IBM Global Services

Executive Tek Report

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Product and service providers: Key technologies and trends

Executive Summary – Product and service providers constantly face challenges that force the adoption of emerging technologies. Electronic data interchange (EDI), just-in-time (JIT) processes and e-commerce are just some of the innovations that have disrupted distributors, forcing reorganizations and creating winners and losers. Today's challenges -- emerging channels, lifestyle marketing, increasing customer expectations, need to lower supply chain costs and new options for outsourcing -- suggest that dynamic partnering, more intense use of online communities, business analytics and ease-of-use can soon provide a competitive advantage.

Introduction

Distribution may very well be the industry sector undergoing change at the fastest pace. The nature of the business environment allows for the introduction of new competitors nearly constantly; disintermediation; innovative channels; shifts in supply; marketing hybrids; and those "pesky" consumers whose needs, wants and whims mutate constantly. Most executives are acutely aware of how technology can cause a rising tide to swell over and engulf them. They've seen waves of innovation, including EDI, e-commerce, just-in-time inventory, customer relationship management (CRM), enterprise resource planning (ERP) and more.

The challenges

Determining trends for product and services providers is difficult. The responses are necessarily driven by specific contexts, but the challenges they face are more general. Overall, product and services providers face global competitors, customers who expect service and sales online, supply chain pressure, new models driven by partnerships and decisions on outsourcing. Some of the most notable challenges include:

- e-commerce and deregulation have introduced new competitors into the marketplace.
- Other firms have access to local customers.
- New channels have been created that target market segments, aggregate products to match consumer lifestyles and provide low cost alternatives for customers -- for instance, through auctions.
- Customers have around-the-clock access to many products and services and expect equivalent access from all distributors, regardless of their business models.
- Even as service is expanded, costs need to be contained.
- The range of online activities is expanding, creating opportunities for integrating efforts.
- The supply chain has become a focus point for reducing cost and improving alignment with a changing market.
- Suppliers must wring costs out to remain in the value chain.

- The ability to add or subtract firms provides the flexibility the market demands.
- Partnerships have become a means by which companies can change value propositions to customers or shift where value is captured.
- Lifestyle, communities, life events and experience must now be considered when appealing to customers.
- Scarcity and rising costs of information technology (IT) skills are making outsourcing more common.

Capabilities needed

By doing an analysis of these kinds of issues and trends, there are five capabilities that seem to be needed as product and services providers go forward: ***Appeal, credibility, flexibility, efficiency*** and ***accessibility***. For each of these capabilities, there are specific technologies, or clusters of technologies, that may promise to make a difference in the medium term.

Appeal -- Obviously the other capabilities -- credibility, flexibility (for customized products and services), efficiency (especially low cost) and accessibility -- all can make a distributor more appealing. But, in addition to these, there are specific technologies that can support marketing to the individual and can help create relationships that inspire customer loyalty.

Market segmentation has always been a key to success in distribution. Demographics and traditional customer records are the starting point for profiling and segmenting customers, but more dynamic tools, including collaborative filtering and social network analysis, can now be used to discover new segments and better predict buying decisions. This intelligence can be turned around to provide personalized products and services and can even create experiences that help increase customer loyalty.

As the understanding of the value of repeat business -- including concepts like “wallet share” -- has grown, interest in using communities to attract customers and build relationships with them has increased. Tools of virtual teaming, such as instant messaging, bulletin boards and online events have been used to build communities. Customers will return to these communities for social reasons and will also seek out information and recommendations from peers. Such communities can become a key element when using viral marketing to promote a new product or service. Viral marketing is “grass roots” marketing; building a market based on word of mouth.

Finally, information on context can improve the timing of offers. Global positioning systems (GPS) are already being used in telematics systems -- such as OnStar -- to provide location-specific information on restaurants, service stations and stores. While popular GPS scenarios -- where cell phones buzz with discount coupons as potential customers walk past shops -- may be a bit flat-footed, there are likely to be creative applications that take advantage of location, attention and even the proximity of other profiled buyers. For instance, if you use your personal digital assistant (PDA) to

compare the price of a CD in the music store you happen to be in against the competitor's price, you could be offered a discount that would not have been available to you if you were shopping from home instead or if you didn't have access to that competitive information.

Credibility -- Although security is a concern -- and, while there are already instances of theft of credit card numbers and customer records -- shopping online has become one of the major uses of the Web. However, technology, such as wireless devices, have put a new focus on reducing vulnerabilities, so distributors will need to be vigilant about maintaining and upgrading their security if they wish to maintain their credibility.

Privacy creates more subtle concerns, because both consumer and legal expectations of privacy vary from region to region. To make use of any data worldwide without violating privacy will require tagging of data and means to filter inputs, control where and how data is used and protection against illicit access to, and aggregation of, data. The need will probably extend beyond straightforward authentication and authorization mechanisms to include agent technology that can negotiate data transfers and business analytics that can be used to detect violations, including identity theft and fraud.

Credibility cuts both ways, and today too much credibility is given to insufficiently challenged buyers. By far, the biggest victims -- at least directly -- of online thefts are vendors who accept bogus credit card purchases. Single sign-on, business analytics and biometrics have all been developed to help alleviate this problem and will become an increasingly important solution alternative as the problem grows.

Flexibility -- There are now new opportunities to share data and reconfigure organizations. Connectors, rapid deployment, open source software, adherence to industry standards and XML are some of the components for building a future-ready infrastructure. Essentially, this provides new flexibility by making a business more modular, and this is the key to three things:

1.) Effectively aggregating products and services to meet new opportunities
2.) Creating new options in the supply chain -- allowing changes in the players and effective transfer of information across barriers
3.) Making outsourcing options available and viable. Thus, technology, in particular dynamic partnering, can help to better address a shifting market and to squeeze costs out of the supply chain.

Efficiency -- Technologies that provide flexibility can create avenues to lower costs, but there are other ways to use technology to improve efficiency. Integration is the most notable example, and it is facilitated by the emergence of connectors that permit the use of data and applications across different platforms. Architecture and business

modeling tools can be used to reengineer and optimize processes and the IT that supports them.
While the much vaunted public business sites, pricing goods and services in open auction has fizzled, private exchanges are alive and growing. These sites are great examples of business-to-business (B2B) done right, streamlining transactions within a dependable environment. Electronic markets for shipping and warehousing – "e-logistics" -- are beginning to emerge, and could have a major impact on product and services providers' costs.

Further out, business analytics, visualization, simulation and experimental economics hold the potential for discovering new opportunities to increase efficiency, realtime management and understanding how and where value is captured.

Accessibility -- "Location, location, location" is a common mantra for distribution success, and being where your customers are -- whether it is the first choice from a search engine or an advertisement appearing on their cell phone display -- is important to success. Product and services providers led the way in making their products and services accessible via the Web and are among the leaders in wireless technology.

Access goes even further than mobile interfaces, 24/7 availability and even rapid response time. Ease-of-use also determines access, as many firms with poorly designed Web sites have found. On the positive side, "one-button buying" can provide a competitive differentiator. Chat windows that allow customers to ask a "real person" a critical question about a product may just make the difference between a click to a competitor and a purchase of your product. Most sites are still too difficult for most people to use. Kiosks are easier to use, but they face challenges as their uses are expanded (for instance, consider the challenge of selling event tickets through automated teller machines). Cell phones and pagers are still limited by tiny screens and buttons. Speech recognition is making some inroads, although applications often amount only to voicing numbers rather than touching buttons on a phone. Some technologies for access, such as machine translation and affective computing, are probably more than three years away from broad adoption. In the meantime, however, lessons on the use of visuals, logic and context are already available, to be used and adopted from simulation. Having the required function is not the same as being usable.

Access can also mean becoming comfortable with decision. Here, communities, expert finder applications and decision support systems can all play a role.

Key technologies

Currently, leading product and services providers are investing in wireless, personalization, private exchanges and integration. On the horizon (and already visible) are a few key differentiators:

- Dynamic partnering -- which involves taking advantage of standards and open source software
- More intense use of communities
- Business analytics
- Ease-of-use.

In the longer term, technologies that indicate context (GPS, sensors), grid computing and affective computing have the potential to disrupt product and services providers as much as the Web, EDI and supply chain management have in the past.

Tek to watch
Personalization
Portals
Business analytics
Grid computing
Integration tools
XML
Pervasive computing

Other sites of interest

Affective computing
http://www.media.mit.edu/affect/
http://mplab.ucsd.edu/affectivecomputing/
http://www.ibm.com/services/insights/etr_affective.html

Biometrics
http://www.utoronto.ca/security/csahl.htm#bio
http://www.afb.org.uk/
http://www.biometrics.org/html/sites.html

Collaborative filtering
http://www.sims.berkeley.edu/resources/collab/

Product and service providers

Communities
http://www.ibm.com/services/insights/communities.html

Decision support
http://www.dssresources.com/tutorials/investdm/sld005.htm Definition
hhttp://dsi.gsu.edu/DSJ/Vol30_4/index.htm

“e-logistics”
http://www.logistics.org/
http://www.sole.org/

Expert finder
http://www.media.mit.edu/~adriana/projects/EF/
http://www.mitre.org/pubs/edge/june_98/third.htm

Future-ready infrastructure
http://www.computerworld.com/cwi/story/0,1199,NAV47_STO27203,00.html
http://www.ibm.com/services/insights/etr_future.html

Global positioning systems
http://www.ibm.com/services/insights/etr_gps.html

Grid computing
http://www.ibm.com/services/insights/etr_grid.html

Open source software
http://www.linux.org/
http://www.apache.org/

Personalization
http://www.ibm.com/services/insights/etr_personalization.html

Privacy
http://www.ibm.com/services/insights/etr_privacy_basing_service_on_respect.html

Security
http://www.ibm.com/services/insights/etr_intsec.html

Single sign-on
http://www.ibm.com/services/insights/etr_singlesignon.html

Social network analysis
http://www.heinz.cmu.edu/project/INSNA/index.html
http://www.ibm.com/services/insights/etr_sna.html

Visualization
http://www.math.yorku.ca/SCS/Gallery/
http://www.nas.nasa.gov/Groups/VisTech/visWeblets.html
http://www.uni-stuttgart.de/RUSuser/vis/vis_www_links.html

XML
http://www.oasis-open.org/cover/sgml-xml.html
http://www.ibm.com/services/insights/etr_xml.html

About this publication
Executive Tek Report is a monthly publication intended as a heads-up on emerging technologies and business ideas. All the technological initiatives covered in *Executive Tek Report* have been extensively analyzed using a proprietary IBM methodology. This involves not only rating the technologies based on their functions and maturity, but also doing quantitative analysis of the social, user and business factors that are just as important to its ultimate adoption. From these data, the timing and importance of emerging technologies are determined. Barriers to adoption and hidden value are often revealed, and what is learned is viewed within the context of five technical themes that are driving change:
Knowledge Management: Capturing a company's collective expertise wherever it resides – databases, on paper, in people's minds -- and distributing it to where it can yield big payoffs
Pervasive Computing: Combining communications technologies and an array of computing devices (including PDAs, laptops, pagers and servers) to allow users continual access to the data, communications and information services
Realtime: "A sense of ultracompressed time and foreshortened horizons, [a result of technology] compressing to zero the time it takes to get and use information, to learn, to make decisions, to initiate action, to deploy resources, to innovate" (Regis McKenna, *Real Time*, Harvard Business School Publishing, 1997.)
Ease-of-Use: Using user-centric design to make the experience with IT intuitive, less painful and possibly fun
Deep Computing: Using unprecedented processing power, advanced software and sop-histicated algorithms to solve problems and derive knowledge from vast amounts of data

Product and service providers

This analysis is used to form the explanations, projections and discussions in each *Executive Tek Report* issue so that you not only find out *what* technologies are emerging, but *how* and *why* they'll make a difference to your business. If you would like to explore how IBM can help **you** take advantage of these new concepts and ideas, please contact us at **insights@us.ibm.com**. To browse through other resources for business executives, please visit **ibm.com**/services/insights

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