Business Models
for Mobile Broadband Media Services
– Case Study Indonesia Telecom Market

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Abstract

The increase mobile data traffic from the emerging Internet services, especially multimedia, has posed considerable challenges for the telecom industry. Their initial mobile data services business models are generally not compatible with these emerging Internet services. Thus, there is a substantial need to investigate the suitable options to make media as a profitable telecom business sector. However, there are different challenges and opportunity factors in developing sustainable mobile media business in each market, due to the unique circumstances applied as the result of customer characteristics, mobile market situation and regulatory/law enforcement.

The first purpose of this thesis is to explore the business model options to deliver media services on top of mobile broadband. Although, we limit our focus to Indonesia, we first analyzed the worldwide patterns toward the media services in order to get a broader view of the current trend. We mapped multitudes of actor involved in digital online / on the top (OTT) media service, which together they form different types of constellation in the value network, as well as service, delivery and revenue model. We also put our focus to get the lessons learned from Spotify’s business model, by framing it using Chesbrough and Rosenbloom’s model.

The second purpose is to understand the Indonesian mobile user's characteristic toward the mobile media services. We conducted survey to 119 Indonesians, analyzed the result with one sample T-tests and validated it with the correlation tests (Cronbach Alpha and Pearson correlation), within the Unified theory of acceptance and use of technology (UTAUT) framework. Our findings confirm the low willingness to pay, but an open attitude for the services. The mobile device and network quality are not the barriers for them to adopt the services, and there is a tight connection between the decisions to adopt the services with the perception that the service is popular.

Through those findings, we assessed the feasibility of the identified options and formulated the recommendations. We used our understanding about Indonesian market structure (telecom and media), regulation, and mobile user, as well as the lesson that we got from media services provisioning in Sweden and worldwide trend. We found that the pricing tiers, adjustable pricing, and differentiated features are some of the key success factors. Meanwhile, being part in the point-to-multipoint partnership with the well-known OTT player is the potential position that the Mobile network operators (MNOs) in Indonesia should take in provisioning OTT media services, rather than deliver the services by their own.

Key words: business model, mobile Internet, multimedia services, mobile broadband
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# List of Abbreviations

**Telecom operator**  
Provider of telecommunication services that delivers telephony and data communication access, and mostly functions as internet service provider (ISP) as well.

**Mobile Network Operator (MNO)**  
Telecom operator that provides the communications services over wireless access that owns or controls necessary elements to deliver cellular services to the end-user, especially radio spectrum license and network infrastructure.

**Communications service provider (CSP)**  
Provider that delivers communication services to the end-user (telecommunications, entertainment and media, and Internet/Web services) encompasses telecom operator (landline and mobile), Internet service provider, and cable and satellite provider.

**Mobile broadband**  
Wireless Internet access through mobile device, using one of the wireless network technologies: CDMA2000 1X EV-DO (EV-DO Rev. A and Rev. B), WCDMA, WCDMA HSPA (HSDPA, HSUPA and HSPA+), TDSCDMA, WiMAX and LTE (FDD-LTE and TDD-LTE).

**Third-generation (3G)**  
Wireless network technology defined by the ITU (International Telecommunication Union), include all of those listed under ‘Mobile broadband’ as well as CDMA2000 1X, some also includes the LTE and WiMAX which are not classed as 4G (LTE Advanced and WiMAX 2).

**Average revenue per user (ARPU)**  
Revenue divided by weighted average number of customers at the same period (e.g. monthly).

**Blended ARPU**  
Revenue divided by average number of total subscribers at the same period (e.g. monthly).

**Voice ARPU**  
ARPU from voice services.

**Data ARPU**  
ARPU from data services.

**Value added services ARPU (VAS ARPU)**  
ARPU from value added services (e.g. ring tones, ring-back tones (RBT), wallpaper downloads, screensaver downloads, music, TV/Video).

**Non-voice ARPU**  
ARPU from all non-voice services (Data, Messaging, Value added services).

**Over-The-Top (OTT)**  
Services that are utilized over the network, delivered directly to the end-user via any connected devices, but the network access operator itself does not offer that. It rides on top of the services already provided and do not require any business or technology affiliations with the underlying network access operator.

**OTT TV/Video**  
OTT service that range to TV broadcasting to video services, e.g. video conferencing, video chat, video on demand, Live TV broadcasting, etc.

**OTT Music**  
OTT Music services, e.g. music streaming, music download, etc.
Chapter 1 – Introduction

This chapter presents a brief introduction along with the description of the addressed problem areas of this study. At the end, the expected contributions to the knowledge and solution are described.

1.1. Background

The evolution of Internet and growth of smart phone penetration have resulted a paradigm shift in society. It triggers higher expectation to the user and increases competition level across the markets. Cisco reported that the typical users using this device consume data traffic ~79 MB/month, compared to ~3.3 MB/month from basic feature mobile phone users. This is predicted to keep increase in the future, reaching ~1.3 GB/month [50]. Mobile data usage was also reported to grow to 83 % in 2011, in line with the data traffic tsunami predictions [51], as shown in Figure 1. This poses a considerable challenge for the telecom industry, such as weakening user relationships and diminishing revenue from existing voice and messaging services [52].

![Figure 1. Data tsunami trend by various researches [53]](image)

However, this also offers a potential moment for telecom operator to evolve, remain competitive, and cope with those challenging situations. The data shows that mobile broadband subscriptions have increased to almost half of 2.4 million Internet users by 2011 [62]. It grew by 45% annually over the last 4-years and reached twice of the fixed broadband subscriptions. There are five emerging developing markets (Brazil, Russia, India, China, Indonesia), called as the BRIC countries that represent 45 % of the world population and predicted to add 1.2 billion more Internet users by 2015 [54]. Mobile broadband likely becomes a preferred access mechanism there, due to cheap smart phones, low PC penetration, limited fixed broadband, etc [55].

The combination between mobile broadband and media services offers a huge potential to be a source of revenue and a key to growth for telecom operator in those emerging markets. The digital music revenue, for example, has increased to 8 % for the first time since 2004 [56]. It was followed by the growth in the subscription to streaming services, purchasing download, and expansion of digital media services across the globe, especially in the mobile devices. This is in contrast to what have happened in the fixed broadband, where the file sharing services dominated. The mobile broadband’s role in these emerging markets is important, as it is likely not just as a substitution for fixed broadband, as we have seen in developed markets [55].
Indonesia is interesting to be a case study due to its market size and potential growth. The mobile penetration has passed 113%, but it is still expected to grow [61]. In addition, despite the 3G has been rolled out for more than five years, its penetration is still less than 10%. The GDP is growing fast compared with neighbors in the region, followed by booming of the middle-class and young population [98][60]. There are tendencies to watch OTT video through mobile devices rather than the Internet-TV [57]. The personalization service is still dominating the digital music landscape and MNO has a strong position towards the billing relationship, as bank account penetration is extremely low, covering less than 20% of the population [59].

1.2. Problem Definition
There are different challenges and opportunity factors in developing sustainable business, both when viewing it in the global and local market perspective. The combination of the aspects above creates unique circumstances to the Indonesian market. In addition, our findings show the complexity that the telecom actors should face to offer media services. First, it requires them to serve users with a higher demand and to understand the differentiation aspects to suit types of user segment [42]. Second, there is a trend in the telecom industry, where new actors with different economic interest enter the ecosystem and introduce changes [37]. Third, the digital piracy remains a barrier for business growth [56].

In addition, the initial mobile data services business models that the telecom actors usually use are not compatible with these emerging Internet services [41]. Therefore, there is a substantial need to investigate and/or analyze suitable options in the existing mobile broadband business models, in order to make it as a profitable telecom business sector. However, the business model itself is a vast scope of a subject, as it covers broad range of aspects and is seen in different points of view [1][2]. The telecom industry itself also runs in a dynamic environment, e.g. in term of demographical, social, economical, and political situation. Despite the similarities among particular user segments across these emerging markets, there are differences in usage habit [54].

Therefore, the strategies used to monetize the potentials and to overcome the challenges mentioned above have to be targeted to a specific service and market. Hence, the universal solutions would not be suitable. Therefore, the main intention of this thesis is to explore the business model options for mobile broadband media services in the Indonesian telecom market. In order to do that, the following four questions below are answered in this thesis:
1. Who are the actors involved in serving the media services, and what kind of relations and business models do they use?
2. What are the mobile user’s usage characteristics, especially in Indonesia, toward the media services through mobile broadband?
3. What kind of potentials and challenges would the MNOs in Indonesia face in providing media services as a mobile broadband business?
4. What kind of positions and roles can the MNOs in Indonesia take to make media services as a profitable business?

1.3. Contribution
In order to analyze and evaluate the feasibility of solutions described in the problem definition above, we will need to see it from a multitude of perspectives. Therefore, this tele-economic discussion was done from a range of aspects and presents outcomes as below:

1. Business models and market structure
We do classification and assessment of different types of existing business model that are currently used to deliver mobile broadband media services worldwide, and then put focus to Sweden, as our reference market. We then provide insights of the telecom and media market structure in Indonesia, which is our target market. In other words, this result mainly concerns about the supply side aspect. The discussion contains analysis of eco-systems, which are the
identification of actors, their relation model, business roles, and responsibility distributed among them, as well as drivers and challenges of their strategies. This industrial background is structured as market maps that consist of telecom operators and other actors in the media and Internet industry.

2. Mobile media user
The second outcome is the understanding of mobile media user, which means the discussion relates to the demand side aspect. The majority of users are not interested with the technical details, and the successful loyalty programs demand the provider’s ability to capture the actual or further composition structure of their preferences. In this context, we analyze the customers’ preferences’ patterns worldwide toward the media services, then we are in deep to Indonesia customer characteristic. It ranges to satisfaction aspect, willingness to pay and continue using the service, and expectation. This is done because, before we are able to identify the suitable business model options for a market, we need to first identify and predict these aspects.

3. Recommendation
Through those two studies above, we analyzed the feasibility of the identified options. We used the market understanding data that we had about Indonesia as an affirmation tool. In other words, we highlight the available business model options to deliver media services on top of mobile broadband in Indonesia. We do this according to our understanding of its market structure (telecom and media), regulation, and end-user, as well as the lesson that we learn from the trend that has happened / is currently happening in the global and reference market (Sweden). We expect that, by using our analysis and recommendation, the MNOs can take a strong position and build profitable business in delivering mobile broadband using media services.

1.4. Thesis Outline
The structure of remaining chapters in this thesis is done as follows. Chapter 2 lays theoretical foundation and frameworks required to understand the research areas. It ranges in the business model, technology acceptance field, as well as related study of the mobile media services.

Chapter 3 describes the activities undertaken to accomplish the research. This chapter also argues the frameworks and theory used as the basis of the work. Chapter 4 and chapter 5 present the introduction of current landscape of digital music and TV/Video industry. It is followed by discussion of the actors involved, and relations and networks that they form, as well as evaluation of the distribution models, service models, and revenue models used.

Chapter 6 contains the analysis of Spotify business model, and discusses its collaboration with other actors in different industries. Chapter 7 presents the Indonesian mobile telecom and media market, as well as regulatory framework. After that, the discussion of the mobile users is presented, along with the empirical results of the quantitative study, where the hypotheses about these users are tested and analyzed.

Chapter 8 consists of conclusions of final analysis and implications for Indonesian market, related to the research questions. The discussion is formulated based on the findings derived from the global market trend, lesson learned from mobile media service pre-study in Swedish market, as well as understanding about the Indonesian market (regulatory, telecom and media market, and mobile user). Finally, some critics of the study along with suggestions for future work are presented.
Chapter 2 – Literature Study

This chapter presents the review of theoretical foundations, frameworks, and related studies. The discussion ranges from the business model concepts, to the technology acceptances and the mobile multimedia services.

2.1. Business Model

Despite its popularity, there is no common consensus on how to define the business model, and this term is often used to express different things [1]. Thus, it is important to stand on the specific definition, before we review various concepts. According to [2], business model is “a conceptual tool containing a set of objects, concepts and their relationships with the objective to express the business logic of a specific firm. Therefore we must consider which concepts and relationships allow a simplified description and representation of what value is provided to end-users, how this is done and with which financial consequences.” Following this, various business models written in range of sources are classified into three categories, which might be hierarchically linked to each other, as shown in Figure 2.

**Figure 2. Business model concept hierarchy [1]**

First, business model is stated as a concept that can be used to describe various businesses (Concept point of view). This is the abstract layer, which is designed to answer typical basic definitions and/or the meta-model questions. The works in [2], [8], and [9] for example, provide both concept and meta-model framework to design a business model. The work in [2] defines the Business Model Ontology (BMO) that constructs business model using four main pillars (product, customer, interface, infrastructure management, and financial aspects), and then split it into nine interrelated business model building blocks as core of the ontology (value proposition, target customer, distribution, channel, relationship, value configuration, capability, partnership, cost structure and revenue model). In [9], this framework consists of six components, which are the value proposition, market segment, value chain structure, revenue generation and margins, value network and competitive strategy.

Second, business model is explained as types of model that each is used to describe a set of business with common characteristics (Taxonomy point of view). The typical questions answered here are either the taxonomy of types and/or the sub-meta question. One example is
that classify the different business models according to the types of value proposition and revenue stream. It classify nine generic forms of e-business models based on value proposition and revenue stream are proposed, which are brokerage, advertising, infomediary, merchant, manufacturer, affiliate, community, subscription, and utility model. Meanwhile, the work in [5] defines specifically business model in wireless business based on revenue stream and target user segments. This was modified from previous models, which consist of nine models as well: advertising, application provisioning, brokerage, content provisioning, infrastructure provisioning, network operating, service provisioning, application service provisioning, internet service provisioning, and terminal manufacture.

Third, business model is discussed as a “bottom-line” analysis that represents an instance of the generic business model (Instance level point of view). It describes the real world business, such as the particular operating case or firms’ business model. The works in [3] and [4] cover the tele-economic calculation, which are the network rollouts assessment for a mobile broadband access. The objective is to evaluate, present the viewpoint from radio-access network investment, and make an evaluation of providing amount of user with forecasted traffic demand. The profitability and the viability of business model are then evaluated using cost and revenue matrix. The work in [9] also matches into this category, as it assesses the implemented and existing business models. In this case, the Xerox’s business model is analyzed using the framework designed previously.

The Network-centric approach
There has been a concern raised that business model should also be seen as cross-firm collaboration as the value network analysis. Focusing to only a single company’s perspective is insufficiently suited to address the services that require multi-actors collaboration [10]. The mobile telecom business itself is also getting complex because there is multitudes of actor outside the industry, with different economic interests, enter the market [12]. Therefore, it is fundamental to identify all of these actors and their roles, as well as to understand their interaction with each other. Numbers of works specialized to ICT field have broad business model analysis of traditional manufacture industry into variety of actors, interaction and strategy discussion, either in the concept, taxonomy and/or taxonomy point of view.

In [5], there has been an identification of nine basic types of actors and roles in the wireless business, which are application provider, application service provider, content aggregator, content integrator, content provider, infrastructure provider, network provider, service provider, and terminal manufacturer. In [13], there are assessments of two existing models for multi-actors analysis, one is based on the system theory (MACTOR) and other is game theory (Allas model). The new model, MASAM, is then proposed to capitalize and overcome previous’s strengths and weaknesses. The cooperation models used by telecom operator to interact with some of these actors are discussed in [7], using the Actor, Relation, and Activity (ARA) point of view. It focuses to three services (public mobile broadband access services, services and solutions for indoor wireless access, and mobile payment and ticketing services), by identifying main drivers of cooperation and how to organize it.

The primary lines of reasoning of the partnership between actors are grouped in [12]. The first motive argued is “Cospesialization”, which is to make the product in optimal and economically scale through specialized resource or knowledge of partner. Such common examples are outsourcing and sharing infrastructure. The second motive is “Cooption”, which is to reduce or share the risk and uncertainty in the environment. Such example is the engagement in a temporary alliance with the actor/s that was/were previously the competitor (“co-opetition”). The last is in order to do “Learning and internationalization”, which is the resources acquisition. The targets are mostly knowledge, data, or end-user access. This is done in order to leverage the business model or competencies, e.g. to conquer the new market. This is also mentioned in [18] as “accessing complementary asset”. This is done to leverage the existing business model and/or competencies.
2.2. Technology Acceptance

Mobile media streaming service would bring shift in the habit of the early user. The diffusion of a new technology is a result of decision series and comparison factors from end-user’s perception regarding the benefits and costs of adoption. Therefore, the ability to predict this diffusion plays an important aspect in assessing the suitable business models of new services, because the potential user might not adopt it, in spite of the availability of that technology in the market. This factor includes user’s readiness to use and willingness to continue using the technology, especially in Indonesia where mobile broadband media services do not take off yet, compared with the developed markets.

Researchers have performed various theories and designed frameworks to analyze factors that affect end-user intention to adopt new technologies and services. However, substantial theoretical and empirical works accumulate to some of it. Such works in mobile Internet field are [34], [35] and [36] those adopt, extend, and combine several frameworks. They assess range of mobile value-added services, due to its flexibility to fit in various cases. The prominent one is **Technology Acceptance Model (TAM)**, shown in Figure 3, designed for two purposes during early stage of computer [30]. **First** is to understand a successful acceptance process from implementation of new information system. **Second** is to provide a basis of methodology to predict further usage of a technology after a brief interaction.

![Figure 3. The Technology Acceptance Model (TAM) [30]](image)

However, as TAM gives more attention to examine the factors that drive user’s adoption, it is inadequate to assess how the external interventions would affect individual perceptions and their attitude intention. These are important to evaluate successful new implementation of information system [31]. Moreover, TAM is also designed to examine user’s adoption and intention to continue using the technology after user had exposed to it. This means, this framework is rather to explain post-adoPTION behavior. It is not originally designed to be used during pre-implementation stage, which is also critical to assess the sustainability of the new technology [32].

![Figure 4. The Unified theory of acceptance and use of technology (UTAUT) [33]](image)
The **Unified theory of acceptance and use of technology** (UTAUT) should be taken into account [33]. This framework is visualized in Figure 4 above. It was designed as an extension of eight previous prominent models\(^1\), in order to overcome their imitations, especially on considering social context and personal expectancy. This model is able to explain 70\% of the observed variances in the study; compared to 17 - 53 \% of TAM’s cite success. It has been tested to the technology usage cases for both individual and organizational/enterprise oriented, as well as in the voluntary and mandatory context. It includes the demographic factors ignored previously and it was designed to examine the technology during their initial introduction state.

The UTAUT framework consists of four user acceptance and behavior factors. The performance expectancy means a degree that user thinks that this new technology will help them in gaining in a job performance. The effort expectancy is a degree of ease associated with usage of the new system. Social influence is a degree to which user perceives the importance of others to think he/she should use this new technology. The facilitating conditions a degree that user thinks the infrastructure is available to support them to use this new technology. These determinants lead to behavioral intention, with is influenced by four key moderators: gender, age, experience, and degree of voluntariness to use the technology.

### 2.3. Mobile Multimedia Services

Several works have been done to research the emerging media services in mobile environment, but most of it focuses to either the technical underlying details or technology acceptance factors. As far as our knowledge, the study about mobile media services that analyses both the business aspect (in multi point of views) and user acceptance factors are not covered yet, especially one that is intended for the Indonesian market and considers the unique circumstances there (regulatory, telecom/media market and mobile user characteristics).

The work in [38] assesses the factors that will affect the mobile video services usage and implications to the service providers. It limits the focus to user-generated on-demand video, where the assessment was done based on theories of the Long tail, user-generated content (UGC), technology acceptance, as well as mobility and self-expression. The findings covers the influence factors connected to the service offering and value for the users, as well as indicate the importance to the service provider to cooperate with other actors in offering and marketing the service.

Moreover, the study in [39] also explores user’s preference in the mobile multimedia service and put the focus to the young people. It was done to investigate the possible value added services from the multimedia that can be offered to this user segment. The findings, which were investigated using the Innovation Diffusion Theory, reveal that the cost and technical constraint to use the service are the main barriers for this user segment, and it is followed by the knowledge level about the offered services. This knowledge factor is also confirmed in [38] as one of the important factors that should be considered by service provider.

Furthermore, the impact of the convergence that happens in the multimedia business is analyzed in [17]. This work explores how this convergence drives change in the competitive strategies of the media and communication actors. It also mentions about multitude of actors form different origins that may attempt to assume the most favorable position, and assess the strategic options that can be taken by these actors in form of migration and integration. However, this work only point out the actors’ positioning in value chain point of view, and actors’ constellation in the value network were not covered.

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\(^1\) Technology Acceptance Model (TAM), Theory Reasoned Action (TRA), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined Theory Acceptance Model and Theory of Planned Behavior (C TAM-TPB), Model of PC utilization (MPCU), Innovations Diffusion Theory (IDT), Social Cognitive Theory (SCT)
This chapter presents the motivation of the research approach, theories, and frameworks used. In addition to that, we also present the detail methods for the data collection and data analysis, as well as strategies to assure the quality of this study.

3.1. Research Approach

In many cases, a research is done either using a qualitative or quantitative approach. The intention of this thesis is more into understanding the phenomenon and answering the problem that the important factors are still unclear. Thus, the main research approach that fits to be used is a qualitative.

However, there is also a need to use the quantitative approach, especially to get an understanding of the media user by using a statistical validity. Therefore, the mixed approach is suitable, where the qualitative approach is complemented with the quantitative approach [19]. We applied this approach to four research phases: literature study, data collection, data analysis, and then forming the conclusion and recommendation for the future research.

3.1.1. Literature Study

As the research needs to dive into a range of perspectives, we first establish clarity of theoretical building blocks. We have to get an understanding of the business model concept. This includes the mechanism of how frameworks and theories work, as well as their antecedent and consequence. In this discussion, we also get deep into a value network discussion, which is to model the relevant actors in the digital media ecosystem and relations among them.

The industrial background and user’s acceptance factors also play an important aspect, which also as a based of the analysis. Thus, we reviewed the technology acceptance frameworks, especially ones that can be used to study the mobile services. This was used to understand the current and future pattern of media services diffusion that is delivered on top of mobile broadband in the Indonesian market.

3.1.2. Data Collection

Beside the literature study, there were also data collection and analysis stages. These were done to understand the business models used to deliver the media services on top of broadband in worldwide markets today. However, the final intention is not to design such new solutions, but to evaluate the existing ones and to identify suitable options for the case study market. Therefore, analyzing the pattern of existing business models becomes a requisite, before we be able to evaluate and propose the relevant options. In order to do that, we used the data collection techniques, as mentioned below:

- **First**, we conducted the **unobtrusive technique** through secondary resources, as the basis of our research problem definition and pre-study cases analysis [20]. Discussions with the advisors and examiner also helped us to formulate the problems. Different types of source from both the relevant and adjacent areas were studied. It consists from academic and market report, to the newspaper and magazine articles. The KTH library catalogue was used to gather the scholarly journals², while the market reports and analysis documents were mainly searched through Ericsson’s business intelligent center (BIC)³.

- **Second**, we have undertaken the qualitative interviews with the contacts in the companies that operate in the reference market (Sweden) and target market (Indonesia). These persons are relevant due to their expertise and professional activities in the telecom and

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² “KTH Bibliothek”, available [http://www.kth.se/kthb/](http://www.kth.se/kthb/)

³ “Ericsson Business Intelligent Center”, available [http://internal.ericsson.com](http://internal.ericsson.com)
media industry that relate to our study. These interview sessions took around 1 hour and conducted as semi-structured and open questions\(^4\). This was done to get an understanding of the context of these actors’ decision, intention, and opinion about the case we were studying. It means we performed the expert sampling\(^20\) that covered the contacts from MNOs, telecom regulator, OTT music service provider, TV broadcaster and mobile content provider. The list of the interviewees is available in Table 23 at Appendix A – Qualitative Interviews.

- Third, we gathered the quantitative user data using a simple random sampling survey\(^20\). This empirical data was used to perceive user patterns (behavior, expectation, perception, and acceptance) toward the mobile media services. Therefore, we could get a better understanding of this market and snapshot of end-user affirmation. The questionnaire was a combination of types of question: multi-item statement (“Likert response scale”), multi-choices, dichotomous, contingency, and open questions.

We first conducted the pre-test survey to a small sample of respondents in Sweden, to improve the questionnaire accordingly. The survey then was opened for 14 days from July 30 to August 12, 2012 and published in the survey monkey, an Internet-based survey tool\(^5\). The link to this survey was privately mailed to an extensive list of 1488 Indonesians, who were randomly selected from social media websites and mailing lists. During that period, we got 195 responds, which consist of 119 valid data. Then, this valid data was used to test and validate our hypotheses about the Indonesian mobile users.

3.1.3. Data Analysis

It is important to do the analysis for the broadband business in its complete ecosystem (network, aspect, services, and application aspects), in order to get a complete understanding and picture of what we are dealing with\(^40\). In the network aspect, we focused on the analysis of the business model specifically for mobile broadband. The service and application aspect was concentrated on the multimedia in entertainment aspect, covered digital mobile music and TV/Video application. The analysis about end-user aspect covered the consumption and preference pattern of the mobile user to those services, in the global and Indonesian market perspective.

Based on the problem domains defined previously, it is clear that the scope of this thesis is not to form new business models, but to assess the suitable options. Thus, the analysis was done with the pre-study and post-study analysis according to theoretical framework mentioned in 2.1. This pre-study analysis consists of three parts:

- First, we saw the business model as value network of entities (Network centric approach)\(^10\), because there are multi-actors involve in the media business ecosystem. We identified these actors, what kind of roles they have, and the value network they form in the OTT music and TV/Video services provisioning. We used the actors, resource, and activities (ARA) point of view\(^7\), where the identification of these actors was elaborated from the work at\(^5\).

- Second, we analyzed common characteristics that lie in the business models used to deliver media services worldwide. We evaluated different business models (Taxonomy point of view)\(^2\), by elaborating the work at\(^6\) and\(^5\). Here, we observed different forms of business model based on the service, distribution, and revenue model.

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\(^4\) The interview questions for the representatives from companies based in Sweden are designed together with the other students that studied similar topic but different case study, which are Ekambar Selvakumar and Jin Huang

• **Third**, after getting the understanding of these digital media industries landscape, we evaluated specific firms’ business model *(Instance point of view)* [2]. We chosen Spotify, as it is one of the current prominent OTT and mobile media service providers in Europe and have inter-actor relation within its business model. We framed our analysis by using six elements in the framework designed in [9].

These three analyses provide us the conceptual bridge to align the triangle of strategy, organization, and technology. We need to do those, as mobile broadband in Indonesia is still immature and mobile media services have not taken off yet. Therefore, there is not much to learn if we only see it from a local point of view. Therefore, it would be hard to analyze this target market, without first doing the pre-study analysis to the mature markets and get understanding of the landscape.

While doing this pre-study analysis, we developed hypotheses that later are then tested in the **post-study analysis**, which was OTT music and TV/Video services provisioning in Indonesia’s mobile broadband market. These hypotheses and its tested variable are listed in Table 32 in Appendix C.1. Using this, we assessed the Indonesian mobile users’ acceptance and readiness toward media services through mobile broadband within the **UTAUT** framework [33], which was chosen as it is an improvement of the previous prominent user acceptance models and has widely used among researcher, as discussed in section 2.1.

UTAUT is based on belief that individual factors affecting user’s decision to accept or reject a technology or service can be identified and measured. According to this, user’s expectancy for performance, effort for adoption, and social environment would influence behavioral intention. This intention, along with the facilitating condition factor, is fundamental determinant of the actual usage behavior. It also considers age, gender, experience, and voluntariness aspect, and it has been successfully applied in numerous studies. Therefore, this is suitable to be used in this study, to understand Indonesian mobile users’ characteristic toward mobile broadband media services.

### 3.2. Quality of the Study

#### 3.2.1 Reliability

Reliability refers to the consistency and/or stability of a particular result from procedures done in the different circumstances, assuming the variable factor/s has/have not changed [21]. As this thesis uses mixed approach, thus the reliability to both of the qualitative and quantitative study should be taken into account. The reliability of the qualitative study was ensured by letting the interviewee be informed about the interview protocol and the questions prior to the interview session.

In addition, because the interviews are semi-structured and open questions, the interviewer might repeat and paraphrase the information relayed by the interviewee, to correct any misunderstanding. We mostly recorded the conversation on behalf of the interviewee’s permission, which makes us possible to re-analysis the information in its whole context later during the post-interview session. The main points from the interviewee’s answer to each question are listed in Table 24 to Table 30 in Appendix A.1.

The reliability of the quantitative study was ensured using **internal consistency**, by testing the hypotheses in a single survey. Internal consistency refers to the degree of the relation among items measured [22]. This means, in this study we assessed the internal consistency by measuring how the results (variable) from different questions that are designed to measure the same hypothesis, yield to the similar construction. We assessed these results using two prominent types of **Correlation tests**, which are Cronbach alpha and Pearson product-moment correlation (Pearson correlation).
Cronbach alpha shows us the consistency of the variables, which is approached within the value of its reliability coefficient ($\alpha$) [22]. The assessment for the Cronbach alpha’s values is done by following the thumb mentioned in [23] as quoted in [24], as listed in Table 1. Meanwhile, Pearson correlation shows the correlation coefficient value ($r$), which tells us whether the variables correlate each other and the strength of their correlation. This at the end also represents the reliability. Nevertheless, different with the Cronbach alpha, it only can be used to measure two variables. Pearson correlation may show negative or positive value, which the negative value means the negative correlation between two variable (one variable, the other decrease), and vice versa. The assessment for the Pearson correlation’s values are done by following the thumb as listed in Table 2.

Table 1. Interpretation of Internal consistency from Cronbach alpha

<table>
<thead>
<tr>
<th>Reliability Coefficient</th>
<th>Internal Consistency</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\alpha \geq 0.9$</td>
<td>Excellent</td>
</tr>
<tr>
<td>$0.8 \leq \alpha &lt; 0.9$</td>
<td>Good</td>
</tr>
<tr>
<td>$0.7 \leq \alpha &lt; 0.8$</td>
<td>Acceptable</td>
</tr>
<tr>
<td>$0.6 \leq \alpha &lt; 0.7$</td>
<td>Questionable</td>
</tr>
<tr>
<td>$0.5 \leq \alpha &lt; 0.6$</td>
<td>Poor</td>
</tr>
<tr>
<td>$\alpha &lt; 0.5$</td>
<td>Unacceptable</td>
</tr>
</tbody>
</table>

Table 2. Interpretation of Correlation coefficient from Pearson Correlation

<table>
<thead>
<tr>
<th>Pearson Correlation</th>
<th>Correlation coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>-0.09 to 0, or 0 to 0.09</td>
<td>None</td>
</tr>
<tr>
<td>-0.3 to -0.1, or 0.1 to 0.3</td>
<td>Small</td>
</tr>
<tr>
<td>-0.5 to -0.3, or 0.3 to 0.5</td>
<td>Medium</td>
</tr>
<tr>
<td>-1.0 to -0.5, or 0.5 to 1.0</td>
<td>Strong</td>
</tr>
</tbody>
</table>

3.2.2 Validity

Validity describes the extent to which a measurement accurately represents what it intends to measure [21]. In the qualitative study, the validity was enhanced using the triangulation strategy. Here, we use multi sources of information in the qualitative data collection, which are the secondary sources and interviews. The qualitative validity was also ensured through carefully choosing these data, including the report documents, companies and interviewees. The data taken from the secondary resources were compared and cross case analyzed with the information from the interviews session, and vice versa. Therefore, the bias and interpretation from author’s personal perspectives can be minimized.

The validity of the quantitative study was assured through both external and content validity. The external validity was done by performing a survey to the small random sample of Indonesians who are currently living in Indonesia, which means the study was carried out to the representative environment to which the study are intended to be applied. The content validity was achieved by conducting the pre-study to the reference markets, with the support of literatures review and qualitative data collections. Thus, we could design the questions that have a close connection with theoretical frameworks (UTAUT) by ensuring the aspects within the framework were measured. The questionnaire was made using Indonesian language (Bahasa) instead of English, to avoid any misinterpretation about the context of the questions.
Chapter 4 – The Digital Music Industry

This chapter presents the analysis of business models used in the digital music industry. We start with the current landscape of the industry, and then provide discussion of the actors involved, and relations and networks they form using “ARA point of view” as mentioned in section 2.1. In addition, we also evaluate business models used by these actors in the “taxonomy point of view”, where we analyze their distribution, service and revenue models.

4.1. Industrial landscape

The digital music services have caused the revolution in the music industry, and it is obvious that the compact disk (CD) has been the largest revenue stream for the industry for more than two decades. This industry has also faced a shift from the physical to the OTT digital distribution era, since the debut of the OTT retail store a decade ago. It extends the music business models and reaches out to more users across the globe. This makes the music as the first media sector that gets full impact from the Internet and technology-empowered forces.

Nowadays, people do not need to purchase CD to enjoy the music, because the available OTT services allow them to immediately and legally download or stream the music stored in the cloud. According to IFPI\(^6\), there has been a consistent rapid increase in the digital music revenue worldwide since 2004 and its percentage over the overall revenue keeps expanding, as shown in Figure 5. This number has far away passed physical format, and made digital penetration in music industry dwarfed all comparable creative industries, except game sector.

![Figure 5. Digital music revenue and its percentage share over total revenue worldwide\(^6\)](image)

However, digital music business internationally is not a homogenous, but consists of various service model portfolios that run at different speeds. Therefore, there would be no single business development road map applicable in all markets, due to the uniqueness and enormous interaction preferences in the way user in each territory consumes music. This is either due to the differences in economic situation, network connectivity, device penetration, digital development, etc. In addition, the obstacles across countries are also not just the piracy levels and low law enforcements, but also different publishing right mechanisms, user’s preference stages of online payment, etc.

4.2. Actors, Relations, and Networks

Before we are able to analyze the network value of the music industry with others, it is important to identify the main actors inside this industry and to get an understanding of their

\(^6\) Author's compilation from the data in the IFPI's Digital Music Report documents, from 2004 to 2012
roles. We then analyze these actors’ relations, from traditional era to the recent phenomena. First, we identify the prominent relations in the digital music industry that have run or are running worldwide. Second, we observe these patterns and model it using ARA point of view [7].

4.2.1 Actors
Despite the dramatic changes in the industry’s landscape, the majority of the actors in the music industry still fulfill their traditional roles [48], as mentioned below.

1. Artist
The term of artist in the music industry covers several parties, which are the recording singer and/or musician, composer, and songwriter. The recording singer is an artist that delivers the recorded music and/or stages the performance. The composer is an artist that writes the music sheet, while the songwriter is one who writes the music lyrics. Some of the artists in music producing industry might hold several roles. A common example is an artist who both works as a singer and songwriter, which makes him/her hold multi-properties for the copyright works.

2. Publisher and Record label
These parties are concerned with the development, protection and valuing the copyright works. The publisher works with the artist based on the publishing contract. It handles the copyright registration, promotes, and monitors the usage of it, and then collects and distributes the royalties of the copyright work as written forms (music sheet, lyrics). The record label works with the artist based on the recording contract, where its main responsibility is in the production and enforcement of the copyright works as recorded forms (sound recording). These actors and the artist act as the content owners who hold the copyright works.

There are currently around 1400 music record labels and publishers worldwide [56], which can be grouped into two types as below:
• Major record labels
  These big record labels are often as an umbrella organization (record/music group), and control ~ 75 % of the worldwide music market [48]. They also may consist of several subsidiary companies, such as the music publishers, record manufacturers, and distributors.
• Independent record labels (Indies)
  The music publisher and record label company, which do not have a corporate backer, might form business relationships with other companies to handle full tasks. However, since in the 1990s, the line between Indies and major record label has begun to blur, as the major record labels sometime also distribute some works of the large Indies as well.

3. Collecting society
The collecting society (copyright collective, copyright collecting agency, licensing agency) is an organization that handles management rights on behalf of its members (publisher and artist). These management rights might include selling non-exclusive licenses, enforcing rights and prohibit the use of copyrighted works, collecting royalty payment and distributing it to the content owners, negotiating license fees for public performance and reproduction, etc. In other words, this organization acts as a point of contact for licensing music from its members, to avoid cumbersomeness for the third party to navigate multitude of independent rights holders.

In some countries, there may be also the collecting society that focuses on functions that are more specific. Some common examples are the collecting society that grants license for performing the work (Performance rights organization / PRO), and collecting society that focuses on publishing management (Reproduction Rights organization / RRO). Indeed, according to the finding in [5], we can classify this actor as the content integrator, as they integrate the copyright works and bridge the content owners, which are mostly the Indies, to the third parties.
4. Content aggregator
The content aggregator is an organization that supplies and aggregates the music from the record label (mainly Indies record label) and distributes it to the music retailer and/or service provider. There are aggregators that offer direct-to-fan integration services (merchandise, event management, etc). In addition, some might also supply download services to other aggregators/distributor and act as a music retailer/service provider directly to the end-user. This is consistent with the finding in [5] that also mentioned a same role in mobile service provisioning.

5. Music retailer and service provider
These actors are at the end of the supply chain line that holds range of licensed copyright works in various formats for distribution to other or to be sold in their own platform. There are currently ~ 520 legitimate digital music Retailers and Service providers worldwide, ranging in 58 countries [58]. The music retailer provides the music as a product, e.g. CD or downloadable track, or any physical packages that contain music. The music service provider provides the music as a service or any act that convey the music. Some parties provide music as product and service, which makes them as both music retailer and service provider, e.g. Spotify.

4.2.2 Value Network of the Core Actors
As same as what have been discussed in the actors’ role previously, the core actors of the music industry’s relation (“Core partnership”) also do not change dramatically. As far as we can identify, their “core network” exist in every models that we discuss further. Meanwhile, the variation happens outside this network “box”. The core actors of the music industry and their relations can be visualized as shown in Figure 6.

![Figure 6](Image)

**Figure 6.** Conceptual actors and relations of the music industry’s core network

When a music artist wants to distribute its artwork, it is quite frequent that they have to deal with separate parties, which are the record label and publisher, through at least two basic contracts to each of them: the Recording contract and Publishing contract respectively. The music artist whose role is a songwriter mainly deals with the publisher, e.g. for the music composition, lyric sheet, etc. The publisher then, on behalf of the songwriter’s, brings that artwork to the record label in order to be used by the singer.

Meanwhile, a music artist that has a role as the singer, mainly deals with the record label, e.g. for the music recording. The record label, on behalf of the singer, contacts the publisher for the music material that is suitable for this singer. Both the publisher and record label deal with the collecting society, which is mainly settled per country-based, that then acts on their
behalf to collect the royalties for the usage of their artist’s work from the aggregator. The **Aggregator** acts as a point of contact for the distribution of that work to the music retailer / service provider.

However, following the development in the technology and decreasing in the revenue, there are several exceptions from the default strategy and working relation mentioned above [63]. This is mainly applied to the Indies environment, as the major record label uses to have a complete capability to fulfill these scoops by themselves. They merge the publisher’s and record label’s traditional roles, and turn as the “music company” by setting up compact all in one deal with the artist (**“360-degree”** / **“multiple-rights”** agreement). While in return, the artist gets more shares, compared with having separate deals with different actors (publisher and record label).

### 4.2.3 Value Network in OTT Distribution

In the traditional era, there is only the music retailer that the core actors of the music industry deal with. The music retailer distributes the copyright works to the end-user as a **physical product** (e.g. phonograph record, cassette, CD, etc). Then since a decade ago, the music business mainly run under the OTT channel, where it is distributed using several packaging models, as discussed later in section 4.2. This then expands and actors from different fields are involved in the ecosystem. This evolution forms diversification to the music industry’s business model, brings music closer to consumer, and becomes the key route to the global mass-market music distribution.

#### 4.2.3.1 “Direct-To-Fan” Model

During the early digital music business, the record labels also rolled out their own digital retail channel. They act as the OTT music retail / service provider, under their own or artist’s brand [64][65]. Their offerings range in variances of product (e.g. track and album, merchandise, performance ticket, artist interview, etc) [90]. Some record labels also turn their channels as an advertisement platform for the brand partners. The decrease in the traditional advertising forms, makes the music industry offers a better opportunity for the international brands to reach their end-user. The actors and their relations in this network are visualized in Figure 7.

![Figure 7. Actors and relations of “Direct-To-Fan” in the digital music](image)

#### 4.2.3.2 Telecom Actor’s Potential Positions

**A. “Point-To-Point” Model**

The earlier relation variance under this model was struck worldwide around 2001, started first by the collaboration between music industry actors with Internet industry actors. Despite various variances and complex ecosystem, the relation under this model requires “external” actor partners to build their own distribution platform, positions themselves at the end of the Value chain. Meanwhile, core actors of the music industry act as suppliers at the back-end, as same as in the traditional distribution era. The Figure 8 shows the typical actors and their relations in the digital music industry using the point-to-point model.
As can be seen above, multitude of actor can also involve in the OTT music business, not just the music industry actors we mentioned in the section 4.2.1 previously. These actors can range from end-user electronic (CE) provider, mobile device OEM and OS provider, telecom operator (CSP), etc. In the variance that involves the CSP, the music industry actors can give them an advantage over established billing structure, commercial network footprint, and mass delivery channel. Music content and service also has a potential as game-changer to the CSP. This can keep them competitive by increasing market share and ARPU, reducing the churn rate, and competing with the OTT, rather than just being the “dump pipe” [90].

In addition, the legal music service is delivered through the client/server and/or assisted-P2P. This could help to control user’s bandwidth usage, as they have a potential to turn to this legal and easy-to-use service rather than the illegal one [66]. TDC and SK Telecom are some of the CSPs that were successful to deliver the “Point-To-Point” model. The data shows that TDC has reduced its churn rate approximately 40% in mobile and 60% in fixed broadband since the launching its download music service, YouSee PLAY, in 2008 [67]. By November 2010, TDC has recorded ~250 million downloads [99]. Meanwhile, SK Telecom has also grown its mobile data revenue up to 30%, far ahead of its competitors due to its music streaming service, MelOn.

The fundamental reason of these successes was due to their value proposition that could not be defeated by their local competitors. In TDC’s case, the unlimited free download was hugely attractive to the Danish market. It was able to offer this because of its success on setting up agreement with all major record labels and Danish Indies record labels [100]. In SK Telecom’s case, it has a subsidiary record label (Loen Entertainment) that is also the largest record label in South Korea [10]. This significantly removed the agreement licensing complexity, and reduces the cost to operate the service with updated contents. It should also be noted that the local music contents are much popular in South Korea, compared to the international contents [101].

However, there are prohibitive up-front cost and significant complexity that prevent others to follow. There are range failures from “Point-To-Point” model implementations, delivered by types of high profile CSPs worldwide. An example is Virgin Media’s direct relation with Universal Music in the UK, French and Australian market back in 2009 [94], because they were unable to secure deal with other three major record labels. On the other hand, BSkyB music service also failed in the UK market due to the inability to reach a large end-user,

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7 “TDC”, available http://tdc.com/
8 “SK Telecom”, available http://www.sktelecom.com/
10 LOEN http://www.loen.com/
although it had a direct backing from major and Indies record labels, large subscriber based and marketing strength [102].

The success of TDC and SK Telecom are not easy to be replicated by other CSPs in different countries with their unique circumstances. These factors are due to several reasons [72], as below:

- **First**, there are huge efforts to be put in developing and maintaining digital music service that has excellent quality, enough affordability and sustainability of music contents, the same as with marketing and branding. During the interview, Lars Roth (TeliaSonera) also mentioned that despite the significant cost that have been invested to obtain license and operate their digital music service, “Telia Musikbutiken”\(^\text{11}\), they still failed on gaining values they look for (see section 6.3.2)

- **Second**, music service is a part of VAS, not the core part of CSP’s main capability and revenue, as they only contribute small proportion to the annual non-voice revenue. Considering these aspects, the CSP might not like to put huge effort and capability to focus to the digital music business, as the OTT music service players would capable to do.

- **Third**, the CSP also has to struggle to compete with other well-known OTT music service players, such as Apple with iTunes and iPod\(^\text{12}\) that give end-user more inferior listening experience. They have the capability to reach consumer globally that then creates a global trend. Their focus to the music business result on a high-quality OTT service, which may lead user to put off their music consumption from CSP’s retail channel.

B. “Point-To-Multipoint” Model

The earlier variance of actor’s relation under the “Point-To-Multipoint” model was struck worldwide around 2007. This model involves the actor that acts as a “bridge” that has a settle link between the main music industry actors and several actors in different fields of industry. The typical actors and their relations in this network are visualized in Figure 9, which also might involve actors from other industries that previously have never been seen in the models before, e.g. the automotive industry [108].

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\(^{11}\) “Frågor och svar för Musikbutiken”, available http://www.telia.se/privat/produkter_tjanster/noje/musik/musikbutiken/faq

\(^{12}\) “Apple - Play music and more on iPod.”, available http://www.apple.com/ipod/
In the collaboration variance that involves CSP, this model also has a potential to gain market share, increasing the smart phone selling with bundling data plan, and reducing churn rate. This variance can be used by bundling it with the CSP’s broadband and telephony subscription packages: **hard bundling** (e.g. Deezer – Orange in France), **soft bundling**, **free trial** (e.g. Spotify – 3 in UK), **billing integration** (e.g. Spotify – TeliaSonera in Sweden and Finland), etc. Collaborating with a well-known service provider would also bring extraordinary impact on CSP’s core business, as it could expand their values beyond the traditional “pipe” provider.

The CSP also can take advantage of their end-user based and network by cross selling the music service with their existing products. However, it more makes sense for the CSP to use this model, instead of create it by them self. This is because this offers opportunity to the similarly compelling service, but with opportunity to gain it quickly, in a simpler way, and at a reasonable cost. Using this model, the CSP can share or even remove the effort on marketing and branding to deliver the service to the market. As also mentioned by Lars Roth (TeliaSonera) and Andreas (Spotify) during the interview, this kind of partnership gives the CSP an already established **platform** and existed **license agreements** with the content owners.

We can compare this with the fails that have been faced by the CSPs worldwide when dealing with the licensing issues, as discussed previously. In return, the OTT retailer / service provider can expand its end-user based efficiently on a scaled size. Its tie with the big players gives them a significant advantage, as they are mostly new and small company. This offers a strong position to compete with competitors and deal for the license with the content owners, as also informed by Lars Roth (TeliaSonera) regarding TeliaSonera-Spotify partnership. Swedish market is an example: according to IFPI, 56% of the consumer confirmed that the streaming service was their main reason to stop music piracy activities [66]. The local music industry saw 10% increasing revenue for the first time since 2000 and the file-sharing activities were reduced by 60%.

### 4.3. Service, Distribution, and Revenue Models

The economics of the music value chain has faced several dramatic changes since two decades ago, moved from the physical to OTT era, and revenue from the OTT channel is expected to overtake the physical channel by 2015 [68]. The OTT distribution, with a support from the network technology, also changes the way the music served the end-user [90]. There are possibilities to consume music content in different ways, as it is delivered on top of diverse devices and platforms. The current business model used in the OTT music can be mapped into different combination of services, distributions, and revenues, as shown in Table 3 and **Table 4**.

**Table 3.** Revenue models in the digital music

<table>
<thead>
<tr>
<th>Revenue model</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-off Payment / Retail</td>
<td>The end-user buys the music content, and it might be downloaded or stored in the digital locker, e.g. iTunes’s revenue model.</td>
</tr>
<tr>
<td>Subscription</td>
<td>The end-user pays for regular period of time to access (stream) /get (download) limited/unlimited music contents (based on amount of time or content), e.g. Deezer and Spotify revenue model (premium/unlimited subscription)</td>
</tr>
<tr>
<td>Subsidized</td>
<td>The end-user does not pay for the music content consumption and other revenue channels support the business, mainly the advertisement fee, either as voice, picture (banner), or placed at the intervals within the content delivery, e.g. Spotify revenue model (free subscription).</td>
</tr>
</tbody>
</table>
### Table 4. Service and Distribution models in the digital music

<table>
<thead>
<tr>
<th>Service model</th>
<th>Distribution model</th>
<th>Revenue model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personalization</td>
<td>Ring tone (monophonic, polyphonic, real tone, user-generated tone), Ring-back tone / RBT</td>
<td>One-off payment, Subscription</td>
</tr>
<tr>
<td>Ownership</td>
<td>DRM à-la-carte, Free-DRM à-la-carte</td>
<td>One-off payment, Subscription, Subsidized</td>
</tr>
<tr>
<td>Access</td>
<td>On-demand streaming, Internet radio streaming</td>
<td>Subscription, Subsidized</td>
</tr>
<tr>
<td>Integrated</td>
<td>Combination of 2-3 service models above, mostly “Ownership” and “Access” model</td>
<td>Combination of revenue generation models above</td>
</tr>
</tbody>
</table>

### 1. Personalization service models

Personalization service models were initially launched by Nokia, as one of its mobile device features, and marked the start of mobile music era [68]. In those early years, the monophonic ring tone has ever contributed as the biggest revenue for MNOs, where the payment was made either using premium SMS or telephony (interactive voice response). However, in line with the expansion penetration of advanced mobile device, the marginal revenue share from monophonic ring tone service decreased and until then it was replaced by the RBT service.

The RBT service was firstly introduced in South Korea [90]. It mainly relies on the network rather than mobile device, as it is installed in the voice system of MNO’s core network. Because of its “close” delivery platform, this service does not relate to the piracy issue. However, it has a technical make up that causes the RBT costly to implement and relies to the regional marketability that makes this service very culturally specific. Thus, only MNO that is often motivated to promote the service, while the third parties mostly involve at the back-end.

### 2. Ownership service models

The “ownership” service or à-la-carte download has been and currently the dominant digital business model. However, the lack of interoperability between services and devices has been a barrier to business development. Significant moves have been done to solve this, such example is DRM-free service that allows end-user to buy and download music, then play it in any devices [90]. It includes “cloud feature” to store the track that has been bought in the cloud.

The DRM-free model is currently still as the key in the digital music business. However, there is still an issue in the interoperability of the content. In addition, the price competitiveness is highly important in this model, and piracy issues still become major barrier to the business growth. In the CSP’s point of interest, this service is only able to influence a fewer bond and loyalty with the user. This happens because user can just download the music content and then chooses on his/her own to experience it offline and/or elsewhere using other devices.

### 3. Access service models

When seeing the business in the network point of view, the CSP can build an enormous strategic alliance with the music industry actors by using the streaming services. This service model has more ability to give an impact to the CSP’s key business metrics and compete with their competitors, compared with the download services, due to several reasons.

- **First**, music is inherently emotional for people and if it is delivered using a streaming service, the quality of experience becomes a matter. It potentially creates a genuine bond between user and service (“stickiness” aspect). This is a key to reduce churn rate and gain market share. The service makes end-user stay with their CSP, unless they would lose access and/or unique offering.

- **Second**, the revenue from streaming service is generated via repeatable billing cycles, so provider keeps the revenue from both data traffic and service usage, as end-user naturally
accepts the concept of bundling with a scheduled-billing (“recur” aspect). Although revenue for a stream is lower compared to a download transaction, the cumulative revenue might be higher, because each track is listened multiple times, that each generates revenue.

- **Third**, streaming service is delivered in a high-end mobile device and can be bundled with a data plan, which is a significant potential for CSP to gain more revenue (“up-selling” aspect). The CSP can compete not mainly based on the low price of the offerings, but due to the attractiveness of the bundling.

- **Fourth**, streaming service is the “access type” consumption model. Therefore, it is natural for end-user to get access into it across different devices (“cross-promotional” aspect). This could expand CSP’s position in supply chains, e.g. PC, mobile phone, digital TV/Audio system, etc.

In addition, the global market demand is also giving signs that the digital music business is shifting to monetizing the “access” to the music. Ovum predicted the revenue from digital music subscription service would increase to more than 60% of its annual growth by 2015, due to rapid increase of paid-subscription to the streaming service [71]. It has been forecasted that the “streaming” service would likely become the main driver in the music distribution channel for the coming years. These revenue shares are shown in graph in Figure 10.

![Figure 10. Revenue stream share from the digital music](image)
Chapter 5 – The Digital TV/Video Industry

This chapter presents the analysis of business models used in the digital TV/Video industry. We start with the current landscape of the industry, and then provide discussion of the actors involved, and relations and networks they form using “ARA point of view” as mentioned in section 2.1. In addition, we also evaluate business models used by these actors in the “taxonomy point of view”, where we analyze their distribution, service and revenue models.

5.1. Industrial landscape

Video is a key driver for exploding mobile data traffic, bundled through ranges of product. According to Allot, video streaming was the largest service accessed worldwide that occupied 42% global mobile bandwidth, derived from the booming of smart phone and tablet. Youtube was responsible for 57% global video streaming traffic by Q2 2011 [78], where over 600 million views / day are mobile. While, Netflix occupies ~ 95% downstream traffic in Canada and ~ 20% in US during prime time, from only 1.8% subscriber.

In addition, video streaming business in mobile devices was also forecasted to catch other businesses in the creative industry, especially game and music. However, video is not representing strong revenue for the telecom operator for its own right. This increasing media stream traffic also triggers demand for a better quality of the content accessed. This creates challenge to manage the traffic, and OTT players also bypass telecom operator’s substantial role in the digital TV/Video value chain. Thus, the telecom operator, especially MNO, poses threat from this, in line with their investment for mobile broadband network, as the digital TV/Video business grows across multiple and connected devices [92].

5.2. Actors, Relations, and Networks

The same as the music Industry, before we are able to analyze the network value of the broadcasting industry with others, it is important to identify the main actors inside this industry and to get an understanding of their roles. We then analyze these actors’ relations, from traditional era to the recent phenomena. First, we identify the prominent relations in the digital TV/Video industry that have run or are running worldwide. Second, we observe these patterns and model it using ARA point of view [7].

5.2.1 Actors

Here we also see a consistent pattern as similar as what we have observed in the digital music industry. Despite the dramatic changes in the broadcasting industry landscape, the majority of the actors inside still fulfill their traditional roles, as below:

1. Content Owner

The Studios and TV broadcasters are match to this category. They own movie (video) and TV content, and traditionally distribute it directly to the widest audience and are compensated for the usage of that. Several examples of actors in this category are Movie-based content owner (e.g. HBO, Disney, Sony Pictures / Crackle, Universal, Discovery Channel), News-based content owner (e.g. BBC / Youview / iPlayer, ESPN, ABC, NFL, Showtime), and Sport-based content owner (NBA, Major League baseball), etc.

2. Collecting Society

As same as in the digital music industry, there is also a same role of collecting society. This organization handles the management rights for digital TV/Video content, and usually operates per country based. In other words, it acts as a point of contact to acquire licenses and avoid cumbersomeness for third party to navigate multitude of rights holders. The work in [5] classifies this kind actor as content integrator in mobile service provisioning.

13 "Product Metrics", available http://www.youtube.com/t/press_statistics
3. **Content Aggregator**
The need for a content aggregator (content distribute) comes to fill the gap between the retailer and/or provider and various content owners. This party obtains range of legitimate intellectual property rights and aggregates the licenses to distribute it. In other words, this actor provides a one-stop-shopping service, which is the established negotiation with the studio and broadcasting firms and assures the availability of the content [29]. This is consistent with the finding in [5] that also mentions similar roles in mobile service provisioning.

4. **TV/Video retail and service provider**
The service provider’s role was previously held by CSP that provides variety of TV/Video contents to their subscriber via their own service brand and delivered through their closed network infrastructure. This service is often bundled with other service features (e.g. triple play or quadruple play bundle). Some examples of actors in this category are the cable provider, satellite provider, and telecom operator. Nevertheless, nowadays, any parties from range of industries can also hold this role, e.g. Internet player, mobile device OEM and OS provider, CE provider, etc.

5.2.2 **Value Network of the Core Actors**
The relation between actors inside TV/Video industry in the digital/OTT era is visualized in Figure 11. As what have been discussed in the actors’ role previously, the core actor’s relation (the “Core partnership”) in the broadcasting industry also does not change dramatically. Here, the copyright works belongs to the Studio/TV broadcasting. Therefore, artist’ roles are less relevant to be discussed, because they do not hold the copyright. As far as we can identify, this “Core network” exist in every models that we will discuss further, while the variation happens outside this network “box”.

![Figure 11. Actors and relations in the TV/Video industry’s core network](image)

In the case of movie content, the studio may also grants the licenses for distribution to the collecting society. Märta Rydbeck (digital broadcasting expert) during the interview stated this as below,

“We (TV broadcaster) pay to [name of a collecting society] for a right that can not be cleared, for a right that is transferred by the owner to an exclusive organization that can negotiate with TV channel. So in order to distribute TV in Sweden you always have to have agreement both with the right owner of the content, but you also need the [name of a collecting society]”.

In addition, content aggregator determines how many copies that have to be made, and do the screening process to the prospective buyers, e.g. Cinema Theater or other content
aggregators. Put differently, the studio company is behind the wall. However, this is mostly not the case with the TV broadcasting industry, as they directly set up the engagement with user.

5.2.3 Value Network in OTT Distribution
Previously in the traditional era, user only got access to the TV/Video content through TV broadcaster or cinema theater. Here, the contents are defined by specific schedule and user accepted the concept to adapt to it, because the service is offered by creating demand of the same content for many end-users at specific uniform time. Then, the retailer expanded these channels and rental (physical) outlet/kiosk in late 80s/90s, where the copyright work is bundled as a physical product (e.g. DVD, VHS, Blu-Ray, etc.)

The “virtual” digital distribution channel was started by the cable and satellite TV provider, and then followed by the telecom operator through their closed network infrastructure, as discussed later in section 5.2. In addition, up until recently, there was rarely direct competition between these parties, as their operation area was different. In that era, the value chain was well established, where the CSPs act as gatekeepers to their own end-users, and there was geographical competition that borders their service range.

However, the technological advancement and change in the regulation across markets have altered the picture, made each cross other’s primary business area. Here, the competition comes from any angles and through any devices. The cable provider offers similar range of services: obtaining voice, data, and existing TV/video service in a bundle. The satellite provider might also collaborate with ISP to provide cross-selling services. While these different CSPs are racing in the triple-play business and not just facing intense competition with their counterpart core competitors, the OTT TV/Video players also enter the market.

This brings even more pressure to the existing actors and triggers a second change in the digital TV/video service competition landscape. The launching of Youtube in 2005 marks new generation of the distribution model, and makes the barrier to provide digital TV/video to the end-user shrink. Now, practically everybody can be a digital TV/Video service provider. The content owner has more choices to deliver and monetize their copyright work across different platforms. Meanwhile, user has more freedom on consuming the TV/Video contents.

5.2.3.1 “Direct-To-Fan” Model

Following the rising of OTT access through range of connected devices, the studio and TV broadcaster also seek opportunity for direct access to their end-users. There are two paths on the implementation, by either collaborating with the CE, Mobile device OEM and OS vendor and/or creating their own platform that enables TV/Video content delivery. Thus, the studio and TV broadcaster provide OTT TV/Video service in this model. The typical actors and their
relations in this network are visualized in Figure 12. Some examples of this actor are SVT play\footnote{“SVT play”, available http://www.svtplay.se/} in Sweden, or several TV broadcasters in the UK that launch open platform called Canvas\footnote{“You view”, available http://www.youview.com/}, which enables any broadcasting actors to use it as delivery platform. In these cases, the TV broadcaster acts as OTT TV/Video service provider and provides its own billing relationship with the viewer. Märta Rydbeck addressed this strategy as below,

```
”(Up until recently) a lot of distribution (channels) are by the operator, so obviously the operators are not so happy with [name of a TV channel] extending beyond its manage network, going over the top... And [name of a OTT TV service] where [name of a TV channel] builds its own customer is huge threat for the (telecom) operator. They obviously want that content in their own network. We said ‘if that is in your platform, we do not get any of the advertising (revenue)... It needs to be played in our service, so can calculate on the advertising, whether we have free channel or we have billing relationship with our own customer’”.
```

From the statement in the interview above, it is revealed there is still a main problem that the TV broadcasters are facing when delivering the content in multi-screen strategy beyond the traditional Pay-TV distribution channel (e.g. mobile TV). Therefore, it is not surprising that the TV broadcaster, as a content owner, also attempts to reach directly their viewer directly in the digital distribution, by delivering their own online channel, by passes telecom operator’s traditional role that exists in Pay TV ecosystem. Märta Rydbeck called this as called as “advertising dilemma”, as she explained as below,

```
”(For TV channel) it (mobile channel) is of course revenue stream, but it does not bring more value to watch it on the mobile (mobile TV) rather than set up box. Actually currently it bring less value, because the TV channels have not sort it out how to deal with advertising on the mobile yet... because, if I watch [name of a TV channel] here (mobile phone), and I watch an advertisement that run on [name of a TV channel], It does not get calculated as a view, I do not get calculated as viewer.

Because there is no measurement system today that takes into account the (number of) advertisement that is broadcasted here (mobile phone)... all the measurements set up today are at home (set-top-box). So it is big problem if you look at the increase of both on demand viewing or linier type of viewing on mobile today for TV channel. So people start to switch at their home, to watching only on their mobile and we do not sort this out... The TV channels are facing big problem”.
```

5.2.3.2 Telecom Actor’s Potential Positions

Despite the opportunities offered in OTT distribution, not all studio and TV broadcaster attempt to shift to the “Direct-To-Fan” model. Some still see the advantages of establishing delivery service through collaborating with other actors. Telecom operator have several strengths this circumstance, e.g. billing and direct relationship with the end-user, capability to reach mass-market through infrastructure and marketing campaign, ability to offer end-to-end quality of the content, investment to acquire desirable content, and flexibility to leverage the service through a range of bundling and revenue streams. There are different strategies and positioning that telecom operator can take in OTT TV/Video business, as discussed below:
A. “Point-To-Point” Model

At the beginning of the digital distribution, the only value chain existed was the ‘Pay-TV’ where the CSP occupied the market space. As in the traditional era, users only had a choice of what channel to subscribe, but not the content itself. The revenue is split between the CSP, content owners, and/or content aggregator [47]. Each typically receives 40-35%, 60%, and 5% respectively from total revenue share [92]. Then, a multitude of actors from different industries entered the digital TV/Video market and distributed content directly to end-users with different service models. Figure 13 shows the typical actors and their relations in the digital TV/Video industry using the point-to-point model.

![Diagram](image.png)

**Figure 13. Typical actors and relations of the “Point-to-Point” partnership in the digital TV/Video industry.**

This is a same pattern we have seen in the music business as discussed previously. These actors bypass CSP’s role using technological advances spurred by the increase of broadband and mobile devices penetration. This was previously triggered by the content aggregator, e.g. BBC, HBO, etc and then leveraged by other Internet players, e.g. Netflix, Hulu, etc. CE provider, especially TV manufacture, also took a role in this ecosystem, e.g. Panasonic (Vieracast), Philips (Net TV), etc. Here, the revenue split is approximately 60/40 respectively between content owner and OTT player [47]. This market generates much smaller revenue, ~8 billion globally, and it currently offers relatively lower quality and availability compared to traditional digital services offered by CSP.

However, this makes CSP as no longer sole provider in digital TV/Video business, as the market is growing fast and the quality issues are addressed through different approaches. This issue becomes less important in following years, compared to the advantage over availability and simplicity. Soon, the increasing quality of the OTT service and the better network connectivity, which is built by the CSP to CSP to strengthen its own core business, will result to the disintermediation of the CSP’s value chain as a traditional digital TV/Video gateway to the end-user. Even though the CSPs’ digital TV/Video services are still not fully cannibalized yet, this definitely brings challenge, as it potentially becomes mainstream in the future.

There also several weak factors and challenges in this ecosystem that do not meet with the CSP’s capability. Some examples are of these weaknesses are their closed and vertical system demands a large investment, but creates slower deployment life cycle. Their mass-market focus makes them slower to adapt to the emerging end-user’s demand and competitors that come from other industries. The effort for setting up and maintaining the license and delivering the service across multiple devices also cost time and money. This might not be worth enough for the CSP, considering the unproven business model and small revenue from this stream, compared with their core businesses.
B. “Point-To-Multipoint” Model

The content owners in this model still play behind the scene, but there is an actor that acts as a bridge between these content owners and other actors outside the core media industry. This actor typically also reaches its own end-user, thus it takes a central position in the value network. In other words, the actors form the horizontal strategic alliance in the ecosystem [18], as they collaborate with other actor that was previously competitor [11][12]. Figure 14 shows the typical actors and their relations in the digital TV/Video industry using the point-to-multipoint model, where the Internet player becomes the “bridge” actor, e.g. Google (OTT player) partnership with Sony (CE Provider), Voddler (OTT player) partnership with Tele2 (CSP), etc.

![Figure 14. Typical actors and relations of the “Point-to-Multipoint” partnership in the digital TV/Video](image)

The telecom operator might consider collaborating with the OTT TV/video player, as it significantly reduces/remove the cost and complexity to roll out the OTT service, and telecom operator can still get some percentage from revenue generate. This is suitable because even though the role of mobile device in the OTT TV/video business is increasingly important, it is still only holding a small part of the whole picture. The OTT TV/video consumption is different from the OTT music consumption, which is naturally suitable for mobility feature. Nevertheless, this is not always the case with the TV/Video consumption, as end-user naturally wants to watch a video on the best available screen. The role of mobile device in the video business would still be a “second screen” device: enhancing experience, helping discovery and facilitating social activity.

This is supported by the research done by Ofcom to the mobile phone owner in the UK about the activities done in the smart phone [76]. They found that despite the increase mobile data services usage and range of smart phone in the market, TV remains among the less consumed features. Therefore, telecom operator better to use this OTT TV/Video to complements the existing Pay-TV service. Telecom operator may take position in the marketing, integrated branding, product bundling, or enhancing the efficiency in the content delivery (resell CDN) [82][83]. It has a better technical capability compared with other actors (CDN provider), as they only able to reach the edge of CSP’s network, results on no guarantee in the final stage delivery of the content. In contrast, telecom operator’s CDN able to provide deep caching as the content is transmitted through their network infrastructure, by avoiding as much as possible upstream point of contention.
5.3. Service, Distribution, and Revenue Models

The business model using the digital distribution channel is still unclear, and the actors in the ecosystem are still testing a wide variety of business models. OTT TV/Video service means the content are delivered over open network/Internet. Different with IP TV and Mobile TV, Internet TV/Video provider cannot offer full QoS control as it uses public/unmanaged network. The current business model of OTT TV/Video can be mapped into different combination of services, distributions, and revenues, as shown in Table 5 and Table 6.

<table>
<thead>
<tr>
<th>Revenue model</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay-per-view (PPV)/Rental</td>
<td>The end-user pays for the ability to view the TV/video content over period of time, e.g. iTunes rental, Amazon watch instantly, Vudu, Voddler, etc.</td>
</tr>
<tr>
<td>One-off Payment/Electronic</td>
<td>End-user buy the TV/video content, and it might be stored in digital locker, e.g. Amazon VoD, iTunes, etc.</td>
</tr>
<tr>
<td>Sell-Through (EST)/Retail</td>
<td>The end-user pays for regular period of time for the TV/video content consumption, e.g. Neflix, News Corporation (Hulu Plus), LoveFilm, etc.</td>
</tr>
<tr>
<td>Subscription</td>
<td>End-user does not pay for the TV/video content consumption and the business is supported by other revenue channel, mainly advertisements fee, either as non-video advertisement (banner), pre-roll or placed at intervals within content delivery, e.g. YouTube, Hulu, etc.</td>
</tr>
</tbody>
</table>

Table 6. Service and Distribution models in the digital TV/Video

<table>
<thead>
<tr>
<th>Service model</th>
<th>Distribution model</th>
<th>Revenue model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ownership</td>
<td>Content download, physical purchasing</td>
<td>Rental, retail</td>
</tr>
<tr>
<td>Access</td>
<td>Streaming (Live/TV, on-demand, catch up TV, end-user-generated)</td>
<td>Rental, subscription, retail, Subsided</td>
</tr>
<tr>
<td>Integrated</td>
<td>Combination</td>
<td>Combination</td>
</tr>
</tbody>
</table>

As can be seen above, the actors in OTT TV/Video are also still found to “mimicking” the traditional distribution model through physical bundle distribution. There is problem that might exist in download distribution model, e.g. the network might not be able to provide good delivery speed so user has to wait to download the content. Thus, it is not surprising that streaming is mostly a primary delivery model used [81], as it offers an instantly satisfying form of access compared to download, especially for long-form contents and in mobile device. There are also different usage patterns, where the ‘on-demand’ or personalization aspect is prominent, e.g. sport competition or concert, as well as a tendency toward less viewing-time, especially in the viewing through mobile devices.

1. PPV and EST revenue model

These models are classified in [6] as Utility model (pay-as-you-go approach). The availability of high interest and new release video contents are extremely important in EST model, rather than TV programs and older release contents [80]. In contrast, the availability of the high interest video contents are more important in PPV model rather than the release date aspect, as the transaction is driven more by interest in viewing content multiple times [80]. Here, user might get the copyright works as a physical bundle (e.g. VHS/DVD/Blue-ray disc, etc), beside the download or streaming based content. Some players have also offered digital-locker feature, where s/he can store the content has been bought/rented in the cloud and access it anytime later.
2. **Subscription and Subsided revenue model**

Both of these models are mentioned in [6], as ones of the generic forms of e-business model. The key success factor in the subscription model is different with both PPV and EST model. Here, the size of content library turns as the most important factor to attract subscriber [80]. Although some contents have a lasting popularity, the continuation of updated library and rotating the popular titles are necessary to help retain viewing interest. In the subsided based on advertisement-supported model, there is a mechanism called as CPM (cost per mile), where the fee is either based on the number of ads viewed or end-user reached by that ads.

Indeed, that is why the OTT TV/Video service providers that use subsided model as one of its revenue streams, needs to get a large user based on as many as possible. Some OTT TV/Video service providers also offer pinpoint delivery based feature to its brand partner, either based on user’s location or favorable genres, in order to add value to advertisement delivery. It is also possible to use the **placement model**, where the advertisement is built as an integral part of the content, whether designed as subtly (used as product showed in content), or overtly (used as main content, e.g. appear in talk show as a product review).

![Figure 15. Revenue share from the digital TV/Video](image)

However, despite the variety of these revenue models, the trend shows that the revenue stream generations from the subsidized-based would potentially overtake the “paid-by-end-user” models in the OTT TV/Video’s revenue source worldwide, as shown in Figure 15. This model is predicted to dominating this share in a long run, due to the better availability and quality of the network infrastructure across the globe, and less significant factor of ownership model (using EST revenue generation). Märta Rydbeck also mentioned the importance of revenue stream from advertising channel, as she stated,

“... *The local advertising is very very profitable for [name of a TV channel] and it is a growing business. The local advertising market for TV is huge in Sweden, and the only competitor in term of local advertising today is the local newspaper or local direct mailing, and so on... It (local advertising) is considered more valuable, more expensive, and more (delivery) times... There are lots of TV channels that have regional version; they are facing the same (advertising dilemma) problem*.”

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16 In this figure, the revenue share from placement model is separated with the advertisement model
Chapter 6 – Spotify Business Model

This chapter presents an “instant point of view” analysis to the OTT media player’s business model, using theoretical framework mentioned in section 3.1.3. Spotify is an OTT music service provider that was founded in Sweden and commercially released in 2008. We also get in deep into the “cross-firm collaboration”, and as this study focuses to the business model in mobile broadband, we mainly cover Spotify’s partnership with the telecom industry actors (MNO).

6.1. Value Proposition

Spotify actually does not offer new type of business in the music industry, as there is already numerous music retails and music service providers out there that also have the same main offerings. However, it has final touches apart from those main offers that make it more successful than the other competitors do. Unlike others that form the business only based on the download-purchase, Spotify is not just selling a product (music retailer selling unit), but also provide the streaming service. It closely resembles the radio, iTunes, and original Napster model, by recognizing the validity of the copyright and conducts its business accordingly. It covers 15 million licensed music tracks globally (size and availability varies in each country).

Convergence of the service across ranges of device is one of the major themes in the digital music business. Spotify application is written in several programming languages and available at desktop clients, mobile devices, tablet PC, and consumer electronics. The service is delivered as a downloaded client application with proprietary protocol. It has much control over the network protocol as opposed to a web application. It also has a device integration feature between these devices so user can synchronize music tracks between these devices, access it in “offline-mode”, and/or download it. Spotify uses different audio bit rates of OggVorbis and offers feature to the premium users to access the music tracks with higher quality.

Spotify works differently compared with other similar services as it relies on several ways to make the music delivered seamlessly to the client, which is very important in the real-time service. It uses TCP-based communication, which guarantees that each bit is correctly delivered. However, TCP is accomplished with timeout and retries mechanism, which this creates delay. This is minimized by Spotify using buffering in the client side. It implements this with hybrid peer-assisted streaming per track (P2P), not per torrent as the Bit Torrent. Here, the peer discovery strategy is the main concern, as the data is small and short. This is different with the P2P streaming for large data (e.g. Movie), where the concern is the download strategy.

To accomplish this, it uses a combination of three data sources: CDN/core streaming servers, P2P and cache, where the data comes from each is 8.8%, 35.8%, and 55.4% respectively. Using this, Spotify recommends 256 kbps bandwidth and free space for caching. Spotify implements dual mechanisms to handle the first request for the track, e.g. when the user search for a new track and add it to the play list. In this case, the client asks to the tracker (CDN server), which will be replied with random OTT peers that recently played the track (tracker-based peer search). It also sends request to the neighbors in the overlay network if there are any peers between the 1-2 distances that have the track in the cache.

This dual mechanism is done to provide a better availability. If the tracker is inoperable, the client still can rely to the overlay search. In addition, if the client is disconnected from the

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17 “Download”, available http://www.spotify.com/se/download
18 “Spotify Web API” https://developer.spotify.com/
19 “Bit Torrent - Delivering the World's Content”, available http://www.bittorrent.com/
overlay network, it can find other peers from the tracker’s information. Every requested track is saved in the local cache, where the default policy is to use 10% free space (capped 10GB in the desktop version). Before the played track ends, the application starts pre-fetching the next track from the cache. This cache exists for 30 days and Spotify monetizes feature to access it for “offline-mode” usage\(^\text{20}\). This is what the combination of P2P and local cache is intended to: to make the streams data sent between the peers, and prevents the server and the network become bottleneck [43].

By using a combination of these data sources, the client’s cache is not just used to prevent client to re-download every time it plays the track. Nevertheless, it also provides tracks that are shared with other peers in the overlay network. Spotify spreads the sharing effort for music data among the users and keeps the Uplink (UL) speeds slower than Downlink (DL) speeds. However, the ration of this UL/DL remains unknown and it does not enforce fairness (e.g. tit-for-tat) [40]. This actually raises issues, especially for the user that has a limited bandwidth, and peak restrictions or expensive data plan subscription where the UL is counted towards the monthly subscription allowance.

6.2. Revenue Generation and Market Segment
Spotify cost structure are mainly to address the licensing cost of its music delivery to the core music industry actors, apart from the development and maintenance cost. These costs are funded through three revenue generation streams, as discussed below:

1. Streaming subscription
Since its commercial launching in 2008, Spotify has made several price scheme changes. It offers three tiers for the streaming service since then, where two are paid-based (“Spotify Premium” and “Spotify Unlimited”) [106]. It also recently confirmed the plan to launching the premium family plan, which is an incentive offering for members of a same household to get access on multiple based [107].

2. Download purchase
Apart from the streaming service, Spotify also builds its own music store. It previously worked with 7digital to provide a-la-carte pay-for-track. Later on, it ended this relation and offered a pay-to-own option [109][110]. In addition, unlike most of other digital music stores, this integration allows user to re-download the purchased tracks several times.

3. Subsided
Spotify offers a free subscription plan (“Spotify Free”) that is supported based on audio and graphic advertisements and sets relation with several brands\(^\text{21}\). Using the information that it has about its users, Spotify is able to generate value to deliver this advertisement in specific targeting pinpoints delivery, also the detail tracking and reporting for that advertisement delivery [111].

From the discussions above, it can be concluded that these revenue streams are build based on two pricing models:
• The “Freemium” subscription model, which is implemented to the streaming subscription bundles: the “Subsided advertising-based” (“Spotify Free”) and “Premium subscription” bundles (“Spotify Unlimited” and “Spotify Premium”)  
• The Retail model, which is implemented to its download for purchase feature

\(^{20}\)“Offline mode”, available http://www.spotify.com/se/about/features/offline-mode/  
6.3. Competitive Strategy

Spotify implements its pricing models using the “demand-based pricing” strategy, as it adjusts the price between countries by following the perceived value as the central element to set the price. Spotify also uses geographic segmentation, as what Facebook did in its early years, but Spotify expands its availability per country based. Its first commercial launching was in Sweden, and since then it has been available in 16 countries, while the expansion strategy that Spotify mainly targeted is the early adopter, which potentially drives benefits in a long-term engagement.

Although, there is no official information of the subscriber distribution per country-based, Spotify currently has 10 million registered users, where 3 million of it is using paid-subscriptions [56]. This makes it as the world’s largest paid-based streaming music provider and the second largest source of digital music revenue in Europe. This is actually the core aim behind the “Freemium” revenue model: to attract end-users with the free offering before migrating them to the paid subscription. The introduction of mobile feature, along with the time-access limit, similar-track limit, offline access, etc is some of the key factors that significantly boost the paid-subscriptions, as shown in Figure 16.

![Figure 16. Spotify’s user based by service type in Europe, Sept 2008 – March 2011 [73]](image)

![Figure 17. Spotify monthly revenue by service type in Europe, Sept 2008 – March 2011 [73]](image)
Spotify also uses **feature differentiation** in some markets, e.g. the implementation of “Private beta” launching model based on invitation. It also keeps changing the offering to the bundling tiers, which might be different between countries, e.g. radio service is available for the tree-based subscription users in the US, or there is no 5-track cap for the free-based subscription users in several European countries. All these strategies are not just mainly due to the copyright settlements that work different between countries, but also to make the product become exclusive and attractive to the early adopter users. Spotify’s revenue is analyzed to come ~ 23 % from advertisements and ~ 77 % from paid-subscriptions [73], as shown in Figure 17 above.

### 6.4. Value Network

In order to legalize its business above, Spotify mainly makes deal with actors in the music industry. Apart from that, it also has several strategic alliances with actors from different industry fields to build the delivery channels that expand and make its service closer to users. These actors range from the consumer electronic, Internet and telecommunication industry. The prominent actors and their relation with Spotify be visualized as shown in Figure 18 and discussed in the sections below.

![Figure 18. Actors and relations in Spotify point-to-multipoint partnership](image)

#### 6.3.1 Relation with the core actors of the music industry

Spotify opens its service channel for independent/self-published artist and small record label that does not have an existing delivery partner or platform\(^{22}\). They can make deliveries through several aggregators or collecting societies that already have an agreement and delivery process in place with Spotify\(^{23}\). Therefore, it can be concluded that in order to get license to deliver the music to end-user, Spotify deals with the record label, music publisher, collecting society, and/or aggregator, **not with the artist**.

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There is no official information that contains all of Spotify’s music industry partners. However, its agreements have reached the entire major record labels, as well as Indies record labels, international and local collecting societies, and music aggregators. Some tracks may not be available or disappear on Spotify because of several license reasons. These music industry actors provide the music and metadata to Spotify, which will be encoded and uploaded to Spotify server, and integrated with Spotify delivery platforms. This means, Spotify tracks all the music played and provides in-depth reporting to all participating parties.

The price and payment to these music industry actors are calculated based on the function of the total number of streams and the total revenue of that particular month, result of the payout per stream. Thus, when the total stream grows more than the total revenue, the payment per stream might be less. According to Andreas Liffgarden (Spotify), the detail licensing arrangements between Spotify and the content owners are not published, as it is part of the Non Disclosure Agreement/NDA. The licensing price might also be different between these agreements, and some of the deals might have discount arrangements.

### 6.3.2 Relation with the Telecom actors

Apart from the collaboration above, Spotify also sets up an alliance with several CSPs. Spotify started its first agreement with TeliaSonera in Sweden in 2009. It then expanded it to the UK and Dutch market with Hutchison Whampoa (3UK) and KPN, respectively. It also collaborated with the MVNOs, which are Virgin Media UK, Hi Netherland, and MTV Mobile Europe. In the sections below, we focus on analyzing the collaboration between TeliaSonera and Spotify, as one of Spotify’s biggest deals.

#### A. The Alliance Model

TeliaSonera is a company formed from a merger between Swedish incumbent, Telia and Finish incumbent, Sonera at 2002. TeliaSonera telecommunication services operation is split into three business areas (Mobility Services, Broadband Services, and Eurasia), and operates in range of countries in Nordic, Baltic, and Eurasia region. Spotify and TeliaSonera started an agreement in 2009, which was a 2-year exclusive deal that makes TeliaSonera a sole exclusive telecom operator in Sweden to use Spotify brand within its products branding and marketing. They boarded this to Finnish market in 2010, and then renewed it in 2011 for the next two years forward.

They call this strategic alliance as a “compiling service”, which is formed by bundling “Spotify Premium” with TeliaSonera subscription plans, as below:

- **Mobile Post-paid subscription**
  User gets a free access for 6 months to “Spotify Premium”. The offering is available for user who signs for 24 months contract for selected broadband packages on selected handsets. User can activate the offering using the same Spotify account in fixed broadband and IP TV connection.

- **Mobile Pre-paid subscription**
  User gets a discount of “Spotify Premium” subscription for a year plus 1 GB mobile browsing bonus each month through “Spotify Annual pass”. These offerings are bundled through selected handsets purchased and/or refill/started kit.

The data connection used from Spotify service is still counted toward the bucket consumption billing though, as TeliaSonera implements the “Volume-based” data plans, which
is capped based on the bandwidth volume. According to our interview with Lars Roth
(TeliaSonera), TeliaSonera also does do the packet inspection to differentiate Spotify’s traffic
with other OTT traffic. However, once a user reaches the limit, s/he still can get access to
Spotify’s streaming service and other OTT services, as TeliaSonera offers free “Spotify
premium” access during promotion early months using “Soft cap with throttling” policy [74].

Lars Roth (TeliaSonera) mentioned that TeliaSonera able to offers this there is a discount
arrangement they got from the music industry actors (content owners), resulting from its exclusive relation with Spotify. The detail of revenue sharing model is not officially announced though, but Lars Roth informed that TeliaSonera gets some chunk of the profit, which is got from the fee paid by every “Spotify Premium” subscribers that are acquired through TeliaSonera bundling offerings. It was also revealed that most of the profit goes toward the content owners. This is also mentioned in [18] as a possible characteristic in a strategic alliance, where distribution of the profit may not be fully equal among alliance partners.

B. Analysis of the Values Exchanged
The offering opens possibility for both parties to expand their market and tight the bond with
their end-users. Although the exact addressable market is not mentioned in the marketing
campaign, Spotify would mostly suit the young end-users. Therefore, this offering would have
a strong attraction to the first-time broadband and TV subscribers. In addition, TeliaSonera’s
main competitor has launched similar service 29 and the competition in Sweden in Finland
pushes price and ARPU down. Lars Roth (TeliaSonera) addressed this issue as below,

“Spotify is extremely oriented building the brand through the product. We can't really do
that, because our competitor is following us quite fast”.

Lars Roth also stated that they have tried to unlock music business using point-to-point
model, as discussed in section 4.2.3.1, but failed. He stated this as below,

“We actually started with our own service; much more like Spotify...It was under brand,
but it was not great... We tried that for half a year and realized that we needed to spend
all our communication explaining ‘what the service was’, ‘how it works’, and ‘why you
should get it’. (At the end) the perception and value we gained from (offering) six months
for free was pretty low”.

Andreas Liffgarden also mentioned that there are “cultural differences” between telecom
and media industry that makes direct collaboration between telecom operator and media
industry does not work. This brings a need for a “bridging actor” that aggregates the objectives
of both telecom operator and media content owner. The main objective of the content owner
in this case, according to Andreas Liffgarden, is to monetize their copyright works continuously
in a scale based.

In Spotify’s side, its relation with TeliaSonera is proved to increase its own end-user based.
This strategic alliance drives end-users directly to higher value subscription (“Spotify
premium”), which is still the core of Spotify’s revenue source (see section 6.3). At the time
when the agreement was firstly launched, Spotify was still a young brand and had small market
segment. Collaborating with TeliaSonera would definitely leverage to this and help on
bargaining with music industry actors, who are taking control over the business ecosystem.
Lars Roth mentioned about TeliaSonera’s role as a telecom operator to this strategic alliance as
below,

29 Partnership between Telenor with WiMP
“In order to get end-to-end deliver to their service, they (Spotify) need a good network... The other reason is, what we have done in giving trust to new company, it is enormous. Telia is the most trusted brand overall in Sweden. When we pick up a partner, we more and less say this is a partner you can do business with. And also, since we are billing provider for them, we charge our customer and get the money to them...Also our bills are one of the most paid in Sweden, with lowest bad debt as well. So this is a really good channel (in order) to have a continuous relation with customer, especially when they have problem when they do that with credit card”.

Indeed, during the first term of agreement, Spotify subscriptions through TeliaSonera have increased by ~ 300 %, acquired up to ~ 25 % of “Spotify Premium” in Sweden. This is in line with the IFPI report about the substantial increase in the digital music sales, which is also due to the law enforcement for piracy (IPRED law) since that year [75]. The revenue sharing model is not officially informed though. Both of our interviews with Both Andreas Liffgarden and Lars Roth revealed that there is no direct arrangement between them and the music industry actors, but it was involved in the discussions to help on the licensing deal for the copyright works used under the alliance model.

The lines of reasoning of the partnership between these actors match with the three points mentioned in [12]. The “Learning and internationalization” can be seen in Spotify side. As a new company in media market and to support its expansion strategy, Spotify needs the resources acquisitions, which in this case are large end-user based and good network coverage. In TeliaSonera side, the “Cospesialization” motive can clearly be identified. Using this partnership, it can focus on its core businesses and let Spotify deal with the licensing, product development and maintenance, and share or even avoid the effort for marketing and branding.

In addition, the “Cooption” reason appears for the both sides, as both gains benefits by collaborating, instead of competing each other (“co-opetition”). For example, instead of delivering its own, which was not successful, TeliaSonera cooperates with the actor that previously was its competitor. Nevertheless, it avoids of just being a “dump pipe” provider. By using this agreement, TeliaSonera has built at least three strategic objectives as what the “Point-to-Multipoint” model could offer, which are to reduce the churn rate, expand market share, and increase the ARPU by up-selling the subscription to the higher value packages.
Chapter 7 – The Indonesian Market

This chapter presents a brief introduction to regulatory framework of the telecom and ICT sector in Indonesia, an analysis to the mobile telecom and media market, as well as the quantitative study to the Indonesian users. The first part of the quantities study is the background data, while the second is the test and analysis to the hypotheses. It was made based on the UTAUT framework and findings in the previous sections in related with the Indonesian mobile user characteristics.

7.1. Regulatory Framework

Indonesia’s telecom regulatory regime can be divided into 3 phases, Pre-1989, 1989 – 1999, and 1999 – present. The current phase can be concluded as mentioned in [27], shown in Table 7. The catalyst of the last phase was fastened by the Asia’s economic crisis in 1997 that affected Indonesia as well. As part of the economic recovery program assisted by the International Monetary Fund (IMF), the government of Indonesia (GOI) started the deregulation and privatization of the telecom sector. This is one form of its commitment to the 1998 World Trade Organization (WTO) Basic Telecommunications Agreement30, translated as the “Telecom development Blueprint”31.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Legal Form</th>
<th>Field Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999 – present</td>
<td>Telecommunications Act No. 6 of 1999</td>
<td>• Duopoly in fixed-line operations, and private participation for other operations without need for a joint partnership with state-owned company</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Network, and service provider structure,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Establishment of independent regulator</td>
</tr>
</tbody>
</table>

In 2007, the GOI issued foreign investment barriers in the several key sectors, including telecommunication32. Under this negative list, the foreign participation is capped at 65% for the fixed-line business and 49% for mobile, satellite and Internet service business (ISP). This rule is not retroactive though, but it sends a signal regarding future investment policy. In 2008, the tower business was closed, and the existing foreign investors were expected to exit within two years. Thus, either the MNOs or domestic provider owns the tower. In 2010, there was also new policy that limits the establishment of the private broadcaster, which is capped 20 % for foreign capital33.

7.1.1 QoS and Technology Convergence

There have been discussions in the Ministry of ICT (KOMINFO) to accommodate the harmonization to the telecommunication, Internet, media, and entertainment (TIME). It falls under the telematics issues, but there is still no specific act that has been formed to take account the convergence issue yet. Currently, the misuse of illegal content distribution, especially the pornography content, is subjected to the Electronic Information and Transactions Act [25].

The provisioning of the services in the cloud ("Aplikasi informatika"), including media, is not handled neither by the telecom regulatory authority (Badan Regulasi Telekomunikasi Indonesia/BRTI) or broadcasting regulatory authority (Komisi Penyiaran Indonesia/KPI).

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30 World Trade Organization (WTO) Agreement on Basic Telecommunications Services, or Basic Telecom Agreement
31 The blue print is based on Ministry of Communications (“MoC”) Decree No. KM 72 of 1999
32 “Regulation of President of The Republic of Indonesia No.111 of 2007”, available at http://www3.bkpm.go.id/file_uploaded/Perpres_%20No_%20111_%20Tahun%202007_en.pdf
According to Didik Akhmadi Usman (BRTI), there is a tendency to put this under BRTI control. The BRTI has willingness to address so the regulator can oversee the emerging technologies and the state gets something from the purveying of these services, exp. taxation issues\textsuperscript{34}.

There is also no specific QoS regulation formed supplying of the broadband services yet (e.g. minimum speed), though there are guidelines of the minimum requirement for QoS basic telephony services. Didik Akhmadi Usman (BRTI), argues that it should fall under consumer protection law, and the providers must give lucid information (e.g. in the advertisement, service-level agreement/SLA), so consumers aware about the terms and condition when they are using data connection. However, there is no obligation that forces the provider to submit their SLA to the regulator for approval. This is inline with the TRE score in 2008 that found the QoS of mobile and broadband service in Indonesia are below the average, due to lack of regulation [26].

7.2. Telecom Market
7.2.1 Structure and Characteristic
Indonesia with its 248 million populations is currently the world’s fourth largest country. This market is among the other 120 that was classified to have a low Internet penetration, as the Internet penetration rate was \( \sim 35\% \) by the end of 2011 [61]. The fixed broadband penetration was only \( \sim 1.2\% \), because PC ownership was also rare with just \( \sim 6.9\% \) penetration rate, and the fixed broadband plans are relatively expensive among Indonesians (\( \sim \)USD 100/months). This makes this country has a lower fixed penetration rate, compared with the neighbors in the region and among the BRICI countries, as shown in Figure 19.

![Fixed broadband penetration in the BRICI countries](image)

This can be understood, as there were problems in the infrastructure deployment, due to the geographic split of the country’s archipelago territory and complex terrain. Therefore, the mobile communication is assessed as a better suit to this market. Indonesia’s telecom market shows common trends like most of the developing countries. The mobile telecom dominates with penetration rate has passed \( \sim 113\% \) by the end of 2011 [61], which makes it as the world’s fifth largest mobile market. The market is heavily dominated by the prepaid subscription, which has reach more than 95\% total subscriber [61], and the churn rate has reached \( \sim 146\% \) annually [85].

\textsuperscript{34} For example, there have been also conversations between GOI with the international OTT players, such as Google and Blackberry (for the blackberry services), to set up a representative office and build the data server in the country.
The mobile penetration is predicted to scale up to ~173% by 2016, because there are multiple ownerships of the Subscriber Identification Module (SIM) and the inactive subscriptions distort the true market growth [61]. This happens due to the four factors below:

- **First**, the starter packs are cheaper compared to the top up fee.
- **Second**, no numbering cost regulation for releasing a new cellular number.
- **Third**, the perception between GSM and CDMA tariff, where the CDMA tariff (especially voice) is perceived cheaper than the GSM tariff.
- **Fourth**, the number portability is not implemented yet. Thus, people tend to reluctant losing their existing GSM cellular number and keep their subscription plan, as it was rolled out earlier.

Although Indonesia is perceived as one of the riskier destinations in Asia [61], there has been presence of the key investors in the telecom sector. The market is supported by a total nine MNOs, consists of five GSM-based and four CDMA-based operators, which most of them have several brands targeted to the specific end-user segments, as shown in Table 31. This is quite a number of players and most of them are granted national licenses, though some have started consolidation [35]. This is a different situation compared to the other emerging markets, e.g. India, that also has a lot of MNOs and subscribers, but most of them are granted regional license.

The competition has been intense since the introduction of the new interconnection policy in 2006, which decreased almost all of the interconnection tariffs for voice [36]. It leads to the massive load in the network utilization, especially for the basic services (traffic volume and minutes of usage for voice, and SMS). The blended ARPU shows a decreasing trend since several years ago, which is currently ~26,000 IDR [61], and forecasted to keep down in future [90]. This is not just affected by the competition, but also due to the large low-income based subscribers, following the MNO expansion to the rural and densely populated areas [86].

The subscribers and the revenue are mainly concentrated in Java and Sumatra, which are the most populated islands [60], as well as relatively have stronger purchasing power and dominate the mobile ownership in the country [93]. The big three (incumbents) become more prosperous in this circumstance, as they have been supported by the well-established network coverage and good record of accomplishment. Therefore, they are more attractive to the high-value and loyal subscribers, compared with the green field operators. They also acquire more spectrums that make them have a better flexibility for expansion and price (see Table 31 at Error! Reference source not found.).

### 7.2.2 Mobile broadband

The 3G services have been available in the country since 2006, but its uptake was low with less than ~20% penetration [87]. This was not just due to the slow roll out of the network, but also the devices price was not affordable and attracted scale subscriber yet. Thus, the GOI has made a target to increase the country’s broadband penetration, especially to push the Internet literacy in the remote areas. Mobile broadband has been launched in 2009 and since then it has been served by all the GSM-based and two CDMA-based MNOs (see Table 31 at Error! Reference source not found.). In addition, The GOI has released additional 3G spectrums to raise the network capacity.

Indeed, there is an enormous opportunity for the MNOs to expand through mobile broadband. There would be increasing subscribers in Indonesia that would use the underlying

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35 The recent example is between Mobile 8 and Smart Telecom, which forms as Smartfren Telecom

36 Except the interconnection tariffs of fixed or FWA originated from / terminated to mobile, VoIP, Satellite and International. See http://www.postel.go.id/content/ID/regulasi/telekomunikasi/kepmen/pm%20nomor8-2006-interkoneksi.pdf
technologies in the following years [85]. The mobile device has also been as the preferred access to the Internet among Indonesians. It makes this market unique, as the consumer normally gradually changes from the “no connection” stage, to adopting landlines and then subsequently to the mobile devices. In contrast, there is a tendency of “leapfrog trend” as in Indonesia, where people head straight to mobile [86]. We can compare this phenomenon with several years ago where Internet café (“Warung Internet”/“warnet”) was a preferred way among people to get access to Internet [113].

Figure 20. Mobile phone penetration in the BRICI countries [81]

As also shown in Figure 20, mobile penetration has been increasing quite fast in Indonesia, even compared to some other BRICI countries [86]. This is in contrast with the landlines penetration that has dropped since recent years [93]. Mobile broadband plans in Indonesia are among the cheapest in the world [88], also in contrast with the situation in fixed broadband discussed previously. The price of smart phones is also falling and more affordable for Indonesians, which is also supported by the attractive Blackberry service and device bundling. Blackberry devices and service (e.g. Blackberry messenger and mail services) have been booming since 2008, and Indonesia is currently RIM’s largest market [89]. This makes this market as a contrarian market for the smart phone.

Furthermore, the share of the data ARPU from the total ARPU is predicted to keep increasing [80]. In the future of the mobile data revenue, the infotainment would contribute 25 % in 2016 compared with the 19 % in 2009, while the revenue from the messaging would decrease from 61 % to 52 % respectively. The MNOs saw a slight decline with their mobile data revenue in 2011, but it was more related with the suspension of VAS services by the regulator at that year, as a response to the massive complains regarding fraud in premium services (mainly SMS). Didik Akhmadi Usman (BRTI) also highlighted this case during the interview.

Moreover, Indonesia is also forecasted as one of the leaders in the emerging Asia-pacific markets for the LTE deployment by 2016, after China [89]. These are mainly driven by at least two underlying reasons below:

- **First**, the country’s economic growth turns to be the fuels for its telecom industry. There is a huge growth in the domestic consumption and Indonesia is assessed relatively resistant to the global economic crisis. There is a booming of the middle-class income in this country, and the GDP per capita is predicted to keep increasing [98].

- **Second**, the demographic plays a major part, as the country’s population is dominated by extremely young people with a median age of 27 [60]. These young people normally have
tendencies to be open for new technology, which can be seen from the popularity of the instant messaging, social media, bulletin boards, and blog in Indonesia.\(^{37}\)

### 7.3. Media Services Market

Several players have offered the music and TV/Video services in Indonesia, both as ownership, access model, and personalization model. This has been initiated since 2006, in line with the 3G launching. There are some of the dominant characteristics, which vary this market with others. Indonesia is one of the few markets worldwide that still sees personalization services dominating the digital music landscape, as 95% of revenue comes from this (mainly RBT, followed by Ring-tone activation).

Several prominent retailers and/or service providers in OTT music and/or TV/Video business in Indonesia are the MNOs, the TV broadcatings, the mobile device OEM & OS provider (Nokia), and local OTT players (Jatis mobile, Mivo TV, Kapan Lagi, etc). There is limited focus and availability of the prominent international OTT music services (streaming and download services), which create a hole in the ecosystem, e.g. iTunes. Some of the MNOs focus to specific devices, such as Blackberry or locked low-end mobile devices launched by the MNO itself, e.g. “HP Esia” phone.

The revenue generations used are mostly retail (for music, e.g. unlimited download/week) and subsidized-based (for TV/Video, e.g. advertising based). However, the piracy level in Indonesia is extremely high, as people currently can easily buy the illegal CD/DVD that contains music, TV series, or movie contents for less than \$10\ SEK or simply download it through the illegal websites/file sharing. In music business, the piracy market was reported twice than the legal market value \(^{69}\), and reached 88% in 2006 \(^{90}\). This makes Indonesia as one of 10 priority countries outlined by the IFPI according to the degree of threat posed by the music piracy \(^{91}\).

The local players in the market also see the competition has been aggressive, and they have tried to fine out other revenue stream and/or to boost the demand to its main service offering. Although there is a partnership done by Telkom Indonesia that set up Joint Venture (JV) with SK Telekom (Melon) \(^ {114} \) for provisioning media services, the majority MNOs in this market typically deal directly with the content owners by acquiring the license to distribute the copyright works. In other words, they use **point-to-point model**, which was also typically seen in European markets before the trend moved to the point-to-multipoint, as discussed in section 4.2.2 and 5.2.2.

The main reason of this dominance point-to-point model done by the MNOs is due to the limited appearance of international prominent OTT players.\(^{38}\) Hengky P. Ginting (NST) stated that usually 50-50 revenue sharing models are used, which is done after the MNO takes out the cost to deliver the service. The roles of aggregator/collection society/publisher are minimum or bypassed. The MNOs mainly handle the marketing, branding, platform development and maintenance. There is a strong appearance of the mobile content providers (CP), but they run business in monetizing non-audio/video content/merchandizes, and only few exceptions where the CP bridges the MNO with the content owners.\(^ {39}\)

Although several local and international parties have tried their attempt, their service offering does not take off yet, due to the piracy issues and user’s willingness to pay is also low (discussed later at section 7.4). Therefore, it is natural for the MNO to choose this strategy,

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\(^{37}\) Indonesia is one of the world's largest Facebook and Twitter end-users, and Indonesian is also one of the most used languages on Wordpress.

\(^{38}\) Apple decided to skip Indonesia along with China and India for iTunes music store

\(^{39}\) Several examples are wallpaper download, premium SMS content subscription/quiz.
because they have strong appearance in the market and stronger bargaining position toward the media industry actors. This is in contrast with the situation we have seen in the developed countries. These are also as result of the several factors, which were also mentioned during the interview with Jockie Heruseon (Telkomsel), Yose T. Arizal (Axis) and Hengky P. Ginting (NST), as below:

- **First**, there are high dependencies among the people to access the Internet through the mobile connection (as discussed in section 7.1).
- **Second**, the MNO billing capability offers the easiest payment mechanism, because the bank account penetration is extremely low, covering less than 20% of the population [59].
- **Third**, the personalization services (RBT, Ring-tone activation, etc) are assessed to have the simplest content delivery channel (e.g. in term of billing) and are safe from the piracy issues.
- **Fourth**, the licensing fee in monetizing the media content is much lower compared with the developed markets. Therefore, MNO has less issue to deliver their service directly to end-users, instead of collaborating with the OTT player (to reduce the cost).

### 7.4. Mobile user

Understanding the end-user, including anticipating their needs and exceeding their expectations is the key in building any business. Apart from the country’s regulation and competition field, Indonesian user has a unique OTT music listening and TV/video viewing behavior. User acceptance is one of the critical aspects that influence the success of the new mobile services provisioning. Thus, it is important to include the analysis of users’ expectation and behavior, in order to understand what influences the Indonesian users’ acceptance toward the mobile media services.

We have formulated the hypotheses related to the Indonesian user and OTT media services, according to our findings about the Indonesian market, both its regulation, telecom and media market situation, as discussed in section 7.1, 7.1, and 7.2. This was also formulated after we saw the trends in the global and reference market (Sweden), as discussed in section 3-7. These hypotheses and explanation of it variables are available in Table 32 at Appendix C - Quantitative Survey. We used the UTAUT framework and 119 responds to test the hypotheses, as discussed in section 2.1 and 3.1.3. The respondents’ answers are compiled as the graphs, which are available in section C.2 at Appendix C - Quantitative Survey.

### 7.4.1 Sample Characteristics

The first initial questions are to identify the respondent’s background. As shown in Figure 21 and Figure 22, the majority of our respondents are men (~76%) and the average age is ~29 years old. All of these respondents are identified to have mobile device, and although this proposition is not varied, it correlates with mobile penetration in Indonesia that has passed 100% penetration rate, as discussed in section 7.2 previously.

Furthermore, as can be seen in Figure 24, all of these respondents have ever used Internet through mobile device. 28% of them confirmed that mobile device is their primary way to access Internet, as shown in Figure 25. These findings are in line with the discussion in section 7.2.1 regarding a high dependency among Indonesians toward the mobile Internet. Therefore, according to these findings, we conclude that the hypothesis 1 as mentioned in Table 8 is accepted.

<table>
<thead>
<tr>
<th>Hypothesis 1</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesian users have already used with the mobile internet</td>
<td>ACCEPTED</td>
</tr>
</tbody>
</table>

Moreover, as can be seen in Figure 26, the most popular services used by these respondents in their mobile phone are email, Instant messenger, and social media. In addition, more than 60
% of them confirmed that they have used OTT music and TV/Video services through the mobile device, although personalization services are still a major revenue stream for the actors in the market, especially for digital music content distribution. Thus, according to these findings, we conclude that the hypothesis 2 as mentioned in Table 9 is rejected.

<table>
<thead>
<tr>
<th>Table 9. Hypothesis 2 result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypothesis 2</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>Indonesian users are not exposed with the mobile media services yet</td>
</tr>
</tbody>
</table>

7.4.2 Technology Acceptance
1. Behavior intention
The first hypotheses that we test are related with the behavior intention aspects of the Indonesian users to adopt the OTT media services.

a. Willingness to use the service
The first hypothesis is the Indonesian users’ attention to adopt the OTT media services. There are three questions that gather the information whether the respondents will use/keep using the services (Q10), will have/keep having the services’ application in their mobile devices (Q13), and will use/keep using the services when there is opportunity to use it for free (Q17). The respondents’ answers are shown in Figure 30, Figure 33, and Figure 37.

<p>| Table 10. Average and Internal consistency of respondent’s willingness to use |
|----------------|----------------|----------------|</p>
<table>
<thead>
<tr>
<th>Services</th>
<th>Q10 Mean</th>
<th>Q13 Mean</th>
<th>Q17 Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music streaming</td>
<td>2,924</td>
<td>3,261</td>
<td>4,118</td>
</tr>
<tr>
<td>Music download</td>
<td>3,092</td>
<td>3,235</td>
<td>4,106</td>
</tr>
<tr>
<td>Video streaming</td>
<td>3,218</td>
<td>3,429</td>
<td>4,176</td>
</tr>
<tr>
<td>Video download</td>
<td>2,916</td>
<td>3,176</td>
<td>4,106</td>
</tr>
</tbody>
</table>

The data in Table 10 reveals that the respondents generally have high intention to use video streaming service, followed by the music download service, as the average responds values for these services in Q10 are above the neutral value (3). The music streaming and video download service have quite lower and below the neutral value. However, the average responds values in Q13 and Q17 show us that the respondents’ intention to have music streaming service and video download service (Q13) and to use it for free (Q17) is high.

<table>
<thead>
<tr>
<th>Table 11. Internal consistency of respondents’ expectancies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Services</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>Music Streaming</td>
</tr>
<tr>
<td>Music Download</td>
</tr>
<tr>
<td>Video Streaming</td>
</tr>
<tr>
<td>Video download</td>
</tr>
</tbody>
</table>

We tested the reliability of these data, as shown in Table 11. The Cronbach Alpha was used to check the consistency in Q10, Q13, and Q17. The Pearson correlation was also used check the consistency in Q10, Q13, and Q17, by pairing them each other to get the correlation coefficient. The results from Cronbach Alpha show us that all of the consistency values are in the range of acceptable.

Meanwhile, all the correlation coefficients from Pearson correlation between Q10 and Q13 are in the range of strong value, which means the respondent’s willingness to use / keep using
the services have tight correlation with their willingness to have the service in their mobile phone. All the correlation coefficients between Q10 and Q17, and Q13 and Q17 are in the range of medium. This means there is also correlation between respondent’s willingness to have the service in their mobile phone with their willingness to use / keep using the service and the opportunity to use the services for free, but this is not as strong as the correlations between Q10 and Q13. It can be seen that the opportunity to use the services for free is positively valuable, but this is not perceived to be so much significant for Indonesian users.

However, these all supports the hypothesis about Indonesian mobile users’ attitude toward the media services, as the average responds values and internal consistencies among the answers are good. Based on this, we conclude that the hypothesis 2 as mentioned in Table 12 is accepted.

**Table 12. Hypothesis 3 result**

<table>
<thead>
<tr>
<th>Hypothesis 3</th>
<th>Services</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesian users have positive intention to use the mobile media services</td>
<td>Music streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Music download</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video download</td>
<td>ACCEPTED</td>
</tr>
</tbody>
</table>

**b. Willingness to pay for the service**
The next hypothesis that we tested was the intention of the Indonesian users’ to pay to use the OTT media services. We use the data from Q9 that gathers the information whether the respondents think they would like to pay to use the services. As can be seen in the raw data in the Figure 29, majority of the respondents think they would not like to pay, which applied in all of the four services. The music streaming service has the highest proportion of rejection to pay (~ 75 %), followed by the video download (67 %). This is in line with the lower intention from the respondent to use both services, as revealed in Q10 previously. Based on this, we conclude that the hypothesis 4 as mentioned in Table 13 is accepted.

**Table 13. Hypothesis 4 result**

<table>
<thead>
<tr>
<th>Hypothesis 4</th>
<th>Services</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesian users have negative intention to pay for the mobile media services</td>
<td>Music streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Music download</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video download</td>
<td>ACCEPTED</td>
</tr>
</tbody>
</table>

**2. Expectancies**
The next hypothesis that we tested was related with the effort and performance expectancy. There are four questions that gather the information whether the respondents think the services are useful and interested to be used compared with physical distribution (Q15), whether using the services save their money compared with physical distribution (Q11), and whether it saves their time compared with physical distribution (Q20), and if the services are complicated to use (Q18). The respondents’ answers are shown in Figure 31, Figure 35, and Figure 40.

**Table 14. Average of respondents’ expectancies**

<table>
<thead>
<tr>
<th>Services</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q15</td>
</tr>
<tr>
<td>Music streaming</td>
<td>3.210</td>
</tr>
<tr>
<td>Music download</td>
<td>3.202</td>
</tr>
<tr>
<td>Video streaming</td>
<td>3.395</td>
</tr>
<tr>
<td>Video download</td>
<td>3.277</td>
</tr>
</tbody>
</table>
The data from Table 14 above reveals that the respondents generally have a good attitude and expectancy towards all the services. This can be seen from the average responds values of Q11, Q15, and Q20 that are above the neutral value. In contrast, all the average responds values of Q18 are below the neutral value, which means that the respondents do not think the OTT media services as complicated.

### Table 15. Internal consistency of respondents’ expectancies

<table>
<thead>
<tr>
<th>Services</th>
<th>Cronbach Alpha</th>
<th>Pearson correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q15, Q11, Q20</td>
<td>Q15, Q18</td>
</tr>
<tr>
<td>Music Streaming</td>
<td>0.792</td>
<td>-0.391</td>
</tr>
<tr>
<td>Music Download</td>
<td>0.780</td>
<td>-0.319</td>
</tr>
<tr>
<td>Video Streaming</td>
<td>0.797</td>
<td>-0.432</td>
</tr>
<tr>
<td>Video download</td>
<td>0.766</td>
<td>-0.330</td>
</tr>
</tbody>
</table>

We tested the reliability of these data, as shown in Table 15. The Cronbach Alpha was used to check the consistency in Q11, Q15, and Q20. Meanwhile, the Pearson correlation was used for Q18, as it leads to different direction with the three questions previously. We get the correlation coefficient by pairing each data of Q15, Q11, and Q20 with Q18.

The results from Cronbach Alpha show us that all of the consistency values are in the range of acceptable. Meanwhile, all the correlation coefficients from Pearson correlation show us the negative value in the range of medium and small, where the negative correlation in video streaming is the highest compared with other services in all of the Pearson correlation values. These all supports the hypothesis about Indonesian mobile users’ attitude toward the media services, as the average responds values and internal consistencies among the answers are good. Based on this, we conclude that the hypothesis 5 as mentioned in Table 16 is accepted.

### Table 16. Hypothesis 5 result

<table>
<thead>
<tr>
<th>Hypothesis 5</th>
<th>Services</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesian users have positive attitude toward the</td>
<td>Music streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td>mobile media services rather than physical products</td>
<td>Music download</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video download</td>
<td>ACCEPTED</td>
</tr>
</tbody>
</table>

3. Facilitating condition

The next hypotheses that we tested were related with the barriers for Indonesian mobile users to embrace the OTT media services.

a. MNO’s network and mobile billing

Two questions gather the information whether the respondents think their MNO network coverage and capability do not support them to use the services (Q5), and whether accessing the services causes them to pay a lot for mobile account billing (Q19). The data from the Table 17 reveals that the respondents generally do not think of the mobile network as a major barrier for them to use the services. They also believe they will not have to pay a lot for mobile account billing because of using the services. This can be seen from the low average responds values in Q12 and Q19 that are both below the neutral value.

### Table 17. Average and Internal consistency of respondents’ perceive to MNO network & billing

<table>
<thead>
<tr>
<th>Services</th>
<th>Mean Q12</th>
<th>Mean Q19</th>
<th>Cronbach Alpha Q12, Q19, Q10</th>
<th>Pearson correlation Q12, Q10</th>
<th>Pearson correlation Q19, Q10</th>
</tr>
</thead>
</table>
We tested the reliability of these data, as shown in Table 18. The Cronbach Alpha was used to check the consistency in Q12, Q19, and Q10, as it contains the data of the respondents’ willingness to use the service. Meanwhile, the Pearson correlation was used by pairing each of the data in the Q12 and Q19 with Q10.

The results from Cronbach Alpha show us that all of the consistency values are in the range of unacceptable and the coefficient correlations are in range of small to none. These values show us that there is no correlation between respondents’ willingness to use the service with the barriers from mobile network quality and billing. This makes sense, as the low average values above show us that the respondents do not think these barriers exist. Based on this, we conclude that the hypothesis 6 as mentioned in Table 18 is accepted.

**Table 18. Hypothesis 6 result**

<table>
<thead>
<tr>
<th>Hypothesis 6</th>
<th>Services</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesian mobile users have positive perception that the mobile network and billing are a major obstacle to use the mobile media services</td>
<td>Music streaming</td>
<td>REJECTED</td>
</tr>
<tr>
<td></td>
<td>Music download</td>
<td>REJECTED</td>
</tr>
<tr>
<td></td>
<td>Video streaming</td>
<td>REJECTED</td>
</tr>
<tr>
<td></td>
<td>Video download</td>
<td>REJECTED</td>
</tr>
</tbody>
</table>

**b. Mobile device**

Two questions gather the information whether the respondents think their mobile device support for using the services (Q21), and whether they can afford to buy mobile device that support to use the services (Q23). The data from Table 19 reveals that the respondents generally think their mobile device support in using the services, and they can afford to buy a mobile device that supports to use the services. This can be seen from the above average responds values that are below the neutral value.

**Table 19. Average and Internal consistency of the respondents’ perceive in mobile device feature and ownership**

<table>
<thead>
<tr>
<th>Services</th>
<th>Mean</th>
<th>Cronbach Alpha</th>
<th>Pearson correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q21</td>
<td>Q23</td>
<td>Q21, Q23, Q10</td>
</tr>
<tr>
<td>Music streaming</td>
<td>3,992</td>
<td>3,798</td>
<td>0,540</td>
</tr>
<tr>
<td>Music download</td>
<td><strong>4,025</strong></td>
<td>3,782</td>
<td>0,469</td>
</tr>
<tr>
<td>Video streaming</td>
<td><strong>4,025</strong></td>
<td>3,798</td>
<td>0,550</td>
</tr>
<tr>
<td>Video download</td>
<td>4</td>
<td>3,782</td>
<td>0,405</td>
</tr>
</tbody>
</table>

We also tested the reliability of these data, as shown in Table 19, whether there is any correlation with respondent willingness to use the services. The Cronbach Alpha was used to check the consistency in Q21, Q23, and Q10, as it contains the data of the respondents’ willingness to use the service. Meanwhile, the Pearson correlation was also used by pairing each of the data in the Q21 and Q23 with Q10.

The results from Cronbach Alpha show us that all of the consistency values are in the range of poor and unacceptable. The coefficient correlations are small to none, except for **music streaming**. These values also show us that there is no correlation between respondents’ willingness to use the service with affordability to buy a mobile device, as well as whether respondent’s mobile device support the usage of the services or not (music download, video streaming, video download). However, as the average responds values are above the neutral value, we conclude that the hypothesis 7 as mentioned in Table 20 is rejected.
### Table 20. Hypothesis 7 result

<table>
<thead>
<tr>
<th>Hypothesis 7</th>
<th>Services</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesian mobile users have positive perception that the mobile devices is</td>
<td>Music streaming</td>
<td>REJECTED</td>
</tr>
<tr>
<td>a major obstacle to use the mobile media services</td>
<td>Music download</td>
<td>REJECTED</td>
</tr>
<tr>
<td></td>
<td>Video streaming</td>
<td>REJECTED</td>
</tr>
<tr>
<td></td>
<td>Video download</td>
<td>REJECTED</td>
</tr>
</tbody>
</table>

#### 4. Social influence

The next hypotheses that we tested were related with the social influence to Indonesian mobile users to adopt the OTT media services. Two questions gather the information whether the respondents think the services would be popular among Indonesian mobile users (Q16), and whether they would get positive attention from their social environment because of using the services (Q22).

The data from Table 21 reveals that the respondents deem the services would be popular among the Indonesian users, but they do not think they would get any positive attention because of using the services. This can be seen from the high average responds values in Q16, where all of that are below the neutral value. In contrast, these are low in Q22 for all of the four services.

### Table 21. Average and Internal consistency of the respondents’ believe about social environment

<table>
<thead>
<tr>
<th>Services</th>
<th>Mean Q16</th>
<th>Q22</th>
<th>Cronbach Alpha Q16, Q10</th>
<th>Pearson correlation Q16, Q10</th>
<th>Q22, Q10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Music streaming</td>
<td>3,445</td>
<td>2,765</td>
<td>0,761</td>
<td>0,617</td>
<td>0,226</td>
</tr>
<tr>
<td>Music download</td>
<td>3,613</td>
<td>2,748</td>
<td>0,748</td>
<td>0,603</td>
<td><strong>0,336</strong></td>
</tr>
<tr>
<td>Video streaming</td>
<td>3,613</td>
<td>2,832</td>
<td>0,661</td>
<td>0,501</td>
<td>0,136</td>
</tr>
<tr>
<td>Video download</td>
<td>3,504</td>
<td>2,815</td>
<td>0,633</td>
<td>0,464</td>
<td>0,279</td>
</tr>
</tbody>
</table>

We also tested the reliability of these data, as shown in Table 21, whether there is any correlation with respondent willingness to use the services. The Pearson correlation was used to check the consistency of these questions, by pairing each of the data in the Q12 and Q19 with Q10, as it contains the data of the respondents’ willingness to use the service. The coefficient correlations between Q22 and Q10 are small to none, except for music download. In contrast, the coefficient correlations between Q16 and Q10 show us the contrast value, which are in the range of medium and strong. The Cronbach Alpha between Q16 and Q10 also show correlation (especially music streaming and music download), as the values are in the range of acceptable.

According to these findings, we can conclude that the Indonesian mobile users’ willingness to adapt to the service have a correlation with a perception that the services would be popular among other Indonesians. However, this does not correlate with respondents’ motivation to get any positive attention from their social environment, except for music download. This makes senses, as they do not believe they would get any positive attention from their social environment because of using these services (music streaming, video streaming, video download). According to these finding, the hypothesis 8 as mentioned in Table 22 is accepted.

### Table 22. Hypothesis 8 result

<table>
<thead>
<tr>
<th>Hypothesis 8</th>
<th>Services</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indonesian mobile users have significant influence from their social</td>
<td>Music streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td>environment to use the mobile media services</td>
<td>Music download</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video streaming</td>
<td>ACCEPTED</td>
</tr>
<tr>
<td></td>
<td>Video download</td>
<td>ACCEPTED</td>
</tr>
</tbody>
</table>
This chapter presents the discussion of implication from mobile media services in mobile broadband in Indonesia. The discussion is formulated based on the findings and analysis derived from the global market trend, lesson learned from mobile media service pre-study in Swedish market, as well as Indonesian regulatory, telecom and media market situation. It is presented by answering the research questions mentioned in section 1.2.

8.1. Actors, Relations and Business models
In this section, we formulate the answer for the first research question: “Who are the actors that involve in serving the media services, and what kind of relations and business models do they use?”

In the digital music, these actors are the content owners (music artist, publisher and record label), which hold the right to the copyright work, as well as the retailer/service provider, which is directly connected to the user. In some cases, the collecting society and aggregator actor may involve at the back end. In the digital TV/Video, there are also the content owners (studio and TV broadcaster), but the artist is excluded, as it does not hold the right to the copyright work. There is also a role of the retailer/service provider, and the aggregator may be involved at the back end of the service provisioning. The CDN provider’s role is increasingly important here, compared with the music business, as the data distributed is much larger.

Furthermore, the technology advance makes it possible for multitudes of actor, which were previously never seen in the traditional music and TV/Video business and come from outside the media industry, to also play role as a retailer/service provider and serve media services directly to the end-user. These actors can be categorized into three types, which are indentified in [90] as well, as below:

- **The Pure player**
  This kind actor has the music and TV/Video service as its core business. It simply mimics and expands the role in the traditional era into the digital and OTT era. Such examples of the pure OTT music players are Spotify, Deezer, Napster, etc, and the TV/Video players are Hulu, Netflix, Voddler, etc.

- **The Diversified player**
  This kind actor previously runs non-music and/or TV/Video business. It enters the media industry in order to expand its brands and broaden consumer presence, which is possible following the advance of the digital and Internet technology. This actor comes from various kinds of industry, such as Amazon, Wal-Mart, Google, etc.

- **The Vertically integrated player**
  This actor previously also runs non-music and/or TV/Video business. It owns the platform or infrastructure, as the based of its core product or service offerings. It actually integrates the music or TV/Video services into its business in order to increase the value and drive the demand to these core offerings. As same as the actor in the Diversified player category, this actor may also come from the various industries, such as CSP (TeliaSonera, TDC, etc), mobile device OEM and OS provider (Apple, Nokia, etc).

The relation between actors inside the music and TV/Video industry in the digital/online era has been visualized and discussed in 4.2.1 and 5.2.1. This is the value network of the “core actors”, which is still same with the traditional distribution era. Our findings show that the change and variation in the value network, both in the music and TV/Video service provisioning, happen outside this “core network”. This value networks can be grouped into three categories, as below:
• The Direct-to-fan model
Here, the content owners directly reach their end-users through their own service or product platform. This model is visualized in section 4.2.3.1 and 5.2.3.1 for the music and TV/Video service provisioning respectively.

• The Point-to-point model
In this model, the content owners do not directly engage with the end-user. Multitude of retailers/service providers, as discussed above, obtains the license, either directly from content owners, or via collecting society and content aggregator. They then provide the service or product platform to deliver the music and TV/Video content to the end-user.

• The Point-to-multipoint model
The content owners in this model still play behind the scene, but there is an actor that acts as the bridge between these content owners and other actors outside the core media industry. They usually at the same time also reach their end-user, thus it takes a central position in the value network.

This finding above is also consistently mentioned in [16], which categorized constellation of the current and emerging business models used in the converged mobile internet services: “Telco centric”, “device centric”, “aggregator centric”, and “service/content provider centric”. The “Telco centric” and “device centric” are typically found in the point-to-point partnership in the OTT music and TV/Video business, where each of the while the “aggregator centric” and “service/content provider centric” is the constellation that can be found in the point-to-multipoint partnerships.

From the discussion in section 4.2.3.1 and 5.2.3.2, we can see that there are two potential positions that the telecom operator’s (CSP) can take in provisioning the media service, either as a central in the network configuration (“Telco centric”), or as a part in the “aggregator centric” or “service/content provider centric” constellation. After analyzing the recent trend, we conclude that the pure OTT retailer/service provider has more capability to be at the central of the value network. Their focus to the music and/or TV/Video and capability to work in a horizontal partnerships make them has a better flexibility to adapt to the emerging business, compared to the vertically organization approach that is typically used by the telecom operator.

We have also analyzed the business models used by these actors in the taxonomy point of view, as mentioned in [1]. Despite the diversity of the business model used in the OTT music and TV/Video business, we found the patterns in the revenue, service, and distribution models used, as discussed in section 4.2 and 5.2. The typical revenue models used are retail, subscription, subsidized, or rental (in the TV/Video content distribution). The service and distribution models used are ownership (DRM/Free DRM à-la-carte, or physical packaging, e.g. OTT CD/DVD purchasing), access (on-demand, live, radio streaming), or personalization (music content distribution, e.g. as ring tone, RBT, etc). Mostly, the actors combine these models, e.g. the “Freemium model”, used by Spotify as discussed in section 6.3.1.
8.2. Indonesian Mobile Media user’s characteristic

In this section, we formulate the answer for the second research question: “What are the mobile user’s characteristics, especially in Indonesia, toward the media services through mobile broadband?”

The typical mobile user’s characteristics in Indonesia are pricing conscious and generally have low willingness to pay for the media services. The ARPU has been decreased over several years following the MNO expansion to the rural and densely populated areas. However, there is still a room for the music and TV/Video service using one or combination of the access and ownership service model. The extremely young user segment dominates the population and there is a boosting of the middle-income individuals (see section 7.1). It means this market actually has a significant amount of potential end-user with luxury need beyond the basic expenditures.

This leads us to the conclusion that there is a huge opportunity for the media services business on top of mobile broadband in Indonesia. The Indonesian mobile users are mostly concentrated in certain areas, mainly in Java and Sumatra Island. These two islands have the most populated cities in the country, and generally have higher purchasing power, and dominate mobile phone ownerships. Our respondents that represent a sample of Indonesian mobile users have also confirmed to have an intention and expectation to adopt OTT media services. The video streaming and music download are the top services that they are using, while music streaming turns as one of the most attractive services, if it is offered free.

Indeed, these aspects, combined with the fact that the social media, bulletin boards, blog, and location-based services are hugely popular among the Indonesians, would offers the opportunity for advertising (mobile ads). It offers a momentum to use the subsidized-based revenue model, presents a way to reach out consumers directly (Word of mouth /WOM) [49], and able to create a presumption of the popularity of the service. As we have sees at the user survey in section 7.4, there is a positive correlation between willingness to use the services with the perception of the popularity of the service.

It means, the more the people are aware or assume that a particular media service is popular among other Indonesians, the more they are likely to try to use it. This does not correlate with an individual’s motivation to get positive attention from social environment though, as the Indonesian users do not believe they would get any positive attention because of using these services. The discussion in section 5.2 also supports this finding, that the advertising would be the key to the TV/Video business growth. The right composition between paid and subsidized-based subscription is also found as a vital point for music services, as discussed in section 4.2.

There is a low average TRE score for mobile and broadband QoS in Indonesia, and dominance of the pre-paid and low-ARPU subscriber. However, the Indonesian users generally have a positive perception of the network quality and do not think the mobile billing would be a barrier for them to use the OTT media services. This was found in the user survey, where respondents generally believe they will not have to pay a lot for mobile account billing because of using the services. Mobile device is also not a major barrier for them to use the services. Instead, smart phone penetration has risen since years in this market, which would be as the driver for these mobile media services, as discussed in section 7.2.1.

Mobile device has been as the preferred access to the Internet among the Indonesians (“leapfrog trend”), compared to several years ago where the Internet café dominated. We have seen the mobile penetration has been increased fast, even compared to some other BRICI countries. In fact, the mobile broadband plans in Indonesia are among the cheapest in the world. This is in contrast with the fixed broadband, where its availability is still limited and the
penetration has dropped. It is still quite expensive to the majority of Indonesians and the PC penetration is low.

8.3. Potentials and Challenges for MNOs in Indonesia

In this section, we formulate the answer for the third research question: “What kind of potentials and challenges would the MNOs in Indonesia face in providing media services on top of mobile broadband?

There are several potential drivers and obstacles aspect ranges in the policy and regulation, supply and demand side in Indonesia market. As discussed in section 7.1, there is no entry barrier exist in OTT media services provisioning in this market. It means in this circumstance, the media service providers only need to consider the licensing issues to distribute copyright work in the market, both for music and TV/video contents. This market also offers a huge challenge, due to high digital media piracy, both as illegal digital download, file-sharing, and physical transaction. In general, there was still low law enforcement, although there have been undergoing actions done by GOI to address these issues and pornographic content distribution.

Furthermore, we have found that the Indonesian users generally have a low willingness to pay and are pricing conscious, and this market has high piracy level. This makes the media providers cannot just directly apply the strategies that they have founded successful in the developed markets to Indonesia. Determining the price is a substantial factor in the success of the media services provisioning, thus the providers have to consider the right prices using different pricing tiers, in order to attract different consumer segments away from the illegal content and use the provider legal services. This is also important to ensure the healthy profit for both the provider itself and the content owners. Indeed, the lesson learned we have seen in the success of media retailers/service provider’s global expansion covers these three factors:

• **Pricing tiers**

  The tiered pricing system is a differentiation made to suit types of end-user segment (value-based pricing). This can be done either based on the different amount or popularity of the content that can be accessed, range of time to access the content, or kinds of feature (e.g. supported device) in several pricing packages.

• **Flexible pricing**

  The flexible pricing is done by adjusting the price based on the “demand-based pricing” and “geographic segmentation”. According to Lars Roth (TeliaSonera) in the interview regarding the lesson learned from the success of Spotify expansion, the price between the market territories should not be always same. Instead, it should follow user’s perceive value in that market.

• **Differentiated features**

  The flexible feature offered in different market territories is also the key to make the service take off in a particular market. The personalization services (ring tone download, RBT activation, wallpaper download, etc) are huge popular in Indonesia, and as the main source of revenue for the music industry. Therefore, it is considerably valuable for the provider to include this feature in their OTT retail or service delivery channel. Such example is to make it possible for the end-user to activate particular content (music) as RBT.

  The provider should also aware that the availability of the service in the mobile device is much important in Indonesia, as the majority of the people only have access to the Internet through mobile, as discussed previously. Thus, the mobile device feature should be available in all price tiers, or otherwise the service would not take off. This is a same case when Spotify adjust its offering in the certain territories, e.g. availability of radio feature, 5-track cap implementation, etc.
8.4. Positions and Roles for MNOs in Indonesia

In this section, we formulate the answer for the fourth research question: “What kind of positions and roles can the MNOs in Indonesia take to make media services as a profitable business?”

1. Analysis of the current situation

The price war has been going on for several years, including in the data service. In contrast with the western markets, the MNOs have low opportunity for triple/ quadruple play because the fixed penetration is not significant. As our findings discussed in section 4.2.3.1 and 5.2.3.2, the triple/ quadruple play is one of the CSPs’ key motives when offering the OTT media services bundling. In addition, the revenue share from the data has just started increase in Indonesia mobile market, and is predicted to keep increase in the next following years.

Indeed, it is not surprise that the MNOs in Indonesia are mainly interested to monetizing the data as access, not yet on monetizing the media service on top of it (bundling), though there has been bundling offering with few other services, e.g. Blackberry services (see section 7.2.1).

The threat of being the “dump-pipe” provider in this market is not as obvious as we have seen in the developed markets. In those markets, the MNOs have been forced to figure out the strategic decision regarding the music and TV/Video business, which cause of the data traffic explosion in their network (e.g. Netflix phenomena in the North America markets).

This is also supported by the fact that the personalization service has been proved as profitable to the MNO, and is still as the main revenue channels from VAS. It is even currently dominating the revenue of the digital music market, which makes Indonesia a contrasting situation with other markets. This is caused by at least three factors.

- First, there is a limited appearance of prominent OTT media service players that results on a hole in the ecosystem (e.g. iTunes).
- Second, there is high piracy level in the physical and OTT media distribution.
- Third, there is a limited opportunity for online payment, because bank account penetration is low.

These factors make the MNO in Indonesia has a better bargaining position in the value network toward the media services provisioning, compared with the situation in the western markets, as they are able to offer a simple payment solution. The low fixed-line/fixed broadband penetration and high dependency among Indonesians to the mobile Internet also give the MNO a strong appearance and ability to reach a large end-user scope. This is in contrast with the developed markets, where the mobile connection is as a substitute to the fixed connection. In Indonesia, mobile device is often not just for basic communication, but may also offers the first opportunity and main way to connect to the Internet.

2. Analysis of the potentials for MNO in Indonesia

The CSP, especially the MNO, is confronted with at least three possible options or positions in the OTT music and TV/Video business, as also discussed in [77].

a. The “Do nothing” option

This means the MNO does not involve at all in the OTT music and TV/Video business, and leave the provisioning of the service to the other player. This option is suitable for the MNO that operates in the markets where the network infrastructure (mobile broadband) and/or mobile device penetration (smart phone) do not take of yet. It means the market as overall is not ready yet for these services.

In the OTT music business, although the market as overall is ready, the MNO still could tolerate this situation if the opportunity for the MNO to gain benefit from the service is too low, which makes it not significant with the effort they should do. This can happen because either the revenue share is too small, or the potential revenue gained from the market is too
low. In addition, the impact of the traffic from the music content delivery for the overall traffic is also likely limited; because the bandwidth requirement for this service is low (high-quality streaming music is likely 320 kbps).

However, this is not the case in the OTT TV/Video business. Even though the revenue share is small; the impact of the TV/Video content delivery to the traffic load is significant (see Netflix traffic in the North America market in the Chapter 5 – The Digital TV/Video Industry). Therefore, if the OTT TV/Video service takes off in the market, the threat to the MNO of being the “dump-pipe” provider is high. In addition, in both of the business fields, the MNO would miss out the opportunity to monetize, as well as the indirect benefits to be involved in the provisioning of these services in their market.

b. The “Do it alone” option
This means the MNO launches its own digital music and/or TV/Video service brand, and compete with the OTT players. Using this, the MNO becomes the retail and/or service provider (The Vertically integrated player) and partnership directly with the music and/or broadcasting core actors (point-to-point model) This option might feasible for the operator that has or able to gain sufficient resource to develop, maintain and deliver its own service. This includes the effort to obtain the license from the content owner, product development, maintenance and marketing, etc. The success examples are SK Telecom and TDC with their music service (see the part A in section 4.2.3.1 and 5.2.3.2).

However, this option is a high-risk approach for the MNO because the media services (entertainment) are not the MNO core business. In addition, the potential benefits and direct revenue share from these services to MNO’s total revenue are not significant to justify the effort to deliver the service to the market. Moreover, the typical vertical system of the MNO’s organization impacts to the slower deployment life cycle, and their mass-market focus makes them slower to adapt to the emerging user’s demand and competitors, compared with the nimble culture of the OTT music and/or TV/Video service provider (The Pure player).

c. The “Collaboration” option
The MNO could choose to collaborate with other player (e.g. the Pure player) and get some percentage of shares from the total revenue, as return to the new users gained from their end-user based, the usage of their brand, and associated services (e.g. billing).

Our findings about the MNO and OTT player partnerships in section 6.3.1 show us that this MNO typically set up the short-time agreement with the OTT player (non-equity mode) [15]. This means they can review this agreement and exit at the end of the term, if the partnership and/or the service do not take off or profitable. The MNO can reduce the effort to deliver the services and share the risk with this partner, compared if they choose the “Do it alone” option (see the part B in section 4.2.3.1 and 5.2.3.2). This is also confirmed by [17] that stated that the two critical success factors in multimedia business are company’s core competencies and user acceptance.

They can also take an active role in this partnership and create a respective bargaining position in the value network. Using this, they may get a larger percentage in the revenue sharing and/or bulk discount in the cost to acquire the license (e.g. discussion between TeliaSonera and record label regarding its partnership with Spotify). Some operators also set up a joint venture (equity mode) with other player and/or become part of the shareholders of the OTT media company [15]. This strategy also offers a possibility of an active role in the partnership, and shares the effort to roll out the media service.

However, this demands a higher investment and riskier, compared if the MNO use the short-term agreement strategy [15]. Our analysis in section 4.2.3.1 and 5.2.3.2, and the lesson learn from global market landscape, Spotify and other OTT media players’ business model
lead us to the conclusion that, it is strategic for the MNO to use the point-to-multipoint model, rather than the point-to-point model. We recommend the operator disregard the first and second option, and instead form a partnership with other player using the short-term agreement under this point-to-multipoint model.

It should also be note that, through any of those available options, the MNOs should not use these services to increase the revenue from the media. Our findings reveal that, even if the number of the subscribers acquired is high, the majority of the revenue generated from these services will go to the “core actors” (the content owner). In contrast with other businesses, in the music and broadcasting business, the provider only has choices regarding what kind of the content they would like to get the license to, not from whom they would like to get the license (e.g. Virgin Media fail in acquire the license from the major record labels).

Indeed, although it is still possible for the MNO to acquire some chunk of the revenue from music and/or TV/Video service provisioning, the key benefits for the MNO are actually to:

- **Reduce the churn rate**
  This can be achieved by monetizing the higher value of the access to the content and feature in the service to user, which will be canceled once user stops their subscription with their MNO.

- **Acquire market share**
  The market share can be increased by exposing music and/or TV/Video service to user and making it exclusively bound with the MNO’s brand.

- **Increase the ARPU**
  The MNO can increase the ARPU from the data by acquiring or turning the subscriber to the higher value subscription (the music and/or TV/Video service is bundled into it).
This chapter provides the assessment of limitation and advantage points of this study, as well as the suggestions for future investigations related to the topic of this study.

9.1. Criticism of the Study
There are several limitations of this study. The first criticism is the expert interview that only covers small amount of stakeholders in the industry. It could be better for the study to cover more experts, so we can get a broader point of view and do in-depth analysis from their information. Nevertheless, due to the time and resource limitation, only the most relevant representatives that could be contacted for the interview.

The second limitation is the user survey, which is the based of the quantitative study. It only covers small amount of respondents and there are even smaller valid data that can be used for analysis. The fact that the questionnaire is formed as an OTT survey also limit the respondent that can be reached, as naturally it is not convenient to do this survey in the small screen and limited connectivity from the mobile device.

The third limitation is in the limited analysis in the quantitative data. This study did not conduct the regression analysis, which is very valuable to measure the most significant values that affect user’s decision to adopt the service. This cannot be covered by the correlation tests. Fourth, the survey itself only explores the acceptance factor for mobile media usage in mobile devices. In real scenarios, the media services might be consumed through other types of device (e.g. laptop), but still use mobile broadband as underlying connection.

However, there are also several strengths of this study though. First, our strategy to use the mixed method approach, by using both quantitative and qualitative study, brings variety of perspectives to the study. This helps to enrich our analysis and ensure the robustness of the findings. Second, the reliability of the quantitative data was assured through several types of correlation tests, and there are more than one questions used to test the hypothesis through internal consistency.

Third, the questionnaire is distributed using Bahasa (Indonesian language). This removed language barrier, helped to attract broader respondent, and make the questions clear to avoid risk of misunderstandings. Forth, the study covers the representative from well-known industry actors and is currently playing vital role in media/telecom business, both in reference market (Sweden) and target market (Indonesia). This help to ensure the results to has practical and influential implications for the marketplace.

9.2. Future Work
This study reveals several issues that can be subjects of further study. Indonesian mobile users generally have positive intention and perceive to use the OTT media services through their mobile device. In addition, the mobile device and connection is not a barrier for them to adopt the service. However, there is still little focus from the local actors, and especially the MNO, to fulfill and monetize this need. We have identified that these MNOs are currently playing dominant role due to high dependency among people to mobile, and low PC ownership and bank account penetration.

Indeed, It would be interesting to study this issue further in the economic and market-based system point of view. One of the examples is predicting the outcome of complex interactions among actors, if the prominent (international) OTT players enter the market. The approach could be to do a micro-economic analysis, e.g. the game theory modeling. This can be used to predict and analyze the further forms of strategy and interaction between these identified actors in the value network of the OTT music and TV/Video business.
Paper, Journal and Book

**Business Model**


• Research Methodology


• Telecom Regulation


• Technology Acceptance


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Mobile Broadband and Digital Media


Report
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Article


## Appendix A – Qualitative Interviews

### A.1. Interviewee List

<table>
<thead>
<tr>
<th>Interviewee Name</th>
<th>Actor Type</th>
<th>Country</th>
<th>Interviewee Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lars Roth</td>
<td>MNO</td>
<td>Sweden</td>
<td>Vice President Consumer at TeliaSonera</td>
</tr>
<tr>
<td>Andreas Liffgarden</td>
<td>OTT music service</td>
<td>Sweden</td>
<td>Global Head of Telecom business development at Spotify</td>
</tr>
<tr>
<td>Märta Rybeck</td>
<td>TV Broadcaster</td>
<td>Sweden</td>
<td>Head of broadcast managed services (Global Services business unit) at Ericsson. She was interviewed due to her previous role as Director of Distribution and Affiliate sales at TV4 until December 2011.</td>
</tr>
<tr>
<td>Jockie Heruseon</td>
<td>MNO</td>
<td>Indonesia</td>
<td>Manager of Broadband Products PIM at Telkomsel</td>
</tr>
<tr>
<td>Didik Akhmadi Usman</td>
<td>Regulator</td>
<td>Indonesia</td>
<td>Member of BRTI, Indonesia telecom regulatory body</td>
</tr>
<tr>
<td>Yose Tireza Arizal</td>
<td>MNO</td>
<td>Indonesia</td>
<td>General Manager of Business development and support system at Axis Telekom Indonesia</td>
</tr>
<tr>
<td>Hengky Philip Ginting</td>
<td>Mobile content provider</td>
<td>Indonesia</td>
<td>Director at New Solution Technology (NST). Hengky Philip Ginting was also interviewed due to his previous role as Head of Business development at Mobafone Indonesia</td>
</tr>
</tbody>
</table>