Achieving Business Optimization Using Collaborative and Integrated Business Models

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Abstract

In today's technology driven Business World, there are two strategic Business Technology investment priorities:Collaborative Business Modeling and Technology Integration.Collaboration includes Supply Chain Management (SCM), Personalization, Customization,Optimization,Automation and Transaction Trust.These components are important because transactions have morphed from discrete events into continuous processes, permitting thinking in terms of whole customer/ supplier/ employer/ partner management. Technology integration supports Collaborative Business Modeling including Back-Office/Front-Office/Virtual-Office data and application integration, development of cross-platform security architecture, and integrated communication infrastructure.

Keywords: *Collaboration, Integration, Supply Chain Management, Data Warehouse, Intelligence, Web Services, Data mining.*

1. Introduction

Connectivity among employees, suppliers, customers, and partners enables interactive customer relationships, integrated supply chains, the business analytics that will eventually permit time tinkering with inventory, distribution, pricing [1,2]. The investment in Business Technology needs to be evaluated along to broad criteria of : Collaboration and Integration. If project score is low in them, consideration of the projects should cease. Project that may contribute measurably to collaboration and integration outcomes should be assessed (then perhaps made), and projects that may contribute to collaboration and integration should be pursued aggressively. In effect, collaboration and integration should be used as filters through which to pass Business Technology investment options.

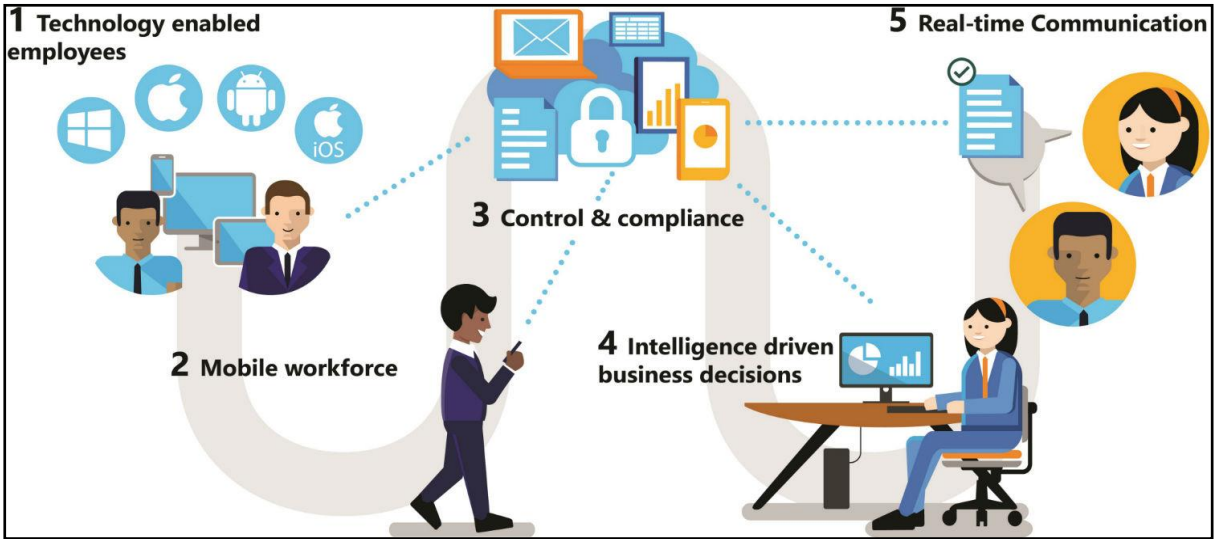

Figure 1 : Business Collaboration and Integration

2. Supply Chain Management

An important aspect of SCM is Supply Chain Optimization, which is achieved through customization, personalization, pricing and automated transaction processing. The potential efficiencies and cost savings are enormous-assuming that value and supply chains are mapped accurately and integrated effectively. Understanding where the leverage is and how it can be optimized in supply chains is essential to successful collaboration[5]. Other components of SCM include supply chain planning, supplier management, demand forecasting, analytics,and metrics.

Figure 2 :Supply Chain Management

An important point in SCM is that connections occur perceptually, procedurally, and technically. All three must exist for supply chain so that planning and management can work. Perceptually, the members of a supply chain must want to collaborate; that is, they must identify clear vested interest in their participation. Procedurally, it's important for them to model alternative work, audit, distribution, and service flows,and then check them for accuracy and long-term validity. Technically, essential that they align hardware,software, and communications with the supply chain models and processes, doing so in a way that's scalable and extensible. Supply chain strategists should avoid using models and processes that will become obsolete or built or build supply chain Technology architecture that are inflexible.

2.1.Personalization:

Companies are able to personalize contact with their customers, suppliers, partners and employees through telemarketing, advertising, paper, and email. Overtime, the given low cost of digital transactions, make sense to reassess the cost -effectiveness of their channels to these people. Which ones pays the best? Which one of the most? The important dimensions for analysis are the depth, location, and quality of customer data.

Personalization and customization should not be limited to customers. Same analytical approaches taken in profiling customers can be used to profile employees, suppliers, and partners. The personalization and customization of employees, suppliers, partners, and customers is the core of the collaboration process. While mass marketing and communications will not disappear, mass customization and personalization will grow dramatically over the next few years. They both will also drive development of new customer service models.

2.2.Real Time Analytics:

Analytics enable Business Intelligence. The location and quality of data about customers, employers, suppliers, and partners determine how effectively a company is able to analyze its business processes. If its data is all over the place - ugly, dirty, in any number of proprietary vendor silos- intelligence is difficult. Data warehousing vendors are happy to sell software, gear, services to address the problem. But it makes more sense to avoid the nasty integration process all together by standardizing on a single (or, at worst, a few) data management platforms.

Real-time analytics is the ability to convert real time analysis into immediate action. For example if the rain quotes a company expected to sell were sitting on a shelf, then the supply chain visibility would permit it to see that the coats are not moving. Tools could help predict sales demand over the next few weeks, given, say, unexpected drought conditions in the company's target market. The company could roll out some price changes then (almost) immediately calibrate their sales impact. Predictive analysis can be enormously valuable as companies navigate their way out of such a mess.

Ideal capabilities include hypothesis testing, analysis, simulations, what if sensitivity analysis. Predictive analysis or not just useful for averting disasters; also help proactively optimize prices. For example the real time generation of demand curve can enable upward price adjustments for goods and services whose prices would otherwise be static. Optimization software may be used for dynamic pricing, but lots of things must be true for it to work as advertised. For example the supply chain mindset needs to be entrenched, data needs to be cleaned and accessible, and the technology to access and analyze the data must be reliable. Vendors sellstrategies and technologies embedded in a variety of applications that slice and dice clean, data in creative ways.

3. Automation

Do customers, partners, employers, or suppliers want to go to the web to execute the same transactions day-after-day, week-after-week? What about technology infrastructure? Why not monitor their condition and effectiveness automatically, fixing them when a problem is detected? Back-office systems can also automatically transact all sorts of businesses. All that's necessary is to engineer them to accept dynamic instructions.

Dynamic instructions, as well as other flavors of automation, can be developed and integrated into larger transaction processing engines in several ways. For example, simple if-then rules can be integrated directly into large transaction processing applications (such as ERP applications) through "rules engine" that support development and activation of if-then instructions. Other, more sophisticated systems Technology (such as neural networks and semantic processors) can also be used to increase the width and depth of automation in the context of emerging collaborative Business models.

Using sales force automation and Customer Relationship Management (CRM) front-office applications can also exploit automation. Once patterns are discovered, profiles developed, rules specified, smart applications can automate a marketing campaigns or follow-up customer service inquiry.

Infrastructures involving applications, data, computing, and communications must all work together reliability and securely, but many things can go wrong. Companies need insight into infrastructure operations with a set of rules designed to react to anticipated and unanticipated conditions. So when the amount of web traffic is unexpectedly high, a rule might fire that says:"when incoming sales traffic is high and server capacity is low, reroute or queue non-essential transactions." Web Traffic can be monitored for Spikes; sales can receive priority over other transactions; and unusually heavy customer traffic is allowed through no matter what, even if it means giving a large number of non-related transactions.

Ideally, infrastructures know about themselves and the state of their health. For example, they should know how many computers exist, what versions of which software are running, and which ones have too much and which ones too little power. They should know which devices fail most often (expensively or inexpensively) and take steps (such as alerts) to anticipate failures. All of these back-office, front-office, and infrastructure tasks can be at least quasi- automated through pre-programmed events or response routines.

The evolution of collaboration through supply chain management, personalization, customization will stimulate for the automation. As consumer, supplier, employee, and partner profiles deepen; it will be possible and desirable to automate all sorts of customized transactions. Assuming that privacy laws and preferences are worked out, customers will empower retailers to execute transactions they know they'll like.

As the number of digital transactions increases, trust among collaborators will be even more important, primarily due to the physical distance between transacting parties. When we buy something through the web, we need to trust the vendor more than when we buy something in person. Trust resumes security, and security assumes the ability to authenticate users, protect data, island control access two networks and applications, and the avoidance of viruses. Trust is what companies want their collaborative teams to feel when they interact within their transaction networks; if there's any doubt about privacy or security-while protecting the infrastructure from viruses and other problems-collaboration will fail.

3.1. Technology Integration:

In order to optimize new collaborative Business models, computing and Communications Technology must integrate and interoperate. Most companies have not consistently worried about integration and interoperability. Accounting systems, claims processing systems, waste management systems, database management systems, processing systems, inventory control systems, and shop floor manufacturing systems word deployed one on the top of the other. Consequently, companies built huge data centers housing many island applications maintained by scores of talented technologists. Over a quarter of a century ago they began asking questions about integration. Today, the questions (and answers) are no longer optional[4].

Enterprise Application Integration (EAI) and migration is a multi-billion dollar business that aims to get data bases and applications designed to ignore each other to instead be friends. This is very tricky and complex, and vendors and consultants make all sorts of promises about integration and migration problems and solutions. They will come in and build custom glue to connect packaged applications with their homegrown counterpart. Companies that take this path are certain to Limit future flexibility, send the glue is custom- made and therefore expandable only by the vendor that created it. A better approach is to exploit some of the interfaces built into the more popular applications that make it easier to connect disparate data bases and applications; tough such flexibility also depends on how fast a particular vendor goes to make its applications work with other applications. Third option is to deploy generic, agnostic, glue design to connect lots of applications and databases. The advantage is that it "works" with lots of databases and applications, though it almost always needs tweaking to work in a production environment.A number of vendors specialize in generic glue and glue- application services.

The good news is that industry is moving towards adoption of technology integration standards known as Web-Services. The idea behind web-services is to get the industry to adopt a set of common tech technology standards and add to make applications(and data) integrate and interoperate. At least three XML - standards define web services: Simple Object Access Protocol (SOAP), Web Services Description Language (WSDL), and Universal Description, Discovery, and Integration (UDDI). SOAP permits its applications to talk to one another. WSDL is a kind of self description of a process that allows other applications to use it, and UDDI is like yellow pages that lists services.

Web-Services are a collection of capabilities that allow primarily newer applications to work with each other over the internet. Due to the agreement about the standards that define web services there's potentially efficiency in there adoption. Conventional glue may, for example consists of middleware,EAI technology, and portals, web-services(due to being standard- based) can reduce the number of data and transaction hops by reducing the number of necessary protocols and interfaces. Eventually, the plan is to extend web-services to the entire collaborative world, suppliers, partners, customers and employees. Web-services(theoretically at least) reduces the need for conventional integration Technology.

The underlying Web-Services integration technology is potentially more powerful than what many realized. As it mature, it may, well, change the way software is acquired, deployed and, supported. The new idea involved a concept called Service Oriented Architecture (SOA) that essentially describes a process through which transactions occur locally(on a computer one owns and operates) and what virtually (through the ability to call new capabilities into transaction). Web-services and SOAs are important pieces of Technology; integration should be developed around them to determine the role they might play in collaborative transaction processing.

Most companies have data in a variety of places. Some may be in Oracle databases, some in IBM/DB2 databases, some in Microsoft SQL Server, some in Sybase and Informix databases. This "operational data", especially if it is in a variety of forms, often needs to be translated into a form which can be used by different people. Transaction results in the development of data warehouses and smaller data marts that support all varieties of online analytical processing and ultimately data mining, for the ability to ask all kinds of questions about employees, customers, suppliers, and partners, facilitating Business Analytics and Business Intelligence.

Eventually, Structured, Unstructured, Hierarchical, Relational, Object-Oriented, Data, Information, and Knowledge will be ubiquitously accessible. While we are a few years away from Universal Data Access(UDA), companies should understand this goal and adapt their business models to its capability. Microsoft, IBM, and Oracle all plan to provide UDA. It's important to stay abreast of their progress, along with the implications for emerging collaborative business models and the processes requiring UDA. Disparate data integration is the short-term path to that goal. Longer-term, if acquisition decisions are made properly, there should be less need to integrate disparate databases. In other words, the immediate data-integration strategy is to reduce the number of database management platforms and databases to enable customization, personalization, analytics, business intelligence and automation.

3.2. Pervasive Communications:

All of these collaborative business trends assume Ubiquitous, Reliable, Secure Communications; all of these technologies require integrated communications technologies. Collaboration and communication are the most synonymous personalization and customization require Communications; so do Supply Chain Planning and Management, Real-Time Analytics and Optimization, Automation, and Trust. Some of this communication is organic and some is digital; most effective is blended.

We need to recognize changing work models, processes and technologies, including: Telecommuting, Mobile Commuting, Small Office/Home Office Computing, Business-to-Consumer, Business-to-Business, Transaction Processing, Internal Workflow, Groupware applications, Business-to-Employee Transactions, Business-to-Government Transactions, Tethered and Un-tethered Communications, Intelligent Fax-Based Communications, Electronic Data Interchange, Radio Frequency Identification-based Monitoring and Tracking, Supply Chain Planning and Management, Continuous Transaction Processing, e-Learning, Automated Customer Service, Local Area/Wide Area/Virtual Private Networks/Personal Information Networks, and the Semantic Web.

The distinction between shared communication and collaboration is important; For example : when IT company emails lots of people(and cc's even more) it is sharing communication, when it creates a

thread of communication based on action/reaction, it's moving towards collaborative computing. Internet bidding will soon be triggering round after round of action/interaction. All action/reaction collaboration requires shared communication.

Another notable trend is the integration of voice and data on the Internet Protocol (IP) networks. As employees, customers, suppliers, and partners are connected through the same data and voice transport networks infrastructure, costs will fall, even as collaborative communications capabilities improve. The addition of Voice-to-IP Networks or Voice-Over-IP (VoIP) will save money and provide more flexibility than today's multi-network configurations for collaboration, complex networks that carries voice, data, and applications. While many issues (such as security, quality, and internetworking) must be resolved through the creative exploitation of integrated voice/data networks, they will provide significant competitive advantage. Once broadband wireless communication is pervasive and secure we can expect the full realization of these collaborative business models.

3.3. Adaptive Infrastructures:

Applications and communication architectures must be designed and supported [11]. When these designs are done holistically, referencing collaborative business strategy, they inevitably support agility, scalability and extensibility. The future infrastructures must have these capabilities. But integrated design is complex. Adaptive infrastructure involved hardware, software, processes, and the discipline to faithfully convert strategic requirement into robust, reliable, secure, scalable networks, data bases, and applications. Infrastructures those are able to adapt evolving collaborative requirements must be designed and deployed.

Infrastructure planning begins with a driving concept and a set of assumptions about what the gear must do. Strategic requirements are collaborative; tactical requirements are integrative. All decisions about infrastructure must converge with collaboration and integration. Here are several consideration:

3.3.1. Collaborative Applications:

Access to collaborative applications (such as supply chain, customization, personalization, and business analytics) must be ubiquitous, and communication networks must be designed to work with all collaborative stakeholders;

3.3.2. Gear:

The gear, including hardware, software, and communications, must support collaboration and integration; we must therefore rethink anything that does only one thing (such as a cell phone that isn't also a paper and a PDA);

3.3.3. Personal Computers:

We must be able to think about buying desktop computers and not think about replacing them for at least 36 months; laptop, do they cost more than desktop, makes more sense for collaborating employees; and

3.3.4. Infrastructure:

Infrastructure should encourage integration and interoperability across device, applications, data, communications, and security environments; whoever supports the infrastructure should push collaborative processes and invest in integrative solutions.

4. Security and Privacy

A particular set of technologies, processes, and services constitutea security strategy. Many companies publish privacy policies because the government tells them to, but these policies do not protect the data of their collaborators as thoroughly as they should. In particular, natural tension between personalization and privacy must be continuously assessed.

As more and more transactions become continuous and collaborative, the importance of security and privacy becomes much more important as well. Not long ago, security was often a poor relative, receiving only enough budgets to satisfy less-than-picky auditors, but after the terrorist attacks in US Sept. 1, 2001, companies reassessed their security vulnerabilities, as well as their disaster-recovery requirements. Terrorism will remain a threat to digital transaction processing. But other threats, including cyber-espionage and increasingly sophisticated hacking, will perhaps become even more commonplace and threatening.

CONCLUSION

Business collaboration and Technology integration are the priorities, but the specifics differ from company to company [8]. The key to success depends on the extent to which companies understand the collaborative business models, which they need to support integrated Technology [1,7,9, and 10]. Companies looking for a compass to guide their technology investment strategies must consider the collaborate/integrate destination.

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