

Investment Analysis of Smart Connected Motorbike in Machine to Machine Application in Indonesia

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Abstract— At present the cellular operator is faced with difficult conditions, where the customer growth rate is at its peak. In terms of income, there was also a decline in growth because legacy services (voice & SMS) tended to decline due to threats from OTT. Therefore, a strategy is needed to survive this condition, one of which is to look at the digital market. The digital service business development strategy is carried out to be able to increase the company's revenue through the implementation of Machine to Machine (M2M) services given the promising potential and support of the digital ecosystem. But in reality, the implementation of digital services has not been able to have a significant impact on the company's revenue growth so that a new strategy is needed with a service innovation. This study aims to model M2M digital services into the Smart Connected Motorbike (SCM) service, as well as analyze the service delivery business model in the PT. XYZ so that it is expected to become a new source of income for cellular operators of PT. XYZ. Furthermore, this research will do investment analysis in machine to machine application. Moreover, this research also indicated that this implementation is also feasible to increase the company's earnings.

Keywords— Smart Connected Motorbike, Machine To Machine Application, Investment Analysis, Revenue

I. INTRODUCTION

The global telecommunications industry is currently faced with challenges where the penetration rate of the number of connections for fixed networks has decreased and even tends to be stagnant compared to the penetration rate of the number of connections from mobile networks, especially when comparisons between developed countries and developing countries are due for the construction of a fixed network requires considerable investment costs. This makes the development of mobile networks more of a better choice or alternative related to the required costs and faster time-to-market as shown in Figure 1. In addition, up to June 2014 almost 80% of the world's population has been able to access the 2G mobile network [1].

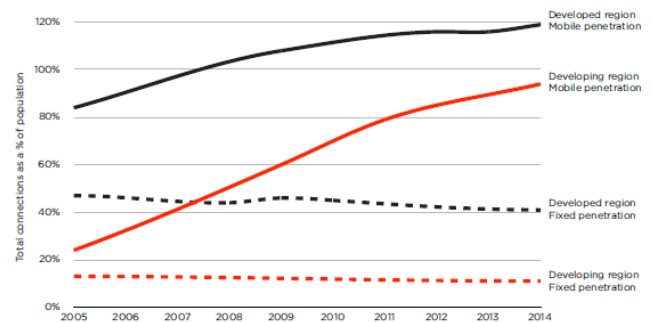


Fig. 1. Penetration of Fixed & Mobile Networks Against Population

This situation also occurred in Indonesia where mobile network penetration grew from 18.76% in 2004 and increased by almost 63% in 2009 which then reached a penetration rate of 91.72% in 2010 or equal to the number of customers of 220 million subscribers. However, even though the penetration of mobile networks can still grow, the most recent problem faced by almost all cellular operators is the fact that there is a decrease in the growth of the number of customers due to the cellular market that has entered the maturity stage or saturation according to the cycle shown in Figure 2. where Indonesia will reach 130% penetration in 2015 with a total of 330 million connections.

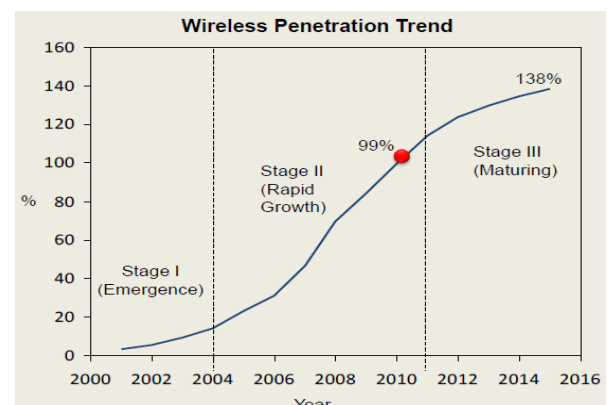


Fig. 2. Mobile Network Penetration Trends reach the Saturation Stage

One of the services included in a digital solution developed by PT. XYZ which has the potential of a rapidly growing business is machine-to-machine (M2M) service technology or also called non-human services. M2M services are services that connect between one device and another device which is usually an application, to exchange information bidirectional and automatically or without human involvement (or with human involvement but very limited) through communication networks so that information from these devices can be utilized by users for the purposes of subsequent business processes, such as for performance and operational efficiency, obtaining equipment statistics, and so on. This research will do investment analysis in machine to machine application. Moreover, this research also indicated that this implementation is also feasible to increase the company's earnings

II. LITERATURE REVIEW

Figure 3 illustrates simply the wireless M2M service system that is formed by 3 main domains, namely the device (device) along with the sensor module and modem, network (network) that provides connectivity and transmits data, and applications (applications) that process and display data and information

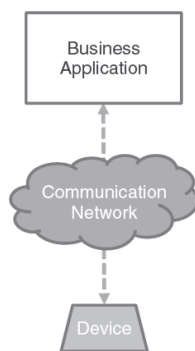


Fig. 3. M2M Service Configuration

Whereas according to the GSMA in explains that IoT is the coordination of several machines, devices or devices connected to the internet network through various network systems. These devices include items that are used daily such as smartphones, tablets and electronic equipment, as well as other machinery such as vehicles, monitors and sensors that are equipped with M2M communication to enable the equipment to send and receive data. In other words, M2M is an integral part of the IoT concept.

From this explanation, the M2M cellular that uses a SIM card is one of the technologies that support the IoT concept as shown in Figure 4. below.

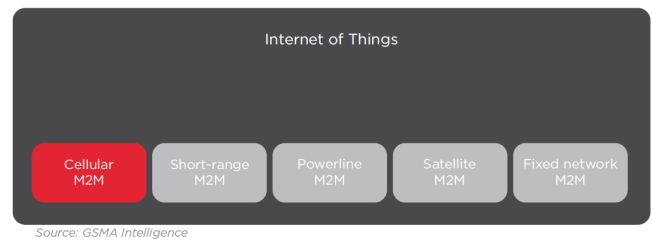


Fig. 4. M2M Position in IoT Coverage

III. METHOD

At present the telecommunications industry is experiencing a period of stagnation, where the growth in the number of customers has decreased due to the cellular market that has entered the stage of maturity or saturation. Cellular operators globally experienced a downward trend in revenue from legacy businesses such as voice services and SMS (short messaging service), one of the biggest causes of this was the rapid development of OTT (over the top) messaging application services.

As a result of the dynamic changes in the telecommunications business that presents new challenges, the operators of cellular operators are developing several strategies to obtain new sources of income, including the operators of PT. XYZ is by developing innovations in digital services by providing several Value Added Service (VAS) services that rely on existing data services and legacy services.

Therefore PT. XYZ must make different service innovations, integrated by looking at the needs and the market conditions and the technology trends going forward.

In this study, the authors propose a business model for digital services by utilizing M2M technology, namely the Smart Connected Motorbike (SCM) service. This research will use the scientific method approach (scientific method) with the conclusion taking process carried out by deductive method (deductive method) based on the results of the analysis of the business model and the economic feasibility analysis of SCM services. The pattern of research conducted is explanatory and predictive (Figure 5).

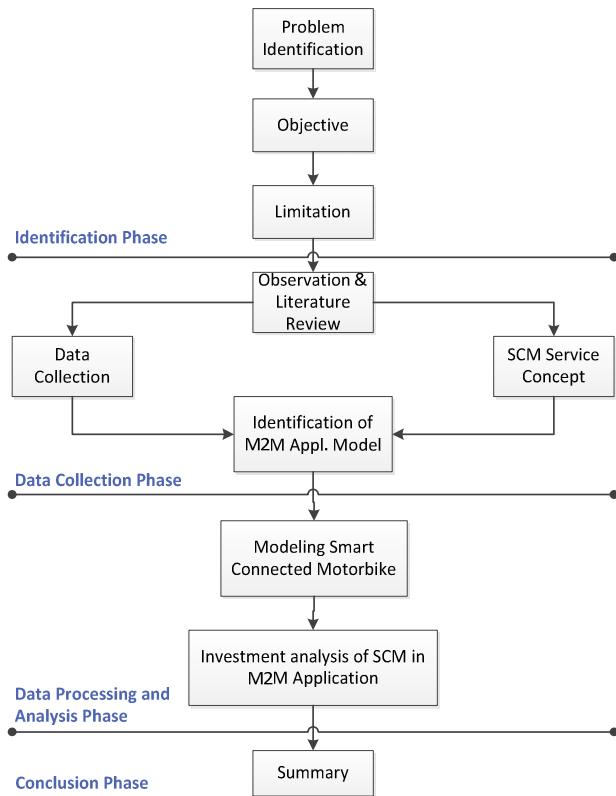


Fig. 5. Framework In The Research

3.1. M2M Services System Configuration

To access the features of M2M services for operational purposes, corporate customers and cellular operators can access the platform through desktop web applications (Fig. 6).

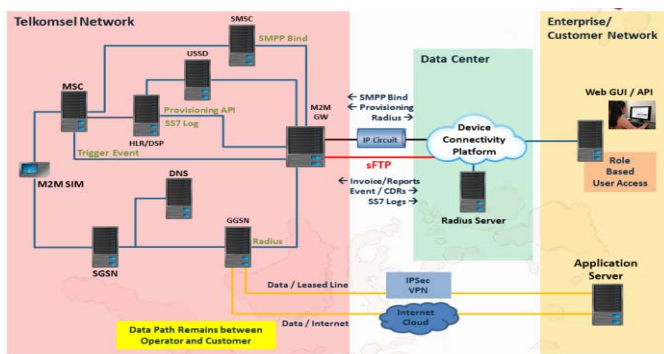


Fig. 6. M2M Platform Configuration System

3.2. Smart Connected Motorbike Service Concept

In accordance with the concept of a smart product, a product consists of mechanical and electrical parts, can be transformed into smart connected products (smart connected products) when combined with several other components such as sensors, microprocessors, data storage media, software applications and connectivity, so that it becomes a very

complex system. Apart from that, the concept of smart connected products must have at least 4 (four) new functions or capabilities, namely monitoring, controlling, optimization and independence.

Wireless connection capabilities are able to exchange information between the product and the environment or other systems.

3.3. System Architecture of Smart Connected Motorbike Service

This system architecture will enable SCM devices make communication with SCM server and vice versa. In the figure 7 is the architecture model for this service:

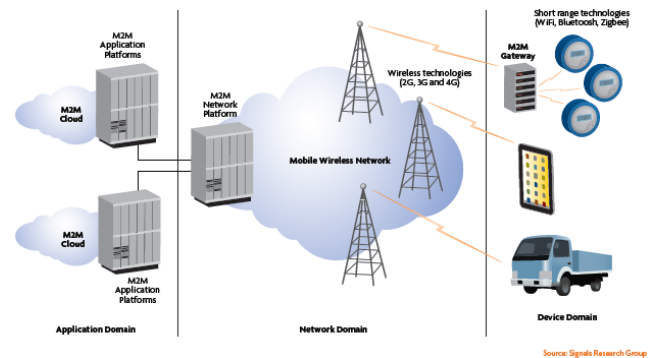


Fig. 7. M2M Service Network Architecture

3.4. Business Services M2M

The concept of platform M2M Device Connectivity Platform (DCP) in general which is used to support M2M services is shown in Figure 8. With this platform, the service provider can provide additional services to customers M2M form of several features that may help management of M2M services in addition to providing connectivity services and SIM card.

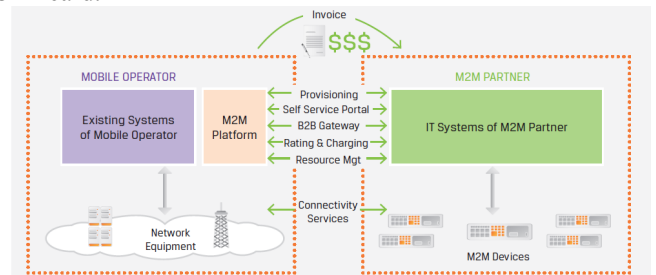


Fig. 8. Configuration Service M2M by M2M Platform DCP .

IV. RESULTS AND DISCUSSION

4.1 Digital Service

There are four (4) digital services become a pillar and developed today to boost the growth of digital ecosystems in Indonesia, namely:

1. Digital Lifestyle, which offers several products concerning the personal segment such as the World Games (mobile game), Payment Gateway Games, Social

- Media Package (social media), media portals, LangitMusik (digital music) and Moovigo (video service portal).
2. Digital Payment & Banking, which offers mobile-based financial services such as mobile banking and mobile e-money.
 3. Digital Advertising, which offers some services targeting corporate customers or SME (small medium enterprise) as LBA (Location Based Advertising), Bulk SMS, SMS Targeted, banners on internet content, Digital Signage and Vending Machine, which is a medium for promoting goods or services to prospective customers
 4. M2M Business, which offers connectivity services to corporate customers for system management Machine-to-Machine (M2M) which runs in the customer's business.

4.2 The concept of Smart Connected Services Motorbike (SCM)

Figure 9. is a simple concept of SCM products use motorcycles that have been installed with the device SCM then connect to the GPS and cellular networks and processed by SCM server, so users can easily take advantage of this service.

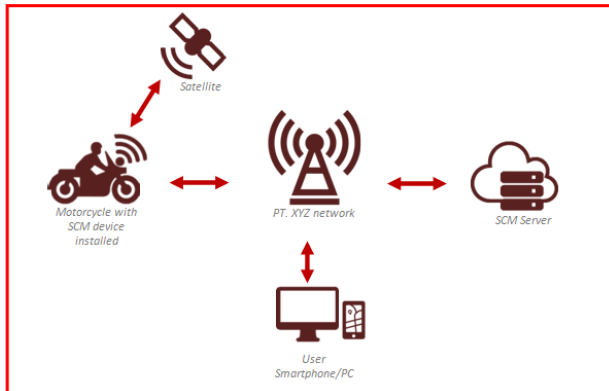


Fig. 9. The concept of Smart Connected Services Motorbike

4.3 Data Estimated Investment Cost (CAPEX)

Data estimated investment cost for the implementation of service delivery Smart Connected Motorbike (SCM) needs to know to determine the economic feasibility of the investment made. The investment costs incurred associated with the implementation of SCM services system is shown in Table 1 below.

Table 1 –Estimation Data CAPEX Smart Connected Motorbike

CAPEX	(USD)	(Rupiah)
Device Enabler		
2G Device	20	
3G Device	30	
Gyroscope Sensor	5	
Fuel Pump Connector	2	

Development Cost		
Application Customization		375,660,000
Android		
Application Customization		561,000,000
iOS		
Application Customization		619,240,000
Web Server		
Application Software		104,100,000
License		340,000,000
Professional Services		
Hosting Data Center & Server		
Setup Virtual Machine (VM)		2,000,000
Server		

4.4 Estimated Data Operating Cost (OPEX)

Estimates Data of operational costs (OPEX) on the implementation of SCM services issued regularly shown in Table 2 below.

Table 2 – Data Estimated Operating Cost (OPEX) Smart Connected Motorbike

OPEX	(Rupiah)
Hosting Data Center & Server	
Maintenance VM Server	48,000,000
VM Application Server	129,400,000
VM Data Center	185,320,000
Marketing Fee	
Above the line promotion	93,600,000
Below the line promotion	39,000,000

Marketing costs are the costs that used to support pemasaran of SCM services such as promotion Above The Line (ATL) and Below The Line (BTL). Promotion Above The Line (ATL) is the activity of marketing / promotion is usually done by a central management using top-line media in an attempt to form the desired brand image, for example: advertising on television with different versions. ATL nature of the media 'indirect' is about the audience, because it is limited to the reception audience. While the sale Below The Line (Media Line Down) is any marketing or promotional activities conducted at the level of retail / consumer with one of its objectives is to embrace the consumer to be interested in these products, for example: bonus program/gifts, events, coaching consumers and so on other.

4.5 Implementation Model

M2M ecosystem services consist of various businesses, where every business person play at least one business role, could be more. In 2012 the ITU-T (International Telecommunication Union - Telecommunication) recommend the business model for the application of M2M / IOT (ITU-T, 2012). Here's M2M business ecosystem recommended ITU-T as shown in Figure 10.

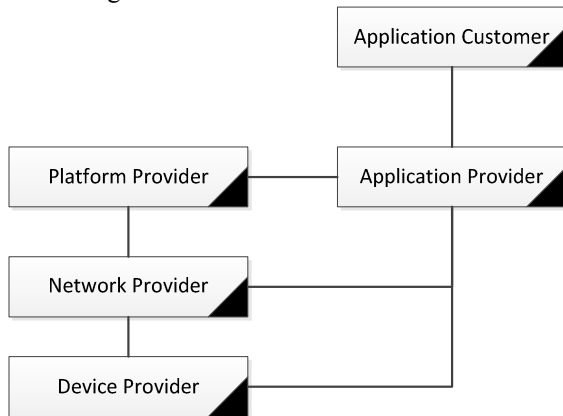


Fig. 10. Bussiness Ecosystem M2M

Here are five (5) business model recommendations issued by ITU-T, as seen in Figure 11.

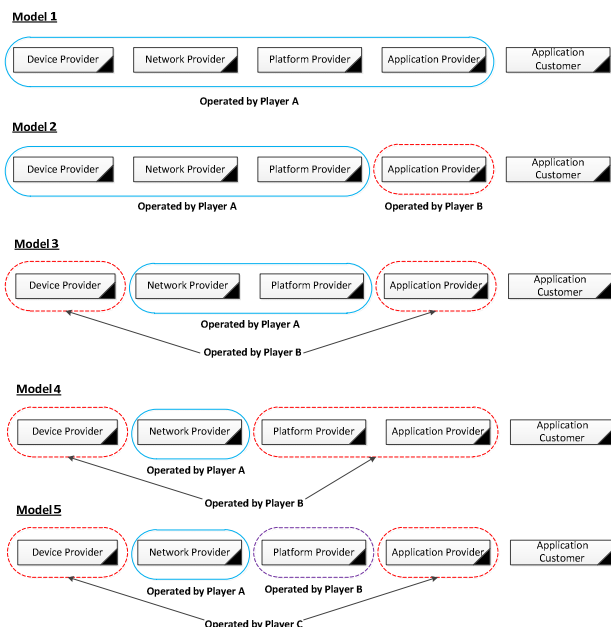


Fig. 11. Bussiness Ecosystem M2M.

V. CONCLUSIONS

Based on the analysis that has been done above, we make a conclusion as follow:

1. This study has explained about Investment Analysis of Smart Connected Motorbike in Machine to Machine Application in Indonesia, which obtained data that the

investment in smart connected motorbike application is very good to be done in Indonesia. this is because the growth of motorbikes is very rapid along with the growth of the existing population.

2. Analysis of the business model of this service can also continue to be improved by providing services in the form of added value so as to facilitate motorcycle users in Indonesia to improve security aspects.
3. The organizer can provide subsidies to the selling price of SCM devices so that it is expected for both individual and corporate users.

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