Managing Platform Business Growth: A Case Study of TikTok

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Abstract

Purpose This case study provides knowledge of the management of a multi-sided platform, by showing the ways that TikTok has been employing to increase its user growth and business value.

Design This study is grounded on a critical realism perspective and adopts a qualitative case study approach. Evidence is primarily grounded on TikTok's press release from 2018 to the first quarter of 2020, and secondary sources such as the interviews of the former President of TikTok on his insights into the management of a multi-sided platform, TikTok global user download numbers by Quarter, and archival analysis reports of TikTok's growth.

Findings A set of strategies have been obtained in TikTok's management of the platform. Firstly, it is found that TikTok largely utilised three ways to grow its user numbers, including developing necessary product features to satisfy users preferences, creating a unique marketing campaign based on a killer feature, hashtag challenge, and growing social media celebrities on the platform. Moreover, TikTok is able to sustain its growth by engaging users into the platform evolution process, such as listening to their ideas and feedback, and improving the user experience accordingly. Additionally, TikTok's collaboration with external business partners enabled the platform to gain monetary return and promote its brand identity further. Last but not least, with the aid of artificial intelligence technology, TikTok is capable of facilitate user interactions to keep users active on the platform and thus draw more traction.

Value Many research has been discussing platform business in the areas of its definition, formation, and strategies. However, few case studies have been conducted to investigate the dynamics of operating a platform business. Apart from that, even though TikTok has experienced exponential user number growth in the past years, the studies around that is insufficient. Therefore, by doing a single case study of TikTok, and looking into the strategies it has been implementing to drive its growth, this paper can give new insights of the management of a platform business in reality.

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1.0 Introduction

1.1 Motivations & Research objectives

The entrepreneurial world has changed greatly since digitalisation transformed the entire business landscape starting from the early 2000s (Autio, 2017). Early research has been discussing the effects of digitalisation on entrepreneurship, stating that the competition logic, opportunities, processes and outcomes of new business venturing have been completely distinct from previous years (Autio, 2017; Nambisan, 2017; Cennamo, 2019). Because of those changes, building business ideas upon digital platforms began to rise as a new business model in the digital era (Nambisan, 2017; Fehrer et al., 2018). Hence, many research have been conducted to describe the new business model, and explore the important engineers of platform evolution and strategies platform startups can employ to drive their growth.

Regardless of that scholars have put forward a number of theoretical discussions around platform business, including network effects and crowdsourcing as two significant platform business concepts, concentre evidence of how a platform business has been established in reality is insufficient. A few case studies of leading platform businesses, such as Uber, Airbnb, Wechat and Facebook, have helped the academic world to capture the activities that have happened in platforms' different growing stages. However, a bunch of questions in regards to the applications of platform business strategies, examples of platform business management in different fields, and the reasons for the failures of some platform businesses, still await answering (Reuver et al., 2018). Given that the external context of platform businesses changes a lot due to the rapid advancement of digital technology, the academia will only be able to gain more insights on the dynamics of platform businesses if more case studies can be implemented (Bouwman et al., 2017; Kraus et al., 2018).

As a consequence, the purpose of this paper is to gain understanding of platform business strategies by studying the approaches TikTok has been applying to grow its user numbers and business value. The case company TikTok is a multi-sided video-sharing platform on which users can interact through producing short-form video contents on topics like comedy, lip syncs, and others (Hylton, 2019; Fannin, 2019). Established in September 2017 as an international version of its sister platform, Douyin, TikTok today operates in over 150 markets (ByteDance, 2020). Since it merged with the dominating platform Musical.ly in November 2017, TikTok has experienced a rapid increase of user numbers and reached around 1.5 billion monthly activity users globally as in June 2019 (Novak, 2020). Therefore, by looking into the development process of TikTok, it is expected that new knowledge of how a platform business has been managed to grow in reality could be learned.

1.2 Research Questions

This paper will study the development of TikTok from 2018 in depth, by centralising the focus on the possible platform management techniques that TikTok has been implementing. With reference to a review of the prevailing theoretical concepts in the areas of digital entrepreneurship and platform business, together with the aforementioned motivations and research objectives, the research will be oriented towards answering the question as below:

- *How did TikTok, as a multi-sided platform, managed to grow its business from 2018 to the first quarter of 2020?*

To gain knowledge of the evolution of TikTok, a single case study will be implemented to explore the mechanisms for the growth and the corresponding methods that TikTok has been employing throughout time (Yin, 2018). Insights will majorly be drawn from TikTok's newsroom articles,

considering that the newsroom data on TikTok's website can show patterns of what TikTok perceived as useful to grow its platform. Besides, interview scripts from TikTok's former President will be obtained from secondary sources to strengthen our understanding from a management perspective. Although Zhu was majorly talking about his management of Musical.ly in the attained interviews, the evidence is still considered as highly relevant to the research. Given that the business model of TikTok is very similar to Musical.ly, and TikTok's parent company ByteDance bought the latter startup and recruited Zhu as the President of TikTok, there is high likelihood that Zhu's learning from operating Musical.ly will be leveraged to TikTok's operations.

Based on a critical realism perspective, the analysis of this research will adopt an abductive reasoning approach, which allows for the researcher to iterate between theoretical concepts in the literature review and real-life observations. In this way, the development of analysis would not be restricted by the scope of predefined theories and be grounded on the reality (Saunders et al., 2007). A content analysis technique and probabilistic topic modelling method will be applied to process the acquired data. The advantages of using these two techniques are that they can disaggregate textual data and categorise them into topics (Bengtsson, 2016; Debortoli, 2016), which then helps the researcher to generate meaningful findings.

1.3 Theoretical Foundation

In order to investigate the development of the platform business TikTok in a comprehensive manner, previous academic papers have been carefully reviewed prior to the fieldwork. This paper is built upon a number of literature that are relevant to the research field, including the definition, driving factors and possible strategies of platform businesses, and digitalisation as a broad

context. In this section, a summary of the structure and theoretical background of platform business will be presented.

The theoretical framework of this paper will start with the concept of a platform business, drawing insights from a few scholars' viewpoints. Then before diving into the driving forces of the platform business, the researcher will draw attention to the discussions on how digital technology has been transforming the whole business landscape, which may influence the early takeoff of a platform business. Once the importance of underlying external factors were examined, the paper will elaborate on the recent considerations for the evolution of platform business, such as two conceptual factors, network effects and open innovation, that can help a platform business to create more value. Following that, pricing strategies and prevailing non-price mechanisms will be explained to illustrate how platform owners could utilise the two driving aspects into their business operations.

Early researches have already been expanding to study the phenomenon of platform business being a dominant business model for today's entrepreneurs to adopt. But because the area is quite new given that platform business started to occur after the advancement of digital technology in the early 2000s (Autio, 2017), our knowledge of this field is still insufficient. For example, even though scholars have agreed that platform business could be regarded as a digitalised business model that gives new possibilities of interactions (Mclyntyre & Srinivasan, 2017; Nambisan, 2017; Hsieh & Wu, 2018), a widely accepted definition has not been established. Whereas some researchers have attempted to describe platform business on the basis of the number of user groups around a platform (Daxhammer et al., 2019), others have explained it in corresponding to its underlying business purposes (Rossotto, et al., 2018; Cennamo, 2019). Moreover, with a view to

capture the initial formation of platform business, a great amount of studies have been conducted to explore the relationship between digitalisation and platform business. Due to that digitalisation has transformed the entire business landscape and primary entrepreneurship practices, scholars put forward that the adoption of platform business in the entrepreneurial world could be a reasonable result from that (Nambisan, 2017; Berget et al., 2019).

Going forward, a few researchers have delved into the evolution of platform business purposely to unveil the elemental influential factors to assist its growth and possible strategies entrepreneurs can employ (Boudreau & Hagiu, 2009; Rossotto et al., 2018). The concept of network effects basically illustrates how an increase of population in the platform network can lead to generation of business values. This effect can happen either on the same side of a platform, or cross the platform (Tucker & Zhang, 2010; Boudreau & Jeppesen, 2014; Reuver et al., 2018; Cennamo, 2019). Several case studies of social networking platforms have also been implemented to observe the factor in the real world. Patterns and specific activities of those platforms putting network effects into use have been captured (Han & Cho, 2015; Chen, 2016). Furthermore, an alternation to increase the value of a platform has been put forward as encouraging ideas from outside the company, which is described as open innovation or crowdsourcing (Chesbrough et al., 2006; Boudreau & Lakhani, 2013; Nambisan et al., 2018). This idea also talks about how the accumulation of ideas can lead to an increase in platform business value.

Last but not least, price and non-price mechanisms have been taken as two ways of platform entrepreneurs can practice to grow their businesses. Even though providing users with monetary incentives has been a typical method for platforms to attract early adopters, (Boudreau & Hagiu, 2009) argued that this strategy can merely work to some extent. In particular, if a platform wants

to sustain its growth, it should see itself as a governor of the platform and regulate all the players within the platform through rules, inducements, and intrinsic motivations.

1.4 Thesis Structure

To develop a comprehensive understanding of the chosen research question and somewhat fill the research gap with a real-life evidence of platform business, this paper will follow a structured approach of thesis writing. To start with, the paper will briefly introduce the essential information about the case company TikTok and illustrate its key events during its evolution. Following that, a number of previous research papers in the ares of digital entrepreneurship and platform business will be reviewed and evaluated in order to obtain a thorough understanding of the leading concepts and possibly generate research gaps that this paper can contribute to fill. In the next chapter, the paper will explain how this research has been designed in terms of the underlying philosophy of science it is based on, and detailed procedure of data collection and analysis. After the data is collected and processed by content analysis technique and probabilistic modelling, an overview of the general patterns that are drawn from TikTok's newsroom articles and Alex Zhu's interviews will be illustrated with examples from the original sources. Subsequently, the discussion chapter will talk about the main insights that have been observed from the findings with reference to the theoretical statements in the literature review. As the research adopts an abductive logic of thinking, the final conclusion will be developed by looking into theories and data back and forth. Finally, the last chapter will summarise the key information in the paper, while also reflect on the limitations of this study and possible areas that future research can explore further.

2.0 Case Study Background

2.1 Case Company Presentation

The case company in this paper, TikTok, is a video sharing application that enables users to create short form videos between 15 and 60 seconds with special effects (Hylton, 2019). As an example, users are guided to create their own video clips with memes, music, and social media trends under a themed hashtag challenge (Sommer, 2019). It is a multi-sided platform that connects content consumers, video producers and advertisers (Davis, 2019). People share everything including comedy, lip syncs, and tips on the application in a scrappy and fast-moving style (Fannin, 2019). The platform was launched in China and initially named as Douyin in 2016. For the purpose of expanding overseas, in September 2017 the product was split into two, one remaining as Douyin serving the Chinese users, and the other renamed as TikTok operating outside of China (Hylton, 2019). Two months later, TikTok's parent company, ByteDance, acquired Musical.ly, a lip-syncing application that TikTok originally imitated from, at $1 billion, and merged it into TikTok (Leung, 2019). Today TikTok operates in more than 150 markets (ByteDance, 2020). The United States and India are the two key international markets for TikTok. The U.S. market takes approximately 10% of TikTok's total user base (Leung, 2019); Whereas India occupies the largest percentage of TikTok's global new installs with 41.3% (Chapple, 2020).

Advertising and in-app purchases are two crucial aspects of TikTok's revenue stream (CBInsights, 2020). With reference to the study of AdWeek, advertisers can buy a sponsored hashtag challenge on TikTok for six days with a basic promotion fee of $150, 000 and probably another $100, 000 to $200, 000 for extra advertising distributions. Apart from that, companies can also put their advertisements on the application banner, and sponsor lenses and filter alternatives for content creators (Sommer, 2019). In addition to the advertising strategy, TikTok offers users with virtual

coins that they can use to support the high performing content creators they like through buying digital gifts (CBInsights, 2020). By doing so, TikTok shares part of the monetary value of the digital gifts content creators receive. This pricing approach not only enables an alternative way for TikTok to gain monetary benefits, but also can motivate content producers to make more creative videos as an incentive (Sommer, 2019).

Although TikTok was established with limited fanfare, it rapidly went viral everywhere in the world (Hylton, 2019). It is reported that Tiktok has been downloaded 2 billion times by May 2020 (CBInsights, 2020), and has nearly 1.5 billion monthly active users around the world (Novak, 2020). Users are found to be addicted to the video app, spending about 52 minutes daily on average using it. This result makes TikTok rank at the forefront among other big social media platforms like Instagram (53 minutes) and Snapchat (50 minutes) (CBInsights, 2020). Even further, due to the coronavirus pandemic lockdowns, TikTok broke another record by generating 315 million new downloads worldwide in the first quarter of 2020 alone (CBInsights, 2020). Due to the exponential success of TikTok, ByteDance becomes one of the highest valued startups around the world with an estimated total investment of nearly $140 billion in 2020 (CBInsights, 2020).

2.2 Case Presentation

To understand how a platform business grows, the subject of analysis in this paper will be concentrated on the detailed activities TikTok has been employing to drive its rapid growth. The following subchapter will talk about the researcher's preliminary knowledge about TikTok's development.

TikTok's user number has been increasing massively since it was split from Douyin and merged with Musical.ly. According to Sensor Tower (2020), the amount of TikTok's worldwide new downloads has grown 6.7 times and reached 315 million in the first quarter of 2020 (See in Figure 1). The rapid growth started from the first quarter of 2018 with 110.3 million new global downloads, which increased more than twice of the number in the last quarter of 2017. Throughout the year 2018, TikTok has experienced steady but still enormous increase of user numbers. Even though the growth rate has fluctuated slightly between the first quarter and third quarter of 2019, it kept developing and reached a peak in the first fourth of 2020.
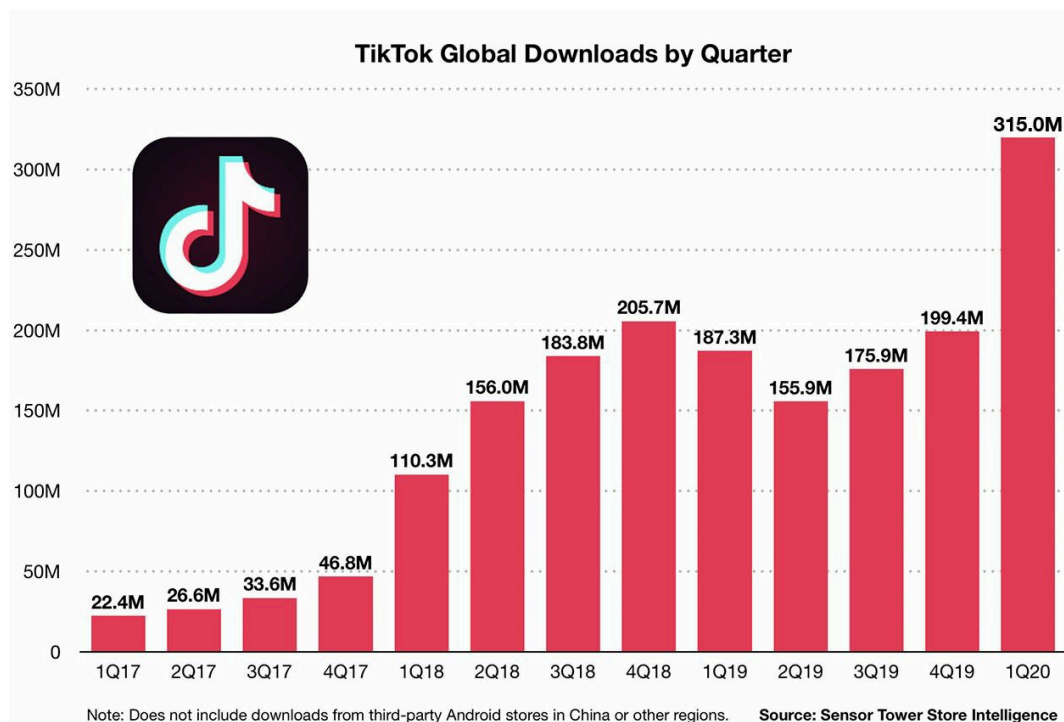
Figure 1: TikTok Global Downloads by Quarter, from the 1st quarter of 2017 to the 1st quarter of 2020, Sensor Tower (2020).

The factors that drive TikTok's success have been widely discussed in the media. Firstly, TikTok's acquisition of Musical.ly has been taken as a vital action to speed up its development. Prior to the mergers of Musical.ly and TikTok, Musical.ly had already been prosperous in the U.S. market.

Although the startup was established in Shanghai, it had over 50% of American teenage users and has ranked as the No.1 free app in the Apple iOS store in 20 nations. The app started to gain people's attention since its hashtag challenge of #dontjudgeme in 2015. Under the hashtag, 200,000 videos have been made and replicated in a week. It is indicated that because of the company's respect and awareness of the U.S. teen culture, it successfully captures U.S. teenagers' urges of being independent and desires to show and share their uniquenesses with others. After Musical.ly was acquired, all the users were moved to TikTok and one of the co-founders of Musical.ly, Alex Zhu, also joined ByteDance as the President of TikTok. Consequently, this acquisition approach helps TikTok to obtain a large amount of international users and meanwhile enables it to replicate Musical.ly's successful operations into its own global expansion practices (Leung, 2019).

Additionally, TikTok applies a set of localisation strategies in each overseas market in order to generate traffic. For instance, the product features are specifically designed with reference to the local taste and language. With the aim of increasing people's awareness of TikTok, it also places advertisements in iconic spots and invites celebrities and influencers who already have an established big fan base to the platform (Leung, 2019). Hence, TikTok is capable of quickly promoting its products abroad and attracts a large number of users.

3.0 Methodology

This chapter will give an overview of the research design and the underlying philosophical position of the research, which aims at exploring the management techniques of developing a platform business. Detailed research methods of data collection and analysis in correspondence with the chosen philosophy of science will be presented to explain how the results in the next chapter are produced.

3.1 Philosophy of Science

Prior to generating knowledge about platform business, it is important to map out the position a researcher takes in research philosophy. This is because research philosophy is a collection of assumptions a researcher has that primarily influence the research process, for instance, how a research problem is addressed and how the data is collected (Saunders et al., 2019). The philosophical position is made up of two concepts: ontology and epistemology. Ontology refers to the study of reality, which means how researchers view the world will affect their assumptions of a certain situation or problem. Further, the ontological considerations will lead to a corresponding epistemological choice, which focuses on how knowledge can be generated in terms of those assumptions (Byrne, 2017).

This research project can be regarded as taking a critical realism perspective, with a presumption that the real world exists independently and our knowledge of the world is a partial representation of the reality (Saunders et al., 2019). This ontological position was initially proposed by Bhaskar (1978), who conceptualised the real world in three different layers, including 1) the empirical level, in which the world is reflected through human beings' sensations; 2) the actual level of reality that occurs no matter whether it has been observed by human beings; and 3) the causal

level where causal mechanisms happen and shape the empirical and actual level of reality but are unseen. Accordingly, critical realism differentiates itself from positivism and relativism by arguing against the idea that the reality is fully external to human experience and another proposal of the reality entirely constructed by human beings' perceptions (Fletcher, 2017). But critical realists put forward that the reality is layered. From their viewpoints, our knowledge of a particular issue is composed of subjective viewpoints that are shaped by unseen objective forces (Coghlan & Brydon-Miller, 2014).

In critical realism, the ontology may not be reducible to certain epistemological approaches. But this does not mean the reality is not accessible. Instead, researchers can at least get closer to the fundamental nature (Fletcher, 2017). Therefore, the epistemological approach in this research could be characterised as relativism, in which historical events will be observed with the purpose of searching for the underlying patterns or causal mechanisms (Saunders et al., 2019).

3.2 Research Design

In terms of the ontological and epistemological considerations, this research will be built upon a qualitative case study, by which intensive investigations around a real platform business will be conducted (Gustafsson, 2017). Generally, qualitative methods are especially suitable for interpretations of non-numerical data (Saunders et al., 2019; Denzin & Lincoln, 2011). In comparison with quantitative approach, multiple variables can be included in the research process, including those ones that may not be priorly envisioned by researchers (Mujis, 2013). Because the key elements of doing a case study matches with qualitative approaches by portraying the characteristics, causes and outcomes of a contemporary situation comprehensively, case studies are usually applied together with qualitative methods (Yin, 2018).

To obtain an intensive understanding of the given research question, a single case study of TikTok, a multi-sided platform, will be conducted. The method of case studies can provide a comprehensive understanding of a phenomenon, because real events and their relationships are able to be observed. Besides, case studies are usually serving to cope with research that focuses on "how" and "why" a phenomenon happens, while the researcher has limited control over the process. As this research attempts to find out how an existing platform business developed, and the researcher is an outsider of its growing environment, the case study design is particularly suitable for this research (Yin, 2018).

Even though doing a multiple case study allows for a comparison analysis of aspects across situations, it can be time-consuming and requires intensive resources to conduct (Baxter & Jack, 2008). By contrast, sometimes a single case study can provide better findings when the researchers want to study only one particular phenomenon, an organisation or a group of people (Yin, 2018), or when they want to look into detailed development and changes of a subject (Dyer & Wilkins, 1991, cited in Gustafsson, 2017; Mills et al., 2010). Therefore, after looking through a list of suitable platform businesses, the researcher chose TikTok as the case company, because TikTok has experienced a rapid growth recently but not adequately examined. Therefore, with an intention to especially study the exponential growth of TikTok and grasp its management methods of that, a single case study design will be applied.

Regardless of that, the researcher is aware of the limitations of doing a single case study for answering the research question. A case is often a rare and exceptional example that probably occurs only during a certain time frame in the real world. The purpose of conducting a case study

is to thoroughly illustrate that particular phenomenon with its underlying contextual factors. Therefore, a single case study research can fail to offer new knowledge that is widely applicable to other circumstances (Mills et al., 2010; Yin, 2018). Other than that, because the researcher serves as an interpreter during the process, by delving into the perspectives and experiences of people related to the case, and other relevant empirical data (Mills et al., 2010), it is likely that some of the interpretation of results will be influenced by the researcher's knowledge scope and biases. However, despite these limitations, the case study design offers the opportunity to analyse a research topic within a specific case, taking into account all details and unique circumstances that may be disregarded with a different research design (Yin, 2018). The aim of this thesis is thus not to generate generalisable conclusions for all platform businesses, but to fully understand the case company's situation and dynamics of its growth against an academical background.

Further, the data analysis process will utilise abductive reasoning, which explores a circumstance by observing the reality, and generates conclusions through a frequent iteration between theories and observations. This logic of thinking is therefore a combination of deductive and inductive reasoning, which is in line with the viewpoint of critical realism (Saunders et al., 2019). If solely using deductive reasoning, it is of concern that the initial theoretical standpoints may restrict the research scope and thus neglect important factors that may cause the case to develop. Whereas even though inductive reasoning can enrich our understanding by giving a lot of real-life data, conclusions are normally untested and require further evaluation (Yin, 2018). Therefore, by combining the advantages of deductive and inductive reasoning, the researcher is capable of capturing the roots and interventions for an incident to happen in reality with an awareness of possible underlying theories (Saunders et al., 2019).

In terms of platform business, despite that the academia has been promoting network effects and open innovation as two vital forces affecting its growth, those theoretical proposals are not adequate to explain the case company's tremendous increase of user numbers and business value in the past 2 years. Instead, alternative factors could cause the phenomena to some extent. Because a case study does not have to start with theoretical concepts (Mills et al., 2010), and in order not to constrain the investigation within a predefined scope, this paper will look into real-life data to gain untested results first (Saunders et al., 2019; Easterby-Smith, 2018). Then those identified results will be used as a conceptual framework to further test their applicability with reference to prevailing theoretical proposals in early research (Saunders et al., 2007). As a consequence, through an ongoing conversation between empirical data and theories, new insights into the development of TikTok as a platform business will be collected.

3.3 Data Collection

This research will be grounded on qualitative data including primary sources such as the press release information gathered from TikTok's official website and secondary data resources like the interview transcripts of TikTok's former President, Alex Zhu, TikTok global user download numbers by quarter, and archival analysis reports of TikTok's growth.

For the purpose of exploring TikTok's techniques on growing its platform, the newsroom data from TikTok's official website were collected via Python. This way of data collection was implemented firstly because press release is a channel for TikTok to communicate its key events, such as product updates and marketing campaign announcements, to the general public. By examining newsroom data, the researcher is able to gain a historical perspective, and obtain information on what and how TikTok sees as useful ways of platform development. Besides that,

this data collection method was chosen due to the fact that it is easily accessible, especially during the global pandemic COVID-19 period. Further, TikTok has very strict company policies on conversing with external entities. Therefore, even though conducting interviews with employees and management team in the case company is a typical case study technique researchers follow (Yin, 2018), this research instrument may be difficult to operate under the given circumstances. Meanwhile, assuming that some of the employees were willing to do interviews and share their opinions in regards to the research question, the quality of the interview answers could be in doubt too. Taking into account that the management techniques of a platform are valuable for startups to gain competitive advantages, TikTok's employees might avoid talking about the key factors that drive the platform's growth. So it is likely that the research may fail generating valid results to answer the research question. Therefore, scraping TikTok's newsroom data can be an alternative way for the researcher to investigate possible factors TikTok has applied to develop its platform.

Around 900 pieces of news data that were released from 2018 to the first quarter of 2020 in TikTok's major 13 international markets (the United States, India, the United Kingdom, Germany, France, Spain, Italy, Indonesia, Japan, Korea, Vietnam, Australia, and Russia) have been obtained. At first, the researcher collected news information, such as news category, release date, and news title, from the website. But because it is found later that those data may not give a thorough overview of TikTok's specific operational activities, the body of each news was included as well. As TikTok uses local languages in the newsroom in some markets, all the non-English news data has been translated into English in Python via GoogleTrans package.

Apart from that, the secondary data of Alex Zhu's interviews on his experience with Musical.ly were collected as valuable resources to understand the growth of TikTok from a managerial perspective. This is mainly due to the fact that the Co-founder of Musical.ly, Alex Zhu, joined TikTok in the management team after the acquisition. So there is a high likelihood that he adopted some of the knowledge and strategies he gained from operating Musical.ly into TikTok. Moreover, the acquisition of Musical.ly could place a significant influence on TikTok's expansion in overseas markets, given that the number of global downloads has grown tremendously following the merger and secondly, the latter startup has a proven success in operating in foreign markets. Hence, two online interviews of Alex Zhu's sharing of his management of Musical.ly were generated. The first interview was on air in November 2016 and conducted by a venture capital firm, Greylock Partners, to whom Zhu talked about how Musical.ly has grown up and how the virtual community has been established. The second interview was released online in November 2017 by Branded, an event organisation that connects organisations in the entertainment sectors through business-to-business festivals (Branded, 2020). In the second interview, Alex Zhu was invited to share his thoughts on how Musical.ly has transformed the ways of sharing and connecting through video contents. Both of the interviews were recorded and transcribed automatically via a software, otter, into text forms.

As these two interviews were very likely to be conducted with different purposes, the researcher only extracted information that is relevant to this particular research project. Therefore, the researcher defined six criteria based on the aim of this research to evaluate the extent of relevance between the interview questions of secondary data and the research question in this project (See in Table 1).

No.	Criteria
1	Musical.ly's methods on attracting users
2	Musical.ly's management of users and creators community
3	Musical.ly's management of business vendors
4	Musical.ly's monetisation strategy
5	The evolution of Musical.ly's platform business model
6	Alex Zhu's reflections and learning on managing Musical.ly

Table 1: Six criteria for evaluating the relevance extent between secondary interview data and research question in this project.

Then with reference to the number of criteria points that has been matched, the interview questions and corresponding text in the secondary resources that are considered as relevant would be labeled as low relevance, medium relevance, and high relevance (See in Table 2). For example, if a question in the secondary data has matched with three points in the predefined criteria list, that interview text will be considered as highly relevant to this research project. By doing so, the researcher has acquired 11 interview texts from the two secondary resources, with 3 highly relevant and 8 medium level relevant interview answers.

Number of criteria points has been reached in the interview questions from secondary data	Relevance
0 or None	Low
Between 0 and 2 (inclusive)	Medium
Greater than 2	High

Table 2: The benchmark of relevance extent between secondary interview questions and research question in this project.

3.4 Data Analysis

In order to investigate how a multi-sided platform like TikTok grows its business, the analysis process of this research will be built upon content analysis and probabilistic topic modelling.

First of all, a content analysis technique was chosen to process the interview data, because it can disaggregate a chunk of communication contents into valuable insights (Bengtsson, 2016). This then allows for a further examination of meaningful patterns that can be relatable to the research purposes (Krippendorff, 2018). Specifically, the first part of analysis was implemented in four steps as follows:

1. decontextualising the interview answers by breaking the texts into a series of meaning units;

2. comparing the meaning units with the research aim, so as to ensure all the units are answering to the research question;

3. eliminating the volume of texts in the meaning units into codes that are made up of words or short phrases, and organising the codes into categories;

4. compiling conclusions from identified categories (Bengtsson, 2016).

Then the technique of probabilistic topic modelling, based on Debortoli's (2016) work on the topic, was conducted to process the newsroom texts, because the model is capable of dealing with a massive amount of textual data, and automatically categorise words and disseminate them into groups. Besides that, the final results normally present a composition of words with probability distributions (Debortoli, 2016), which enables an identification of possible topics a document contains (Blei, 2012). But prior to diving into the newsroom data, several rounds of data cleaning were conducted. It is due to that data scraped from the websites can contain a lot of disturbances, which can make it difficult for the computer programme to read and process (Debortoli, 2016). Hence, the researcher started the second half of analysis by identifying potential data quality

problems, such as duplicated words and punctuations, which require to be removed. After that, all the texts were transformed into their simplest forms through lemmatisation. For instance, all the plural words were transformed to singular forms, and verbs were presented in their present tenses. In this way, the pre-processed newsroom texts would be easier to be categorised.

As one way of automatically turning texts into topic models, latent dirichlet allocation was applied. It is built upon a presumption that every document is made up of a set of topics in different percentages, and those topics are also composed of a number of words in distinct proportions (Debortoli, 2016). So by measuring the weights of each word inside a document and categorising them in groups, it is possible to recognise possible topics a document may be written in (Blei, 2012). Although alternative text categorisation methods like latent semantic analysis have been developed, latent dirichlet allocation was implemented because it can be interpreted better by humans (Debortoli, 2016). As a consequence, newsroom data under the category of product, community, and safety were inserted into latent dirichlet allocation for text categorisation. As the technique requires human input on the possible number of topics it needs to extract, all the processing began with an assumption that a minimum of two topics could be found under each news category. Once the results were generated, labels of each topic were assigned with descriptive phrases that are written with actual words from the newsroom data. Despite that there is no standard for researchers to interpret the topic modelling outputs (Debortoli, 2016), it is not necessary for the researcher to have strong interpretability in order to diagnose the topic models accurately (Chang et al., 2009, as cited in Debortoli, 2016).

Accordingly, two of Alex Zhu's interview scripts were manually interpreted following the four steps of content analysis. This interview data was processed at first, taking into account that Zhu's

managerial perspectives of managing Musical.ly, a very similar content platform as TikTok, are valid to answer the growth of platform business in general. The other reason for that is that Zhu was not only a leading figure in Musical.ly, but also in charge of TikTok's operations until May, 2020. So the researcher was seeking to pinpoint some insights he gained from operating a multi-sided content platform, and utilising them as guidelines to dive into the newsroom data for specific executions while managing TikTok took.

But as it is time consuming to go through over 900 pieces of newsroom data, the second part of the analysis was conducted with the assistance of probabilistic topic modelling. The most common words and topics TikTok used to converse with the public were intended to be discovered to generate insights on TikTok's management techniques. Notably, because the first section of data analysis revealed that the growth of a multi-sided content platform can be facilitated by a careful management in product design and community building. So the second part of the analysis only processed the 436 newsroom articles located at the specific areas of product, community and safety for further investigation. Although the safety factor was not mentioned in Zhu's interview data, it was included in the analysis considering that it is closely linked to user experience. Given that TikTok has already divided its news into specific categories, it was easy to identify relevant datasets.

On top of that, the paper conducted an additional exploration on subtopics in correlation to the keyword "hashtag" within community news, because hashtag challenge turned out to be one unique marketing campaign TikTok uses to grow its community. Considering that TikTok may differentiate marketing campaigns in different nations, each nation's hashtag challenges were carried out respectively prior to generating common patterns.

3.5 Validity and Reliability

3.5.1 Construct validity

Although normally triangulation is stated by Yin (2018) as a typical way to eliminate research bias by using a set of evidence, this research consciously designed a case study protocol to strengthen the construct validity of the research process. Concerning that case study researchers may put subjective judgments into the data collection process, and thus influence the research validity, a chain of evidence of how the final results have been figured out from the initial question should be carefully constructed before the fieldwork (Yin, 2018).

With reference to the model provided in Yin (2018), the case study protocol was designed into four sections, including the overview of the case study, an illustrative data collection procedures, protocol questions for the researcher, and a temporary outline for the final report (See in Appendix E). In detail, before collecting the data, the researcher did several rounds of investigations on theoretical concepts in the areas of digital entrepreneurship and platform business, and tried to narrow down the criteria of the chosen case with reference to the predefined research question. In order to gain deeper insights into the problem, it has been decided that the case company should be a real-life example of digital platform business, which preferably is a startup business, but could also be an intra-entrepreneurial project within a corporate. Apart from that, because this research wants to illustrate the development of a platform business, it is preferably that the case company has already experienced user number growth in the past years. After gathering a choice of suitable platform start up companies, the researcher chose TikTok as the case company because the mentioned criteria were fulfilled in the best possible way and TikTok's growth was quite recent and not extensively researched yet.

Following that, the case study protocol specified several sources to collect relevant data and prepared a backup plan to accommodate unexpected barriers. A brief consideration of preparations before collecting the empirical data is explained as well. After that, protocol questions are particularly thought through to keep the researcher targeted on the right track of the research. In doing so, this document can help the researcher to identify potential challenges or difficulties that may occur during the research process and prepare themselves ahead of time. Meanwhile, all the procedures will keep the researcher staying on the right track whenever they may get distracted from the research purpose (Yin, 2018).

3.5.2 External validity

Due to the fact that a single case study inherently cannot generate findings that are widely applicable beyond the particular situation, the external validity of this research is limited. However, because the analysis process was oriented towards explaining the mechanisms of a situation and the relationships between them, this research still can achieve an analytical generalisation to some extent, and thus somehow ensure external validity (Yin, 2018).

3.5.3 Reliability

The reliability of this research is achieved because the research steps have been consciously designed and argued for in the case study protocol. By following the case study protocol, readers and future researchers can follow the exact steps described in the protocol and gain similar results (Yin, 2018). On top of that, a mixed form of documentations, including the case company's press release, official reports related to the research, and interview records of the company's former president, has been collected and developed into a case study database. Moreover, while analysing

the results drawn from the documentations, original texts have been offered as examples to illustrate how certain ideas have been conversed and written in the original sources. Hence, readers can easily go back to original texts and find out how a topic was drawn and connected (Yin, 2018).

4.0 Literature Review

4.1 Platform Business

Platform business can be referred to as a new business model in the digital era (Fehrer et al., 2018). In order to understand how it works, it is important to define the meaning of the platform first. Platforms are normally an abbreviation for digital platforms. They can be referred to as "interfaces" (p. 143) that facilitate interactions among individuals and businesses (Mclyntyre & Srinivasan, 2017). On the top of that, Nambisan (2017) pointed out that all forms of digital technology are interfaces that can be used to enhance interactions. But what differentiates digital platforms from the other two forms, which are digital artefacts and digital infrastructure, is that they connect individuals with a bunch of product and/or service offerings, instead of providing technological capabilities to support a product or other businesses (Nambisan, 2017). Despite that, Hsieh & Wu (2018) argued that in today's context platforms can be broadly seen as "mediums" (p. 316) that not only facilitates connections, but also offers possibilities for other businesses to build upon them. Accordingly, platform business could be considered as businesses that has a combinational features of digital platform and digital infrastructure in their offerings.

For the purpose of better understanding the concept, many studies have tried to categorise platform business into different types. For instance, in terms of business purposes, platform business can be classified into:

1. innovation platforms, providing an environment where other businesses can build on top of it and contribute as a function;

2. transaction platforms that facilitates communications and commercial transactions;

3. integration platforms which combines the characteristics of innovation and transaction platforms (Cennamo, 2019).

Moreover, on the basis of the number of different sides a platform connects, platform business could be sorted out as

1. "One-sided platform", normally refers to companies that goes digitally by providing the customers an extra access to their offerings online;

2. "Two-sided platform", where suppliers and customers from two sides are connected with the platform as a medium facilitating the transaction;

3. "Multi-sided platform", where a collection of suppliers are directly connected to the customers (Daxhammer et al., 2019, p. 1356).

However, some scholars argued that because platform business is creating new markets, it should be seen as platform markets in theory (Rossotto et al., 2018; Cennamo, 2019). This is because that platform businesses often emerge from a non-consumer segment, but in adjacent space between categories. So the business does not directly compete with others in established markets, but combines functionalities from multiple markets as an offering (Sampere, 2016). Hence, platform businesses are not only targeting a niche group of people, but could leverage a large amount of individuals with diverse demand. Therefore, platform-based markets are forming and can be categorised as below:

1. Multisided transaction markets, where the transactions between product and services providers and final customers are facilitated by a digital platform serving as an infrastructure;

2. Complementary innovation markets, where a digital platform is more of an technological interface allowing for new venture creation building upon;

3. Information markets where a digital platform enhances the categorisation, search and exchange of information.

4.2 Digitalisation and Entrepreneurship

But prior to diving into the discussion about platform business, it is significant to explore the reasons for this change of business model to come about. So I will place the theoretical lens on how digitalisation has shifted the entrepreneurial world and enabled platform business.

Digitalisation has been transforming the business landscape dated back to the early 2000s (Autio, 2017). Specifically, the creation of computers and the Internet has provided an alternative infrastructure for businesses to be built upon. So products and services are resulting in less physical but virtual settings. Meanwhile, economic transactions are computer-mediated, which allows for massive data to be handled and stored for a cheaper price. Hence, the fixed cost structure in the traditional business world collapsed, which largely shifted the logic behind today's business operations (Varian, 2013). These effects spilled over to the entrepreneurial world as well, and cultivated a new phenomenon, digital entrepreneurship (Kraus et al., 2018), which stands for new ways of business venturing in terms of partly and even wholly physical business operations being digitised (Hull et al., 2017).

Many researches have been conducted to discuss how distinct business venturing in the digital arena is from traditional entrepreneurial practices. To start with, researchers indicate that more entrepreneurial opportunities are arising in a digital environment. This can be caused by three key features that digital innovation naturally owns: openness, affordance, and generativity. Firstly, because digital technology is open and applicable to any sector, a wider network of people, organisations, and other entities can aggregate and interact directly beyond physical spaces (Nambisan et al., 2019). Therefore, more entrepreneurial ideas can be generated, as people interact primarily to exchange information (Autio, 2017). Apart from this, entrepreneurial

possibilities are increasing because digital technology enables them to be more feasible. Nambisan et al. (2019) proposed that specific forms of technological capacities, such as digital artefacts, can provide actionable potentials to things that may not have direct linkage. Together with the capabilities of combining all the relevant elements and/or agents into execution, digital technology is assisting in creating something that can be valued more than a sum of those inputs. Thus, an increasing number of entrepreneurial opportunities are envisioned as doable now (Nambisan, 2017).

Secondly, entrepreneurial processes and outcomes are not predefined, but changing and evolving throughout time. This is primarily due to the reality that a group of actors who have distinct resources and motives are engaged, and their interactions can dynamically shape and decide how a business could be. Therefore, traditional ways of predicting externalities and executing business according to a well-written action plan are not valid. Instead, technological elements are constantly modified and recombined with one another to realise a new functionality or business purpose. And because of that, entrepreneurs change their behaviours in the process. Rather than assuming the values behind their businesses, they intentionally keep their offerings incomplete and temporal. Thus it is flexible for them to keep up with realities and adjust (Nambisan, 2017).

Furthermore, the best practices for pursuing entrepreneurial opportunities are distinct today, because the fundamental logic of competition shifted due to digital technology (Autio, 2017; Cennamo, 2019). It is indicated that companies are competing against each other between markets, instead of product or service offerings (Rochet & Tirole, 2003; Cennamo, 2019). This is due to the logic that in traditional business, market is seen as given and firms play their own parts in a linear value chain. So anyone with similar product offerings or targeting the same customer

segment tend to be potential rivals. Thus the focus of entrepreneurial practices would be on acquiring a larger share in a given market against others (Cennamo, 2019). However, as before mentioned, a collection of agents are involved in the value creation process in digital entrepreneurship and the boundary of entrepreneurial results are less fixed (Nambisan, 2017). As a consequence, it is believed that more value could be created in the form of digital entrepreneurship across multiple markets. So entrepreneurial ventures do not compete against one another but collaborate and form into ecosystems in order for enlarging the whole market value for everyone to gain benefits (Cennamo, 2019).

Even though traditional companies network in their relevant communities too, scholars pointed out that entrepreneurial ecosystems do not serve in the same way. Primarily, the entrepreneurial ecosystem enabled startups and scale-up ventures to grow and compete against established big players in a given industry. Hence, the entrepreneurial ecosystem will organise specialised resources around startups and scale-up ventures for the purpose of being more effective on resource allocation. Another point is that entrepreneurs in the ecosystem would share knowledge and reflections of their business model experiments with one another in order to grow effectively as a whole. By contrast, traditional firms network with the aim of being aware of the market trends and changing their market positioning accordingly, as their objectives are gaining a larger percentage of market share (Autio, 2017).

Accordingly, digitalisation enabled platform business to exist, as a new business logic should be applied since the externalities have been transformed. Apart from the contextual requirement, digital technology's technical capabilities also served as a driver for the evolution of platform business.

A number of literature have been discussing whether digital technology can be more than a contextual factor. Some scholars put forward that digital technology can be viewed as "an enabler" (p.1032) that should be built into business models supporting entrepreneurs to deal with complex externalities (Nambisan, 2017). In his analysis of the impact of digital technology in entreprenuership, Nambisan (2017) revealed that many studies examined how entrepreneurship has been implemented in a technology-rich environment. For instance, digital technology has been described as "an environment" (Kraus et al., 2018, p.368), or "an infrastructure"(Autio, 2017, p.3) that offers a new space for people and business to meet and interact virtually (Autio & Thomas, 2016). As those interactions can be programmed into data, normally digital numbers like '0's and '1's, companies are able to store, process and exploit them for new business insights (Autio, 2017; Kraus et al., 2018). So digital entrepreneurship researches have been focusing on how to play in the digital environment and utilise interactions that are enabled by digitalisation to create new business value (Nambisan, 2017).

However, it is argued that those researches failed to study how digital technology can shape entrepreneurial processes and outcomes as a functional feature (Nambisan, 2017; Berget et al., 2019). Scholars explained that in essence, entrepreneurial practices are used to cope with uncertainty in the external environment. If digital technology is regarded as a contextual factor, the entrepreneurial practices would be designed for solving the extra uncertainties digitalisation brought in. But what if digital technology is part of the solution to the external complexities (Nambisan, 2017)? Because digital technology is reprogrammable and generative (Yoo et al., 2010), it can be utilised to create new environments that are more than an alternative space for communication. Hence, three forms of digital technology are proposed as solutions to the digital entrepreneurial world, including:

1. a digital artefact that is a component of a product or service serving a particular purpose;

2. a digital platform which connects a collection of complementary services, applications with end-users;

3. a digital infrastructure that is composed of technological capabilities to support other innovative sectors (Nambisan, 2017).

Considering that digital technology could be built into different forms, questions arose about how digital platforms stood out as a major adoption. The answers could be found in the earlier work. Firstly, digital technology fundamentally is an interaction technology that facilitates value exchange among different sectors (Autio & Thomas, 2016). So a digital platform, as a form of digital technology, is naturally capable of engaging a massive scope of agents. Moreover, Yoo et al. (2010) have already identified that digital platforms are a combination of modular and layered architecture, which can display multiple functionalities by connecting to identical components but also remain a generative design. Therefore, it can stay flexible and evolve in corresponding to a specific functional change or environmental shift (Nambisan, 2017). Last but not least, when a digital platform connects multiple sides, it will grow into "a collective intelligence system"(p.4) that includes different actors' resources, motivations and interests; And because of that, in order to co-exist and benefit from the system, each actor's action would be oriented towards collaborations (Elia et al., 2019). Consequently, the wide adoption of platform business models in the entrepreneurial world is due to the fact that this new model is a production of digitalisation that can be carefully tailored to tackle the new challenges created by digitalisation.

4.3 Key Drivers of Platform Business Value

Now that the reasons and significance of applying a platform business model is established, it is important to explore the factors that drive a platform for sustainable growth.

A range of papers have demonstrated that network effect and open innovation are two vital concepts that smooth the path of creating joint business value in platform business. As mentioned before, in the digital arena, business value is jointly created by a collection of agents. Therefore, the size of networks, which can be seen as the collection of diverse agents, influences a platform's value and evolution. This means that a growing number of networks can lead to an increase in the business value (Cennamo, 2019; Reuver et al., 2018). Network effects occur in two ways. On one hand, once a group of people are active on a platform, it will directly attract people who have similar interests, attributes or needs joining them (Tucker & Zhang, 2010). So entrepreneurs can build up a platform with a number of users through leveraging social networks. On the other hand, when a certain number of user scales is reached, it will cause more product or service providers to join the platform. And because users are in favour of platforms with an increasing variety of complementary products and/or services, the accumulation of complementors will lead to another growth of users with diverse demographic characteristics to join (Boudreau & Jeppesen, 2014). Ultimately, when a critical mass of people are engaged in the platform, their interactions will enhance a platform's ability of creating extra value that goes beyond its original capabilities (Cennamo, 2019). Therefore, the fundamental nature of designing network effects into a platform business model is that a vast amount and diversity of networks can create added value jointly and eventually enlarge a platform's value.

As a result, a few articles have been conducted to explore how network effects can be built up to help a platform business create extra value. It seems that not many researchers discussed the practices of attracting a critical mass of initial users, despite their demonstrations on its significance. Instead, they seem to place more theoretical emphases on achieving an indirect network effect by aggressively attracting complementors onto the platform (Boudreau, 2012; Boudreau & Jeppesen, 2014). Evidence is found in some case studies of the benefits of doing so. Taken as an example, in their case study of a Korean social networking platform, Kakao Talk, Han & Cho (2015) examined that the platform replaced the traditional paid mobile service by offering a free texting application, which facilitates individuals' interactions and thus generates quite a few users. Later the initial users of the platform were absorbed into a new mobile game service on the platform, where a variety of game developers were attracted. As more game operators participate in developing a collection of mobile games, more profits are gained by the platform. The firm ultimately started to lead the mobile game industry and evolve with more mobile services that are complementary to its social texting service (Han & Cho, 2015).

Another example is that two other free messaging platforms, WeChat and LINE, have been gradually growing into one-stop service platforms in which a bunch of lifestyle services can be implemented on the basis of their foundational social networking function. This evolution has also been closely linked to network effect, as both platforms were afraid that the network effect could be weakened if they charge too much from the user side. Therefore, they introduced other complementary services onto the platform in order to distribute the sources of revenue generation and stimulate network effects (Chen, 2016).

However, although a growing number of complementors can positively stimulate network effects, Boudreau (2012) pointed out that the competition between complementors of similar product or service offerings could be intense. So throughout time, some complementors may drop out of the game due to fierce competition. It is further investigated that a platform may not be able to generate an expected indirect network effect when the competition is tough but monetary benefits are limited (Boudreau & Jeppesen, 2014), regardless of that complementors are largely motivated by psychological factors (Boudrau & Lakhani, 2013). Therefore, with the aim of reaching desired objectives, platform owners are suggested to play a role of regulating complementors' behavior.

Another value co-creation method, open innovation, has been highlighted in many preliminary works in the practice of digital entrepreneurship as well. The concept of open innovation can be dated back to the early 1990s during which Microsoft joined an alliance with Intel giving software developers access to develop computer applications through an open interface (Autio, 2017). Nowadays examples of open innovation can be widely found. For instance, Facebook opens its platform to third-party developers for the purpose of diversifying its social networking-related applications; TopCoder, an open platform for outsourced software solutions, was set up to tackle companies' technical problems through regular contests among numerous software developers (Boudreau & Hagiu, 2009).

The prevailing adoption of open innovation is because of the presumption that enterprises are incapable of knowing everything on their own as a massive amount of information is produced every day in the digital world (Nambisan et al., 2018). Hence, entrepreneurs should take a set of activities to open up its internal innovation process to outside individuals, firms and institutions

(Nambisan et al., 2018; Daxhammer et al., 2019), and thus letting knowledge freely flowing and shared among those sectors to achieve unpredictable creative outcomes (Chesbrough et al., 2006).

The concept of open innovation sometimes is referred to as crowdsourcing too. It is because a group of external contributors to a firm's innovation process can be seen as a crowd. A well-functioning crowd is composed of a highly diverse collection of individuals with various experience and skills, which allows the innovation process to have a larger room for exploration, experimentation and remain flexible. And for the purpose of maintaining a well-functioning crowd, platforms can have four types of strategies to arrange crowdsourcing activities. They include hosting contests, aggregating a collaborative community, encouraging external crowds to be complementors of the platform, and searching for talents in a large labor market. Platform owners can choose one or more models from these four, depending on their problems and needs. As an example, if a platform is faced with highly complicated issues and wants to control the innovation process without losing too much of internal knowledge, it can possibly generate a large scope of valuable solutions from contests (Boudreau & Lakhani, 2013).

But in addition to a cautious selection of crowdsourcing channels, platform providers should carefully design the ways of approaching and maintaining relationships with the crowd. As a large crowd is more likely to aggregate around a platform with a good image, a continuous investment on platform reputation is vital (Schenk et al., 2019). Apart from that, platform providers need to be aware that the crowd may value intrinsic reward more, like gaining reputation in a community, in comparison to monetary returns. Consequently, an investigation of motivational factors that truly matter to the crowd should be conducted (Boudreau & Lakhani, 2013). And most importantly, platform owners who choose to open up their internal innovation process should bear in mind the

risk of losing valuable know-how to outsiders. Hence, they are suggested to protect their intellectual property carefully and take thorough considerations about what can be revealed to the crowd (Nambisan et al., 2018).

4.4 Platform Business Strategies

Given that a positive network effect and idea generation from the external crowd is important for the growth of a platform business, scholars continued to explore the strategies a platform provider can implement to facilitate the value creation process.

There are a few articles that have examined pricing strategies that can positively affect the network effect. Two factors are found to be taken into consideration: which group to charge and the ways of commercialisation. In their proposal of a revenue model that combines "loss leader segments" and "profit making segments", Rossotto et al. (2018, p.96) explained that in order to attract one side of the platform users to adopt the platform and reach network effects, firms may subsidise some compensation as an incentive. But this amount of money will be resumed by another side of the platform. This strategy is designed mainly due to the imbalance of bargaining power between platforms and users, particularly at the initial stage. When a platform necessarily requires a certain group to participate, and it is hard for the group to obtain benefits in the short term, the platform may not be able to bargain with the group (Rochet & Tirole, 2003). Therefore, a subsidy can eliminate the tension (Rossotto et al., 2018). Besides, evidence also shows that platform providers may just provide free services to the group that is key to an increase of network effect. For instance, WeChat and Line, the two free messenger services are intentionally not charging directly from its users but keeping the basic messaging service free. Instead, the two platforms carefully designed their commercialisation by advertising merchants and gaining

commission fees from third-party supported premium services, in order to sustain positive network effects (Chen, 2016).

Regardless of that, it is argued that if a platform business wants to continuously grow and compete against rivalries, setting their prices right is not adequate. Nevertheless, platform owners should be a governor of the ecosystem across their platforms and implement non-monetary mechanisms such as regulations. They identified that because of private interests, each player across the platform will naturally act in their own favours and this combination of self-interested actions will never attain a win-win solution. Whereas platform providers as regulators can oversee user behaviours and correspondingly design the technical architecture and contractual instruments that can lead to a healthy interaction system with everyone's interests considered (Boudreau & Hagiu, 2009).

To sum up, existing research has been conducted to examine the influential factors for platform business to exist and evolve overtime. Digitalisation has transformed the entrepreneurial world greatly and provides a technical foundation for platform business models to occur. In addition, network effects and crowdsourcing have been put forward as two significant engineers in platform business value creation. Therefore, a collection of articles have further investigated the strategies in order to attain the most from them. Both price and non-price mechanisms are found to be effective on enhancing positive network effects to some extent.

Despite that in theory platform business has been largely discussed, what we know about how this model has been implemented in the real world is still limited (Bouwman et al., 2017; Kraus et al., 2018). Among the few case studies of platform business, we are able to know how a platform

evolves in different phases. But there could be more real-life studies across industries to generate knowledge. In particular, concerning the external environment has been rapidly evolving, theoretical studies have already been trying hard to catch up with the reality. Hence, it is difficult for us to fully understand the dynamics of platform business. Oftentimes, success stories of established players were illustrated, making those failed platform businesses seem to be non-existential ever. This then raises a question: does the dominance of current flourishing digital platform business just happen accidentally? If not, how has the conscious business model been designed in reality (Reuver et al., 2018)?

Apart from that, even though researchers have carried out much work on platform business strategies, possible methods for platform owners to sustain their stances in the scale-up phase have been insufficiently explained (Reuver et al., 2018; Mclyntyre et al., 2020). For instance, we still have inadequate knowledge of when an entrepreneur finds as appropriate timing to address certain actions, what strategies an entrepreneur finds as useful and how problems are solved (Reuver et al., 2018). Last but not least, there is still ambiguity regarding the instruments on generating network effects, for example, which mechanism performs the best under which circumstances, and how can a platform provider manage to operate with both price and non-price instruments.

5.0 Findings

In this chapter, the researcher will focus on the results generated from TikTok's newsroom articles and secondary data to answer the research question. Prior to generating the findings, the researcher firstly looked into Alex Zhu's interviews and found that the growth of a multi-sided content platform could be enhanced by a bunch of operations ranging from product design to community management to pricing strategy. Consequently, following that, the researcher further investigated the specific activities TikTok has implemented since 2018 with regards to those three areas. It is identified that six topics in the areas of user traction, platform evolvement, and external partnerships have been largely distributed in TikTok's newsroom data.

Therefore, the first part of analysis will concentrate on the major three ways that TikTok has been using to attract users. Following that, the second section of analysis will pay attention to how TikTok involved ideas from its users to create extra platform value. Lastly, the chapter will talk about TikTok's management of external partnerships to gain mutual benefits, and its management of user interaction by developing a smart distribution system. Because the results from Zhu's interviews and TikTok's newsroom data showed similar patterns in certain topics, the analysis will be explained in a way that combines ideas from both.

5.1 Three Ways to Gain User Traction

5.1.1 Attracting users by offering unique product features that users need
In order to attract users, especially early adopters to the platform, it is significant for the platform owners to offer product features that meet users' needs. On top of that, a product may quickly stand out because one of the product features becomes a "killer feature" that people would use frequently on a daily basis. According to Zhu, users are attracted to a platform majorly because of

its basic product functionality. To attract users and keep them active on the platform, Musical.ly consciously framed people's perceptions of how this platform can be used by displaying user cases before their registrations. Once users are on board, a human curated list of the best-performed user cases will be presented on the top of users' feeds. And lastly, with an aim of encouraging users to invest and post their own contents, the platform will send notifications to users to remind them sharing their creativities with others. Apart from that, he demonstrated that Instagram also developed based on this idea, as early users utilised Instagram was not for the likes or comments from other users, but because they can play with the filter collections:

> *"We have to focus on the utility aspect. Like the first users of Instagram 1.0, they did not use Instagram for the feeds, for likes, for the comments. They use Instagram because of the amazing filters. And they post on other social media. So before you have the critical mass of the users and accountants, you have to focus on utility." (Interview one, 2016)*

In line with that, it is not surprising to see that the first topic in TikTok's newsroom articles concentrates on new launches of product features that are primarily designed to facilitate content creations for users. With a collection of words distributed in video (2.3%), hashtag (1.7%), user (1.3%), app (0.8%), challenge (0.8%), content (0.8%), account (0.8%), and creator (0.7%) under product category (See in Appendix F, Table 5), it can be interpreted that the platform has designed its product features with an aim of supporting creators to participate in hashtag challenges and produce video contents. Considering that background music and visual effects are two important elements in video production, it is not surprising to find examples of TikTok improving its product functions in the two given areas. One example is that TikTok US created Thanksgiving-themed visual effects and stickers for users to add into their videos when celebrating the holiday times:

"To help kick off a weekend of feasting and TikTokking, we've created several Thanksgiving-themed visual effects and stickers that can be utilised to add a little holiday spirit to your videos. The new effects include the "TikTok Party Turkey," "Thankful," "Munchies," and several turkey day stickers..." (TikTok US, 2019-11-28)

Besides that, one more instance of TikTok Korea integrating an analytics tool within the app which creators can draw insights from gives evidence of how TikTok has strengthened its basic product features. The analytical function allows Korean users to flexibly switch their accounts between standard and professional settings. With an open access to professional account free-of-charge, Korean users are capable of tracking the data in terms of their content and followers. In this way, they can smartly get an overview of their video performance and create video contents that can draw more tractions accordingly:

"TikTok offers free Pro account conversion to all users. The new Pro account helps users systematically manage their TikTok accounts by providing analysis of video views and followers to anyone. Pro account provides three analysis screens: Overview, Content, and Followers... Based on in-app analytics, you will be able to easily see the current trending trends and create another trending video..." (TikTok Korea, 2019-07-11)

However, Zhu put forward that a rapid growth of user generation does not happen immediately merely because that a platform has essential product functions that fulfil users' needs. Rather, a platform should have at least one particular function that users will utilise habitually. If there is no good scenario for users to post videos, users would not form a habit of using the platform every day and thus, the platform would not grow much. So in order for improving the frequency of users using the platform, the business should be propositioned on a killer feature that has already been successfully formed into a habit (See in Appendix E, Table 4).

This insights were gained from Zhu's own experience of managing Musical.ly. He mentioned that the team accidentally noticed an unusual growth pattern of app downloads every Thursday evening and realised that it was due to a popular show called lip sync which was broadcasted every Thursday in America. It is found that after the show, audiences went to search lip sync in the App store and downloaded apps that have this particular feature. Consequently, the team figured that lip sync could be utilised as a "killer feature" that drives the growth curve. And because providing a music video maker does not serve as a habitual function that people would frequently use, they transformed the entire value proposition from a music video maker to lip sync channel:

> *"In order to make an unsuccessful part successful, adding features doesn't help. One product can become successful, because there is one cool feature, it becomes a killer feature. So you have to change the value proposition, in order to change your growth curve. And we have to change the value proposition from a channel, music video maker, to lip sync." (Interview one, 2016)*

5.1.2 Attracting users by using unique hashtag challenge campaigns

Apart from having cool product features that fulfil people's needs, it is found that TikTok utilised hashtag challenge as a form of marketing campaign to attract users and encourage them to stay active on the platform. Although there was limited information related to this in Zhu's interviews, a second topic focuses on building a community upon hashtag challenges was generated on TikTok's newsroom data. The word "hashtag challenge" was the most common word (5.6%) that has been used among all the newsroom articles (See in Appendix F, Table 5). By using hashtag challenge, TikTok created a unique marketing campaign that users and creators community can interact frequently through the video clips they created with reference to the predefined challenge themes. Every hashtag challenge normally starts with a particular cause and names after that cause. For instance, in order for promoting diversity, TikTok US launched a hashtag challenge

campaign "#AllTheDifference" that users can create videos based on their own understandings and experiences of being different and supporting a diverse world:

> "We've collaborated with the World Economic Forum (WEF), one of the world's leading nonprofits, to celebrate the differences that make up our diverse community, why their voices need to be heard, and the efforts they have done to make the world a more tolerant place... users will have an opportunity to show what makes them unique, how they cast off labels, and how they help make the world a more inclusive and diverse place." (TikTok US, 2020-01-22)

To encourage users to participate in the hashtag challenge, TikTok usually creates corresponding video effects and provides a bunch of keywords relevant to the predefined challenge that users can utilise as areas to start their video creations. Other than that, TikTok always carefully selects a group of creators who already shared their creativity within the given challenge as examples (See in Appdendix F, Table 5). With the example of the "#AllTheDifference" challenge, TikTok US listed a few creators and their videos as desirable contents for users to follow (See in Figure 2).
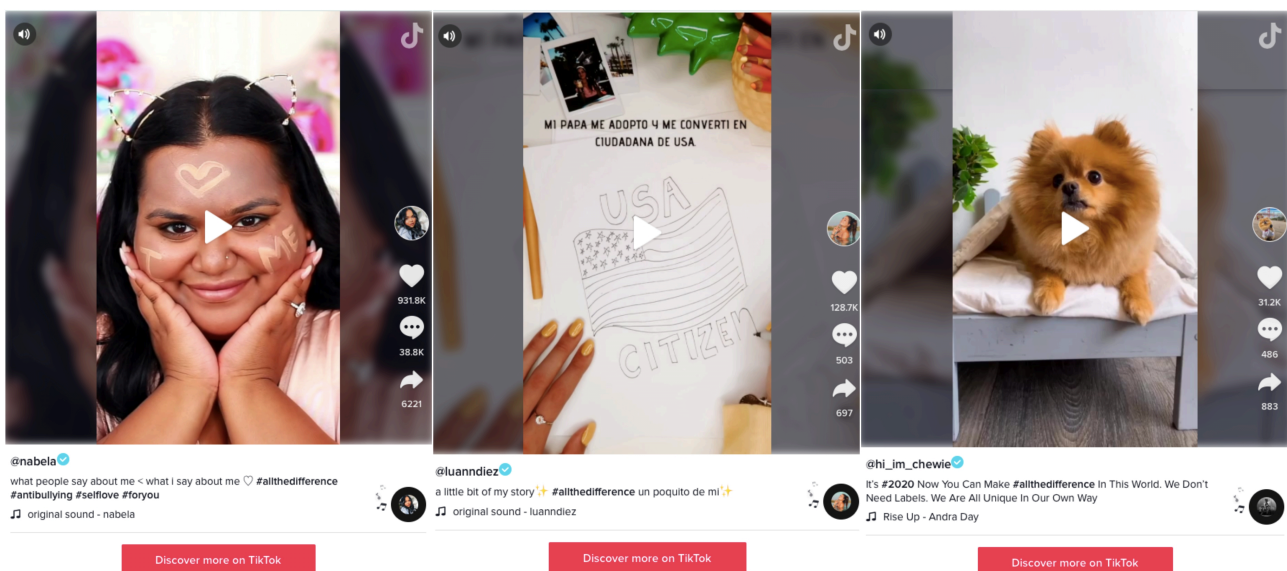

Figure 2: An example of how TikTok promoting content creators to encourage users to participate in the hashtag challenge "#AllTheDifference" (TikTok, 2020)

Because "hashtag challenge" is the top word that has been mentioned in the newsroom articles, the researcher did an additional study of the subtopics under this keyword. It is identified that TikTok's hashtag challenges can be categorised into three aspects, including raising awarenesses of social matters, following a market's social trends, and promoting its brand identity. Details are provided as follow.

The first subtopic of "hashtag challenge" focuses on a series of social cause events, for example, empowering females, supporting health care workers, addressing environmental issues, and promoting mental well-being in the global pandemic COVID-19. For instance, as a way to promote gender equality, the platform launched marketing campaigns such as #SheCanDoIt in Australia in 2020 which highlights women's contributions to the society, and #WomenWhoWow in Germany at the same time to celebrate International Women's Day and encourage women to support one another. Regarding to the examples of tackling environmental issues, in 2019 TikTok France collaborated with a non-governmental organisation, Conservation International to raise people's awareness of the severe plastic pollution in the oceans via a hashtag challenge #SaveOurOceans (See in Appendix F, Table 6).

One more environmental protection campaign in 2019 was in Japan, where TikTok did a #AllEarthHour challenge campaign to encourage the community conversing on environmental issues and educating each other about changing behaviours to protect the planet. Additionally, because the outbreak of coronavirus COVID-19, TikTok has been implementing online campaigns like #CelebrateDoctors in Australia, to call on the importance of staying at home as a way to support the healthcare workers who are fighting viruses on frontlines. Meanwhile, TikTok also addressed the mental health issue while everyone is working and studying at home. By launching

campaigns such as #ZuhauseMitTikTok, TikTok Germany intended to bring people joy by free entertainment programs (See in Appendix F, Table 6).

The second subtopic within "hashtag challenge" tends to be a bit scattered in terms of specific trends and interests in the nation. Take Korea as an instance, the most trendy hashtag challenge campaigns were in relation to Korean pop stars and their music. With a cluster of words like original (1.1%), winner (0.8%), sound (0.7%), and music (0.6%) (See in Appendix F, Table 6), the #ddeumchallenge launched in March 2020 became a promotional event for the Korean pop band Winner who just released a new music album. Users were encouraged to present their own video work by using the songs from the album as a background music. Another example can be found in Vietnam, in which the platform made a cooperation with the department of tourism in city DaNang to boost the local tourism by spreading the view of the city and sightseeing activities in the campaign of #helloDaNang in 2019. Likewise, TikTok also worked with governmental organisations in Indonesia to celebrate the country's independent day in the campaigns of #JExploreKuliner, promoting food culture, and of #EkspresiMerdeka to showcase the youth activities (See in Appendix F, Table 6).

The last subtopic that is relevant to "hashtag challenge" is more about reinforcing TikTok's brand identity as a world leading creative platform. By using keywords like world (0.65%), leading (0.5%), share (0.5%), original(0.45%), content (0.4%), platform (0.4%), and creative (0.3%) (See in Appendix F, Table 6), TikTok has been establishing and demonstrating its identity as one of the top content platform where people can share joy through short-form videos.

5.1.3 Attracting users by raising up role models

In addition to designing core product features and unique marketing campaigns, TikTok has been growing social media celebrities on its platform to draw people's attention, and hence grow its platform user numbers. From Zhu's perspectives, if a platform can show people that it is easier to obtain what they want on its platform with good examples, the platform can quickly develop its user base. This is because the fundamental nature of managing platform users can be equivalent to the way of running a country. So platform entrepreneurs could apply economic principles into developing their user population (See in Appendix E, Table 4).

As an instance, he stated that one essential principle that platform entrepreneurs can refer to at early stage is that a small amount of population can be developed by the establishment of a centralised economy. By orienting resources towards a small group of people in the beginning, early adopters will grow and become role models for other people, and finally attract them to join. The logic behind that is when a new platform is launched, it has almost zero population. So the platform can be seen as a new land with no habitants. But considering that there are populations in other lands, one solution is to attract people from there. By taking the example of migration theories, Zhu stated that in a developed country, it would be difficult for an average person to climb the social ladder because the society is very stabilised. So what they can do is to go to another land that is less developed and with more opportunities:

> *"In the early stage, building a community from scratch is like you just discovering a new land. You give it a name, America. And you want to build an economy, you want to build a population, and you want people from Europe to migrate to your country...A very important thing is, in the beginning, you have to build a centralised economy, meaning that from a wealth distribution point of view, you make sure the majority of the wealth is distributed to a small percentage of people, to make sure these people get rich first. And then these people became role models for other people living in Europe. As they see, this is a normal guy and he just went*

to America and he became super rich. I can do the same… And then you grow the population,
you grow the economy.” (Interview two, 2017)

The application of this concept could be identified in TikTok's newsroom as well. From a cluster of words such as film (0.5%), filmmaker (0.3%), ad (0.2%), independent (0.2%), and festival (0.2%) (See in Appendix F, Table 5), the researcher figured another topic of TikTok collaborating with external organisations to raise up its own creators community as role models. The results highlighted that TikTok has differentiating managements on each user groups in terms of their preferences and behaviours. The activities on creators community were largely about bridging amateur creators on TikTok with professional creators for collaborations, and rewarding creators' efforts through a monetisation ecosystem. In the partnership with an independent film festival, Film Independent, in Los Angeles, TikTok launched a creativity contest where filmmakers were encouraged to create their own artworks by using TikTok as a mobile video production tool. Monetary rewards were provided for winners with a $10,000 grant. TikTok US explained the program as follows:

"TikTok, a Platinum Sponsor of the year's LA Film Festival, has quickly become a worldwide
destination for content creation, showcasing the power of short-form video as a medium for
storytelling, creativity, and sharing passions across cultures. The partnership with Film
Independent and creation of the "TikTok Real Short Award," allowed Festival filmmakers to
utilise the mobile platform to create meaningful works of art. Filmmakers were given the
inspiration "Why I'm a Filmmaker," encouraging participants to capture a moment
showcasing their passion for filmmaking and captivating fans through their
storytelling." (TikTok US, 2018-09-24)

Despite that external partnerships could benefit the growth of creators community, Zhu pointed out that the platform provider should guide external partners and TikTok creators to collaborate in a manner that benefits the community. He elaborated that when a platform reaches a certain

scale and becomes trending, professional artists will be naturally attracted to join. Thus, the platform starts to have more high quality contents. But it could make the platform too polished if only professional-made contents are trending, which also can demotivate amateur creators on the platform. In order to encourage amateurs to keep producing contents, the platform guided all the creators to collaborate on their productions towards a direction that nourishes the entire community:

> *"The show is in a collaborative fashion. So they work with our influencers, our creators on each episode, talk about something that is interesting for the whole community, and we allow the end users to submit the contents for the next episode. So, that becomes a very unique format." (Interview two, 2017)*

Besides that, the findings showed that monetary incentives are vital to attract and encourage more creators to produce contents. To Zhu's knowledge, users tend to look for fairness when they initially on board a platform. But once the fairness is secured, they are more likely to stay active on that platform if they can generate revenues from it as well. For instance, YouTube would not be as successful as it is today if it did not have the partnership program with YouTube creators. Hence, monetising from content creators' influence is designed as a part of Musical.ly's pricing model and creators can gain additional income from their creative productions on the platform (See in Appendix E, Table 4).

Further, as the number of creators accumulates on the platform, TikTok tends to have stronger promotional power that can be used for advertisements. For instance, in the collaboration with Tokoname comedy exposition, the program was aimed at promoting the identity of the city and meanwhile building up TikTok's reputation in the region. Being the sponsor of the exposition, TikTok has made a variety of video materials in regards to illustrating distinct aspects of the city.

As an example, in the news article, TikTok mentioned making a short form advertising video of the city, with its scenic views, food culture, and representative figures. Because TikTok is operating in a number of countries, this partnership can help promote the city over the globe. In return, TikTok's brand was showcased on the local TV programming and advertisement (See in Appendix F, Table 5).

5.2 Evolving the Platform by Learning From Users

5.2.1 Engaging users into the product improvement process

After users are attracted to the platform, an important method to keep growing the platform is to engage users into the product design process. Thus, the close connection between the platform and user groups can improve user experience and further attract more people to join. From Zhu's perspective, this idea could be adopted in early stages of a platform business. Taken from the example of Musical.ly, he stated that in order to enter the American market, the platform startup recruited a group of people who had studied in the U.S., as they tend to have more knowledge of the place in comparison with other employees in the company. At the same time, they paid particular attention to the trends and news in the targeted market in order to understand the culture better. Moreover, a great amount of time was spent on gaining knowledge of users through online data, the contents users made, and interacting with users on the platform:

> *"We have to spend a lot of time observing users' behaviour in the application, not by looking at data, but by looking at the contents generated by the users. And then I personally register a lot of fake accounts, and use this fake identity to talk with the users on the platform: comment on their videos, and see why they post these videos, and just try to understand, try to get empathy." (Interview one, 2016)*

Further, to gain deep insights about users, they attempted to be immersed into the culture and think like users by talking to them in an online group chat on daily basis like friends do:

> *"We have a lot of Musical.ly users on WeChat. And we have daily conversations, not only conversations about, support and ideas, but also just talk, understanding what they think, making jokes, being immersed into the American teen culture." (Interview one, 2016)*

Once behaviours are learned, they start to test their learnings and ideas by implementing numerous experiments with users' participations. Users have been playing a critical role in this process where their feedback, ideas and viewpoints are highly valued. Zhu described this activity as user participatory design, in which they present ideas and have conversations with users before implementing any new product features:

> *"So for every design, especially important major feature design, we always first present the ideas, have a conversation with users about the mockups and wireframes and get the feedback before we do any coding." (Interview one, 2016)*

In regards to that, three relevant topics were found in TikTok's newsroom data, focusing on updating product features to address users' digital wellbeing. Firstly, by having words like content (1.1%) , user (1.0%), time (0.7%), netzdg (0.5%), and parent (0.4%) (See in Appendix F, Table 5), it can be seen that TikTok particularly curated its product features to cope with digital concerns, such as Internet violence, long screen time, and sensitive content. Taken as a case from Germany, in order to comply with the country's online security legislation, Network Enforcement Act (NetZDG), TikTok launched a report feature within the application that users can notify any contents that may violate the regulation and safety of the online community to the platform. Once the notifications of undesirable behaviours were received, TikTok promised to deal with the issue within 24 hours. Additionally, TikTok tries to be transparent about the methods it utilises to

moderate the content and information about how it processes complaints (See in Appendix F, Table 5).

Apart from that, TikTok Germany set an example of the platform's serious attitudes towards providing a safe online environment. In doing so, a Companion Mode was introduced to the app as a demonstration on tackling parents' worries about kids' screen time. This function has been tested in some markets like Indonesia and then becomes applicable across Europe. With this particular feature, parents are able to track young users' daily usage time and set a limit screen time together with their kids:

> *"...With this in-app feature, parents can help their children create, share and interact with the community in a safe environment. After downloading the TikTok app and activating the accompanied mode, parents and their children set the screen time, contact options and filtering of the "For You" feed. For data protection reasons, parents only have access to the functions listed. They cannot see what content teenagers are viewing or what messages and comments they are receiving and sending..." (TikTok Germany, 2020-02-19)*

Moreover, another two topics has been found that TikTok particularly strengthened its safety enforcement in its product settings. Both topics demonstrate TikTok providing a safe environment by allowing users to decide how much information they want to share with others. For example, one cluster of relevant words like user (2.6%), video (2.4%), content (1.5%), safety (1.4%), setting (0.9%), experience (0.8%), profile (0.8%), comment (0.8%), and control (0.7%) were largely distributed in the safety-related articles (See in Appendix F, Table 5). While diving deeper into those texts, it is found that TikTok gives users options in the privacy setting where they can manage the accounts according to their preferences. For instance, users are able to decide to what extent they want their profiles, online view activities and video contents to be visible to others. Moreover, it is also possible for users to set a boundary on their interactions with other users,

meaning that only selected groups can send messages to them or comments on their contents. Detailed instructions on how to set up the account preferences were given as well. Here is an example from TikTok US news:

"...not everyone wants to share parts of their profile, so TikTok created features that allow you to restrict what your friends and the public can see. With these tools, you're in control of what you show the world, who can see your likes. Liking videos is an important part of curating your TikTok experience. When you like a video, TikTok will try to show you similar videos you might also find entertaining. But we understand that sometimes you might not want the world to see everything you tapped a heart for. That's why we added a feature that keeps your list of liked videos private..." (TikTok US, 2019-05-09).

In addition to tackling users' data security concerns, the fifth topic on TikTok is related to screen time management and content view mode, given that a mix of words including time (1.1%), online (0.8%), content (0.7%) and safe (0.6%) were identified (See in Appendix F, Table 5). Like aforementioned, one strategy TikTok utilises to address users' screen time and content view scope is by designing corresponding product functions. As an example, TikTok Indonesia mentioned that a machine learning algorithm will be monitored when users enable TikTok to place a limited view mode on their accounts:

"Additionally, TikTok is improving its Limited View Mode feature. When this feature is enabled, optional account settings will limit negative content for all users. This feature is enabled by using a password that will be valid for 30 days and is supported by a machine learning algorithm. This can empower users to control the content they access..." (TikTok Indonesia, 2019-04-22)

On top of that, TikTok also tried to exemplify the significance of balancing screen time by placing informative and entertaining videos on the feeds. For instance, TikTok Australia worked with

some creators to make a series of TikTok-style videos to remind people of taking a break from their phones:

"… To help users manage their screen time, TikTok partnered with several top creators, @nat.alise, @brookestyless, @scott.boersen to make short videos that encourage users to keep tabs on their screen time. These fun videos use the upbeat tone users love while offering a suggestion to take a break and do something IRL, like explore the city or read a book…" (TikTok Australia, 2020-02-13)

5.2.2 Being open to users' innovative ideas of marketing campaigns

An alternative way to improve user experience and innovate the platform is to encourage users to contribute to the design process of marketing campaigns. According to Zhu, the creators community was carefully managed through frequent interactions and taking creators' opinions seriously. As aforementioned, the team of Musical.ly loved staying close to the users and highly valued their ideas. So whenever content creators were proposing something to the platform, there would be a high likelihood that those ideas become realities. For instance, an anti-bullying campaign was put forward by creators and later this suggestion was taken and built up jointly by the creator community and the platform:

"The community came to us, giving us some ideas: hey today, you should try think about how to embrace live streaming on Muscial.ly. And then we took the idea. We created a platform, lively. It was coming from the users. And tomorrow, they came to us and said, let's do an anti-bullying campaign, let's do a cancer awareness campaign. And now we took that idea and worked with these influencers, creators, and users to make this happen." (Interview two, 2017)

Even though this point of view has not been directly captured as a topic from TikTok's press release data, it seems that TikTok did listen to users' voices and design corresponding hashtag challenges as well. Due to the fact that a large amount of social issue related hashtag challenges

have been identified in previous sections, it is very likely that some of the ideas were promoted by TikTok users.

5.3 Collaborating with External Organisations for Mutual Benefits

Fourth, according to the last topic generated from TikTok newsroom data, the platform utilised external partnerships to gain monetary returns and promote brand identity further to attract more users (See in Appendix F, Table 5). Taken as one example, the collaboration between TikTok and Melon, a representative music service provider in Korea, benefits both companies. From Zhu's perspective, the content platform is more than video discovery. Yet hundreds of music were discovered and promoted by the user community every day. Therefore, the content platform has huge influences on promoting music. By leveraging this promotional power, Melon can promote its brand and possibly gain tractions from TikTok. In return, TikTok is capable of capturing revenues from advertising. Meanwhile, because the platform depends on user-generated contents and music material is a key component of users' video production, it tends to require a large investment on intellectual property of nicely-made music materials. By linking TikTok's platform with Melon, the platform can provide a wider variety of background soundtracks that users can apply to their videos. And in order to promote this new product feature, TikTok launched a hashtag challenge, "#Melon DJ Drop", encouraging users to navigate through the additional music lists and using the new feature:

> *"In the future, TikTok's original video background music (BGM) can be used in Melon, and a new category will be created so that you can check related TikTok videos on the detailed page of the sound source. The TikTok app provides melon playlists in the sound addition category, allowing you to freely select Melon's recommended sound sources when creating content..." (TikTok Korea, 2019-08-12)*

One more example could be drawn from TikTok's collaboration with Tokoname comedy exposition, which aimed at promoting the identity of the city and meanwhile building up TikTok's reputation in the region. Being the sponsor of the exposition, TikTok has made a variety of video materials in regards to illustrating distinct aspects of the city. As an example, in the news article, TikTok mentioned making a short form advertising video of the city, with its scenic views, food culture, and representative figures. Because TikTok is operating in a number of countries, this partnership can help promote the city over the globe. In return, TikTok's brand was showcased on the local TV programming and advertisement (See in Appendix F, Table 5).

5.4 Applying Algorithm Intelligence Technology to Facilitate User Interactions

Last but not least, it is fairly important that a decentralisation mechanism is designed into a platform business model, especially when the platform user base reached a certain scope. In the case of TikTok, the platform applied a content distribution system that is supported by algorithm intelligence technology to deliver contents to users who may show interest. Thus, user interactions can be reinforced.

The idea of designing a content distribution system is to facilitate the decentralisation process. Zhu explained that it is because if resources are only allocated to a certain amount of people, the rest of the population will ultimately know they have inadequate chances to get what they want and leave. Therefore, in order to sustain the life of a platform, it is significant to give opportunities to the majority of people to grow on the platform:

> "*Very importantly, you have to do decentralisation at the same time...They came here, (because) they want to be reached... So you have to decentralise your traffic model, you have to*

give the opportunity to average people and make sure they get satisfaction. Make sure there are middle class, coming up." (Interview two, 2017)

In correspondence to the decentralisation concept, the results revealed that a core aspect for TikTok to continuously develop is because of a smart and efficient distribution system designed in the platform to match the content supply with its demand. With reference to Zhu's opinions, he was operating a content platform, instead of running a content business. This means the platform does not generate contents itself and it does not manage content creators like creative agencies do. In order to ensure users grow and their creative contents gain attentions, the platform utilised a computational mechanism that distributes content to people who may be interested as predicted by technology:

"We release Musical.ly as a content platform, rather than a content business...the core competence of Musical.ly is the traffic, is to design a traffic mechanism that matches supply and demand, and efficiency of the whole traffic system. The distribution system determines the success of the platform." (Interview two, 2017)

This application of an artificial intelligence (AI) technology in TikTok's product has also been put forward as an essential factor to facilitate TikTok's growth by several reports. It is stated that before the creation of TikTok, ByteDance already had successful entrepreneurial records on using artificial intelligence (AI) to provide personalised online news content through a news aggregator product, Toutiao (Hylton, 2019). So this successful implementation of AI technology enabled ByteDance to further grow TikTok. But the algorithms behind TikTok's personalised video recommendations are found to be slightly different from other big social media platform players like Facebook (CBInsights, 2020). First, users are not required to choose their preferences or people they want to follow from the beginning (Davis, 2019). TikTok's algorithms can learn users' preferences preciously from their watch history and habits. Moreover, despite recommending

content for users to view like what Facebook, Netflix and YouTube do, TikTok directly delivers the video contents to users once it studied the contents may match with individual preferences (Fannin, 2019). Moreover, the algorithms are also widely utilised in the video production process by providing content creators with a bunch of recommendations on soundtracks, hashtags, and special effects (Davis, 2019).

5.5 Summary of Findings

To sum up, TikTok has been employing three methods to grow its user base. First of all, the platform has been developing necessary product features that can meet users' needs. For instance, to facilitate users' content creation experience on the platform, TikTok has been creating a number of visual effects and build in an analytical tool for creators to learn the performance of their videos. On top of that, it created a unique hashtag challenge marketing campaign, which could possibly be taken as a "killer feature" on TikTok. The results showed that most of the hashtag challenges have been focusing on raising people's awarenesses of social issues, and following specific social media trends in each country, and promoting its own brand identity through some partnerships. Other than this, it has been raising up social media celebrities on its platform in order to attract more people who want to develop reputations through the Internet.

In addition to that, the continuous growth of TikTok has been reinforced by its involvement of users into the platform evolution process. Because people's increasing awarenesses of Internet health issues, TikTok has been interacting with users to update produce features in a manner that users' digital wellbeing can be taken care of. As an example, it particularly curated specific product functions in regards to coping with Internet violence, long screen time and sensitive content. Apart from that, the platform has been consciously managing external partnerships in order not to

reduce positive network effects with too much commercialisation. Furthermore, the findings revealed that the platform would not be efficiently enough to facilitate user interactions if TikTok did not apply algorithm intelligence technology into its content distribution system.

6.0 Discussion

Moving forward, this chapter will discuss the major insights brought by the outcomes obtained from the previous findings section, with reference to relevant literature in the area. This chapter will begin with explaining the reasons for digitalisation being the fundamental element to make TikTok a growing business. After that, the focus will be oriented towards how TikTok managed to boost its user base and maintain a balanced interaction among distinct user groups, by leveraging platform envelopment strategy, and playing a role as a regulator of the platform. In conjunction with the analysis, the discussion will particularly illustrate the specific activities TikTok has been employing to increase network effects and put open innovation into actions.

6.1 Digital Technology as a Fundamental Enabler

The first insight learned from the case of TikTok is that digital technology enabled the creation and development of TikTok. This platform business would only be a business idea full of imagination but lacks feasibility, if the element of digital technology is missing. This resonates with the idea that digital technology is no longer merely a business context but also can be designed as product functions enabling a business to come about (Nambisan, 2017). In this particular case, TikTok's growth has been rooted in four technological advancements. Firstly, TikTok is capable of offering a video making application that integrates music resources and visual effects because of technology. Prior to this new tool for creativity expression, few people would have ever imagined that one day they could be closely connected to others primarily by video contents made by completely strangers. Neither would they ever have thought this connection is built upon another human being recording themselves singing a song and dancing to a camera. We

have been used to feeling a sense of connection through physical presence. But digital technology here makes it possible for new entrepreneurial opportunities to exist (Nambisan, 2017).

Secondly, because a variation of functionalities can be included into a digital platform's technical structure (Yoo et al., 2010), TikTok is able to differentiate its offering to a collection of user groups from their own preferences thanks to digital technology. Likewise, due to the fact that digital technology is reprogrammable (Yoo et al., 2010) , it allows the platform to keep evolving on the basis of user feedback. Further, without the advancement of algorithm intelligence technology TikTok would not be able to match video contents with individuals' preferences, and thus create value for users. Therefore, the evidences from TikTok strengthened the belief that digitalisation is both a contextual factor to let platform business exist, but also a capacity for it to develop.

6.2 Platform Envelopment to Drive Initial Growth

The method of acquiring the early users who can then be leveraged to drive same-side network effects has long been on the discussion table. Creating value for users has been pointed out as essential at the initial stage of platform development (Han & Cho, 2015; Chen, 2016). But it seems that this strategy did not necessarily help much. Alternately, TikTok applied an unusual strategy to boost its user base by acquiring a dominating rival in the market.

Although the results did not explicitly show the driving factors for the unusual growth of TikTok user numbers in 2018, the incident could be caused by TikTok's merger with Musical.ly. With reference to Suarez and Kirtley (2012), startups are able to challenge established successful players in the market by platform envelopment. This technique is defined as a way of swallowing competitors and bundling their markets and functionalities into its own platform. It could be seen

as exactly how TikTok managed to boost its development in 2018. Before the merger in November 2017, TikTok was still a copycat of Musical.ly, offering short form movie making tools. Users were attracted by those features to produce their own video clips with background music and visual effects. Even though those features aggregated the first unit of early adopters, they did not create a habit for users to use the application regularly. So the growth pattern of TikTok was pretty slow. In contrast, Musical.ly has been dominating the market with its unique feature of offering lip sync to users and reached great success in multiple markets (Leung, 2019).

After the merger, statistics have shown that TikTok's new user downloads suddenly rise up after the merger and acquisition. It can be interpreted that new users are attracted due to the fact that this strategy is an application of direct network effects, in view of the fact that an increase in the number of users can bring extra value to the platform. Then because of the added value, more users are appealed (Boudreau & Jeppesen, 2014). Therefore, the merger of TikTok and Musical.ly is an instance of growing the platform user base through platform envelopment, by which TikTok successfully leverages competitor's user base and operations into its own business.

Despite that, merely providing video production tools and lip syncing features would not sustain the growth for long. Because those features can easily be copied by others and the platform business model seems to have limited strategic focus (Cennamo & Santalo, 2015). Therefore, a set of mechanisms, including non-price and price models, have been recognised in TikTok's operations since 2019.

6.3 Regulator of a Content Ecosystem to Facilitate User Interactions

Few researchers in the field have put forward that multi-sided platforms would be more effectively operated when they adopt a governing role to manage the platform users in an ecosystem-like environment (Boudrau & Hagiu, 2009). This paper gives evidence from TikTok to support that statement, because the results showed that regulating a platform as a content ecosystem largely helped TikTok manage its platform effectively.

The concept of being a governor on the platform is that multi-sided platforms should utilise a variety of instruments, such as setting up rules and offering rewards to shape user behaviours. Traditionally, price mechanisms are largely used as incentives to guide user behaviours. But it has been argued that using only price mechanisms may not be sufficient to fight against market failure, given that players on the platform are naturally driven by self-interests (Boudrau & Hagiu, 2009). In the case of TikTok, it is found that TikTok has been setting up its business model by overlooking the roles and interactions among average users, content creators and external businesses. The fundamental purpose of that is found to be increasing positive network effects and thus growing the platform value. The results highlighted that different sides of the platform have been managed distinguishably but cohesively. To name a few, TikTok has built up a content exchange model to smooth the communication and interaction between average users (content consumers) and content creators. A few activities have also been set up to encourage content creators to work with external businesses. Besides, it set some soft rules for external businesses to operate across the platform to some extent, in order not to reduce user experience. More detailed examples will be addressed in the following sections.

6.3.1 Establishment of a content exchange model

First of all, TikTok tried to govern the content creation and content consumption process through an establishment of a content exchange model, which is supported by algorithm technology and human intervention. In doing so, TikTok can make sure that content creators can constantly produce new videos and those videos can be consumed successfully. This is because in essence, TikTok provides a market for information exchange, where the platform is fundamentally a digital infrastructure that allows users to find the information they need (Cennamo, 2019). Across this platform, information takes the form of video contents. So users are interacting on the basis of that. However, if there were no content produced, no user interaction would ever appear. So the production of video contents is at the core of TikTok's business. But given that information exchange does not work in just one way, content consumption is fairly important as it is one motivating factor for lasting content creation. As a consequence, a content production model has been built upon those two elements (See in Figure 3).

Content exchange model governed by TikTok

facilitated by algorithm intelligence technology

Content stored in a pool with a set of labels → Content distributed to users based on view history and activities (likes & comments)

Users ┈┈> Content created

Content consumed

Content view statistics provided ← User behaviour captured & machine learning optimised

New hashtag challenges designed ← Insights on trendy content & tags generated

moderated by human interpretation
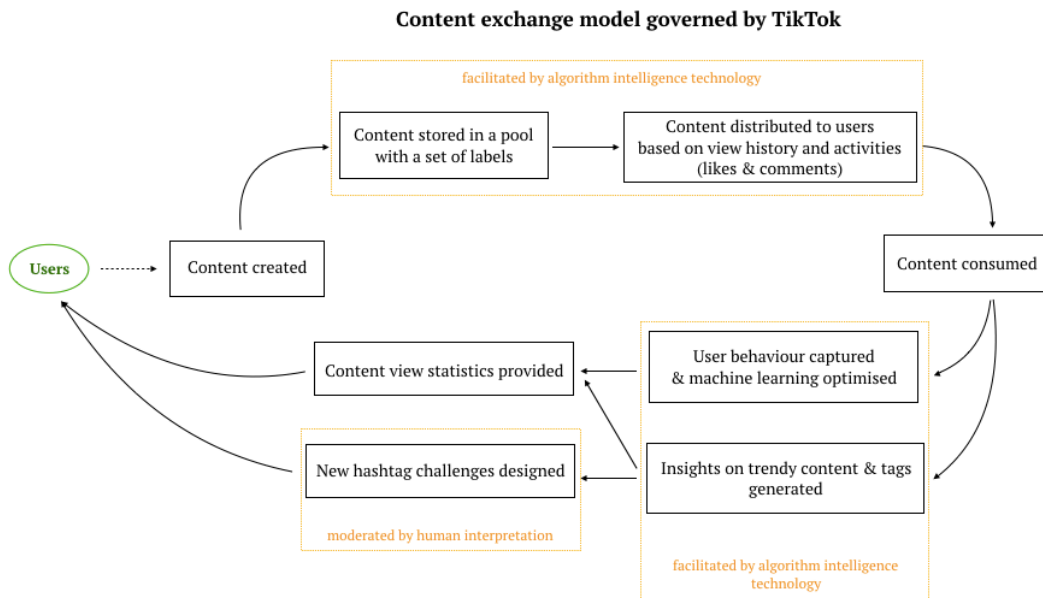
facilitated by algorithm intelligence technology

Figure 3: An illustration of the content exchange model governed by TikTok, generated from the results.

In detail, starting from 2019, TikTok has been designing hashtag challenges in distinct themes to activate user conversations around certain topics which their video contents can be made up of. A large share of those hashtags challenges were composed of discussions on social matters, whereas country-specific themes have been conversed as well. In doing so, TikTok managed to set up a conversational environment for users to produce information and interact. As the platform guided users to label their contents with a set of keywords, the automated traffic system is capable of categorising contents with regards to their tags. Following that, a smart traffic system operated by the platform will distribute contents to users who are predicted by the machine as likely to be interested. The prediction normally is facilitated by algorithm technology that generates information with accordance to users' view history and activities, and other relevant resources elsewhere (Agrawal, et al., 2017).

Now as the contents are successfully created and consumed, the technology captures new content history and user behaviours, which then will be used to optimise machine's future predictions and content distribution. Because of those data, insights can be drawn to help the platform discover user preferences on trendy contents and tags. Thus, new marketing campaigns can be designed with human interpretations of those results. Meanwhile, some of the statistics will be also given to content creators who want to advance their video productions with real-time analytics. The last steps subsequently contribute to another new round of content creation, and hence, a closed cycle of content creation and consumption is reached.

6.3.2 Management of creators community to facilitate content innovation

Apart from establishing a model to regulate the content exchange across the platform, TikTok is able to strengthen content diversity and innovation by putting the idea of crowdsourcing into managing content diversity and innovation. Crowdsourcing has long been a powerful strategy for companies to find innovative ideas from people who are not employed internally (Dahlander et al., 2019). Different from traditional indoors research and development, this concept encourages firms to open up its innovation process and welcome the ideas from the external crowd as sources of inspirations and commercialisation (Laursen & Salter, 2006; Daxhammer et al., 2019). In TikTok's case, it can be an advantage to incorporate users into the process of product design and the selection of campaign themes to improve product functionalities and reach stronger user engagement.

But most importantly, video content is one fundamental feature of TikTok. So encouraging a larger variety of content creators to join can increase the overall platform value and hence, captivating more people to join (Cennamo & Santalo, 2015). That again applies network effects, but indirectly, by rising up the diversity of contents made by users on one side of the platform as incentives to drive users on the other side (Suarez, 2005). So to broaden the content variation, TikTok differentiated operations on different user groups and tried to build a community around content creators. The intention comes naturally considering that TikTok is not a content provider, but relies on content to grow. So it needs to have a devoted group of people who are enthusiastic to create contents for it. But contrary to finding professional creative agencies to do, TikTok has been trying to raise some of the popular and passionate content creators on the platform into collaborators.

However, it has been put forward that a large accumulation of collaborators is a double-edged sword. Even though indirect network effects can be achieved by that, the rivalry within the collaborative community tends to be increasingly intense whenever a new member joins (Boudreau, 2012). Consequently, given that there is a U-shape correlation between the quantity and the performance of open innovation, it has been put forward that firms should guide contributors to make efforts that are oriented towards the interests of the company. Meanwhile, incentives could be set up to expand the scope of contributors and strengthen the quality of ideas (Laursen & Salter, 2006).

In this case, a series of activities around content creators have been captured as ways to help them make better videos, and simultaneously to shape creators' behaviours that will benefit the platform as well. For example, every hashtag challenge campaign on TikTok was provided with comprehensive explanations to illustrate the participation steps. Even though it was not explicitly stated as a standard of video contents, TikTok intended to educate users about what content is regarded as desirable and promotable, by shortlisting the names and contents of some content creators as good examples of hashtag challenge participation. Moreover, the platform has been offering two account settings. Users who are interested in creating videos with higher likelihood of exposure are recommended to advance their account settings without charge. By using the analytic tools built in the professional accounts, creators are able to gain an overview of their video statistics and make adjustments accordingly. However, it is notable that specific punishment rules on inappropriate user behaviours have not been captured in this research. TikTok seems to govern its creators community in a more soft and friendly way.

Despite the reason that those content creators can be taken as complementors to TikTok, TikTok seems to combine the characteristics of building up collaborative communities and complementors as its crowdsourcing strategies. Content creators are complementing the platform's value by providing core video contents to make this platform alive. This somehow matches with the role of complementors by its definition. In research complementors are referred to those who are not part of the company but contribute to its users' problems by adopting the tools provided by the company (Boudreau & Lakhani, 2013). However, although content creators are using the features and resources on TikTok to produce innovative contents that fulfil content consumers' needs, TikTok did not give them access to the core technical functions. Instead, those creators are aggregating around the platform with loose administration and creating value for the whole, which matches the illustration of collaborative community (Boudreau & Lakhani, 2013). Therefore, it is found that sometimes the identity of a platform's collaborators could not be simply distinguished, but complicated in the real world.

But by looking further, more characteristics of building up collaborative communities were found in TikTok's management of content creators. For instance, it is figured that TikTok has been developing a shared culture to enhance the cohesiveness, which usually can be seen in community management (Boudreau & Lakhani, 2009). By designing hashtag challenge campaigns in response to social matters, TikTok has been constantly reinforcing the values and beliefs it supports and promotes. Thus, people with similar attitudes are likely to aggregate and have a sense of belonging. Also, it has strengthened the platform identity as a place full of creativity through marketing campaigns and partnerships, so creative people naturally stick around. However, other mechanisms of managing collaborative community, such as knowledge dissemination, giving

members unique identities, and agreements on common jargon (Boudreau & Lakhani, 2009), have not been observed in this research.

6.3.3 Management of partnerships to gain revenues without compromising network effects

In addition to the management of the average users and creators community, TikTok has been balancing the pros and cons of connecting external businesses to the platform, in order not to cancel out positive network effects. The results have shown that partnerships have been maintained in a mutually beneficial way. Due to the critical mass TikTok generates, business partners are attracted to leverage the platform's promotional power on their products and services. But the platform could be over commercialised with a large amount of advertising contents. This concern has also been pointed out in two other case studies of messaging service platforms, WeChat and Line, stating that the involvement of third party corporations and advertisers could possibly worsen user experience and make users leave the platform (Chen, 2016). TikTok handled this by encouraging the businesses to work on projects that have good causes. For instance, TikTok had cooperated with Converse in England to raise people's awareness of men's health problems (TikTok, 2019). At the same time, with an intention to ensure the video contents not being too polished because of advertisers, TikTok attempted to engage amateur content creators on the platform working with professionals, to maintain a good balance of fine art and roughness.

In return, TikTok benefits from partnerships in three ways. Most obviously, working with external partners allows for the platform to establish a monetisation model in which the main source of revenues comes from advertising fees (Cennamo, 2019). Across the platform, users on different sides do not have direct financial transactions. The platform is basically free of charge for users

and even if they use advanced product settings, they do not need to pay for extra functions. Instead, TikTok gains monetary returns from business corporations. A share of the revenues also goes to content creators as rewards. This behaviour is in line with motivating factors for platform collaborators when monetary incentives are missing pointed out by Boudreau and Jeppesen (2014). Regardless of that creators communities can be largely driven by intrinsic aspects like the joy of doing things, or recognitions in the community (Boudreau & Lakhani, 2009), the authors altered that network effects may be cancelled out if there were only psychological rewards (Boudreau & Jeppesen, 2014). So the purpose of giving out financial rewards to content creators could be considered as a method TikTok took to protect the network effects it has been working hard to raise.

Additionally, the second advantage of carefully managing the external partnerships is that TikTok can gain traction and promote its brand image, especially partnering on projects on social issues and city tourism advertising. Furthermore, it can elevate the content quality and meanwhile motivate creators with opportunities of working with professionals in the creative industry in some partnerships. To illustrate, TikTok's collaboration with Film Independent at Los Angeles Festival was significant to bridge amateur creators on TikTok with professional artists to enhance the quality of video productions and raise stars within the creators community.

6.4 Limitations & Future Research

Similar to all the research, it is acknowledged that this research has a set of limitations in regards to the nature of single case study, the research design, the research time and resources, and the researcher's knowledge base and biases. But future academic work can dive into some areas that

failed to be studied in this paper due to time and resource constraints, and complement the research field with more insights.

As a single case study of a multi-sided content platform, the findings in this paper may be lacking in general applicability to all platform businesses, but limited to TikTok alone. It is also likely that the outcomes may provide insights into the growth of TikTok to some extent, taking into account that there were a few drawbacks in the process of data collection and analysis. For instance, due to the fact that the paper is built upon the secondary interview data of TikTok's former President and TikTok's newsroom data, the findings may fail to provide another angle from the internal employees' perceptions. And because there were not many relevant newsroom articles written about TikTok's 2018 activities, the author did not manage to map out a development pattern of TikTok's operations by each year. Meanwhile, a lot of the findings were generated from the researcher's own interpretations, therefore, they could be biased somehow because some factors might be beyond researcher's knowledge and thus be neglected.

In addition to that, there could have been more fields to dive into to give a more thorough overview of TikTok's development over the past years. But due to the time limitation, the author did not elaborate on those areas. As an example, TikTok's user number has been growing steadily but not at a rapid speed in comparison to that after 2018. It has been presumed that the sudden increase in TikTok's user numbers in 2018 was influenced by the merger and acquisition of Musical.ly. However, not much information about this has been directly put forward to validate this assumption. It could be the fact that the TikTok's growth in 2018 were driven by other factors that the researcher did not capture. Therefore, more investigations could be conducted to study the strategies TikTok has been implementing in this particular year to drive its growth.

Another example is that algorithm intelligence technology has been an essential tool for TikTok to manage its smart content distribution system. But in order for gaining more knowledge of that, examining the specific management of that technology, and possible difficulties and drawbacks could be implemented. Likewise, because the creators community is taken as a central user group to keep the platform active and attractive, detailed management of this group could be studied. Additionally, for the purpose of generating universal patterns of managing a multi-sided platform business growth, comparative case study of TikTok and alternative content platforms such as Instagram, should be analysed. Last but not least, the attributes of the operational team behind platform business are vital to its success. Consequently, leadership styles and personality characteristics could be conducted in order to assist platform business managers to find suitable talents.

7.0 Conclusion

7.1 Concluding Remarks

This paper specifically investigated a real life case of growing a multi-sided platform business, TikTok, with an intention to deepen the understanding of how platform business may be consciously managed to create more values. From a comprehensive examination of academic papers in the related area, the author found that digital entrepreneurship gives technical foundation and possibilities for platform business to occur. On top of that, scholars have indicated that the advantages of network effects and open innovation a platform can take in order to grow its business size and value. However, evidence from real life cases are limited. Moreover, detailed strategies that are relevant to those two factors should be explored further. Therefore, to gain more knowledge of the stated issues and the development of platform business in reality, this research thoroughly examined TikTok's press release articles from 2018 to the first quarter of 2020. Apart from that, interviews of the former President of TikTok, Alex Zhu, on managing a community across the multi-sided content platform, have been comprehensively studied to understand the research question from a managerial perspective. Further, other secondary sources like archival reports analysing TikTok's growth have been examined as well.

In the process of data analysis, a content analysis technique has been conducted to dive into Alex Zhu's interviews. Because of the large amount of TikTok newsroom data, probabilistic topic modelling has been applied with the aid of computer language programming system, Python. These two methods have allowed the researcher to extract key information from a chance of texts and later build up conclusions from the relationships between the generated key points. Subsequently, all the data has been analysed in the logic of abductive reasoning, which develops insights by iterating between theoretical statements and real life observations.

The results have particularly provided evidence from reality to Boudreau and Hagiu (2009)'s viewpoint that a multi-sided platform can be effectively managed by placing itself as a central regulator of the platform. It is studied that TikTok has been governing the interactions among distinct user groups mainly through non-price instruments, including setting up a content exchange mechanism, raising some of its content creators as business collaborators, and controlling the behaviour of external businesses. But other than this, the first exponential growth of user numbers in 2018 is studied as driven by TikTok's application of platform envelopment. As the dominating content platform Musical.ly was merged into TikTok's business, TikTok managed to enlarge its user base and borrowed the successful operations from the former, and hence attract more users to join.

A fair number of literature have been promoting network effects and open innovation as two significant areas for a platform to mature. In TikTok's development, elements of the two aspects have been recognised. Specifically, direct network effects seem to be applied largely at early years of its growth, by offering basic product features that users are interested in and leveraging the user base from Musical.ly. As for indirect network effects, TikTok attempted to open up its innovation process to the external community to diversify its video contents. So more users tend to be attracted due to the fact that the platform has more various contents. But unlike others, TikTok seems to use an unconventional way of leveraging the power of complementary service providers. Instead of introducing them to the platform, TikTok has been raising active content creators it already has on the platform into complementors. Simultaneously, it tried to manage the creators group as a community through a series of verbalisations guiding creators' behaviours and building up a shared culture to strengthen the bond among members.

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9.0 List of Appendices

Appendix A: Figure 1 of TikTok Global Downloads Number by Quarter

See page 1 in the Appendix document.

Appendix B: Case Study Protocol

See page 2 and following in the Appendix document.

Appendix C: Tables of Data Collection Process

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Appendix D: Interview Transcriptions of TikTok's Former President, Alex Zhu

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Appendix E: Findings of Zhu's Interviews

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Appendix F: Findings of TikTok Newsroom Articles

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Appendix G: Figure 2 of an Example of Promoting Creators in Hashtag Challenge Campaign

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Appendix H: Figure 3 of TikTok's Content Exchange Model

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Appendix I: TikTok Newsroom Articles (2018 to 1st April, 2020)

See page 58 and following in the Appendix document.