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Business Models and Strategies of M-Commerce: A Review

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Abstract

The focus of this paper is on reviewing business models in the literature from the mobile network operator (MNO) perspective; observing the strategic decisions made by companies and discussing the possibility of a standard in m-commerce business model that can emerge in the near future. This paper analyses theoretical and empirical evidence of business models and strategies across the world. Results indicate that the focus of business models has shifted towards value net approach with customer at the core and all the other players in value chain encircling it, forming relationships to obtain win-win situations. Empirical evidence from authors belonging to various geographical locations across the world will provide an insight of market trends and behavior in those particular regions. This study can provide a reference and aims to fill the void in literature regarding business model and strategies as it is important to focus on business aspects of m-commerce.

Keywords: **M-commerce; Business models; Strategy; Value nets**

INTRODUCTION

During the last few years, mobile phones have undergone an extra-ordinary change in their technology as well the functions available to consumers. Recent battles for market share between Apple, Samsung, Sony and others have paved the way for new innovations and the demand of mobile phone and related applications has increased sharply.

According to European Mobile Industry Observatory Report of 2011, the mobile penetration rate in Europe stands at 128%, higher than the respective rates in Japan (100%) and USA (104%)[1]. Studies also show that the mobile penetration results in economic growth of countries (Waverman, Meschi, & Fuss, 2005). Statistically speaking, a 10% increase in penetration could increase the GDP growth rate by up to 1.2%[2].

Moreover, the economic growth factor is higher for developing countries and their adoption rates are also higher (Banerjee & Ross, 2004). The great number of mobile phones in the market enables consumers to get connected with internet all the time and hence paves the way for productive opportunities for all the players involved.

With the implementation of 3g technologies in telecommunication, the whole network of mobile commerce with all its players (network operators, customers, application developers, service providers etc) needed to change their strategies. This translated into a shift from traditional business practices to a new and improved practice of optimizing the interactions between them. So, a dynamic solution is required, which not only provides a foundation to profitability in the current scenario but also accommodates future technological advancements.

Now 4g technology has been launched in different countries and the same question arises that whether or not companies can use traditional business models to fulfill their purpose and what strategies can they apply in order to achieve maximum benefits from m-commerce industry. This paper provides a review of different business models and strategies and highlights the theoretical and empirical results. The focus of this paper is only on broad business aspects so I have not discussed or considered papers that are purely technical and will not go into details about the technicalities involved in m-commerce network.

Section 1 introduces m-commerce and provides an overview of the definition of m-commerce, business model and strategy. Section 2 deals with the methodology used in writing this paper. Section 3 presents different business strategies in the literature and how I have distributed them. Section 4 deals with the empirical evidences related to business strategies. The paper is closed with a conclusion and a comprehensive list of references.

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[1] . European Mobile Industry Observatory Report, (2011) available at: http://www.gsma.com/publicpolicy/wp-content/uploads/2012/04/emofullwebfinal.pdf

[2] Economic Contribution of Mobile Communications- Telenor, (2012) available at: http://www.telenor.com/wp-content/uploads/2012/03/Telenor_Eco_Impact_25_april.pdf

DEFINITION OF M-COMMERCE

There are a lot of definitions of m-commerce in the literature. Some authors define it as a subset or an extension to the ideas of e-commerce. R. Kalakota & A.B.Whinston (1997) defines e-commerce as "the ability to buy and sell products or information on internet or other online sources". Some researchers propose that the aspects of e-commerce can be applied to m-commerce. Others define it as a business transaction with the exchange of anything of value through a mobile network. Mylonopoulos & Doukidis (2003) classify m-commerce as an ecosystem. The definition of m-commerce is evolving though and some authors have recently formed new definitions based on a combination of ideas explained above. They have combined the transaction, ecosystem and e-commerce concept to propose a better definition of m-commerce. The table below reviews the various definitions of m-commerce based of different classifications along with the authors who propose them:

Classification	**Definition**	**Literature**
1. Subset/Revolutionized form of E-Commerce	M-Commerce is a subset or a new form of e-commerce and all the aspects involved can be extended and applied to m-commerce.	O.B. Kwon & Sadeh (2004), Coursaris & Hassanein(2002), Scharl et al. (2005)
2. Transactions	A transaction having a definite value or utility, administered through any mobile terminal equipment on the mobile telecommunication network, can be considered a part of mobile commerce.	Li Yan (2005), Barnes (2002), Tsalgatidou & Pitoura (2001)
3. Business Ecosystem	M-commerce is an interactive ecology system of people and organizations based on social and technological effects.	Mylonopoulos & Doukidis (2003)
4. Combination of 1, 2, 3	M-commerce is an extension of e-commerce in which products or goods are managed through wireless mobile equipment without time or place constraints in order to increase the profitability / efficiency of business processes.	Y.F.Kuo & C.W.Yu (2006), X Y Ming (2008)

Definition of business model

Business model is a very comprehensive topic covering many aspects from all industries. So naturally, there are a lot of definitions in literature regarding business models (Shafer, Smith, & Linder, 2005) provide a general view of business model concept according to various authors and try to give an acceptable definition to the business model idea. They define business models as "a representation of a firm's underlying core logic and strategic choices for creating and capturing value within a value network."

Chesbrough & Rosenbloom (2002) define business models using the value-chain concept and say that a business models depicts how a company makes money by classifying its position in the value chain.

The components involved in business models are also a debatable topic. Many authors have proposed different methods in order to choose different components. Shafer et al. (2005) use an affinity diagram approach to determine the components of business model that appear most often in literature and categorize them into four groups: strategic choices, the value network, creating value, and capturing value. (Osterwalder, Pigneur, & C.L.Tucci, 2005) discusses the nine primary groups of elements that appear most often in literature. Chesbrough and Rosenbloom (2002) provide us with six basic groups of elements in business model namely: market, value proposition, value chain, cost and profit, value network and strategy**.**

Definition of strategy

Porter (a, b) in his work, provides us with an idea of strategy and says that strategy implies the future position of industry in the market, choosing between tough choices or trade-offs about the ways the company will create value for consumers, and building the strategic fit between different functions of organization with the ultimate goal of creating revenue.

Business models and strategy are two different things and must not be confused [Shafer et al. (2005), Magretta (2002)]. Authors have tried to distinguish between these two widely used terms. Seddon & Lewis (2003) have suggested that a business model can be viewed as a conceptual depiction of a firm's strategy. They further argue that as business models are like patterns or the conceptualization of the means to create value, they come first and a combination of different business models could be used in making strategic decisions. Eisenhardt & Sull (2001) contend that strategy is a vital tool for organizations especially in a dynamic environment and strategic decisions can be simplified by focusing on specific goals.

The purpose of this work is to cover the business models discussed in literature both in theory as well as empirical way. I will also discuss the basic features and the strategic decision by various researchers.

METHODOLOGY

For the purpose of this paper, I have gone through an exhaustive survey of articles dealing with the issues of business models and strategies. Ngai & Gunasekaran (2007) have done a comprehensive literature review for m-commerce in general, dealing with articles from 2000 to 2003. Dahlberg, Mallat, Ondrus & Zmijewska (2007) have also done a review of literature from the mobile payments point of view. So, there is a need to review literature from a purely business-model perspective so that it may be useful for decision makers to have an idea about different business models and it might be helpful for them in making strategies in a competitive environment. I have searched for papers, both conferences and journals, from 2003 onwards in these databases: Science Direct, IEEE Xplore, Emerald Fulltext and Google scholar. Out of all the papers, some were selected that fulfilled the objective of this paper based strictly on business models and strategy.

I have divided them into two general groups: theoretical and empirical. I have tried to answer some research questions using information gathered from review. These questions will be useful for researchers in future research in this field and also for decision makers in mobile industry.

THEORETICAL ANALYSIS

In the scope of this work, the number of elements involved in a business model is not important. However, for the purpose of classification, I choose the classification scheme of Devine & Holmqvist (2001). They propose six different types of business models in m-commerce: User Fee Business Models, Shopping Business Models, Marketing Business Models, Improved Efficiency Business Models, Advertising Business Models and Revenue Business Models. In my view, these core categories of business models are well suited to categorize different business models.

In a user fee business model the key players involved are network operators, users and third party acting as intermediary dealing with the financial aspects. Users pay a subscription fee or usage fee for the content they use. Shopping business model primarily consist of content providers and users. Users either pay online or through delivery of product. On-line shopping through credit cards falls into this category. In marketing business model, content providers and customers are the primary players. In this model, content providers use their apps as a marketing medium to advertise their core business items to the users. In Improved Efficiency Business model, content providers aim to reduce the cost of interaction with customers by using mobile internet. Costs may be higher if customer interacts with content providers through other means. In Advertising Business Model, users, content providers and advertising company play a central role. Content providers allow other companies to advertise on their content in exchange of revenue in order to make users aware. Revenue sharing business model involves partnership agreement with other companies in order to provide content to users and the revenue generated is shared.

However, with so much technology advancements and the resulting competition the focus has shifted towards business models based on value nets. Value nets are customer based models derived by the needs and requirements of customers and can be adapted easily in case of uncertainty or disruptions due to technological innovations. Shixi Luo & Huihui Gu (2010), Y. Wu, Lin & H. Wu. (2007), Karrberg & Liebenau (2007), Liu & Zhou (2011) have all proposed models based on value nets. The concept of value net was first used by D. Bovet, Martha & Kirk Kramer (2000) and it is better suited for virtual environments than the traditional supply chain models.

The main characteristics of value nets according to Y. Wu et al. (2007) are: strict focus on customers, coordination between different players, sensitivity to environment, quick response and networking. This paper reviews the literature and characterizes the business models on the basis of scheme that proposed Devine & Holmqvist (2001) proposed and value nets idea. I have tried to highlight important results and strategic implications from operator point of view so that decision makers and researchers can have an idea about existing research.

The basic purpose of such a categorization of business models and strategies is to have a general idea to answer the following questions. What kind of business models are used more frequently? What strategy different authors across the world propose to maximize the profits for all players involved in mobile network? Whether the models used in one country are applicable to an industry in another country or not? The following table represents the characterization:

Authors	**Context**	**Main Results & Strategic Decisions Suggested**
Huang & Dong (2007)	Advertising business model	Identifying the customers and their needs keeping in view the resources are key factors to measure the performance of business model and must be analyzed. Case study of an online marketing company has also been presented.
F. Buellingen & Woerter (2004)	Advertising business model	The current value stream of network providers will decrease in future due to increase in demand and technological innovation. If the revenue base is extended to other functions such as advertising with the operator in a gate-keeper's role will result in better results.
Y. Zhang & N. Zhang (2011)	Improved efficiency Business model	Strategies and business models should be dynamic to prepare for uncertainties in future.
V. Shankar & S. Balasubramanian (2009)	Marketing business model	Strategic decisions of mobile marketing have been explained. Customers should be given a choice between advertisements. Understanding of the customer behavior is extremely important.
Jiang Yu & Lanxiang Zhao (2006)	Revenue sharing business model	In a highly regulated market, value can be created by a greater level of co-operational agreements with authorities. Competitive advantage can be achieved by the combined efforts of entire network.
Unni & Harmon (2003)	Revenue Sharing business model	Network providers and location-service providers should capitalize on opportunities and agree upon ownership of data and profit-shares.
Y.F.Kuo & C.W.Yu (2006)	Revenue sharing business model	Due to disruptive innovation by 3G, mobile network operator (MNO) centered model is presented. To create value, new services have to be provided so operators should work towards focusing mainly on services instead of technology.
Bonazzi, Fritscher, Zhan & Pigneur (2010)	Revenue sharing business model (collaboration with third party)	Third party services should be employed for customer-privacy as it is the main value creation criteria.
Khawar, Kamran &	Revenue sharing,	Type of business model and the strategic

Weijun (2010)	Marketing and improved efficiency business models	decisions made depend upon the type of service provided by the organization. The operator has the centre-location in the network and mobility is the factor behind achieving profitability.
X. Wu, Zhang & Chen (2010)	Revenue sharing/ Value net business model	In order to generate profitable revenue streams, business model innovation is required focusing on customer value, cooperation with other players and change in organizational structure
Jan Ondrus & Pigneur(2005)	Revenue-sharing business model	Mobile network Operators should increase their collaboration with financial institutions to increase competitive advantage with respect to payment scheme.
Jianming Zhu, Wang & Ma (2004)	User fee business model	In case of multiple service providers, the concept of micro-payment can be used. This characterizes a greater collaboration between different operators and the charge of small fee from consumers based on amount of services used.
Mark de Reuver et. al (2009)	User fee/ Revenue sharing business models	Operator centered business models cannot work in the future so new business models centered on different players will materialize. Different models for creation of value have been presented.
Karrberg & Liebenau (2007)	Value net	Business plan based on value network integration is suitable to achieve competitive advantage in the long run as shown by case study in Japan.
Shixi Luo & Huihui Gu (2010)	Value net	A greater collaboration between the demand and the supply results in highest profits and form win-win situation compared with no co-operation at all.
Y. Wu, Lin, & H. Wu. (2007)	Value net	In a changing environment, a value-net customer based business model with integration of different functions in industry can help to achieve objectives.
Unni & Harmon (2003)	Value net	Network providers and service providers should focus on development of services that arouse greater public interest.
Mingdun Xie, Zhang & Zeng (2009)	Value net	Value net approach to the business model with the network operator at the centre. The ability of service providers is a key factor to compete with others so it must be improved.
Liu & Zhou (2011)	Value net	Value net model with the customer at core integrates each function in value chain well and can realize the demands of customer which are source of main revenue.

Shao & Wu (2010)	Value net	A new value chain model is needed and conventional monopolistic business model cannot be used for an extended period of time.

The summary shown in the table above represent that focus from traditional operator focused business models has shifted towards more dynamic value net models. In the literature, authors point out that the choice of a specific business model greatly affects the performance of companies and the quality of service (C.L.Nicholls-Nixon & Woo, 2003). Thus it is of utmost importance for companies to choose the business models which can fulfill the requirements of customers, create value for all the stakeholders and help them in evolving continuously in a changing environment. Value net approach greatly fulfills these requirements. Ideal situation is to use a combination of business models but it depends on the size of market, regulation practices and number of competitors. For example, a telecom company operating in Europe faces different challenges as compared to one operating in China. The purpose of this theoretical analysis is to help managers have an idea about the various business models and to help them realize the importance of an effective business model. Due to the continuous advancements in technology, companies still have not found the right solution and are experimenting based on their own resources and trends of market. While there is no standard for a business model in m-commerce at the moment, but in the future a combination of different business models can become a possibility.

EMPIRICAL ANALYSIS

In this section the focus is on empirical analysis regarding strategic decisions. There is still scarcity of empirical evidences regarding business models. The papers selected in this section explain the results and can give readers an idea about making decisions in a specific market. Moreover most of the empirical findings in literature are concerned with behavior of customers or adoptability of certain application with the exception of Mark de Reuver, Bouwman & Haaker (2009) , who have identified the key success factors and additionally show that design of business model leads to value creation. Decision makers cannot deny the importance of such an analysis as it will help them in making decisions based on customer preferences. This is also the core logic of value net business model. However, the results achieved in one area do not mean that these can be applied in different areas. Different countries have different policies regarding mobile technology and obviously user trends are different as well. The table below represents the empirical review of literature:

Authors	**Data Sample collected from**	**Main Results Achieved Regarding Strategic Decision Making**	**Methodology**
Androulidakis & Kandus (2011)	Eastern-Southern Europe	Variable tendencies of using m-commerce in different areas, provides decision makers with better understanding of market in each country.	Statistical Analysis

Byunghwa Yang, Youngchan Kim & Yoo. (2012)	Korea	Mobile technology and advertisements effect user's perceptions. Experienced users have greater ability to distinguish information technology.	Structural Equation Modeling
Chen Xin (2009)	Denmark	In Danish market, low pricing schemes (69.5%), good coverage (39.2%) and reputation (27.8%) are most important criteria for customers to choose a particular network.	Case study with data analysis
Chia-Ling, Rudolf, Noemi & Parissa (2012)	Japan/Australia	Users in different areas react differently to mobile based advertising. Decision makers must make strategies based on information.	Confirmatory Factor Analysis
Ching-Chang Lee, K. Cheng & H. Cheng (2007)	Asia-Pacific	Personal digital assistant (PDA) for performing daily tasks in an insurance company is suited based on a higher level of data/information quality maintained.	Hypothesis Testing/ Regression Analysis
Ching-Yi Chang, Wang & Fu (2009)	China	In order for companies to compete internationally, R&D, distribution and marketing and sales functions of a company must be improved.	Analytical Hierarchy Process (AHP)
Ebibi, Snopce, H., Fetaji, B. & Fetaji, M. (2012)	Macedonia	Incorporating m-commerce based software in the company business process resulted in greater profitability with 60% of managers answering that it resulted in greater employee efficiency.	Statistical Analysis
Hong, Fiona & Keng Siau. (2005)	USA	Improvement in work process, knowledge sharing and enhanced sales & marketing effectiveness are the main strategic results achieved by mobile technology.	Value Focused Thinking model
Mark de Reuver et.	Europe, USA, Latin America,	The value created by mobile organizations can be related to	Structural Regression

al (2008)	Australia, South Africa	the design of business-model. Risks and organizational structure are two critical factors in business model design.	Analysis
Mehmet Karacuka et al. (2011)	Turkey	The demand of pre-paid customers is more elastic and more price-sensitive compared to post-pay customers. For the post-pay market the price elasticity is -0.36 compared to -0.20 for the pre-paid market. Fixed line services are difficult to substitute for post-pay customers.	Dynamic panel data analysis
R. C. Basole (2008)	108 companies around the world	Decision makers are provided with a visual model to view the competitive position of each company around the world. Google and Apple have good chance to take central role in future.	Visualization model
Tao Zhou (2013)	China	To increase revenues, decision makers must focus on improving service quality, system quality and information quality as they have positive effect on customer's trust and satisfaction. Service quality has the maximum effect on customer trust (γ=0.39).	Structural Equation Modeling
Wenqing & Cheong (2005)	China	The type of strategic planning used in m-commerce industry directly influences the mobile commerce diffusion process in the market.	System Dynamics Simulation
Wei Huang (2010)	China	A competitive model has been proposed for Chinese market. All categories of 3G applications have a high chance of acceptance in market with micro-payment, business information and mobile gambling being the least risky with standardized co-efficient values of 0.92, 0.91 and 0.89 respectively.	Structural Equation Model

W-T. Wang & H-M. Li (2012)	Taiwan	Mobile-service attributes of personalization, identifiability and enjoyment have positive effect on key brand equity factors (brand loyalty, perceived quality) which then influence the purchasing intent of customer.	Structural Equation Model

Most of the empirical evidences relate to different findings that might help decision makers to launch applications that will have higher acceptance chance in market and enables them to create profits. The model by R. C. Basole (2008) can be useful to view the competitive situation of different companies across the globe and to view which companies have a greater chance of dominating the market in coming years. Mehmet, Haucap & Heimeshoff (2011) compare the price elasticities of pre-paid and post-pay customers in Turkish market.

DISCUSSION AND CONCLUSION

Mobile technologies have undergone enormous changes in the past and the future trend also depicts greater competition between companies on the ground of technology and pricing schemes. In the literature, many authors have discussed the positive impact on value of firm resulting from using IT (Ho Geun Lee, Dong Hwan Cho & Seong Chul Lee, 2002) but still, companies have to design their business models and make strategies which enable them to achieve maximum benefits. However, the lack of standards for business models in this industry does not bode well with decision makers. The brief summary of theoretical analysis is given below:

Business Model	**Literature**
Value Net	Shixi & Huihui (2010), S Jihong & W Danhong (2010), X Wu Et Al. (2010), Liu & Zhou (2011), Karrberg Et Al. (2007), M. Xie Et Al. (2009), Unni & Harmon (2003), Y. Wu Et Al. (2007), Shixi & Huihui (2010)
Revenue Sharing	Y.F.Kuo & C.W.Yu (2006), Mark De Reuver Et. Al (2009), X Wu Et Al. (2010), K. Hameed Et Al. (2010), Unni & Harmon (2003), Jiang & Zhao (2006), Bonazzi R. Et Al. (2010), Jan Ondrus & Yves Pigneur(2005)
User Fee	Mark De Reuver Et. Al (2009), J. Zhu et al. (2004)
Improved Efficiency	Y Zhang & N Zhang (2011), Khawar Et Al. (2010)
Advertising	F. Buellingen Et Al. (2004), Huang Et Al. (2007)
Marketing	V. Shankar Et Al. (2009)

The table shows that most of the authors have discussed value net model followed by revenue sharing model. Value net model has received a wide acceptance in last few years but it will still take time for a particular model to become a standard in this industry. The trend is shifting from traditional models to more value net approach. A combination of both might become a possibility in the future. There is still need for more empirical analysis in this area when actual results or profitability of different companies using different business models in same environment are compared. The success and continued existence of any firm is depicted by the prospective value creation opportunities it can generate. As the environment surrounding any company in technological sector is never constant due to legislation, innovation, uncertain demands or increase in competition, only those firms will be able to create long term competitive advantage that are dynamic and have the ability to change their business models or strategies.

Mobile business is a complex network of different players in competition with each other to capture value. The collaboration with companies in form of agreement is the solution for the future. With different service providers and application developers, it has become harder for companies to choose the one that will open value streams for company and to manage the financial aspects related to it.
Based on the information collected by theoretical and empirical evidences, we are in a position to highlight some important questions for future research in the complex network of mobile commerce.

RESEARCH QUESTION 1:
How can the telecommunication market structure and the government policies in a country effect the business model selection?
The telecommunication industry structure varies greatly in countries. The impact of government regulation and market structure on business model selection can be calculated by evaluating the business models in China and in Europe. China mobile has a dominant position in Chinese market compared to relatively open market structure in Europe. A cross-national comparative case study or interviews with experts can help to answer this question. Jiang Yu & Lanxiang Zhao (2006) have discussed the business model in highly regulated Chinese market. Similar studies and comparisons between other countries can offer a useful insight to researchers.

RESEARCH QUESTION 2:
How can the players in M-commerce value chain structure and manage the interactions between them?
The literature across the world points out the need of different players to co-operate and interact with each other in order to create win-win situations. However, there is a need to discuss this issue in greater depth that what kind of relationships or understanding in terms of contracts can all the players agree upon and what are the critical success factors in such a situation. Case-studies or interviews can help researchers in future to address this problem.

RESEARCH QUESTION 3:
How the consumer behavior and lifestyle can affect the design of business model?
Value net models combined with revenue sharing models can be a solution in the future but the affect of consumer's lifestyle on business model remains to be seen empirically. Comparative analysis between telecom operators might be useful in this case. Review of theoretical analysis points out different preferences of customers across the globe. Androulidakis & Kandus (2011) discuss the different behaviors in Southern and Eastern European countries. Similarly, W-T. Wang & H-M. Li (2012) provide us with an insight into Taiwan mobile industry preferences but papers concerning the quantitative effect of such behavioral differences on company's decision do not exist and it can provide an interesting area for future research.

RESEARCH QUESTION 4:
What is the exact profitability or value gain achieved when mobile operators shift from traditional business model to a more adaptive value net model?
Research highlights that traditional business models are not well suited to provide profitability in the long run. Researchers are now focusing more on value nets or combination of different models. Empirical analysis of companies shifting from traditional to value nets model are not available. Case studies and data analysis can be helpful in this case.

RESEARCH QUESTION 5:
What will be the impact of business models when new paying methods using innovative technologies like near field communication (NFC) or quick response (QR) codes are used?
Business models have become more user-centered but the changes occurring because of new methods like NFC have to be taken into account. Research can be carried out using NFC as a case study in a payment environment. The profit sharing between operator, service provider and the manufacturer of mobile can also be an interesting topic of research in this case.

RESEARCH QUESTION 6:
What are the factors that hinder the adoption of a standard in m-commerce business models?
In the literature, we found very little information about the factors that affect the adoption of business model standard. Nir Kshetri (2007) highlights the economic and sociopolitical barriers in the adoption of business models in developing countries. Similar case studies in other parts of world or in developed countries can provide with an insight of the important factors and barriers in the adoption of business models.

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