

New Business Model Of T-DMB Enabled Education In Universitas Islam Sultan Agung Semarang

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Abstract— The digital convergence between telecommunication and broadcasting is an emerging sector that drives a new business concept. Terrestrial-Digital Multimedia Broadcasting (T-DMB) is one of the convergence technology that potential to overcome the educational shortages by delivering the educational contents efficiently, effectively, widely and potential to expand the educational opportunities to the unreachable or remote areas. This paper intends to elaborate the new business models of T-DMB for education in UNISSULA. With the new application of T-DMB, education, research, administration services and contents resources can be integrated and accessed quickly and easily, anywhere and anytime. Therefore the benefit of T-DMB learning process can be used by students, lecturers, institution and other stakeholders.

Keywords : *business model; educational services; terrestrial digital multimedia broadcasting (T-DMB)*

I. INTRODUCTION

The dramatic growing combination of the Internet users and mobile phone systems are phenomenal in Indonesia. This phenomenon have changed our perception of communications where anyone can access various information easily, quickly, anywhere and anytime. According to that, the demands of various multimedia services, including data, audio and video, through the mobile devices are increased abruptly. Delivering the multimedia contents via digital broadcasting is one of the favourable solution to overcome the bandwidth limitations, reduce the cost and expand the value added application. It is also endorsed by the trend of the analog to digital broadcasting transition. Unissula strongly recognizes these new phenomenon which encourages Unissula to utilize the Terrestrial-Digital Multimedia Broadcasting (T-DMB) to overcome the educational shortages. T-DMB that implementing a convergence concept between a mobile digital broadcasting and ICT applications can be a strategic tools to expand educational opportunities and accelerate national socio-economic development. By transcending physical and spatial constraints, T-DMB bring unprecedented educational opportunities to people of all socio-economic levels. The conventional classroom

approaches to learning are being supplemented by learner-centred anytime anywhere learning, with the potential to increase participation and school retention rates.

In Indonesia, the traditional learning have some limitations where can not satisfy an increasing capacity in educational population or serve the rural area. Moreover it can not fulfill demand for access to learning at any time and any place. An key issue of lifelong learning needs to find the most effective way of reaching their target audiences for the learning services. It is also in the interest of many governments to make learning more widely available and accessible to their citizens. Access to knowledge and learning is now seen as a means of enabling a region to remain competitive in what is now becoming a global economy. The reskilling and upskilling of large numbers of people is now being considered as being critically important in particular for those who may not have had any education.

Flexible and distance learning methods are being seen as one way of meeting some of these needs, particularly with the use of new technologies school. The traditional technologies of distance learning include radio based learning, cable TV based e-learning and internet web based one have some limitations. A cable TV and radio based e-learning mode only present a passive receiving mode, furthermore, radio based learning provides only audio content. Web-based mode needs some base infrastructure and professional skills in spite of its benefit about active interactive operations. The development of Internet-based learning initiatives has revealed some shortages, including difficulties in the use of computers for some social sectors, the limited penetration of computers in homes and the uneven presence of broadband infrastructure. Therefore, DMB enable education is the attractive solution to overcome these problems.

Based on those, Unissula plan to develop and implement T-DMB system to improve the education process and overcome some shortages. As a preliminary process, this research bounds to investigate a business model of T-DMB enabled education in Universitas Islam Sultan Agung (UNISSULA) Semarang since T-DMB system affecting the value creation activities of educational institution. The goal of this study is to provide managerial insight so that UNISSULA can effectively exploit business opportunities

presented by the accelerating process of digital convergence and related technological innovations. This paper begins with discussing the research framework and methodology that be used to design the business model. The overview of T-DBM technology is then discussed to describe how the technology can satisfy the necessities. The new business model of DMB enabled education of UNISSULA is presented in the next section.

II. RESEARCH FRAMEWORK AND METHODOLOGY

A business model describes the rationale of how an organization creates, delivers, and captures the value [1]. The business model is like a blueprint for a strategy to be implemented through organizational structures, processes, and systems. Generally, business model innovation have one of four objectives:

- To satisfy the existing but unanswered market needs,
- Tto bring new technologies, products, or services to market,
- To improve, disrupt, or transform an existing market with a better business model,
- to create an entirely new market

In this section, the research framework of this work based on the Business Model Canvas that was initially proposed by Alexander Osterwalder [1] is presented. It is a strategic management template for developing the business models that enable to align the organisation activities by illustrating potential trade-offs. Figure 1 shows the visual chart that is recognized as The Business Model Canvas.

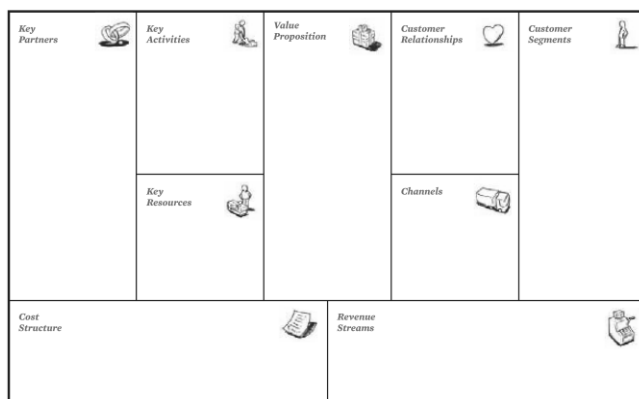


FIGURE 1. BUSINESS MODEL CANVAS BY OSTERWALDER [1]

The business model is described through nine basic building blocks that show the logic of how a company intends to make money. The nine blocks cover the four main areas of a business: customers, offer, infrastructure, and financial viability.

Infrastructures involve key activities, key resources and key partnership. The key activities define as the most important activities in executing a company's value proposition. Meanwhile the key resources are the resources that are necessary to create value for the customer. They are considered an asset to a company, which are needed in order to sustain and support the business. These resources could be human, financial, physical and intellectual. Key partnership aim to optimize operations and reduce risks of a business model. Organization usually cultivate buyer-supplier relationships so they can focus on their core activity. Complementary business alliances also can be considered through joint ventures, strategic alliances between competitors or non-competitors.

A value proposition of organisations is what distinguishes itself from its competitors. The value proposition provides value through various elements such as newness, performance, customization, design, brand/status, price, cost reduction, risk reduction, accessibility, and convenience/usability

Customers comprise the customer segment, channel and customer relationship. Customer segment aim to classify the customer base on the different needs and attributes to ensure appropriate implementation of corporate strategy meets. A company can deliver its value proposition to its targeted customers through different channels. Effective channels will distribute a company's value proposition in ways that are fast, efficient and cost effective. An organization can reach its clients either through its own channels (store front), partner channels (major distributors), or a combination of both. To ensure the survival and success of any businesses, companies must identify the type of relationship they want to create with their customer segments

Finances encompass the cost structures and revenue streams. The cost structures are the most important monetary consequences while operating under different business models. Meanwhile the revenue streams are the way a company makes income from each customer segment.

III. T-DMB AS COMMUNICATION AND BROADCASTING CONVERGENCE SERVICES

Terrestrial-Digital Multimedia Broadcasting (T-DMB) is a mobile broadcasting services that implementing a convergence concept of ICT applications. This application is characterized by three key differentiators: mobile; personal media; and interactive, including video, audio and data. Content is aggregated at the T-DMB centre and then sent to the mobile user terminals simultaneously through a broadcasting link , and sent interactive contents through a communication link. User terminals for T-DMB technology are numerous, include: mobile phone terminals, mobile television terminal, portable digital assistants (PDAs) and notebook/PC tablet [2,3].

T-DMB transmission system is a mobile digital broadcasting based on the Eureka-147 DAB system. Figure 1 shows how the T-DMB service is working through the Eureka-147 DAB system [3]. There are five kinds of data path in the Eureka-147 DAB system. Fast information channel (FIC) and Service information (SI) in this figure are to transmit the multiplexing and service information for configuration of some services, including the various data and audio. DAB audio frame path is used for the digital audio service, which is main service of the existing DAB system. Two main data channels, packet mode and stream mode path are given at the Eureka-147 DAB system. Of the two, the packet mode channels are used for the various data service. TDMB is using a stream mode data channel to transmit Audio and video (AV) stream which is made by the DMB processor. After all the data are multiplexed into single stream, it is encoded by OFDM encoder, and transmitted by RF signal. By using the Eureka-147 DAB system, all kind of services will be possible in T-DMB. The basic service of T-DMB is TV-like service in mobile or static environments. At this service, the target quality of video is VCD-like on 5~7 inch LCD display, and maximum picture resolution is 352×288 at 30 frame per second (fps). The secondly available service in T-DMB is a mobile-phone-like multimedia service. It's possible to do free services in mobile phone, like the conventional TV. In this case, the DMB receiver acts as high bandwidth data-box in my pocket for free reception, compared to the mobile communication network. High quality audio service is also available in T-DMB, which is main purpose of the existing DAB [3]. In this case, CD-like quality audio broadcasting beats analog FM, and some data service related to audio is also possible, such as slide show. Finally, T-DMB can provide a lot of data services, such as EPG, broadcasting website, news, weather, stocks, and traffic information etc.

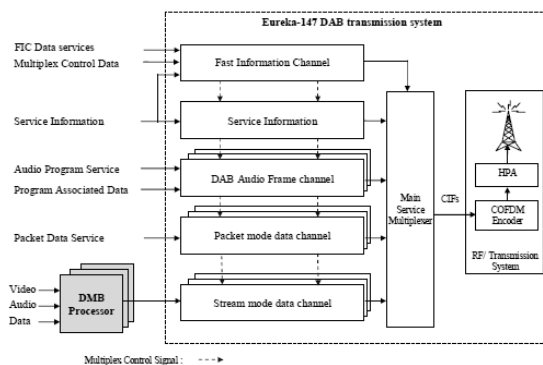


FIGURE 2. T-DMB SERVICE BASED ON THE EUREKA-147 DAB SYSTEM [3]

T-DMB realize the merging of telecommunications and broadcasting to form a new, converged value chain linking telecom, IT, media and e-commerce. T-DMB uses traditional on-air technology to deliver broadcasting content and utilizes a communication network as a return channel. A

combination of proven radio technology and bidirectional capability using a communication channel provides feature-rich interactive services. The reference model of interactive data service, which has been modified for adaptation to the T-DMB network is shown in Figure 3 [4].

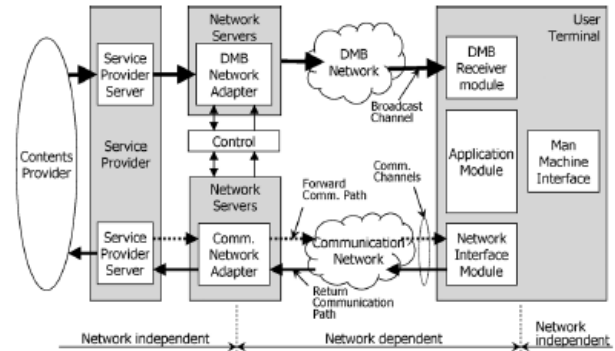


FIGURE 3. REFERENCE MODEL OF T-DMB INTERACTIVE DATA SERVICE [4]

The normal broadcast channel is transmitted through the DMB network adapter. This includes the DMB video encoders as well as the other components of DAB. For the communication channels of network-dependent components, the Code Division Multiple Access (CDMA)-based cellular communication network is being used in Korea instead of GSM, as in Europe. As shown in Figure 1, service providers of the interaction channel can operate a kind of return channel server, which communicates with the interactivity-enabled T-DMB receiver via the CDMA network, and gives users some information each time the user makes a request. Based on this framework, various types of interactive data services are being developed and introduced.

IV. CASE STUDY: NEW BUSINESS MODEL OF DMB ENABLED EDUCATION IN UNISSULA

UNISSULA have declared as World Class Islamic Cyber University and have transformed the academic and administration system from analog system to digital system using T-DMB technology. This technology enabled convergence between existing ICT system and mobile broadcasting system and is optimized for education, research and administration development therefore education services can be accessed quickly and easily, anywhere and anytime. In addition, the technology enabled the learning process is always documented.

UNISSULA have supplemented the conventional classroom learning with T-DMB enabled learner-centred anytime anywhere learning to increase participation and school retention rates. It is affecting value creation activities

generally done in terms of business models. In traditional business models of education process using the conventional classroom, key resources rely heavily on physical building and lecturers. Meanwhile in new business model of T-DMB enabled education, key resources rely heavily on T-DMB infrastructure, T-DMB contents, institutional trust and brands/images as well as human resources. Key partnership with policymakers in ICT and broadcasting, license/patent holder of T-DMB technology, research institution and other education institution are significant in the new business model. Moreover, another building block of the new business model such as channel, customer relationship, value proposition, revenue stream and key activities is transformed according to this technology. In figure 4, the new business model framework is shown and the explanation of building block is described in figure 5.

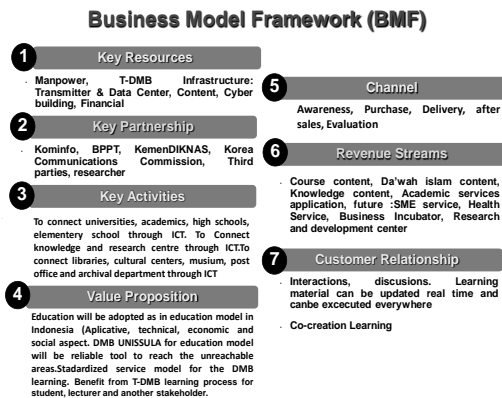


FIGURE 5. BUILDING BLOCK OF T-DMB ENABLED EDUCATION BUSINESS MODEL IN UNISSULA

In the new business model, key resources comprise most important assets to create value proposition, reach markets, maintain relationships with customer segments, and earn revenues. The key resources include physical, human resources, intellectual and financial [1]. With transformation into convergence of ICT and DMB technology, key resources rely heavily on T-DMB infrastructure, T-DMB contents, institutional trust and brands/images. Meanwhile, as education and also research institution, human resources are crucial since the excellent outcome rely also on experienced and skilled lecturer/researcher as well as other supporting human resources. By T-DMB technology human resources enabled to be acquired from the partnership easily. Intellectual resources such as UNISSULA brands/images, proprietary knowledge, patents and copyrights, partnerships, ICT contents, DMB learning contents and data centre are increasingly important components of a strong business model. Intellectual resources are difficult to develop but when successfully created may offer substantial value. Furthermore financial support is also a significant key resource in UNISSULA business model. It is provided

internally from the institution and externally from partnerships.

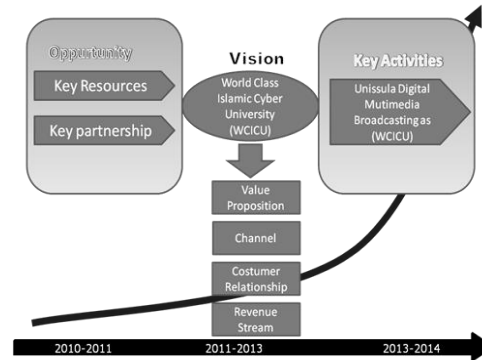


FIGURE 4. BUSINESS MODEL OF T-DMB ENABLED EDUCATION IN UNISSULA

Key partnerships are strategic alliance to optimize the business model and acquire the resources. Key partnership with policymakers in ICT and broadcasting, policymakers in educations, license/patent holder of T-DMB technology, and other education institution are significant in the new business model. Therefore, UNISSULA make strategic alliance with Kominfo as policymakers in ICT and broadcasting, KemenDIKNAS as policymakers in educations, BPPT as research institution, Korea Communications Commission (KCC) as license/patent holder of T-DMB technology, third parties and other researchers to acquire the resources, outsourcing or sharing infrastructure and activity.

In traditional business model, conventional classroom courses with excellent lecturer are value proposition in higher education. Meanwhile in new business model, UNISSULA offers value proposition to solve education problem and satisfies an education needs. DMB UNISSULA for education model will be reliable tool to reach the unreachable areas, anywhere, anytime and low cost. Standardized service model for the DMB learning is provided. It make education services available to society who previously lacked access to them. This education will be adopted as in education model in Indonesia (Applicative, technical, economic and social aspect). Benefit from T-DMB learning process is captured by students, lecturers and another stakeholders. This can result from business model innovation by using T-DMB enabled education making things more convenient or easier to use can create substantial value.

There are many different between channels in traditional and the new business model due to T-DMB technology. The channel describes mechanism of institution to deliver the Value Proposition for students. It have five distinct phases, including:

- Raising awareness among student candidates about institution's products and services. Awareness of T-

DMB enabled education is obtained by understanding the technology and its benefits. Socialization is also important to raise the awareness.

- Helping student/candidates evaluate an institution's Value Proposition. Evaluation is important to know how this service can satisfy the student needs. Some improvement is done based on this results.
- Allowing students/candidates to enrolled specific products and services based on interactive data services.
- Delivering a Value Proposition to students /candidates
- Providing enrolled student support

The next building block of the new business model is customer relationships. Comparing to customer relationship in traditional business model dominated by real interaction, relationship is created in more ways such as automated interactive service, direct interactions, personal assistance, community discussions, and co-creation learning. Learning material can be updated real time and can be executed everywhere.

Automated interactive service can recognize individual student and their characteristics, and offer information related to orders or transactions. At their best, automated services can simulate a personal relationship. Personal assistance is based on human interaction. The students can communicate with an real academic staff to get help during the education process or after completed. This may happen onsite, through call centers, by e-mail, or through other means. Community discussions are used to become more involved with students/candidates and to facilitate connections between community members. Interactive broadcasting and online communities allow students to exchange knowledge and solve each other's problems easily. Communities can also help UNISSULA better understand their students. Students are involved in co-creation learning by reviewing and giving suggestion to satisfy their needs and expectations.

The revenue streams of the new business model are generated by enrollment as the students or subscription for the use of particular or continuous access to services of course contents, "*da'wah islam*" contents, knowledge contents and academic services applications. In the future, revenue streams are also generated by the use of particular or continuous access to small medium enterprise (SME) services, health services, business incubator, research and development center. In addition, the revenue streams are generated from fees for advertising a particular product, service, or brand.

As a result of T-DMB implementation, the key activities in the new business model is different from the traditional model. It is required to create and offer the value proposition, reach markets, maintain customer relationships,

and earn revenues. Therefore, the key activities are connecting universities, academics, high schools, elementary school through convergence ICT and DMB, connecting knowledge and research centre through convergence ICT and DMB, and furthermore connecting libraries, cultural centers, museum, post office and archival department through ICT /DMB.

V. CONCLUSION

T-DMB technology merges the ICT and digital broadcasting formed a new business concept. UNISSULA that declare as World Class Islamic Cyber University transformed academic and administration system from analog system to digital system using this technology. The conventional classroom learning is supplemented by T-DMB enabled learning to increase participation and school retention rates. It is affecting value creation activities generally done in the new business model.

There are many points in traditional business models of education process changed to make the new business model. As a highlight, key resources rely heavily on T-DMB infrastructure, T-DMB contents, institutional trust and brands/images as well as human resources. With the new model, education, research and administration services and resources can be accessed quickly and easily, anywhere and anytime. Therefore the benefit of T-DMB learning process is exploited by students, lecturers, institution and another stakeholders.

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