

Introduction to M-commerce

- Mobile commerce (M-commerce) is a type of e-commerce conducted through mobile devices
- such as mobile phones, personal digital assistants (PDAs) and other devices with a wireless connection.
- It is quite different from traditional of E-commerce.
- Mobile Commerce refers to any transaction with monetary value that is conducted via a mobile telecommunications network.

What is M-Commerce?

- M-commerce is the buying and selling of goods and services through wireless handheld devices.
- M-Commerce is the process of paying for services using a mobile phone or personal organizer.
- M-Commerce is the use of mobile devices to communicate, inform transact and entertain using text and data via a connection to public and private networks.

M-commerce benefit

- Your Internet offerings are easier and more convenient to access.
- You get considerable flexibility while conducting business.
- Transaction and personnel costs are reduced due to widespread automation of back-office operations.
- Field staff is more effective as they have flexible access to back-office data.

Benefit for business

- For a small business could benefit from m-commerce.
- Selling a product or service
- Improving productivity

The Unique Characteristics of M-Commerce

- **Ubiquity.**
 - When was the last time you left home without your mobile phone, PDA, pager, or other mobile device that has become the center of your personal and professional universe?
 - Mobile devices fulfill the need for real-time information and communication in a way desktop PCs, which are dependent on a user's location, will never be able to do.

Convenience and Accessibility

- In the wired e-commerce world, people are constrained by time and place.
- Not so in the m-commerce world where being seated at a PC is not a prerequisite for sending email, bidding on eBay, trading stock, or getting the latest sports results.
- Moreover, users can still maintain their privacy by limiting who has access to them, and at what times.

Localization.

- With technologies like GPS (Global Positioning System) or TOA (Time of Arrival),
- m-commerce will enable users and merchants to push, receive and access information and services specific to their location.

Personalization.

- While personalization has started to make some strides with the wired Web,
- the wireless world offers a vastly superior opportunity for companies to provide personalized, one-to-one services to its customers.
- Where the PC is often shared across multiple users, mobile devices are typically operated by and configured for a single user.

Form Factors.

- The physical form of mobile devices (e.g., screens, keyboards, weight) invokes a very different user experience from that of a desktop PC.
- To be successful companies should appreciate these limitations and design offerings that leverage the positive attributes of a particular mobile device:
- larger screens for PDAs, QWERTY keyboards for two-way pagers, or voice for mobile phones.

Bandwidth and Capacity.

- While streaming audio and video capabilities over mobile devices are enticing, current bandwidth and device limitations (e.g., processor speeds, memory and storage capacity)
- demand that the first generation of mobile offerings is practical and predominantly text-based.
- With this said, adoption of mobile Internet devices will still be explosive because applications, and *not* bandwidth, will drive m-commerce growth.

The Value Chain.

- Today's wireless Internet closely resembles the supply-driven value chain that existed in the formative years of the wired Internet:
- customers are locked into "closed-wall" relationships with access to limited, proprietary content and services.
- But, like the wired Internet, this will evolve into a more open model characterized by a proliferation of relationships between Content Providers, Content Aggregators, Mobile Portals and Network Operators all looking to own a piece of the customer.

- The marked difference of the m-commerce value chain is the key role played by Network Operators who control the billing relationship and the default portal on mobile devices

M-COMMERCE MARKET DRIVERS

- **Growth in Internet usage.**
 - Worldwide, the number of Internet users is predicted to reach 500 million by 2003, growing at a CAGR of 29% since 1998.
 - This desire to access information on the Internet will spill over to those users wanting it at all times and places via mobile devices.

Increasing propensity to transact online

- M-Commerce will benefit from wired Internet users' increasing confidence transacting online.
- According to IDC, approximately 22% of all Internet users already transact online, reaching 36% by 2003 off a much larger base.
- E-Commerce revenue is grew to \$1.3 billion by 2003 at a CAGR of 92% from 1998.

Explosion of mobile communications.

- Remember when mobile phones were perceived as exclusive? Not any more.
- Latest estimates suggest that there are now twice as many mobile phones as PCs.
- Lehman Brothers estimate that in the US alone, wireless service revenues have grown at a CAGR of 32%, compared with just 5% for wireline.
- In Western Europe, mobile penetration reached 71.5% by 2003 (vs. 14.4% in 1997).

- This growth can be attributed to improvements in call quality, near ubiquitous coverage and roaming services,
- increased competition driving down prices and up the number of value added services.
- In addition, many governments favor wireless networks over wireline due to the greater speed and lower cost to deploy

Declining ARPU (Average Revenue Per User)

- Increased competition, commoditization and popularity of prepaid wireless services, have driven down the ARPU from traditional mobile communication services.
- This has forced network operators to look to m-commerce as an alternative source of revenue.

Emergence of new technologies

- The growth of m-commerce is heavily dependent on new technologies to aid the wireless delivery of personalized and location-based content and services.
- Expect to see rapid advances in hardware (e.g., WAP-enabled handsets),
- improved interoperability across operating systems and microbrowsers, and
- massive investments in network capacity and 3G wireless technologies.

Standardized Platforms.

- The introduction of WAP and other concerted efforts to standardize key technologies will drive the development of mobile applications.

Evolution of Market Offerings.

- There will be noticeable progression away from “generic information push” to “personalized transaction-based” and “bandwidth driven” mobile offerings.
- This will help attract a broader base of customers.

Issues in developing e-commerce applications

- Many of the following issues:
 - Security
 - Flexibility
 - Scalability
 - Fault tolerance
 - Integration
 - Interfaces (graphical and not)
 - Time-to-market
- are common to many applications, but they are all critical in the case of e-commerce because of its nature

Issues in developing e-commerce applications

- A state-of-the-art application always fail if people do not utilize it
 - A constant attention must be payed to the users over the whole development process
- A close integration with every business aspect is needed:
 - For an online buyer security and easy access to the informations are the primal needs
 - A manager will need a flexible application to adapt the business to the new trends in a faster way

Security Issues

- Security is a crucial feature
 - Most transactions take place in a fully automated way
 - Restricted data are transmitted through a public network
- Users must be sure that their money will not be lost or stolen

Flexibility Issues

- E-commerce systems are subject to frequent structural changes because of mutations of:
 - Products and services provided by the firm
 - Commercial partnerships

Scalability

- Capability to support a certain number of users (thousands, even millions) without compromising performances
- It is important because a slow application often means to lose customers (especially in B2C) since they have very small patience

Fault tolerance

- A less fault-tolerant application will be less available to the user
- Every minute that a site is not available costs 1400\$ to the company (survey on 400 major companies by Oracle)
- It is easy to lose customers forever
- It is necessary to redirect the users without they perceive it

Integration

- Always needed since no application offering every commercial functionality can be realized
- Critical because the commercial functionalities are often realized by many different legacy and third-party applications
 - Examples:
 - ERP systems
 - Legacy systems

User Interfaces

- Must be intuitive, easily comprehensible and of simple utilization
- In the case of B2C must support profiling in order to anticipate the customer requests
- They also need to be customizable

Multi-channel interfaces

- Application interfaces must support several kinds of connections:
 - Web browsers
 - Web TV
 - Cellular phones (via WAP)
 - PDA

Time-to-market

- Has greater importance than elsewhere
- Emphasis on COTS and reuse

1st presentation

- World Wide Web and security
 - Give an overview of WWW
 - History of WWW
 - Web security
 - What do we need to protect?
 - Firewalls etc
 - HTTP Authentication

1st presentation

- World Wide Web and security Continued
 - **Attack Types**
 - Secure Sockets Layer (SSL)
 - Cryptography
 - Digital Certificates