

M-commerce Driving Factor and Transaction Variables: Aspects That Constructs The M-commerce Model

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Abstract- The study is specifying the M-commerce's concept of driving factors and M-commerce transaction variables. The work proves that the driving factors and M-commerce transaction variables are constructing forces for the M-commerce Model. There is clarification of M-commerce models and their related stimulating driving factors and M-commerce based transaction variables^[5]. Variables and content of M-commerce's related driving factors are also indicated in the work. The study also throw the light on existing driving M-commerce's factors as well as throw the light on an advance driving factor and related M-commerce model. The study specifies that M-commerce model is based on M-Commerce driving factors as well as M-commerce transaction variables. The work introduces advance equations. (1) M-Commerce model is depending on M-commerce driving factors and M-commerce driving factor is depending on M-commerce transaction variables. (2) M-commerce Model is depending M-commerce driving factors individually, (3) M-commerce Model is depending on M-commerce transaction variables separately. The work utilized case study as research methodology. Analytical study has undertaken for justifying M-Commerce model is depends on M-Commerce driving factors and M-commerce transaction variables.

Keywords- M-Commerce, Driving Factor

I. INTRODUCTION

The study can specify the factors that must be taken into force in implementing m-commerce applications 1. Mobility, 2. Personal identity and built in payment mechanism, 3. Location based service, 4. Time-critical impulse purchasing, 5. Special Market Niches.¹ The forces that impel its growth 1. Technology innovation 2. Evolution of new value chain 3. Active customer demand.¹

A newly introduced M-commerce driving factors "Rapid Growth of Customer Use and Adoption of The Broadcasting Agent and Receivers: A Driving M-Commerce Factor"² have played important role for estimating present study^[5].

The forces behind the M-commerce "Revolution" have explained by Norman Sadeh.^[2] The work stated forces like 1. Explosion of mobile device, 2. Union of mobile telecommunication networks and Internet. 3. Evolution to third-generation telecommunication technologies and higher data rate they support. 4. Appearance of a broad set of personalized, location-Sensitive and context-aware applications and services, etc. Through out the work M-commerce driving factors and M-commerce transaction variable played an important role for deciding M-commerce model. The work specifies the M-commerce driving factor is depending on M-commerce

transaction variable. The equation $\sum_{i=1}^n \text{Tr.V}_{(i)} \rightarrow \text{MDF}$ specify dependency^[5]. The work undergone with the below mention equations.

$$\text{Equations (1): } \sum_{i=1}^n \text{Tr.V}_{(i)} \rightarrow \text{MDF} \rightarrow \text{MM}$$

$$\text{Equations (2): } \text{MDF} \rightarrow \text{MM}$$

$$\text{Equations (3): } \sum_{i=1}^n \text{Tr.V}_{(i)} \rightarrow \text{MM}$$

All the dependencies strengthen M-commerce Model.

II. LITERATURE REVIEW

The forces behind the M-commerce "Revolution" have denoted by Norman Sadeh.^[2] The work instructed forces like 1. Explosion of mobile device, 2. Union of mobile telecommunication networks and Internet. 3. Evolution to third-generation telecommunication technologies and higher data rate they support. 4. Appearance of a broad set of personalized,

location-Sensitive, and context-aware applications and services , etc. Driving force for M-Commerce success have explained as

1. Technology Modernization
2. Value Chain Development and
3. Active Customer demand.^[1]

Factors Driving Electronic Commerce Initiative in Malaysian' Organization the work carried out by Ali Khatibi, Abasanul Haque Hishamuddin Ismail and Shameem Al Mahmud. In his work they explain factors driving E-commerce are as follow

1. business values
2. Technology Infrastructure,
3. Customer values and
4. Cooperative regulatory environment.^[3]

The key driving factors have explained by The Silicon Valley World Internet Center and its programs supporter during August 29,2001 at United States.^[4] The study denoted the top driving factors

- 1.Usability
- 2.Contextual Marketing
3. Personalization.

The study taken important support from the work that has introduced advance M-driving factor: Trivedi Jaydipkumar H, Dr J G Pandya, Trivedi Prakash H, Patel Jignasha B, Rapid Growth of Customer Use and Adoption of The Broadcasting Agent and Receivers: A Driving M-Commerce Factor, IOSR Journal of Engineering Vol. 1, Issue 1, pp. 61-65^[5].

III OBJECTIVES

1. Clarify the M-Commerce Model on the basis of driving force And Transaction variables.
2. Indicates and study the driving force and Transaction variables.
3. Prove that M-commerce model depend on driving factors.
4. Prove that M-commerce model depend on M-commerce Transaction variables.
5. Prove that M-Commerce model is depending on M-commerce driving factors and M-commerce driving factor is depending on M-commerce transaction variables.

IV RESEARCH METHODOLOGY

For estimating the present work, case study is an essential research methodology.

V HYPOTHESIS

Under mention hypothesis have postulated through out the research work.

1. M-commerce driving factor and M-commerce transaction Variables are the aspect that constructs the M-commerce model.
2. M-commerce model is depending on M-commerce driving factors.
3. M-commerce model is depending on M-commerce transaction

- Variables.
4. M-commerce model is depending on M-commerce driving factors and M-commerce driving factor is depending on M-commerce transaction variables.

VI. CONTENT OF THE DRIVING FORCE

The content of the driving force lead towards the development of the M-commerce model. The M-commerce factor provides overall indication for a particular model.

Content Indications:

1. Services: Services based on M-commerce transaction are the indications of the driving force for a M-commerce model.
2. Background: Background based on M-commerce transaction is the indication of driving force for a M-commerce model.
3. Transaction: Transaction itself based on M-commerce transaction indication of the driving force for a M-commerce model.
- 4 Payment: Payment of the M-commerce transaction is the indication of driving force for a M-commerce model.
5. User: User based on M-commerce transaction are the indication of the driving force for a M-commerce model.
6. Protocol: Protocol based on M-commerce transaction is the indication of the driving force for a M-commerce model.
7. Player: Player based on M-commerce transaction is the indication of the driving force for a M-commerce model.
8. Technology: Technology based on the M-commerce transaction is the indication of the driving force for a M-commerce model.
9. Device or Tool: Device or Tool based on M-commerce transaction is the indication of the driving force for a M-commerce model.
10. Nature: Nature based on M-commerce transaction is the indication of the driving force for a M-commerce model.

Ultimately all the contain utilizing as M-Commerce transaction variable. The equations are using M-Commerce transaction variables.

VII ADVANCE EQUATION THAT IS SUPPORTING M_COMMERCE MODEL

Equitation for deciding MDF based on Transaction variable, MM based on MDF at the same time MDF based on Transaction variable, MM is based on MDF once again MM based on MDF, MM based on two different thing equally (1) Transaction variable as well as (2) MDF.

(1) Equitation for deciding MDF (M-commerce Driving Factor) based on Transaction Variable:-

$$\sum_{i=1}^n \text{Tr}.V_{(i)} \rightarrow \text{MDF}$$

Explanation:-

Equitation for deciding MDF (M-commerce Driving Factor) based on Transaction Variable has already been proved [5]. It explained as $Tr.V(1) + \dots + Tr.V(n) \rightarrow MDF$. The business transaction variable is important for recognizing or deciding of the M-Commerce driving factor. The study has provided a classification of the different business transaction which ultimately leads to the m-commerce driving factors. The equation indicated that MDF (M-Commerce Driving factor) depend on $Tr.V(1) + \dots + Tr.V(n)$ (Sum of the transaction variable) [5].

(2) Equitation for deciding MM (M-Commerce Model) Based on M-commerce Transaction Variable and MDF (M-commerce Driving Factor):-

$$\sum_{i=1}^n Tr.V(i) \rightarrow MDF \rightarrow MM$$

Explanation:-

The equation imply that MM (M-Commerce Model) is depending on MDF. MDF is depending on M-Commerce Transaction. On the basis of the business transaction done by customer, the study introducing the business transaction variable and M-Commerce driving factor.

Transaction variable using as $Tr.V(1)$, $Tr.V(2)$, $Tr.V(3)$,... $Tr.V(n)$. Business transaction matter or content taking as M-commerce based business transaction variable. In the business transaction, a service of the transaction taking as $Tr.V(1)$, Background of the transaction taking as $Tr.V(2)$, Transaction taking as $Tr.V(3)$, Protocol used in the transaction taking as $Tr.V(4)$, User based on transaction taking as $Tr.V(5)$, Player based on transaction taking as $Tr.V(6)$, Payment based on transaction taking as $Tr.V(7)$, Technology based on transaction taking as $Tr.V(8)$. Device or tool based on transaction taking as $Tr.V(9)$, Nature of the transaction taking as $Tr.V(10)$. MDF is depending M-Commerce Transaction variables. [5]

Now, The MM (M-commerce Model) is depending on MDF. The dependency has been observed through the case study.

Case Transaction 1:-

No	M-commerce Transaction Variable (Business transaction matter or content) Service, Background , Transaction itself , Protocol, User, Player, Payment, Technology. Device or tool, Nature of	MDF (M-Commerce driving factor)	MM (M-Commerce Model)
1			
2			

	the transaction		
1	Tr.V(1) -Charge user for the content they access -Location base service -To traffic condition -News -Game -Entertainment Tr.V(2)- -Mobile Transaction Involving small fees -User Pay For News -To traffic condition -Entertainment user will pay for -i-Mode content providers were charging a monthly subscription. Tr.V(3)-Mobile communication infrastructure and network background Tr.V(4) -WAP Wireless Application Protocol Tr.V(5) -Customer from all economic sectors of the technology -Mobile device user Tr.V(6) -Mobile device manufacturer are players like Nokiya, Motorola etc. Tr.V(7) -Subscription fees -Transaction fees -On actual basis Commission. PayPerMinute Tr.V(8) -Mobile Technology -Using WAP'S UML (3G Wireless digital Cellular Telephone technology) Tr.V(9) WAP enable mobile Phone -Wireless PDA -Video Camera -Palm hand held Wireless Laptop Tr.V(10) -Serial in nature	Value Chain Evolution	User Fee Business Model
2	Tr.V(1)	-Active	NTT-

<p>-i-Mode Services -SMS based content services -Commercial services based on SMS -Ringing Tones and ICON Services. -WAP services-MMS -Operator Create Wireless market -Poly Phonic Ring Tone -Mobile Multi Media Service Tr.V(2)- -Marinating the account Transaction -Bookkeeping Bank -E Payment M Payment -Movie Ticket Purchase -Banking -E-Money -NFC Times News Tr.V(3) -Wireless Network -Cellular Network Mobile Communication Infrastructure -9.6 PDC Packet Network. Tr.V(4) -WAP Wireless Application Protocol Tr.V(5) -Customer or mobile device user Tr.V(6) -Video Phone -NTT DoCoMo FOMA 2G/3G dual mode phone-Nokia Tr.V(7) -Credit Card -Pay as-you-use Mechanism Tr.V(8) -Mobile Technology -Mobile Multimedia -Using c-HTML Tr.V(9) -PC-WAP enable or c-HTML enable phone-Video Phone Tr.V(10) -Do not preserve</p>	<p>Customer Demand</p>	<p>DOCOMO</p>	<p>3</p>	<p>Sequential in nature Tr.V₍₁₎ -Broadcasting Agent provides service for customer. Tr.V₍₂₎ -Business Transaction done automatically and semi automatically using broadcasting agent and receiver Tr.V₍₃₎ -Data communication and process for different broadcasting agent and receiver agent and receiver. -Wireless Network -Cellular Network Mobile Communication Infrastructure. -Network for NFC Tr.V₍₄₎ WAP Wireless Application Protocol -Broadcasting agent based protocol. -Simple Fixed-delay broadcasting protocol -Harmonic broadcasting protocol -Adaptive Pyramid Protocol. Tr.V₍₅₎ -Customer or mobile device user -Audience -Spectator Tr.V₍₆₎ 3G Competent Mobile -3G TV -Data receiver -PC -Radio broadcast receiver -Telephone Broadcast receiver -Cable radio broadcast receiver -Satellite Broadcast receiver -Web Casting Receiver Tr.V₍₇₎ -Credit Card -Pay as-you-use</p>	<p>Rapid Growth of customer Use and Adoption of the broadcasting Agent and Receiver</p>	<p>Broadcasting and It's Receiving Agent Based M-Commerce Model</p>
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Mechanism -NFC agent -E-payment -M-payment Tr.V ₍₈₎ Mobile Technology -Mobile Multimedia -Using c-HTML -Embedded Technology -FM broadcasting Technology -Digital Broadcasting Technology -Digital radio broadcasting Technology -Digital audio broadcasting Technology -Digital Multimedia broadcasting Technology. -DVB-T System. Tr.V ₍₉₎ -PC -WAP enable or c- HTML enable phone - Video Phone Tr.V ₍₁₀₎ Do not preserve Sequential in nature -All the broadcasting agent and receiver based transaction		customer Use and Adoption of the broadcasting Agent and Receiver	Receiving Agent Based M- Commerce Model
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Result: The case study indicates that M-commerce model have dependency on M-commerce driving factor.

(4) Equitation for deciding MM (M-Commerce Model) Based on M-commerce Transaction Variable:-

$$\sum_{i=1}^n \text{Tr.V}_{(i)} \rightarrow \text{MM}$$

Explanation:- M-commerce transaction variables are small bits for constructing M-Commerce model. The transaction variables are depending on real functionality of business transaction done by the customer and contents or matter related to Business transaction.

The case transaction and the work has undergone with observation on different M-commerce transaction variables and their related depended M-commerce models.

Case Transaction 3:-

No	M-Commerce Transaction Variable	MM
1	Tr.V(1) -Charge user for the content they access -Location base service -To traffic condition -News -Game -Entertainment Tr.V(2)- -Mobile Transaction Involving small fees -User Pay For News -To traffic condition -Entertainment user will pay for -i-Mode content providers were charging a monthly subscription. Tr.V(3)-Mobile communication infrastructure and network background Tr.V(4) -WAP Wireless Application Protocol Tr.V(5) -Customer from all economic sectors of the technology -Mobile device user	User Fee Business Model

Result: MM is depending on MDF, and MDF is depending on M-commerce transaction variable^[5].

(3) Equitation for deciding MM (M-Commerce Model) Based on MDF (M-commerce Driving Factor):-

$$\text{MDF} \rightarrow \text{MM}$$

Explanation:-

All most all M-commerce models have dependencies with their own MDF. Independently MDF took great part for deciding M-commerce Model. MDF leads towards an idea about constructing related M-commerce model. MDF is recognizing as a variable through which different real driving factor working as parameters. The work has undergone with observation on different M-commerce models and their related depended M-commerce driving factors. The case transaction highlights the dependency with their related M-commerce model.

Case Transaction 2:-

No	MDF	MM
1	Value Chain Evolution	User Fee Business Model
2	Active Customer Demand	NTT-DOCOMO
3	Rapid Growth of	Broadcasting and It's

	<p>Tr.V(6) -Mobile device manufacturer are players like Nokiya, Motorola etc. Tr.V(7) -Subscription fees -Transaction fees -On actual basis Commission. PayPerMinute Tr.V(8) -Mobile Technology -Using WAP'S UML (3G Wireless digital Cellular Telephone technology) Tr.V(9) WAP enable mobile Phone -Wireless PDA -Video Camera -Palm hand held Wireless Laptop Tr.V(10) -Serial in nature</p>		<p>Infrastructure -9.6 PDC Packet Network. Tr.V(4) -WAP Wireless Application Protocol Tr.V(5) -Customer or mobile device user Tr.V(6) -Video Phone -NTT DoCoMo FOMA 2G/3G dual mode phone-Nokiya Tr.V(7) -Credit Card -Pay as-you-use Mechanism Tr.V(8) -Mobile Technology -Mobile Multimedia -Using c-HTML Tr.V(9) -PC-WAP enable or c-HTML enable phone-Video Phone Tr.V(10) -Do not preserve Sequential in nature</p>	
2	<p>Tr.V(1) -i-Mode Services -SMS based content services -Commercial services based on SMS -Ringing Tones and ICON Services. -WAP services-MMS -Operator Create Wireless market -Poly Phonic Ring Tone -Mobile Multi Media Service Tr.V(2)- -Marinating the account Transaction -Bookkeeping Bank -E Payment M Payment -Movie Ticket Purchase -Banking -E-Money -NFC Times News Tr.V(3) -Wireless Network -Cellular Network Mobile Communication</p>	NTT-DOCOMO	<p>Result: The case study indicate that M-commerce model have dependency on M-commerce transaction variable.</p> <p style="text-align: center;">VIII DATA ANALYSIS</p> <p>From Case Transaction 1 -From the case transaction 1 the work instructed. Three different M-Commerce model like 1. User Fee Business Model, 2.NTT-DOCOMO, 3. Broadcasting and It's Receiving Agent Based M-Commerce Model. Three different model has their own dependency with their M-commerce driving factor Like</p> <ol style="list-style-type: none"> 1. Value Chain Evolution 2. Active Customer Demand 3. Rapid Growth of customer Use and Adoption of the Broadcasting Agent and Receiver <p>-The same case transaction indicating MDF is depending on M-commerce Transaction Variables like 1.Service, 2. Background, 3. Transaction itself ,4. Protocol, 5. User, 6. Player, 7. Payment, 8.Technology, 9 Device or tool, 10. Nature of the transaction</p> <p>Utilization Of an equation:</p>	

$$\sum_{i=1}^n Tr.V_{(i)} \rightarrow MDF \rightarrow MM$$

The equation is parameterized and prove the dependency.

From Case Transaction 2

-From the case transaction 2, the work instructed MDF (M-commerce driving factor) and MM (M-commerce Model)

1. User Fee Business Model has dependency on MDF, Value Chain Evolution.
2. NTT-DOCOMO Business Model has dependency on MDF, Active Customer Demand.
3. Broadcasting and It's Receiving Agent Based M-Commerce Model has dependency on MDF, Rapid Growth of customer Use and Adoption of the broadcasting Agent and Receiver.

Utilization Of an equation:

$$\text{MDF} \rightarrow \text{MM}$$

The equation is parameterized and prove the dependency.

From Case Transaction 3

-From the case transaction 3 the work instructed M-commerce Transaction Variables and observed Tr.V(1), Tr.V(2), Tr.V(3), Tr.V(4), Tr.V(5), Tr.V(6), Tr.V(7), Tr.V(8), Tr.V(9), Tr.V(10).

- All the M-commerce Transaction Variables are the basics for M-commerce Model and Observed (1) User Fee Business Model (2) NTT-DOCOMO as M-commerce Models.

$$\sum_{i=1}^n \text{Tr.V}_{(i)} \rightarrow \text{MM}$$

Observed equation using M-commerce transaction variables for showing M-commerce model is based on M-commerce transaction variables. It also parameterized with the variables.

VIII RESULT AND CONCLUSSION

- The equation $\sum_{i=1}^n \text{Tr.V}_{(i)} \rightarrow \text{MDF} \rightarrow \text{MM}$ has parameterized and

obtained the MM M-commerce Model is depend on MDF (M-commerce driving factors) and also obtained MDF (M-commerce driving factors) is depend on M-commerce Transaction variable.

-The second equation $\text{MDF} \rightarrow \text{MM}$ denoted M-commerce model individually shown the dependency on MDF (M-commerce Model) and properly parameterized.

-The third equation $\sum_{i=1}^n \text{Tr.V}_{(i)} \rightarrow \text{MM}$ shown the M-Commerce

Model has dependency on Transaction Variables independently and also parameterized.

-The dependency shown in the all the three equation proves the basic aspect for constructing M-Commerce Model.

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