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Research paper

Proposed Business Models and Parameters in Over-The-Top Initiatives

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Abstract

Communication service providers (CSPs) are confronting challenges from the over-the-top (OTT) players that have been providing free-like services using various indirect-charging business models in addition to the network infrastructure developed by the CSPs. To encounter the challenges, CSPs should embrace OTT opportunities, deploy the right business models and set relevant business parameters accordingly. After conducting action research (AR) at one of Asia Pacific's largest CSPs, this research identifies five business models, including three indirect-charging models and four business parameters that can determine the efficacy of an applied OTT business model. The research also finds that the business models can be mixed as similarly the business parameters can be combined according to the business model. Finally, the research concludes that the presence of OTT business model mix table and OTT business model canvass are very helpful for the business managers when developing OTT initiatives.

Keywords: *Business models, business parameters, communication service providers (CSPs), over-the-top (OTT) services.*

1. Introduction

The presence of over-the-top (OTT) services has created new challenges for communication service providers (CSPs). CSPs have been relying on connectivity services, including voice and data connection with direct charging models, while the OTT players offer various applications and content services with indirect charging models (Dewnarain 2014, Tejpal and Dewnarain 2014, Dewnarain 2015, Foong 2014a) which are perceived as free-like services. OTT players do not have to bear heavy investment connectivity service; therefore, it is easier for them to instead offer free-like services such as freemium, two-sided markets model and market capitalization (Martin 2012, Needleman and Loten 2012, Zhao 2011, Armstrong 2006, Rysman 2009, Morgan Stanley Consulting Group 2014, Gupta and Mela 2008, Hahn and Dewnarain 2017). OTT players could offer substitute telecom services for free to obtain their own revenue (such as internet advertising), while CSPs have their own challenges, including unfamiliar ecosystems (Hahn and Castedo 2017). CSPs struggle to earn their investments back, while certain OTT services are directly disrupting the revenue of CSPs (Foong 2014a, Dewnarain 2014, Foong, Nandan, Skorupa 2017). CSPs must embrace OTT opportunities to recover their lost revenue (Dewnarain 2014, Tejpal and Dewnarain 2014, Foong 2014a, 2014b, Young et. al. 2014, Foong, Nandan, Skorupa 2017, Hahn and Dewnarain 2017, Patrick 2014).

Other than technologies and services, one of the primary differences between CSPs and OTT players is the business model they are using (Dewnarain 2014, Tejpal and Dewnarain 2014, Dewnarain 2015, Foong 2014a). CSPs charge their customers directly using two primary means: fixed monthly subscription fees and variable usage fees. Direct charging business model has two primary disadvantages as it is relatively easy to duplicate the model, and at the same time, it is very difficult to compete with the indirect charging business model, particularly connectivity services are commodity-like where emotional benefits have minimal influence and vulnerable to price war (Zhao 2011). In contrast, many OTT players have been smartly deploying indirect-charging business model that includes freemium (Martin 2012, Needleman and Loten 2012, Tejpal and Dewnarain 2014), two-sided markets model (Zhao 2011, Armstrong 2006, Rysman 2009, Tejpal and Dewnarain 2014) and market capitalization (Morgan Stanley Consulting Group 2014, Gupta and Mela 2008), while utilizing network infrastructure of CSPs. Competition from OTT services causes cannibalisation of subscription mode services from CSPs (O'Donnell et. al. 2017). By implementing indirect-charging business models, OTT players can achieve a more sustainable competitive advantage once the number of users achieve critical mass required to make their platforms work properly (Zhao 2011).

2. Literature Review

Chesbrough (2010) argues that a new technology is of no value if there is no business model to commercialize it. Casadesus-Masanell and Ricart (2010) explain that business model of a firm is a reflection of its realized strategy. A business model is the result of strategic planning that describes the operational logic and value creation in the firm. Furthermore, the researchers explain that a business model is the means to create and capture value for stakeholders by finding innovative approaches to produce revenues and to formulate value propositions for associated parties. The argument from both Chesbrough (2010) and

Casadesus-Masanell and Ricart (2010) highlight the importance of the OTT business model as a key success factor for a CSP in responding to OTT challenges and opportunities.

While CSPs have made considerable effort to succeed in the OTT business, the results are not satisfactory for various reasons, such as organizational structure, capabilities, offerings, engagement and delivery models (Young et. al. 2014). Many projects (or initiatives) are conducted by CSPs world-wide to generate new revenue; however, few of these initiatives produce significant results (Dewnarain 2014, Foong 2014b, Tejpal and Dewnarain 2014). This research notes that those initiatives were not very well conceived in an indirect charging business model. Referring to the various business models discussed above, this research classifies two direct charging business models and three indirect charging business models, as depicted in Figure 1. Those business models can also be combined to generate new modified business models that can be adjusted in accordance with OTT business characteristics.

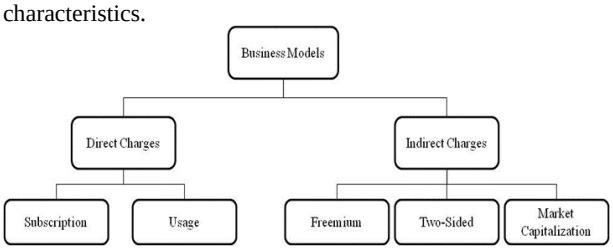

Fig. 1: Direct and Indirect Charging Business Models

The first indirect business model is freemium, which is the most popular and widely used due to its simplicity in implementation. The presence of internet and web 2.0 have enabled freemium to become the most common model among companies delivering online services (Wilson 2006a). The freemium model provides common products or services for free and charges a premium for additional or advanced products or services (Wilson 2006a, 2006b). Free service in the freemium business model allows for the acquisition of a large user base that is being acquired through different channels (Reime 2011). Furthermore, Reime (2011) clarifies that paying for a premium service provides the premium customer features in addition to those that are available as a free user. According to Kumar (2014), start-ups are attracted to the freemium model because it could potentially attract a large user base without expending resources on costly campaigns. To maintain the operation of a freemium model, CSPs must be able to manage its operation costs at a minimum level such as embracing communities that may help CSPs to conserve operation costs, to provide and obtain new needs and fresh ideas. The quantity of service variation is also important to ensure sufficient user attraction. The user base will be a key resource for a company implementing freemium to gain a strong competitive position.

Another aspect of the freemium business model is the value of each free user should be considered based on the probability of converting them into a paying customer, and the value of a free user needs to be based on network effects as well. An empirical study by Gupta and Mela (2008) illustrates that a free user can have greater value than the potential of becoming a paying customer. Another research study by Pulkkanen and Seppanen (2012) suggests that the management must be able to identify when to move from obtaining more free users to obtaining more premium customers. Implementation of a freemium model must consider different psychological responses between a one cent price and free (Anderson 2008), which also implies a low conversion rate of approximately two to five percent for most freemium businesses (Shaw 2010). The key to success in the freemium model is the conversion rate of users from the free service to the premium service (Reime 2011). An advertisement can be used as a supplement for revenue but is not the main source of revenue in the model. These findings highlight the importance of the conversion rate from free users to premium users to ensure a successful implementation of the freemium model in an OTT business.

Despite its advantages, freemium also holds several caveats that need to be considered to ensure successful implementation. Based on collected opinions from experts and practitioners, Martin (2012) concludes that freemium is increasingly in vogue. Companies need to carefully examine what to offer for free, the necessary product attractions to stimulate customers to pay for a full version and the required product upgrading to satisfy customers after paying (Martin 2012). A study on several companies conducted by Needleman and Loten (2012) found that freemium could be a costly trap with high operating costs and many freeloaders. The very low conversion rate of one to two percent requires a large customer base. A wide range of products is also necessary because paid users generally expect to obtain better or different versions of what they have previously received free. The freemium model also needs time to work because only fewer than one percent of users become paying customers within a month, compared with 12% after two years (Needleman and Loten 2012). Excessive quantity features in the free version could also risk cannibalizing paid customers while not offering sufficient features may generally generate minimal interest (Needleman and Loten 2012). CSPs must focus on four key characteristics of successful freemium business models as concluded by Pulkkanen and Seppanen (2012). The separation of free and premium versions must stimulate the willingness to buy; the segment size must be sufficiently large to ensure business feasibility, and low usage costs are needed to ensure sustainability of the model and recognition towards a free version in supporting other businesses.

The second indirect business model is the two-sided markets model, which ties two groups of users in a platform in which they serve as two-sided networks. Eisenmann, Parker and Van Alstyne (2006) argue that products and services that have reshaped the global business landscape in recent times mainly use this model. In the two-sided markets model, businesses providing products and services that ties two groups of users in two-sided networks are called platforms, which act more like an intermediary by attracting a market from both the supply and demand sides, providing infrastructure and rules and facilitating transactions and their interaction. Eisenmann (2007) explains that the two-sided markets model has become powerful because the two groups are attached to and influence each other as a result of the cross-side network effect (Armstrong 2006). In two-sided networks, cost and revenue flow from both directions, because a distinct group of users (or agents) resides on each side of the platform; the costs is incurred for serving both groups. However, revenues can also be generated from each (Maffe and Ruffoni 2009). Many OTT players have been successfully implementing the two-sided markets model and influencing the businesses of CSPs.

Any markets involving transactions between two (or more) parties are considered potential two-sided markets (Rochet and Tirole 2006). Any businesses that attempt to implement two-sided markets must successfully attract both sides of the market to join. The more a business can attract a market from one side, the more success it will have in attracting the market from the other side. Competition among platforms in two sided-markets is less punishing since an agent from one side is attached to an agent from the other side; thus, they cannot easily leave the platform. This condition makes competing platforms coexist if they differentiate from each other (Chou and Shy 1990; Church and Gandal 1992). Once a company implements the two-sided markets model, it must not use one-sided logic (Wright 2004). The two-sided markets model uses both product competition and customer-focused competition; therefore, it can overcome the diminishing issue (Zhao 2011).

CSPs are providing network connections to many of their customers; this involves many externalities. Most markets with network externalities are potentially two-sided (Rochet and Tirole 2006). Conventional CSPs such as mobile communication service providers have been implementing typical transaction-based markets (Hagiu 2004) and therefore encounter two-stage problems. The first stage is to have both sides participate; the second stage is to stimulate both sides to interact. However, the OTT players are implementing audience-making markets in which the platform acts as the market maker for one side of the market (Hagiu 2004). This type of two-sided markets model offers a more attractive free-like service to the end users; this may cause the users to leave the services provided by CSPs. Several OTT players have been successfully implementing multi-sided platforms, as per the model described by Hagiu and Wright (2015).

The third indirect business model is market capitalization, which represents the market value of a company calculated as the current stock price of the company multiplied by the total number of outstanding shares (Morgan Stanley Consulting Group 2014). For OTT start-ups, market capitalization is another means to monetize their business. The idea is that the business only focuses on obtaining more users until it is sufficiently large and becomes attractive for investors or other companies to buy it. However, since the business has no income, its valuation becomes challenging. Gupta and Mela (2008) have improved the more classic customer lifetime value (CLV) model to valuate a customer when that particular customer does not generate direct revenue. By knowing the value of one customer, the market value of a business or company can be estimated by multiplying the value of one customer with the number of customers.

Gupta and Mela (2008) create a model to measure the value of the customer using three sources: marketing activities such as pricing and advertising, effects of a direct network or word-of-mouth and effects of an indirect network. By using the parameter estimates of this model, it is possible to compute the Lagrange multipliers arising from the constraints (Rockafellar 1993) that the seller and buyer growth models place on a firm's infinite horizon profits. From this model, it can be learned that CLV is not solely a function of the cash flows generated by a customer but also the effect this customer has on attracting other customers. By having been able to quantify the value of a customer in an indirect revenue situation, Gupta and Mela (2008) have answered the underlying question of how to measure the market capitalization of a firm if its customers do not pay for the products or services they consume.

Each business model has its own conditions to consider before a business manager makes her or his selection. The combination of two or more business models could also be possible with the original business models' conditions continuing to apply. For this research, a selection table consists of the requirement from the single business model (SBM) and the considerations for combining two business models are constructed as exhibited in Table 1. The table will be introduced to participants and tested on the initiatives they are working on.

Table 1: OTT Selection of Business Model Mix

Single Business Model (SBM)						
		Subscription	Usage	Freemium	Two-sided	Market Cap
	Conditions	- High investment costs (free model is not feasible) Customer has willingness to pay subscription	- High operating or variable costs (free model is not feasible) - Customer has willingness to pay per usage	- Low operating costs - High chance to covert from free to pay mode	- Network effect applies - The platform has the capability to attract both market sides	- Strong financial support is available The business can achieve the scale that is attractive to investors
Combination of Two Business Models – Conditions of the two SBMs apply						
Secondary Business Model						
		Subscription	Usage	Freemium	Two-sided	Market Cap
Primary OTT Business Model	Subscription	- Subscription only - Conditions of the SBM apply	- Subscription + Usage - Subscription fee for only accessing the service or basic service, then a charge per usage is applied for more usage or more attractive offers	- Subscription + Freemium - Subscription fee for basic service and premium fee for advanced package - The basic service must be sufficiently attractive; the advanced package must be significantly attractive	- Subscription + Two-sided - Subscription is applied to either or both markets in a two-sided platform - Network effect can be leveraged to obtain more agents or generate more revenue	- Subscription + Market Cap - Subscription fee is very low (only to filter qualified customers or to cover certain operational costs) with an attractive offer to attract many customers to achieve the critical mass that will be attractive to investors

	Usage	- Usage + Subscription - Charge per usage then subscribe for more attractive offers with subscription fee - The subscription package contains more volume with similar quality to the usage version - The business offers subscription to obtain volume (not profit)	- Usage only - Conditions of the SBM apply	- Usage + Freemium - Free to enter the service facilities but will be charged per usage to consume various basic services and charged premium to enjoy attractive bundled premium advanced package - Only selected customers can enter the facilities	- Usage + Two-sided - Charge per usage is applied to either or both markets in a two-sided platform - Network effect can be leveraged to obtain more agents or generate more revenue	- Usage + Market Capitalization - Usage charge is quite low (just to filter qualified customers or to cover certain operational costs) with attractive offer to attract many customers to achieve the critical mass that will be attractive to investors
	Freemium			- Freemium only - Conditions of the SBM apply	- Freemium + Two-sided - Freemium model is applied to either or both agents in two-sided markets - Free of charge is applied to attract more agents and premium charge is applied when the platform is currently strong to monetize more revenue	- Freemium + Market Capitalization - This model is very similar to solely freemium except more support/fund is allocated to accelerate user growth (usually the demand side users) to make it more attractive to investors
	Two-sided	- Two-sided + Subscription Agents from either or both sides are filtered with subscription fee to enter a very attractive two-sided market	- Two-sided + Usage Agents from either or both sides are charged to use a service in a very attractive two-sided market	- Two-sided + Freemium - Free basic services for either or both sides in a two-sided market but premium charge is applied for very attractive advanced package	- Two-sided only - Conditions of the SBM apply	- Two-sided + Market Capitalization - Two-sided markets with very low or no subscription or usage fee to attract many agents from both market sides and to achieve critical mass that will be attractive to investors
	Market Cap	- Market Cap + Subscription - Market cap is the primary business model with minimum subscription fee to filter customers or to cover certain fixed operating costs	- Market Capitalization + Usage - Market cap is the primary business model with minimum usage fee to filter customers or to cover certain variable costs	- Market Capitalization + Freemium - Market cap is the primary business model with free of charge for basic service and minimum fee for advanced package to filter customers or cover certain variable costs	- Market Cap + Two-Sided - Market cap is the primary business model in a two-sided market with additional indirect revenue from third parties such as advertising	- Market Cap only - Conditions of the SBM apply

The research is intended to provide a tool for business managers to design an OTT business model and to determine its associated business parameters. A business model explains the rationale of how the value of an organization is created, delivered and captured (Osterwalder 2013). To ensure the success of those three value processes, a business model should be prepared in a design that provides the organization strategy to implement the value creation, delivery and capture process. In an OTT endeavour, business model design is very crucial because it will provide a brief and clear plan regarding how the business will be conducted from its conception to its implementation and guide the business to grow in the appropriate direction. A very popular means to depict business model design is by using a business model canvass, as proposed by Osterwalder and Pigneur (2010). The business model canvass is very helpful for organizations in conducting structured, tangible, and strategic conversations around a business. The primary objective of the canvas is to help organizations transform from product-centric thinking to business model thinking (Osterwalder 2013). Osterwalder and Pigneur (2010) construct a business model canvas that consists of nine building blocks: customer segments, value propositions, channels, customer relationships, revenue streams, key resources, key activities, key partnerships and cost structure.

To accommodate OTT initiative-specific characteristics, Osterwalder and Pigneur's model will be modified by adding the five business model options, namely, subscription, usage, freemium, two-sided markets and market capitalization; in addition, the model will be modified by adding the four business parameter options, namely, financial cash flow, customer growth, usage and conversion and network effect, as shown in Table 2

below. These options are shown as reminders to business managers that they are addressing the OTT business with its specific characteristics. Additional fields to identify OTT key partners from the CSP perspective are also added. This revised business model canvass will be referred to as the OTT business model canvass and will be tested to prove if the five business models and the four business parameters will be sufficient to assist a business manager in designing the business model and determining its business parameters.

Table 2: OTT Business Model Canvass

Key Partners Platform Developers Content Developers Application Developers Crowd Source	Key Activities	Value Propositions Demand-side Customers Benefits Supply-side Customers Benefits	Customer Relationships Demand-side CRM Supply-side CRM	Customer Segments Demand-side Customer Segment Supply-side Customer Segment
	Key Resources		Channels Demand-side Channels Supply-side Channels	

Cost Structure	
Supply-side Costs	Demand-side Costs

Revenue Streams	
Supply-side Revenues Subscription Usage Premium Others	Demand-side Revenues Subscription Usage Premium Others
Market Capitalization	

Business Models and Parameters

Subcription	Usage	Freemium	Two sided		Market Capitalization
Financial	Financial	Financial	Suply Side: Financial	Demand Side: Financial	Financial
Customer Growth	Customer Growth	Customer Growth	Customer Growth	Customer Growth	Customer Growth
Usage	Usage	Usage & Conversion	Usage & Conversion	Usage & Conversion	Usage & Conversion
			Effect to Demand	Effect to Supply	Network Effect (if any)
					Supply Effect to Demand
					Demand Effect to Supply

The research deploys two phases, which are the model building phase to design tools for determining the OTT business model and its associated business parameters (the OTT business model mix table and the OTT business model canvass in this case) and the model confirmation phase to confirm if these models fit the situation encountered by business managers of the CSP working on OTT initiatives. To accomplish those two phases, theory and model building will be deployed in this research. Theory and model building is intended to be a bridge between conceptual and practical science; this will eventually provide useful knowledge to the real world (Swanson and Chermack 2013). Theory building plays a critical role as a process by which vibrant descriptions, explanations, and representations of observed or experienced phenomena are built, verified, and refined (Lynham 2000).

The current trend in social sciences is more accommodating models that are driven by questions rather than techniques, which implies the need for a distinction between models and theories (Swanson and Chermack 2013). Models do not necessarily require theories or a theoretical foundation, while the majority of scholars position models as a smaller component of theories (Carnap 1938, 1971; Coombs, Dawes and Tversky 1970; Kaplan 1964). This research intends to encourage the use of model in designing an OTT business; therefore, this research focuses more on the model rather than on theory.

Lynham (2002), and reinstated later by Swanson and Chermack (2013), suggests five phases of theory building, as follows: conceptualize, operationalize, confirm, apply and refine. These phases of theory building are not linear, but they are necessary. Where one begins and ends with applied theory building is less relevant than the acknowledgement that all five phases presented

in the method are necessary to generate a relevant, useful, and trustworthy theory (Lynham 2002).

The model building phase of this research is intended to construct a model that will be tested in the confirmation phase. In the model building phase, group model-building will be applied in the focus group discussion (FGD) form involving the clients as participants. System dynamicists have involved client (group) in the model-building process for three reasons: to capture the required knowledge in the mental models of the client group (Forrester 1961, 1987), to increase the likelihood of the implementation of model results (Roberts 1978; Weil 1980) and to enhance the client's learning process (Greenberger, Crenson, Crissey 1976; De Geus 1988; Lane 1989; Morecroft 1992; Morecroft and Sterman 1994).

Earlier literature has produced detailed descriptions of methods and techniques to capture the required knowledge from a group in conceptualization (Vennix et al. 1992) and in the formalization and quantification (Ford and Sterman 1998) of a system dynamics model and certain designed standard procedures to build system dynamics models with groups (Randers 1977, Stenberg 1980, Richmond 1997). Further research on quantitative modelling with groups led to a more detailed description of the different roles in working with teams (Andersen and Richardson 1995) and the notion of scripts for group model-building (GMB), which directs the stream of group activity in GMB sessions (Andersen and Richardson 1997, Andersen, Richardson and Vennix 1997). Other scholars have employed GMB interventions to work with management teams on less tangible, ill-defined strategic issues or labelled messy problems (Ackoff 1974, 1979). In these cases, the emphasis is on problem structuring and on creating consensus and commitment with a group decision (Lane 1992, 1993; Wolstenholme 1990, 1992, 1999; Vennix 1996; Majone 1984; Zakay 1984), for concerted action to result (Drucker 1988). Vennix (1999) also suggests that GMB can potentially resolve messy problems if it is implemented correctly.

3. Methodology

Given the situations as encountered by CSPs whenever entering an OTT business and after reviewing existing business models, this research raises the following hypotheses: It would be advantageous for CSPs to use the OTT business model mix table and the OTT business model canvass specifically modified to design the OTT business model and determine the OTT business parameters.

To ensure the effectiveness of the FGD, before it is begun, key considerations for OTT initiative development were first identified through an in-depth interview with the top level of related functions or businesses for further verification with questionnaires and exercise with the FGD. The process will continue to the confirmation phase where the facilitation will occur in a more customized manner to further explore the OTT business model mix table and business model canvass.

Blum (1955) defines that all action research (AR) has two stages, which are a diagnostic stage to analyse the problem and to develop hypotheses and a therapeutic stage to test the hypotheses through deliberate change experiments. The diagnostic stage in this research is included in the initiation stage of the model building phase where the situation is analysed, problems are identified, and hypotheses are developed. The therapeutic stage is very much equivalent to the model confirmation phase. The research uses Bailey's argument (1998) that AR should not be judged by the traditional criteria of random selection, generalizability and replicability, as its goals are to establish local understandings. This research is in line with the research of Stephens, Barton and Haslett (2009), since it is conducted within an open system where logical processes can be identified using abductive, deductive and inductive modes of inference.

This research is more future-oriented than merely past situation analysis. This research must have predictive capability regarding how to manage OTT initiatives in the future since the windows of opportunity in the OTT business are usually very short. The research must also be capable of providing guidance on how the business model will be designed and how the business parameters will be determined. Therefore, this research will use AR as an approach to diagnose the situation, conduct planned-actions, observe the progress and results, and reflect the learning for further development.

The research proposes the OTT business model mix table to determine the business model and the OTT business model canvass to design key aspects of the business including business parameters as part of the first stage of AR and to further test the model as part of the second stage of AR. To design the OTT business model mix table and the OTT business model canvass, the research adopts group model-building (Vennix et al. 1992, Vennix 1996, Andersen and Richardson 1995, Andersen and Richardson 1997, Andersen, Richardson, Vennix 1997). The research objective is to validate if the guidance provided by the OTT business model mix table and the OTT business model canvass are applicable to the OTT development process as proven by the performance of the business parameters. The research includes in-depth interviews, questionnaires, and FGDs from respondents and participants who have been working on a total of more than fifty OTT initiatives. The in-depth interview involves top-level executives, while both the questionnaires and the FGDs involve strategic-level business managers. The research is conducted at the largest CSP in Indonesia, which is also among the top ten CSPs in the Asia Pacific region.

In-depth interviews with seven top-level executives of the CSP at both the group holding and the subsidiary level are conducted to assess their perspectives and concerns regarding business models and parameters. The questionnaires are intended to obtain the initial opinion of alternatives for both business models and business parameters to ensure that all possibilities have been covered. Thirty-six respondents at the strategic level and four global consultants are provided 'Yes' or 'No' questions. The consultants are included in the survey as comparison to the strategic level business managers and the results are very much similar. The questions are arranged in such a manner that certain answer from previous questions may refer to certain answer in the following questions. If any inconsistency is found, further confirmation is made.

Eight respondents who consider that the proposed five business models and four business parameters are sufficient are then selected to participate in two FGD sessions. The respondents' positions either at group level or subsidiary level and whether they are managing portfolio (portfolio manager) or initiatives (project manager) are also considered. Another factor influencing the selection is schedule match and availability of the respondents. The FGD consists of two sessions to assess participants' opinions regarding the business models and parameters and to deploy the Group Model-Building approach. The ultimate objective of the FGD is to test if the OTT business model mix table and the OTT business model canvass can be used to design the OTT business model and to determine the OTT business parameters. Upon completing the two tables, participants are invited to monitor the performance using corresponding performance monitoring charts as shown in the Appendices. The results from the observation are then collected for further analysis. Prompt feedback is also solicited from the participants.

4. Results and Findings

Findings from the in-depth interviews can be categorized into the following groups, as shown in Table 3: revenue perspective, product perspective, performance perspective, partnership perspective, portfolio perspective, business position, flexibility of business models and traffic consideration. In general, all top executives realize that there is no business model that fits all. The executives expect business models to be both simpler and relevant. The executives also agree that the CSP must consider both the synergy value and the financial value and make a decision regarding the business model prior to developing a partnership or acquiring a business.

Table 3: Insights from In-Depth Interview

Perspective	Insights
Revenue Perspective	The CSP mainly seeks new revenue not only for capital gain; therefore, the CSP should choose business model that triggers usage. The subscription model is no longer a fit, and other business models such as the two-sided markets model and the freemium should be considered; the latter is preferred more because the OTT nature is free. The business model can be altered from the indirect charging model at the beginning then the direct charging model, if the introduction phase is successful.
Product Perspective	If the product-related problem and its corresponding solution are known, proven existing business models are preferred because it is difficult to initiate a new business model since it involves market behaviour.
Performance Perspective	The indirect charging business model must tie to the performance evaluation, and strong evaluation such as growth tracking should be implemented. Business models should be predetermined in advance to avoid an unnecessary change in the business model in the future.
Partnership Perspective	Ownership proportion with partners should be treated in a fair manner, and partners' preference should be considered.
Portfolio Perspective	Position of the OTT service in the portfolio will determine which business model to apply; it must consider value proposition, competition and customer preference. The CSP must consider both the synergy value and the financial value and decide on the business model prior to creating the partnership or acquiring the business. The industry benchmark must also be considered.
Business Position	The position of the OTT business in the market is very important in determining business model. Competition and business objective must be considered. For example, if competitors provide free OTT service then avoid direct-charging subscription model, choose freemium to penetrate, if the crowd is large then choose advertising model. Direct charging business model can be considered if penetration is successful.
Flexibility of Business Models	Business managers are expected to consider several business models to achieve flexibility and to ensure sustainable and secured revenue streams. Adjustment may be needed to accommodate simple and relevant model; however, mixing business models is not advisable due to its versatility.
Traffic Consideration	Traffic of usage must be considered since traffic size will differ perception towards a business.

Preliminary questionnaires were distributed to confirm the concerns at the strategic level. The questionnaires ask fourteen relevant statements as shown in Figure 2 to 36 business managers who work in various business lines and have been initiating various OTT initiatives both at group holding and subsidiaries. The questionnaires are also distributed to 4 external consultants who have global experiences in providing consultancy to various CSPs in managing OTT initiatives. The statement address respondents' previous involvement in selecting business models, the use and needs of certain procedures to select business models, previous involvement in performance monitoring, business parameters and respondents' belief regarding the adequacy of the four business parameters to assess OTT business. A larger portion of the respondents have implemented or at least considered the five available business models. Most respondents also have attempted to combine two or more business models in one initiative. The majority of respondents also follow certain guidelines to choose the OTT business model, and the majority of respondents agrees that a guideline is needed to effectively select the OTT business models. The majority of the respondents also monitor the business model implementation progress or results. All respondents agree that the four business parameters, namely, financial, customer growth, usage and conversion and network effect, are both important and relevant, with the exception of financial parameters, which are not agreed upon by a few respondents. These respondents consider that other non-financial parameters should be used to evaluate business models. However, all respondents agree that those four business parameters are valid indicators to conclude if the business models are either effective or not. The results also show that the consultants' opinion fall into majority on each questions.

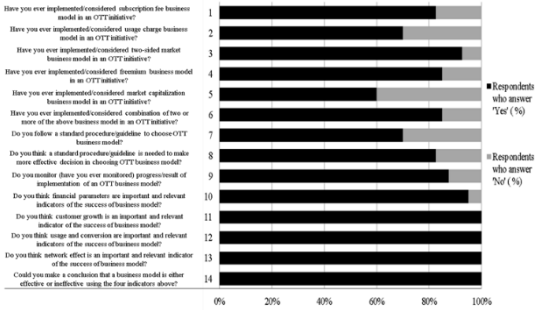

Fig.2: Questionnaire Results on Portfolio Selection Process for OTT Initiatives

To confirm if the use of five business models and four business parameters can answer the OTT business model design, eight participants are selected to join the FGD sessions. The FGDs are conducted twice in two different sessions. In the first session, all participants reconfirm that the five business model alternatives and four business parameters as shown in the OTT business model mix table and the OTT business model canvass are sufficient. The second session deploys the OTT business model mix table and the OTT business model canvass to confirm if they can answer the real-world situation. Participants are requested to select the business model and parameters for particular OTT initiatives they are working on and monitor the progress within three to nine months. Estimations towards business performances are made in the beginning of each initiative and then revisited periodically after new data from the implementation is obtained. Table 4 below shows participants' immediate response in the second session pertaining business model selection in the particular OTT initiatives they are currently working on. Subscription remains the most favoured business model, with five selections, followed by usage charge and two-sided model, with four selections for each, and freemium, with three selections. Only one initiative selects market capitalization as its business model.

Table 4: Respondent's Selection on Business Models

Initiatives	**Subscription**	**Usage**	**Freemium**	**Two-sided Model**	**Market Capitalization**	**Explanation**
E-Logistic	OK	OK		OK	OK	Annual listing fee, commission from order

						and Merchant Discount Rate (MDR).
Entertainment Hub	OK		OK			Monthly fee with free or very low fee basic contents and charge for premium content.
Home Learning on TV		OK		OK		Charge per session and advertising model.
Cloud Gaming on TV			OK			Free basic service with monthly flat charge for premium package.
Video Call	OK	OK				Monthly subscription fee and usage charge per call duration.
Travel Xchange	OK	OK				Monthly fee and success fee to compensate usage.
Cloud Storage			OK	OK		Free 1 GB with charge for additional usage and video content.
Web Portal	OK			OK		Advertising model with listing fee.

Participants are then required to monitor performance of the business parameters of each initiative up to nine months. After performing and monitoring the initiatives in their works, participants are asked to provide feedback pertaining to effectiveness of the method in business model selection and business parameters setting. The results from the implementation are shown in Table 5. Of eight initiatives selected by the participants, one initiative has not delivered outcome due to uncontrollable external factors. The other seven initiatives show that the use of OTT business model mix table and OTT business model canvass to design OTT business model and determine OTT business parameters are very effective and deliver excellent results. Four participants explicitly state that the OTT business model mix table and OTT business model canvass really helps them to more effectively determine business model. Regarding business parameters, higher initial growth rate is enjoyed by most initiatives, while a lower initial investment takes second place. In terms of impact, higher mature growth rate has the largest percentage of increase that could achieve 130%. This high impact may also be due to the mature growth rate being very low in the prior deployment of the model. Among reasons or explanations from the respondents regarding the cause of the positive impacts are more accurate partner selection, more convincing price negotiation and more efficient infrastructure selection, which causes lower operational fixed costs, lower basic and advanced variable costs. These lower costs, in turn, enable the CSP to offer better business model mix, which then affects higher growth in three phases, namely, initial, accelerated and mature, while generating higher fixed revenue, higher basic usage revenue and higher advanced usage revenue. For initiatives that use freemium and two-sided markets model, the use of the canvass is also helpful to increase conversion rate and to stimulate higher network effects.

Table 5: Results on Business Parameters

Better Cash Flow Model	**Initiatives**	**Percentage of increase or decrease**	**Reason/explanation**
Lower initial investment	E-Logistic Home Learning on TV Entertainment Hub Cloud Storage Video Call	20% to 50%	Better partner selection, better price negotiation, more efficient infrastructure selection.
Lower operational fixed costs	E-Logistic Entertainment Hub Cloud Storage Video Call	20% to 50%	More efficient network causes lower fixed operation costs.
Lower basic variable costs	Entertainment Hub Video Call	10%	Better negotiation result drives lower basic variable costs.
Lower advanced variable costs	Entertainment Hub	10%	Better negotiation result drives lower advanced variable costs.
Higher fixed revenue	E-Logistic Entertainment Hub Web Portal Video Call	5% to 10%	More attractive offer increases customer's willingness to pay for subscription fee.
Higher basic usage revenue	Entertainment Hub Cloud Gaming on TV Cloud Storage Video Call	4% to 6%	More attractive offer increases customer's willingness to pay for basic usage fee.
Higher advanced usage revenue	Entertainment Hub Cloud Gaming on TV Cloud Storage Video Call	12% to 15%	More attractive offer increases customer's willingness to pay for advanced usage fee. A suitable business model selection will affect the advanced usage revenue in the long run.
Better Customer Growth Model	**Initiatives**	**Percentage of increase**	**Reason/explanation**
Higher initial growth rate	E-Logistic Home Learning on TV Entertainment	5% to 10%	More effective customer selection and relationship result in better growth at

	Hub Cloud Gaming on TV Web Portal Video Call		initial stage.
Higher accelerated growth rate	Entertainment Hub Cloud Gaming on TV Web Portal Video Call	10% to 20%	These four initiatives could creatively modify their offers in the accelerated stage to obtain higher growth.
Higher mature growth rate	Entertainment Hub Cloud Gaming on TV Cloud Storage	120% to 130%	In addition to the offer and customer loyalty, maintaining growth at a mature stage is very difficult makes the percentage of increase much higher than the prediction.
Better Usage and Conversion Model	**Initiatives**	**Percentage of increase**	**Reason/explanation**
More initial basic usage	Entertainment Hub Cloud Gaming on TV Cloud Storage	5% to 15%	Accurate segment and channel selection and effective customer relationship stimulate more basic usage during initial stage.
Higher initial conversion rate	Entertainment Hub Cloud Gaming on TV Cloud Storage	5% to 10%	Attractive offers increase conversion rate during initial stage.
More accelerated basic usage	Entertainment Hub Cloud Gaming on TV Cloud Storage	20% to 30%	Accurate segment and channel selection and effective customer relationship stimulate more basic usage during accelerated stage.
Higher accelerated conversion rate	Entertainment Hub Cloud Gaming on TV Cloud Storage	10% to 20%	Attractive offers increase conversion rate during accelerated stage.
More mature basic usage	Entertainment Hub Cloud Gaming on TV Cloud Storage	25% to 35%	Accurate segment and channel selection and effective customer relationship stimulate more basic usage during mature stage.
Higher mature conversion rate	Entertainment Hub Cloud Gaming on TV Cloud Storage	15% to 25%	Attractive offers increase conversion rate during the mature stage.
Better network effect model	**Initiatives**	**Percentage of increase**	**Reason/explanation**
Higher initial demand effect	E-Logistic Home Learning on TV Cloud Storage Web Portal	15% to 25%	Consideration on the supply side stimulates higher demand effect towards supply market in the initial period.
Higher initial supply effect	Cloud Storage Web Portal	5% to 10%	Consideration on the demand side stimulates higher supply effect towards demand market in the initial period.
Higher accelerated demand effect	Cloud Storage Web Portal	20% to 30%	Consideration on the supply side stimulates higher demand effect towards supply market in the accelerated period.
Higher accelerated supply effect	Cloud Storage Web Portal	10 to 15%	Consideration on the demand side stimulates higher supply effect towards demand market in the accelerated period.
Higher mature demand effect	Cloud Storage	50% to 70%	Consideration on the supply side stimulates higher demand effect towards supply market in the mature period. Additional business model can also be added in the mature period.
Higher mature supply effect	Cloud Storage	30% to 50%	Consideration on the demand side stimulates higher supply effect towards demand market in the mature period. Additional business model can also be added in the mature period.

All participants who become involved in the initiative monitoring are asked to provide the benefits resulting from the tools. The participants agree that the use of the OTT business model mix table and the OTT business canvass provide them benefits in managing OTT initiatives. Four participants select more than one benefits, as shown in Table 6. A test was later provided to three participants who did not recognize the need for OTT business models and the results are similarly positive. These outcomes support the use of the OTT business model mix table and the OTT business model canvass to design the OTT business model and determine the OTT business parameters.

Table 6: Benefits of the OTT Business Model Mix Table and the OTT Business Model Canvass

Benefits felt by the Participants	Number of Participants feel the Benefits
Assist me in creating a better business model	5
Assist me in setting business parameters more accurately	2
Determining the OTT Business Model	4
Designing OTT Business Model including its parameter (cash flow, customers, usage and conversion, and network effect)	1

The results from seven participants who implemented the OTT business model mix table and the OTT business model canvass in the seven OTT initiatives they have been working on show that the proposed two tables can be deployed in the OTT initiatives to select the OTT business models and determine their business parameters. The tools are very useful to help participants in designing OTT business model and determining OTT business parameters because the tables provide guidance and reasons for every selection that can be examined against the initiatives. Participants can work more effectively and make decisions more firmly because unreasonable subjectivity can be prevented as early as possible. Using the OTT business model mix table helps the participants to consider the match between characteristics of the initiative and characteristics of the business model. The table also help the participants to reach consensus based on a reference that has been carefully examined according to proven literatures and practical benchmark. Similarly, the OTT business model canvass is very helpful for the participants to sharpen their decisions in selecting parameters. In more specific, the table is very effective to remind the participant whenever they are working on indirect charging models such as two-sided market models and freemium or whenever they are simultaneously working on combination of

two or more business models. This reminder is very critical to ensure the utilization of indirect charging model characteristics.

Using the performance monitoring charts (shown in the Appendices), four business parameters of the initiatives: financial cash flow, customer growth, usage and conversion and network effect can be analysed. After monitoring and periodically reassessing the business parameters for nine months, the charts indicate performance improvement that is very likely caused by the use of the two proposed tables. More reliable selection of business model has resulted in stronger position and more successful implementation of the initiatives that in turn encourages more potential partners and customers to participate and try the service. Partners' attention and customer growth are two strong indicators that the initiatives will be successful in creating the ecosystem that is very vital in OTT business.

5. Conclusions

Both performance results and reaction of the participants indicate that the OTT business model mix table and the OTT business model canvass are very helpful in designing OTT business models and determining OTT business parameters. The use of these two tools has impacted the performance of the OTT initiatives as shown by positive impacts on the four business parameters: financial cash flows, customer growth, usage and conversion and network effect. Several participants also consider that the two tables have been very helpful to provide a long-term assessment of the initiatives they are working on. Based on these findings, the research recommends using the OTT business model mix table and the OTT business model canvass to design the OTT business model and to determine the OTT business parameters when developing OTT initiatives. The presence of these two tables in OTT development process is expected to become a new practice in the CSP for current and future OTT endeavours.

The research concludes that it would be advantageous for CSPs to use the OTT business model mix table and the OTT business model canvass specifically modified to design the OTT business model and determine the OTT business parameters. Even the OTT business model mix table and the OTT business model canvass are constructed and applied in an CSP, other CSPs around the world could encounter a similar situation in embracing OTT opportunities; therefore, the two tables could be considered applicable. However, further research to test the model in different companies, regions and in non-OTT businesses is recommended to standardize and globalize the empirical results.

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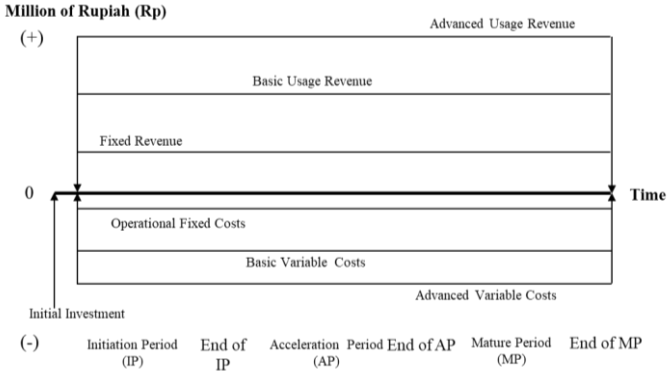
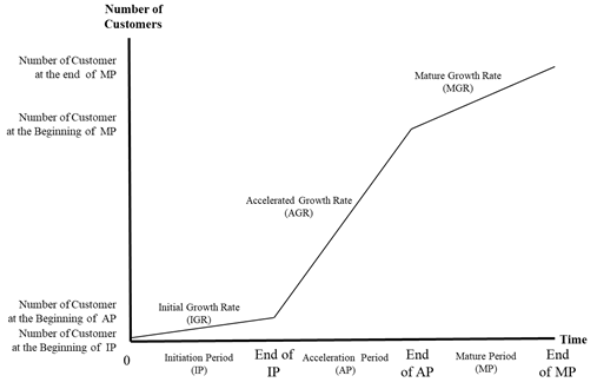
Appendices: Performance Monitoring Charts

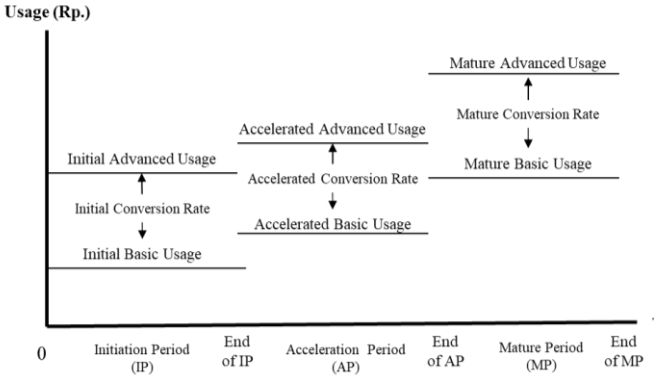
Appendix 1: Financial Paramters from Supply and Demand Side Projection Chart



Appendix 2: Customer Growth at Supply or Demand Side Projection Chart



Appendix 3: Usage and Converstion Rate at Supply or Demand Side Projection Chart



Appendix 4: Network Effects at Supply or Demand Side Projection Chart