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Summary: The buzz today may be about cell phones and PDAs that connect to the Internet. In fact, a much more sweeping change is under way—the emergence of seamless, continuous economic interaction. Call it u-commerce: ubiquitous, untethered, unbounded.

1 Introduction

You've got to sympathize with executives these days. Just when they thought they were getting their arms around e-commerce, someone came along and said things were about to change-again. The new challenge, they were warned, was to figure out what to do about m-commerce.

Of course, just about everyone is aware of the explosive growth in the use of cell phones and other handheld devices that underpin mobile commerce. But CEOs around the world are right to wonder if there is anything here beyond the hype that promises consumers they can operate vending machines with their cell phones or trade stocks while jogging. They want to know what m-commerce means for their businesses and how urgent it is to embrace this latest technology-driven change.

We believe that mobile commerce is simply the next step-albeit a very big step-toward something even more encompassing: universal, everyday, around-the-clock interconnectivity. The buzz today may be about cell phones and personal digital assistants that can connect to the Internet. In fact, a much more sweeping change is under way-the emergence of a world of seamless, continuous economic and social interaction.

What we are seeing is the dawn of u-commerce-commerce that is:

Ubiquitous-taking place everywhere, at all times;

Untethered-not constrained by the lines and hard wires of traditional computing and telephony;

Unbounded-no longer limited to the traditional definition of commerce.

Not just a matter of transactions, u-commerce encompasses the flow of information between a business and its employees, supply chain partners, customers and various smart appliances in ways that will either save money or generate new revenue.

Business leaders focused today on e-commerce or even m-commerce should look further out on the horizon, preparing in addition for the challenges and opportunities of u-commerce. Ultimately, they need to think of u-commerce as an "and," not an "or." It should not be seen as a replacement for e-commerce, m-commerce, or bricks and mortar. A more likely scenario is that it will be a fusion of all three, with people moving seamlessly from one to the other, depending on their location and the nature of the need.

Moving into u-commerce is not a replacement for anything your company is doing today, but an extension of it. And it will be mandatory, not optional.

In this world, people will be connected to one another, and to the Web, in a variety of ways that we can only begin to imagine. Along with computers and handheld devices, we may use our televisions, video games and automobile consoles-giving us "t-commerce," "v-commerce" and "a-commerce."

We will be connected faster, more continuously, and without the constraints of space and time that limit today's desktop devices. A cell phone, for example, could be an always-on Internet connection, used as a mobile device when the person is traveling, or hooked into a terminal at home or the office.

Objects also will communicate with one another or with people, transmitting information about their location and status, or taking action and even doing business on people's behalf. An appliance or automobile, for example, will sense impending mechanical problems and schedule maintenance; personal-finance robots will make market transactions automatically according to preprogrammed guidelines.

2 Driving Forces

This isn't science fiction. U-commerce will play a major role in our work and lives because it is consistent with drivers of behavior that are already at work.

2.1 Mobility

Individual consumers already approach their lives in general with a kind of fast-food mentality. In developed countries, people multitask, using time spent in the car, online or on the street not only to eat but to read or talk as well. Making purchases on the go is a logical extension.

Similarly, in business, employees at all levels are on the move. Today's employee doesn't work just at the office-and indeed may not even have an office. Work gets done at home, in the car, at the customer or client location, or in any available cubicle. The efficiency and productivity of all those individuals can be improved by any of a number of portable devices.

Once connectivity and Internet access are no longer limited to the personal computer, they will become available to people who were never deskbound, like doctors, teachers, electricians and farmers. The opportunity to reach and serve such people at virtually any time opens up new business opportunities.

2.2 Service

The explosion of computing power has enabled businesses to personalize their products and services based on what they have learned about their customers; therefore, businesses can offer those customers a higher level of service.

With cell phones, PDAs or even more futuristic forms of ubiquitous access that we can't yet imagine, that capability is increased because the customer can, in effect, be anywhere. Several automakers, for example, already offer drivers a variety of personal assistance and services, often based on the geographic position and status of their vehicle at that moment. As access becomes continuous, customer expectations for continuous personal service are likely to increase accordingly.

2.3 Lower cost access

Phones, pagers and PDAs cost less than computers. In the consumer realm, that means Internet access is becoming available even to people whose lifestyle or financial situation would keep them from buying a computer.

This has important implications for the so-called digital divide that exists not only within the economies of wealthy developed countries, where many citizens still do not have computers, but also between the developed and developing worlds. Low-cost access could greatly boost Internet use in countries like China and Brazil, where cell phone use is becoming relatively common.

Within businesses, mobile devices can help control the cost of extending intranet or Internet access. Currently, the cost of computers and networks is the fastest

growing component of information technology expenses. Mobile devices also can contribute to greater overall employee productivity.

3   Bumps in the Road

To be sure, u-commerce will not burst upon the scene full-blown tomorrow. Like all new technologies, m-commerce and u-commerce still have obstacles to overcome.

3.1   Absence of clear standards

Unlike Europe, which has consolidated largely around a single frequency and signaling protocol, the United States has phones supporting three different standards to enable communications in various regions of the country. This problem isn't likely to be solved through either government mandate or competitor consensus, so the "winner" will likely be whichever standard can achieve a dominant share first.

Another possibility is that no standard will win. The problem simply may be overpowered with layers of technology, just as browsers can handle XML, HTML and Java.

3.2   Limitations of current handheld devices

Web access just isn't the same on a screen not much bigger than a business card, and inputting data can be hard on a cell phone pad. Voice-recognition technology is improving but is still imperfect. Meanwhile, compact keyboards that attach to mobile devices (such as PDAs) exist today; holographic projection screens are under development.

Such advances would make mobile devices more user-friendly. But the eventual solution still is likely to be an integrated network of multiple devices, with the user choosing whichever is appropriate to the need at the moment.

3.3   Need for back-office systems

Here is an often-cited scenario: A person is walking down the street, decides to get something to eat and-using a mobile device—checks out local restaurants, gets directions to the restaurant of choice, has a meal and pays the bill.

It sounds good, but the systems to make this happen are not yet in place.

Imagine the billing and settlement process. Many parties contributed to getting our customer fed: the portal that carried the restaurant information, the carrier that calculated the customer's proximity to the restaurant and provided directions, the restaurant itself and the company that provided the mechanism for payment. All deserve a cut-but who does the calculation and distribution, and how?

There are other pitfalls. Payment systems are still vulnerable to hackers when data is sent via mobile devices. Privacy is also a concern. Before long, every cell phone will come with GPS (global positioning system). That's exciting for marketers, but customers are skittish about unwanted intrusions and the feeling of being followed.

3.4   Lack of killer apps

It was e-mail that made Internet access a must-have. To date, no comparable killer m-commerce application has emerged on a global level.

In the business-to-consumer realm, I-Mode has caught the fancy of the Japanese, especially teens. I-Mode offers users communication (phone, e-mail); dozens of services, from the practical (ticket booking, recipes) to the recreational (games, karaoke); plus several whimsical options for standby screen displays. More than 13 million subscribers have signed on in Japan, but I-Mode hasn't caught on outside the country. Nothing like it has emerged in Europe or the United States, though some speculate that short messaging may fill that role.

3.5   Cultural and regional differences

Europe is ahead of the United States in adopting m-commerce, in part because European mobile phone users do not pay for incoming calls. As a result, they are more willing than Americans to leave their phones on. Streaming information and services to a user's mobile device, therefore, is more likely to be successful in Europe than in the United States.

Another regional difference is the extent to which mobile devices are the primary means of Internet access rather than being an adjunct to computer-based access. Today more than 41 percent of US households have access to the Internet via in-home computers; that figure is 27 percent in Japan and much lower in many parts of Europe.

Finally, the widespread use of mobile devices in Japan may be partly a result of the country's commuting patterns. The typical Japanese commutes 54 minutes per day, primarily by train, which allows ample time and opportunity to work or play on a mobile device. In contrast, 70 percent of US commuters spend less than 30 minutes per day in transit, and 87 percent of all commutes are by car.

These obstacles will slow the arrival of u-commerce and make its rate of adoption uneven around the world. But they will not stop it.

4   First Steps

4.1   What will uCommerce mean for your business? What opportunities does it offer?

We can only give that dreaded consultants' answer: "It depends."

It does depend-on your company's geography, industry and specific situation. u-commerce may become a necessity either because your customers demand it or because it is key to maintaining a competitive business system. Or it may offer opportunities to fundamentally transform your business model.

But at this early stage of this-or any-technology's development and implementation, it is hard to know the answers with any certainty. The challenge for a business leader is to anticipate what u-commerce might mean by starting to ask the right questions now.

4.2   Can uCommerce help you build a new, durable relationship with customers? Think about:

4.2.1   Moments of value

The mobile aspect of u-commerce means that you can be with the customer at the moment of need. What could it mean for your business to be in almost continuous contact with customers? To allow customers to access information on their own from anywhere at any hour? To make purchases or transactions any time that buyers decide they want something?

4.2.2   Product to service

Can u-commerce help your customers not just buy your product but use it successfully? Can you, for example, train your customers how to get full value from the product? Help customers anticipate or avoid problems?

4.2.3 Discrete to continuous

Can the technologies underlying u-commerce help you repackage or reprice your product? Can you offer the product or service in smaller increments? Vary the pricing structure by number of units, time of day, location of usage or some other dimension?

4.3 Can uCommerce create a new way of doing your business? Think about:

4.3.1 The flow of information

In politics, a common piece of advice is "Follow the money." Here the challenge is to follow the flow of information.

4.4 What kind of information moves among employees, and how does it move? Along the supply chain? To suppliers, customers, partners? How could those flows of information be shortened, sped up, rerouted or eliminated if people could communicate instantly at any hour? If people could "talk" to objects, or if objects could communicate with one another?

4.4.1 Location, location, location

Mobile technology offers an unprecedented ability to know where someone or something is at any given moment. Suppose your employees were always in touch? Had continuous access to company data and resources? What if you could track your purchases, inventory or shipments minute to minute? If you could pinpoint your customers? How could this knowledge change the way you operate?

Answers to these questions will vary from company to company, of course, and visions of the u-commerce future will differ. Nonetheless, all business leaders should take the fundamental first steps now.

4.4.2 Get a handle on the technology

Nothing can replace firsthand experience with the advantages and limitations of today's leading-edge devices and applications. Reading about other applications of this emerging technology (such as tagging devices) can help round out your understanding of what it can bring.

4.4.3   Team up on research

Why go through the learning process alone? In the early stages, team up with other companies, even potential competitors, to jointly research usage and preference patterns around a suite of applications. Share the results, then separate and enter the marketplace as competitors, partners or allies-as the situation warrants.

4.4.4   Grab the low-hanging fruit

At the corporate level, start smart. Pick some u-commerce applications that have the potential to be profitable; these will certainly be learning experiences. Some applications (particularly in business to business) offer such immediate and high payback that any risk of choosing the "wrong" standard or technology is minimal. Treat these applications as pilot projects. Rather than setting high profitability goals, use them as ways to learn how the technology really works, how people really use it.

5   Conclusion

The technological revolution of the past decade has brought profound changes in our working and private lives and surging productivity for many businesses. As e-commerce is transformed into m-commerce, and as u-commerce looms on the horizon, it's clear that this revolution is far from over.

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