorities and criteria for IT investments* - the operating model of the company defines the business priorities and how it will deliver products and services. The top executives and IT leaders respectively must clarify the IT investments priorities. All companies are different, but what the IT savvy have in common is that they "create a central point for business change efforts" - and this central point helps them to prioritize the IT investments on high-value projects.

- *Establishing transparent process of project prioritization and resource provisioning* - in IT well-advancing companies the senior management is responsible for strategic business initiatives and respectivelly for project prioritization. The prioritization criteria must be clear and must specify how the IT project team will be held responsible for the project outcomes and deliverables. The transparency in project approval will guarantee that not individual or political decisions would influence project's approval, but pure economic and business efficiency.

- *Monitoring the projects through the phase of implementation and afterwards* - only a few companies track their IT projects from the idea –all through putting into practice, including post-implementation. By applying post-implementation projects' review (PIR), companies can obtain valuable information about accomplished outcomes, further to study and improve their IT funding cycle.

There is a splendid example of how British Telecom revamped its IT funding model based on the newly developed business strategy around three lines of business: retail, wholesale, and global services. At that time (2004), BT was running above 4000 systems, and over 6000 IT employees were working on more then 4300 projects world-wide. The new appointed company management examined the existing IT environment and concluded it is not designed for integration or low cost. To endorse IT to be a critical tool for enabling BT's business transformation, the top management established "One IT for One BT" to consolidate the systems environment and to reduce the project portfolio. Actually BT rebuilt the company's project portfolio by targeting the three core business processes: lead-to-cash ("selling stuff"), trouble-to-resolve ("fixing stuff"), and concept-to-market ("innovating stuff"). These three processes defined the key elements of

BT's *unification operating model* and provided the management focus and clear methodology for IT spending and resource allocation. The process for project approval was established very clear: the business unit prepares project case with expected specific benefits, and then the IT unit provides costs, technologies that can be used, and time frame for execution. Special established requirements and options for the level of ROI were adopted. Furthermore, the projects were monitored following approved metrics periodically in ninety-day cycle, and beyond the implementation phase if they generate the expected business ROI. The company succeeded to reduce its total IT costs by 14 percent and to cut the unit cost of IT services while tripling output and doubling delivery speed. The new IT funding processes, aligned well to the company business strategy, helped BT to be transformed from a very traditional and conservative telecom company to a competitive and innovative firm.

Two additional lessons from the BT case could be summarized in:

- the positive effect of the PIR process helps companies to lower the risks of investments by learning from mistakes and best practices from previous projects and to stimulate employees to explore options to maximaze project's profits;
- to create and manage IT project portfolios in order to be able to estimate and allocate properly the company's IT expenditures. The IT Portfolio combines the IT investments (or costs) for existing systems, which cannot be left without maintenance and support and the IT investments for new projects.

The objectives of the IT advancing companies should be to change the ratio *new projects vs existing systems* to 40%:60% and to force the company to a new more competitive level.

2.2 Building IT Architecture

Once the company takes charge of directing IT funding to the strategic business needs, it is ready for the second component of the *Commit* activities: to build a digitized platform for enhanced business performance.

The IT architecture or the Digitized Platform of a company is the computer hardware and infrastructure, software applications and data which all together provide and support the core business processes of the firm. In today's highly technological world, the DP is a company instrument to achieve an efficient operating model

which will guarantee the company long term prosperity and success. According Weill and Ross from MIT CISR based on their extended research around the globe the companies' IT experience of building their DP as a "journey" that can be divided into four stages:

- Stage 1 - *Localizing* – this stage illustarates the dynamic, energetic and innovative approach of any new company or IT unit, when the firm's priority is rapidly grow of new systems or customized solutions as they respond to customer demands and seek to establish their unique proposition. *Localizing* benefits/concerns analysis: the stage helps in local and functional optimization, however it raises complexity and expensive localized IT solutions that respond to instant business needs, and soon alter the stage name as *Business silos* where business processes lack consistency and costs/performance gaps become commonplace.
- Stage 2 - *Standardizing* – firms retreat from the rapid-fire responces and focus on IT efficiencies through technology standardizations and shared infrastructure and resources. *Standardizing* benefits/concerns analysis: the stage succeeds to discipline processes in IT service delivery and investment prioritization, and to achieve IT functional efficiency as to low OpEx and high reliability, however soon after its adoption it limits opportunities and become incapable to meet new strategic needs.
- Stage 3 - *Optimizing* – firms implement disciplined enterprise processes and share data as required by their operating model. *Optimizing* benefits/concerns analysis: in the stage firms define enterprise priorities, invest in core packaged or customized integrated platforms and systems, and most likely accomplish high operational efficiency. In general IT spending is increasing, but not the IT unit costs, the project priorities are established based on enterprise requirements, rather than isolated ROI estimates, however focusing on standardization and integration provides little if any opportunity for innovations.
- Stage 4 - *Reusing* – firms exploring the opportunities to utilize their business processes as reusable components that they customize for new, but related, business prospects. *Reusing* benefits/concerns analysis: in the stage firms achieve *Business*

modularity based on synchronized strategic and operational decisions with clear rules, reliable data, and business intelligence tools, these all result in gaining the most of IT capabilities towards assets utilization, new business opportunities and growth.

The successful DP creates a set of reusable IT modules, and the business agility allows the IT advanced companies promptly to address the following four business opportunities:

- empowering the employees with information they need, and optimizing the processes for maximum performance;
- speeding up product/services innovations;
- reorganizing the business processes to meet better the customers and business needs;
- improving merging and acquisition processes for business growth.

If the company strategy to growth is by acquisitioning businesses, the process of integrating the IT infrastructures and information systems of the new and the old structures is often extremely challenging task. That is why many companies choose "rip and replace" strategy to completely change the old IT infrastructure in the acquired firm with their existing DP which already has been proven success.

One great example of a company that has reached the fourth stage of its journey to build advanced DP and successfully reusing it in many differnet ways is Amazon. Initially Amazon business strarted in dot com era as online C2C bookstore. Their strategically evolving IT architecture well aligned to agile business strategy created a successful and growing business. Soon after the beginning, Amazon has expanded the range of selling goods far beyond books, and proffered its advanced wide-spread digital platform to large number of businesses and independent retailers. At present, over 2.5 million retailers are using the Amazon DP and are part of its enormous marketplace with over 150 million global customers Amazon did not stop with the first previously described transformation from direct sales business model to sales-and-service model. The company has capatalized on its advanced IT capabilities and succeeded to build one of the largest in the world cloud computing platform, creating and launching the Amazon Web Services in late 2006. In short, with this new business model, based on innovative utilization of existing DP and enhancing it with new applications and higher computing performance, Amazon targets and serves new customers and different business processes, providing computing

resources on demand, and applying diverse profit formula. AWS is an explicit example of IT advanced firm where the investments in IT are used for building digital platform that can be used and reused multiple times by the company itself, its direct customers or resellers to reap the benefits and to enhance the growth.

Evolving through the four stages of building DP is a challenging experience for organizations and their IT units. As it has been said at the beginning - the radical changes impact the organizational mindsets in rethinking and reengineering the traditional IT resources. Indicators for such transformations can be seen analyzing the latest Gartner CIO Agenda Report from 2015. It is based on survey gathered data from over 2500 CIOs from 84 countries across the globe. The results represent how IT domain is moving beyond IT craftsmanship (focusing on technology) and IT industrialization (focusing on process efficiency and effectiveness) into a third era of enterprise IT, where digitalization is transforming business models and provides continual opportunities for growth, innovation and differentiation - Figure 1. (Gartner, 2014).
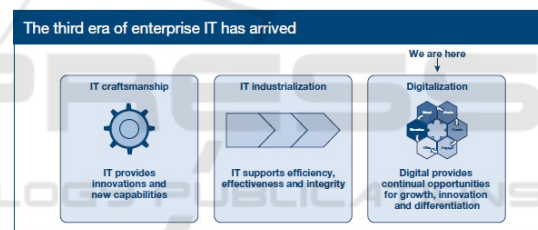

Figure 1: New IT domain - "Digital first" (Gartner, 2014).

As one CIO is cited "we stopped thinking of the IT as a bad, and started thinking of it as what keeps the business running." And this is the pivot point for the modern organizations how to plan and manage IT stratigically – by closing the loop with the *Exploit* activities in the "value creation cycle" the companies would maximaze the gain from reusing ingredients, will steady advancing performance and profitable growth, at the same time chasing new business opportunities – see Figure 2.

Figure 2: The IT Value Creation Cycle (Ross, Beath and Quaadgras, 2011).

125

3 INSIGHTS ON ALIGNED IT CAPABILITIES TO BUSINESS STRATEGY

For the benefit of any company it is most important to define and establish the IT architecture underneath the organization's business strategy. A well-formulated IT architecture typically consists of *content* and *processes* and describes the following key components of the enterprise IT architecture:

- Technology planning and management: strategy, governance and operations aligned to business processes
- Information and data flow architecture
- Applications architecture and functional systems, including correlated interfaces
- IT infrastructure: existing platforms, services, and adopted standards.

The "IT/Business Alignment Cycle" is a frequently used methodology which introduces a set of well-planned process improvement programs that systematically address a broad range of activities to permeate the entire IT organization and its culture. The four phases of the alignment cycle are (Nugent, 2004):

- The *Plan* phase translates business objectives into measurable IT services and helps close the gap between what business needs and expects and what IT delivers;
- The *Model* phase designs infrastructure to optimize business value and involves mapping IT assets, process, and resources , then prioritizing and planning to support business critical services;
- The *Manage* phase drives results through consolidated service support and enables the IT to deliver promised levels of service based on pre-defined business priorities;
- The *Measure* phase verifies IT commitments and improves its cross-organization visibility into operations.

Following the above IT/Business alignment cycle fosters organization-wide shared IT expectations and defines a common framework for a broad range of activities forcing alignment of IT and business objectives. This simple framework should be revisited periodically when there is a significant course correction in corporate directions or in the key components of the IT architecture.

In the evolving IT/Business alignment process several significant points should be considered.

The first finding reflects **the lead on driving value from IT** and the following critical steps should be executed:

- Set the directions for the IT-Business alignment process – define the company operating model, identify the key components of the IT architecture, articulate the strategic vision that the OM and IT is intended to realize;
- Lead the IT-business transformations – straight the activities to build the DP, complete the organizational changes needed to execute the vision;
- Preserve technology, data, and process standards – supervise the technology implementations conforming to the operating model, the platform enabling it, and adopted standards;
- Exploit the value – gain the advantage of the business agility provided by the adopted IT platform, reuse and innovate constantly to achieve sustaining technology S-curve.

The second finding reinforces **Structure rationalization** to transform IT from a costs center to strategic assets with business intelligence capabilities. The Gartner analysis on Future Directions of the IT industry from 2011, exemplifies where the transformations are the most appropriate – from lessening the *After the Sale* IT spending to substantial increase the investments in *Before the Sale* and in *The Sale* sectors – see Figure 3 (McGee, 2011). The process requires significant alternations in the enterprise requirements to support transformational initiatives such as: content-aware computing, social and semantic computing, information-enabled pattern-based strategy.

Figure 3: The IT Money Spending Model (McGee, 2011).

Only few years later, the current Gartner analysis shows a new Nexus of Forces – BI/analytics (social and information), cloud and mobile- as leading CIOs investment priorities forcing transformations in the traditional IT money spending model targeting *Before the Sales* and *the Sales* sectors– see Figure 4 (Gartner, 2015).

126

Based on the CIOs strategies reported in the table, IT and business leaders transform profoundly the role of IT from a strategic liability to strategic asset strengthening the customer experience and pursuing new channels of growth.

Rank	Investment priority	2014	2015
1	BI/analytics	41%	50%
2	Infrastructure and data center	31%	37%
3	Cloud	27%	32%
4	ERP	26%	34%
5	Moblie	24%	36%
6	Digitalization/digital marketing	17%	11%
7	Security	13%	11%
8	Networking, voice and data comms	12%	12%
9	Customer relationship/experience	11%	8%
10	Industry-specific applications	9%	10%
11	Legacy modernization	7%	7%
12	Enterprise applications	6%	2%

Figure 4: The CIOs priorities 2014/2015 (Gartner, 2015).

The third finding suggests modifying the Latin philosophy "Ex Chaos Facultas" ("From Chaos comes Opportunity") to "From *Consumerization* comes Opportunity" to reflect the current technology trends. Recent tendencies in IT utilization show that new technologies emerge first in the consumer market and then, after mass acceptance, are employed largely by business organizations. The expected consequence of this pattern is that across the globe companies are experiencing the most disruptive new technology trend of this decade: Consumerization.

Enterprises are capitalizing on the consumerization of IT and proliferation of mobile devises by developing applications aimed at improving employee productivity and customer satisfaction – see Figure 5. (Columbus, 2014).

Figure 5: Consumer Tools into enterprise (Columbus, 2014).

Consumerization of IT, along with workforce mobility, and flexible, reliable, accessible and affordable remote computing, change forcefully the corporate IT lanscape affecting the relationship between enterprise IT, corporate users, and consumers. For organizational IT management,

consumerization exemplifies the convergence of a demanding set of challenges such as information and infrastructure security, technology policy, data protection, and end-user technology. A new tendency -BYOD (Bring Your Own Device) and COPE (Company-owned, Employee-enabled)-driven mostly by current Consumerization of IT in the enterpise, is forcing companies to redesign or create their policy and rules on how smart portable devices can be used for both corporate and private purposes, and how the related expenditures should be covered.

For corporate management, consumerization of IT signifies a new strategy which supports business models and process innovations, talent strategy and customers' satisfaction, as well as corporate brand and identity. Consumerization of IT blurs the line between personal and work life, especially for mobile workers. Mobile workers make up about 39% of the employees in North America, 25% in Europe, and 42% in Asia, according to Forrester's analysis (Forrester Consulting, 2013). Their cohort benefits the business immensely by increasing productivity, and advancing collaboration and business agility, thereby improving customer satisfaction and climbing the rate of talent retention. Consumerized employees spread the boundaries of the workday and workplace, and it is fair to name them "anytime, anywhere workers."

The fourth finding is that in a digital economy every organization is challenged by IT constant innovations, and it should take a look again on the pivotal question: "What comes first: IT architecture or Business strategy?" The IT rapid advancement is spawning completely new industries in several different ways:

- IT makes new businesses *technologically* feasible – advances in nano-technologies made today's mobile industry possible. If we think about Apple's i-products – they came as of technological advancements and miniaturization, however Apple did something unique and far more smarter making not only a great technological product, but wrapped it in a superb business model. The Apple's true innovation was to enter and gain a substantial slice of the personalized entertainment industry – utilizing the technology innovations and make it easy, customers' friendly and demanding the control of all i-products and services.
- IT can spawn new businesses by creating demand on new products such as customized

financial services (mortgage, brokerage, and investment) there were not optional nor needed before the spread of IT caused a demand for them. Web 2.0 technologies help social networking and Big Data to flourish as multibillion dollar business, the new coming Web 3.0 with the next digital inspiration: semantic technologies, Internet of Things, M2M would make even beyond the current experience.

- IT creates new businesses within old ones. Many companies take advantage of excess capacity and skill of its advanced IT value chain and provide products and services to others based on them.

4 CONCLUSIONS

There are many other considerations and challenging implications in the IT-Business alignment process: asymmetric competition, speed of innovations, speed to the market, speed of organizational model's evolution. All these specifics require yet more efforts and analyses on how to integrate technology into the strategic business objectives and to excel on IT-enabled capabilities. The suggested simplified EA framework and findings for consideration have to provide a consistent, predictable, and agile experience when mapping and executing IT/Business alignment.

Further work is planned in two directions: how consumerization of IT adoption to the dynamic business objectives and current operating models can be evaluated and measured, and how Web 3.0 technologies would impact the business of IT at the enterprise level.

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