E-Commerce on the Move - Malaysian Scenario

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ABSTRACT

One of the fastest growing areas of E-Commerce today is mobile commerce. There are more users of mobile devices such as laptops, palm PCs, cellular phones and personal digital/data assistants (PDAs). A mobile device is a personal unit that is within reach and provides anywhere and anytime access to the user. The penetration rate of cellular phones in most developed and developing countries is much larger than that of personal computers. Recent roll-outs of public wireless broadband infrastructure of 2.5G and 3G networks have made opportunities for mobile commerce become a reality and will affect our daily lives in work, leisure and recreation. This analytical paper attempts to study the development of E-commerce in Malaysia. A part from this, the paper will also construct SWOT analysis and identify the impact of M-commerce on the political, economic, social and technological environment. Finally, recommendation will be given of the best alternate strategies for the promotion and development of M-commerce in the nation.

1.0 INTRODUCTION

Commerce is broadly defined as the buying and selling of goods and services. Many organizations today are selling goods and services on the Internet, which has been referred to as electronic commerce or E-commerce. This form of commerce took off like wildfire resulting in many entrepreneurs investing in E-commerce.

In 1999, Sonera of Finland was the first telecom operator to provide the wireless technology needed to allow its customers to conduct commerce in a wireless fashion (Rasinghani, 2001 cited by Frolick F.N. and Chen 2000). This mode of commerce brought about a new technological buzzword known as mobile commerce (M-commerce). This development of mobile economy can be attributed to the rapid technological advancements in mobile phones, portable computers and wireless data communications.

Lenny and Artypas (2001) defined M-commerce as both 'content delivery (notification and reporting) and transaction (purchasing and data entry) on mobile devices'. Another term used for M-commerce is 'wireless E-commerce' whereby business activities offer leverage to the existing Internet technologies and infrastructure. Therefore M-commerce can be defined as any form of mobile communication with the customer, whereby goods and services are transferred resulting in a business profit.

As at end June 2004, Malaysia had 12.38 million mobile phone users that are 49.52 percent of 25 million population and analyst expect the number to reach 13.21 million by year-end. (New Strait Times 2004). These figures indicate the potential available in the growth of M-commerce in the country.

2.0 DEVELOPMENT OF E-COMMERCE AND M-COMMERCE

The introduction of the Internet and especially the World Wide Web has brought about varied new dimension in today's world businesses. It has rapidly become the primary commerce and communication media for virtually every industry, large or small. The development of online businesses has created ways in reaching potential customers and markets that were never before possible. E-commerce is doing business over the Internet around the clock, 365 days a year with anyone and anywhere in the world. With advanced technology such as multimedia and video, it has brought about new business opportunities with greater efficiency and more effective transactions resulting in productivity gains.

Several factors have brought about this phenomenal growth in E-commerce. The digital revolution especially the development of the IT during the past 10 years has created massive continuing global market growth. Information sharing, quick comparison-shopping convenience and control of their finances are important changes that emerged within E-commerce.

Another factor of the development of E-commerce is that E-commerce helps people to work together. It creates better interaction between organization, suppliers, vendors, business partners and customers that ultimately gives better result. It is quite evident that E-commerce technology is now being adopted within M-commerce. Therefore it can be seen now that there is a transition of E-commerce to M-commerce.

Mobile commerce or M-commerce is the ability to purchase goods anywhere through a wireless Internet – enabled device, (Clarke, 2001). Mobile commerce provides easy access to information from anywhere at anytime. It allows employees to access real time data and to make timely decisions that increases productivity and improves business performance.

M-commerce also provides a valuable channel for enhancing customer relationship as well as direct marketing and promotional activities. With application such as GPS it takes the user's location

into account and provide users with access to localized and personalized information. Attracting potential customers within the vicinity can prove to be valuable. Mobile devices create more contact points with the commitment and improve customer services by bringing the product and services directly to the customers.

3.0 TECHNOLOGY DEVELOPMENT AND MOBILE COMMERCE

In 2003, there were 1.4 billion mobile phones worldwide and half of it was Internet enabled. (Zabada, 2000 cited by Clark, 2001) The successful adoption of mobile commerce up to now and in the future depends very much on the continuous advancement of wireless technology. Mobile technology started more than 15 years ago with cordless phones. Mobile phone usage continues to expand as technology advances. From just making and receiving calls, it has evolved to allow users to send short messages (SMS) and multimedia messaging services (MMS).

Recent survey in Malaysia shows that there are about 12 million mobile users who send about 30 million SMS everyday and this constitute approximately 15% income to the telecommunication providers (Izawan Ismail, 2004). SMS can generate sales amounting to millions using push marketing strategy, whereby the vendor initiates the communication and delivers time sensitive or location specific promotional messages to consumer's mobile devices. Frolick and Chen, describe this phenomenon as 'message and mortar'. This is a widely used facility among Malaysians because it is cheaper and easy to use.

The predominant communication protocol used today for M-commerce is the Wireless Application Protocol (WAP) (Rasinghani, 2001 cited by Frolick and Chen, 2004). WAP allows mobile users to pick up e-mail, synchronize calendars and access database instantly over the Internet. It is compatible with most handsets currently in use and works well in Internet technology.

However WAP is found to be slow and rather expensive due to longer connection time. Due to its limited display capability and input options its application is rather less user friendly. However in Malaysia WAP is very much alive today. At the end of the first quarter of the year 2004 there were nearly 350,000 WAP users in Maxis, Malaysia. According to Barry Lee, Managing Director Nokia, Malaysia, the advent of color screen mobile phone, GPRS and XHTML will further enhance the browsing experiences of WAP. GPRS and EDGE (enhanced data rates for global evolution) technology provide faster means of download.

Current mobile users are not fully satisfied with the existing bandwidth limitations and low transmission speed. Therefore the alternative communication protocol, which is General Packet Radio Services (GPRS), is gaining popularity widely. GPRS is a wireless broadband which is faster than WAP because it works specifically on 2.5G and 3G networks. According to Garfinkel, data can be sent in high-speed packets, just like the Internet. An example of this type of service is NTT Do Co Mo in Japan. It provides diverse M-Commerce products and services such as hotel reservation, online auction, books, stock quotes, ticketing etc.

Similarly many enhanced services have been introduced around the world such as 3G WAP-Enabled networks for conference establishment, dynamic call screening and personalized services. (Batni et al., 2000) The other is wide Band CDMA (W-CDM) introduced in USA. In addition to wide area wireless network solution several firms have invested in wireless local area networks (WLANS).

The dominant WLAN standard is Wi-Fi also known as 802.11b technology developed by IEEE. The high-speed wireless fidelity (Wi-Fi) hotspots are gaining much popularity these days (Shyla, 2004). It provides wireless access to users within a local geographical area. According to Cisco systems, WLAN has greater convenience, flexibility, mobility, time saving and greater productivity gains.

Other recent technologies are Bluetooth and 802.11g. These new technologies offer lightning-fast speed to data transmission and effective communication with mobile apparatus, capable of increasing productivity. According to Sharifah Kassim, the adoption rate of wireless connectivity is expected to boost with the incorporation of the 802.11g standard, which promises improved and more stable wireless connection in a local area network (LAN).

4.0 SWOT ANALYSIS OF THE TELECOMMUNICATION INDUSTRY

Wireless Internet via mobile devices (WIMD) is leading the world into another spectrum of communication and means of conducting day-to-day business and life activities. (Lu.J et al, 2003. The S-W O-T analysis will provide an insight into the future prospect and consumer acceptance of WIMD.

4.1 Strength
Although M-commerce is faced with many shortcomings, the implementation of M-commerce can lead to significant benefit for both businesses and consumers. According to *Palen,* the greatest strength of M-commerce lies in its ability to build connectivity by transcending time and place, increasing accessibility and thereby expanding social and business network. This proliferation will provide the convenience, localization and personalization for user in mobile communication and services activities (Clarke, 2001 cited by Lu et al, 2003)

The location awareness capability is an added distinguishing factor of M-commerce. As such access to real time data, timely decision making and everywhere presence of M-commerce is uniquely beneficial to consumers. This ubiquity is the greatest advantage of M-commerce over fixed line technology.

M-commerce has the ability to enhance customer relationship as well as direct marketing and carry out promotional activities. This with the continuous advancement in technology and product innovation has brought about much convenience in carrying out business activities.

Mobile phones provide another effective medium for advertising products and services. According to Zabada, advertising through mobile phone will be as normal as advertising in newspaper or television. This will profoundly influence the expansion of wireless services. Instant communication between customers and employees is beneficial. Communication facilities within M-commerce network such as receiving and sending of E-mail, facsimile, instant messaging, voice mail forwarding etc, increases convenience. M-wallet is another convenient feature today.

In Malaysia the government's commitment and push for IT literacy and development of IT infrastructure is an added advantage for the development of M-commerce. This is clearly evident, as the number of users has grown significantly within a short period of time.

The healthy competition among service providers in the country has resulted in lower prices, introduction of value for money and personalized application facilities together with growing awareness among the consumers of the convenience and simplicity are strong drivers for the expansion of M-commerce.

4.2 Weaknesses
Among the key weakness in mobile E-commerce includes lack of security, unproven benefits in terms of ROI and high start up cost. There is real possibility of hackers breaking into the system and intercepting important data. Business and consumers must feel safe transmitting sensitive transaction - related data. The location pin pointing technology could create new privacy and security issues where unscrupulous people can abuse information. Unwanted messages and advertisements due to push technology can affect valuable consumer time.

The small size and portability of wireless devices could result in being easily lost or stolen. Furthermore data on these devices are seldom encrypted. Therefore in the event of such security breech there is a gray area as to who should be held

responsible and what form of compensation the consumers may receive.

M-commerce is said to provide numerous benefits, but determining the unproven benefits, or ROI is not easy. Not all businesses are suitable for M-commerce and therefore many businesses have failed miserably due to failure in identifying potential strategic impact.

Cost of customers to participate in M-commerce remains relatively high. The start-up cost is huge; therefore the decision to adopt is a difficult one. Furthermore, the reliability of the software and hardware technology is also important. Poor technology may cause prolonged 'air time' and longer transaction my cost the consumer more. The screen size, graphics, battery life, clarity, display capabilities, input options simplicity, limited memory, low speed of data processing and coverage can all pose considerable set back in the adoption of M-commerce.

Finally the availability of wide range of mobile devices with different technology and application has created difficulties in inter-operability. Technology complexity will have significant effect on consumer acceptance. As one expert pointed out, the wide adoption of an M-commerce application requires compatibility with multiple devices (Worthen, 2001). Varied technologies and lack of standardization is a major issue in the transition from E-commerce to M-commerce.

Social acceptance of new technology, resistance to change from old practices and awareness of the need to change can all affect consumer acceptance

4.3 Opportunities
Figures reported by IDC Malaysia shows a rapid growth in mobile users from 4 million in 2,000 to 9.3 million by end of 2003. However, the M-commerce usage is relatively low. M-commerce is still in its infancy stage as far as Malaysia is concerned, but there are huge opportunities for its development.

Improving the existing wireless infrastructure is absolutely critical. At the moment Telecom Malaysia being the No. 1 service provider, has developed global widespread infrastructure. To develop these infrastructures, it incurred huge amount of capital. However, the improving of existing infrastructure is absolutely important in order to create acceptability and boost the confidence of the customers. Existing infrastructures is still open to security risks, therefore greater protection for upgraded infrastructure could definitely promote the development of M-commerce.

The mobile and wireless applications have to be constantly reviewed to meet the customers' satisfaction. Effectiveness of WIMD largely depends on efficiency of data transfer, system functionalism, interface design and mobile device capacity. There

must be sufficient value added features such as personalized services and wider coverage that can satisfy the growing demand of the consumers. Experts pointed out that the key to effective mobile marketing is to fully exploit the time, location based and personal nature of the mobile channel. (Jimienez, 2002).

Generally the Malaysian consumers are not well informed but rather cautious in using mobile devices for business purposes, but this trend and the mind set is slowly but surely changing. The Malaysian economy together with the stable socio - political environment and minimal restriction from legislations are also factors favoring the development of M-commerce in this country.

The actual benefits of mobile commerce is not fully realized, but as more information is made available the opportunity will be taken by user to develop their business to business (B2B) and business to consumer (B2C) activities. Income and social economic status have long been recognized to have strong effect on technology adoption and diffusion.

4.4 Threats

M-commerce also faces stiff competition from e-commerce. M-commerce business model have to be unique and affordable, if it were to compete with E-commerce. The cost of using the mobile device is rather high; therefore Mobile commerce providers have to seriously consider reducing the cost/price.

Although cost of SMS services appear to be low due to stiff competition from other providers, it is still expensive, especially when there were delays in connection time and other errors. Recent technology developments in fixed line Internet facilities have increased penetration with high-speed Internet connections. M-commerce devices and applications therefore have to better or at least compatible and are cost effective in order to survive as a business tool.

All business transactions require an element of trust, especially those conducted in the uncertain environment of electronic commerce (Lee, 1998, cited by Lu et al, 2003). Security and privacy are two key ingredients of wireless trust environment. Compared to wire Internet, wireless Internet is exposed to greater danger of insecurity, which include confidentiality, authentication and message integrity.

Incidence of abuse in the usage of mobile devices is on the rise. There are many unwanted and unscrupulous messages, promotional and misleading information, which can reduce the confidence of the consumers on the services, provided. Therefore if this perceived potential threat on security and privacy is not alleviated it may pose a serious threat to the adoption of M-commerce.

5.0 INDUSTRY ANALYSIS USING THE PORTER'S FIVE FORCES MODEL
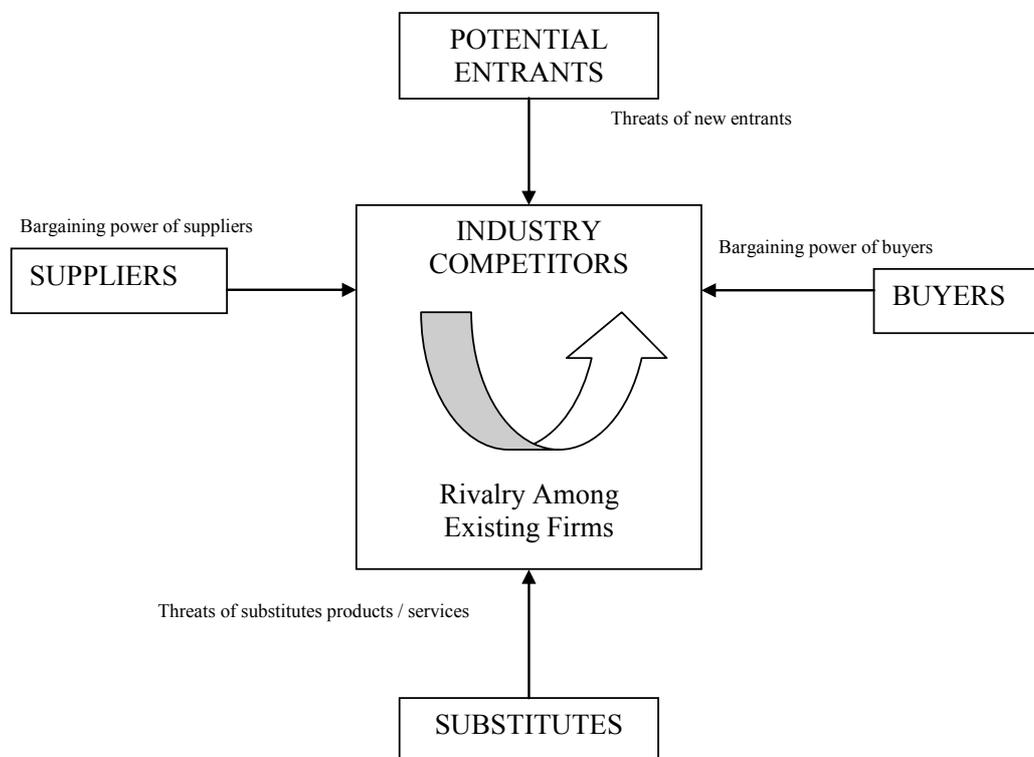
Porter's five Forces framework of competitive analysis is a widely used approach for developing strategies in many industries.

5.1 Rivalry among Mobile Service Providers.

Rivalry among competing firms is usually the most powerful of the five competitive forces. Changes in strategy by one firm may be met with retaliating counter moves such as lowering prices, enhancing quality, adding features, providing services, extending warranties and increasing advertising.

Currently in Malaysia, we have several major mobile service providers such as Celcom, Maxis and Digi. Malaysia's mobile phone market was worth 9.4 billion Ringgits, during the year 2003 (Bloomberg.com) and it was expected to grow by 10% in 2004. The number of mobile device users in the country is growing by leaps and bounds.

Free flowing of information in the Internet is driving down prices and inflation worldwide. The intensity of rivalry among these competing firms tends to increase as the number of competitors is growing. As competitors become more equal in size and capability, these firms are continuously introducing attractive packages with lower prices to retain and attract new consumers. Rivalry is also intense as the consumers can switch brand easily and barriers to leaving the market is high. The product differentiation and switching cost is also very significant therefore creates plenty of opportunities in the market.

5.2 Potential Entry of New Competitors

Whenever a new firm can easily enter the industry, the intensity of competitiveness will increase. Mobile data and mobile commerce technology is still in its infancy and it is a huge area of business growth worth billions waiting to be explored and therefore there is a high potential for entry of new competitors. Therefore existing firms have to come up with different types of barriers to entry.

Some of the barriers in the industry are brand name, quality of the product; services offered, lower prices, product packages etc. Consumers are very brand conscious especially among the higher income group. Consumers are also looking into better quality technology with enhanced features such as security, ease of use, broader bandwidth and of course cheaper rates. This strong product differentiation in the industry creates a lot of opportunity for new entrants. Therefore it is quite evident that these firms are continuously upgrading their services and promotional activities in order to ward off new entrants.

The economies of scale for mobile usage are significant and therefore it is also very encouraging for new competitors to enter. The Government's liberal legislation and strong support for IT development in the country provides the booster for more firms to get a slice of the cake.

5.3 Potential Development of Substitute Product and Services

E-commerce and M-commerce have many similarities in the product and services offered. Therefore, for M-commerce to remain competitive or obtain an edge over E-commerce it must continue to portray and deliver its own unique features. Features such as business anywhere and anytime, location - based services and personalized services must be further developed in order to survive from substitute products and services. M-commerce providers must further develop their technology and reduce shortcomings in the application protocols in order for consumers to remain faithful in carrying out mobile businesses.

Today the cost of doing business via Internet is much cheaper compared to mobile devices. In comparison to fixed network, the M-commerce has no consistency in publicity and lack of effort to create awareness. As such M-commerce has to address these factors and make consumers recognize the real value in mobile commerce.

5.4 The Bargaining Power of Suppliers

As far as the mobile phone industry is concerned the bargaining power of suppliers is rather low. The providers of the product and services get their components and raw materials from diverse suppliers. As there are large numbers of suppliers who can deliver similar products at competitive prices, the firms have higher bargaining power over choice of suppliers.

5.5 The Bargaining Power of Consumers / Buyers

In the free market environment with minimal restrictive legislation the users have a high bargaining power. The products and services being offered are standard or undifferentiated and therefore the bargaining power of consumers is also higher. Therefore it can be seen that rival firms tend to offer extended warranties, special services, packages, widespread advertisements and other promotional activities in order to gain customer loyalty.

From the analysis of the Five Forces it can be concluded that the mobile commerce industry is a very competitive one. The industry is still young and has a lot of room for growth and development so as to be widely accepted by all the Malaysians in the future.

6.0 STRATEGY TO PROMOTE M-COMMERCE IN THE TELECOMMUNICATION INDUSTRY

The mobile market is big and still growing at a phenomenal rate. As a result the firms in the telecommunication industry will have to compete with other mobile service providers to broaden their market share. Therefore firms will have to develop effective strategies in order to promote M-commerce have a primary service.

6.1 Product Development

Although the benefits of M-commerce cannot be denied but improvements are urgently required in several aspects of the applications, especially when comes to security. Therefore the firms have to improve their present hardware and software technology to meet the expectation of the consumer. The firms have to improve on existing security structures so that consumers have more confident with the system. Secondly a common protocol or standard will have to be reached so that it can be adopted in different environments. Interoperability of the system among various devices is important for expansion.

At the same time new features and facilities have to be added which can promote M-commerce. Features, which can create greater clarity and bandwidth with uninterrupted transmission, are pertinent for M-commerce development. Therefore the firms should pay more emphasis on Research and Development (R&D) of its existing technology in order to provide the best and efficient service.

6.2 Market Penetration

The awareness among Malaysian as regards to the benefits of M-commerce is low, therefore the firms should promote M-commerce by carrying out extensive and intensive promotional activities such as advertisements, road shows, promotional booths etc., in order to increase publicity and awareness of their products and services. Educating mobile users on the usage of data application is important as many owners of feature-rich handsets are either unaware of their capabilities or do not know how to fully unleash such capabilities with mobile data service offered by the operators. (New Straits Times. 2004)

At the same time the firms should also price their product competitively together with promotional packages such as increased airtime, reduced introductory rates, corporate rates etc., so that more consumers can be drawn into. Personalized customer service and technical support could also further developed to encourage M-commerce.

6.3 Forming Alliances and Partnership

This is another effective strategy whereby the firms can form strategy alliances with other telecommunication partners in the region in order to obtain a win-win situation. It is an accepted fact that not all company's can provide the best product and services; therefore by forming partnership, the firms can incorporate certain protocol and application, which can lead to a higher quality product to the consumers. For example, one such alliance is between Maxis and Telecom Malaysia Bhd., where plans are under way to begin operating high-speed services known as 3G as early as the first quarter of next year. (Bloomberg.com.2004)

6.4 Differentiation Strategies

Successful differentiation means greater product flexibility, greater compatibility, lower cost, and improved service, less maintenance, greater convenience and / or more features. *(David, 2003).* Product development strategy, which was discussed earlier, is an example that the firms should pay emphasis because it offers the advantages of differentiation.

Features with desired attributes such as superior service, engineering design, technology, product performance, ease of use etc., will determine the uniqueness of the product, thus enable to fetch a higher price and able to gain customer loyalty.

6.5 Cost Leadership Strategies

Currently business transaction via mobile means is rather expensive compared to using 'fixed line', computer base. The firms must strive to be the low cost provider of E-mobile services in the industry. This can be made possible due to the existence of many price sensitive buyers who do not care much about differences between brands. Presence of large number of buyers with significant bargaining power could further lower prices thus allow customers to switch to M-commerce for E-commerce.

From the above discussion of the strategies it is evident that the firms would be able to promote mobile commerce in the telecommunication industry, by continuously introducing faster, more advanced and affordable with creditable mode of delivery.

7.0 RECOMMENDATION

In order for M-commerce to achieve long-term success, it must be able to provide value added user experiences, through content aggregation and portal development. Mobile Internet customers will be more demanding for personalized services to meet the individual wants and needs. Providers must take advantage of the characteristics that make M-commerce distinct from E-commerce to develop truly unique and compelling services.

When considering the implementation of M-commerce to a business model, one should pay close attention to both technical and business issues. The first and the foremost important step in developing a mobile strategy is building a business case. Mobile devices could carry out not all businesses efficiently as what people say that, "We shouldn't just do things because we can do them". It must be thoroughly analyzed taking into consideration of possible negative consequences before adopting the mobile technology for business.

Business organizations should identify the application before selecting the devices. Wireless devices differ in many aspects, and therefore selecting the device first will seriously limit the functionalism of the future application. If there are too many devices then

there is much necessity to standardize the protocols in order to reduce the complexities and ensure the suitability and reliability of services.

Another important factor for consideration is the selection of technology. The relevance of various technologies pertaining to M-commerce has already been discussed. However decision on selecting a particular technology must be based on scalability, flexible infrastructure, well-supported protocols and applications, strong security measures and standardized functional devices. This consideration for recommendation will definitely provide the ingredient for successful adoption and implementation of M-commerce by an organization or individual.

8.0 CONCLUSION

Mobile commerce is still at its infantry stage in Malaysia and the providers of M-commerce facilities are fully aware that this industry has growth potential. Today the wireless services that are made available include SMS, MMS, WAP, GPRS, Bluetooth and WLAN, but adoption of mobile commerce application for business purposes is low.

Although many factors have been dismissed earlier, security and trust remain the major factor influencing the decision to do mobile shopping. Organizations need multi-layered (security) defenses and enhanced multi – layered defenses. This means combining more then one security technique together. (Manecksha, 2004). Therefore mobile service providers should do everything possible to build customer's trust and confidence in order to increase M-commerce usage.

The other factor of importance is of course keeping the price competitive and further improving the technology and application to attain greater convenience and simplicity. "Mobile commerce is per se included in the traditional E-commerce market models. M-commerce will be able to increase the overall market for E-commerce because of its unique value proposition of providing easily personalized, local goods and services, anytime and anywhere".(Durlacher, 2000)

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