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Data Visualisation Using Content Modules

Exemplified by Facebook Fan Page of Studio Ghibli Animation Exhibition in Taiwan

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Abstract

The research proposes a content tagging method called the ‘Content Module’ to aid in visualising the relationship between the post content and the engagement rates of Facebook fan pages.

Since Facebook fan pages have become common digital marketing tools, there are enormous amounts of data generated on the platform every day. The data is regarded as valuable to the digital marketing industry because it allows the companies to realise how people interact with the digital world in depth. However, the massive amounts of data also make them difficult to perceive. As a result, data visualisation tools have emerged to help social media analysts discern meaningful insights from the large datasets.

Facebook Page Insights is a reporting dashboard that provides various visualised charts for social media analysts to observe how well the Facebook fan pages are reaching the target audience. The engagement rate is one of the most critical aspects to watch when managing a fan page, as it closely relates to how far the posts can spread. The post content is believed to be one of the key factors of influencing the engagement rates; however, an analysis of what may be influential elements in the content is missing in the dashboard. Therefore, the research proposes a ‘Content Module’ method, aiming to remedy this missing part in Facebook Page Insights.

So as to achieve the purpose of the research, first, a study of related fields including social media and data visualisation is addressed. Next, the concepts and the design process of the ‘Content Module’ are explained in detail. In the implementation section, the fan page data from ‘Studio Ghibli Animation Exhibition’ is visualised using the ‘Content Module’ method. The visualisation is used to facilitate identifying the relationship between the content elements and the engagement rates, and the results are evaluated by comparing them with the assumptions made in the design process. The research contributes to discerning the gap between the assumptions and the actual results by visualising data using ‘Content Module’ method.

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Chapter 1: Introduction

This chapter lays the foundation for this research. First, the background and the motivation are stated. Second, the research question is issued. Next, the objectives the research aims to achieve are outlined. Finally, the scope and the limitation of the research are discussed.

1. Research Background and Motivation

The rise of Facebook[1] has transformed the digital world from a one-way communication platform to an interactive virtual community. Facebook is an online social networking platform which enables people to interact and communicate with each other in virtual communities by using multiple forms such as text, image, video, or live. Estimated by Facebook Reports First Quarter 2018 Results[2], there were over 2.20 billion monthly active Facebook users for Q1 2018, which was a 13 percent increase year over year worldwide. According to Alexa's top ranked sites[3], Facebook ranked the top three most visited website in the globe in May, 2018 *(See Figure 1)*.

	Site	Daily Time on Site	Daily Pageviews per Visitor	% of Traffic From Search	Total Sites Linking In
1	Google.com Enables users to search the world's information, including webpages, images, and videos. Offers...More	7:23	7.89	4.30%	3,686,477
2	Youtube.com User-submitted videos with rating, comments, and contests.	8:22	4.71	15.90%	2,803,542
3	Facebook.com A social utility that connects people, to keep up with friends, upload photos, share links and ...More	11:11	4.32	8.30%	7,315,125

Figure 1: Alexa's top ranked sites

A Facebook fan page is a business platform created particularly for brands, celebrities, companies, and other organisations. It provides a virtual platform for business to communicate and interact with Facebook users. Since Facebook has become part of people's lives, the fan pages have also become popular marketing tools. Due to the prevalence of the fan pages, there are enormous amounts of data generated every day.

The data is considered valuable to the digital marketing industry because it allows the companies to understand how people interact with the digital world in depth. However, the massive amounts of data make them difficult to grasp and digest. As a result, data visualisation tools have emerged to help social media analysts to perceive meaningful insights from the large datasets.

[1] http://www.facebook.com/

[2] https://investor.fb.com/investor-news/press-release-details/2018/Facebook-Reports-First-Quarter-2018-Results/default.aspx

[3] http://www.alexa.com/topsites

Facebook Page Insights is a reporting dashboard which allows the social media analysts to see how well the fan pages are reaching the target audience via various data visualisations. However, there is a limitation. The dashboard displays the results of engagement rates; nonetheless, it can not tell users what cause the results. Post content, according to the conversation with several social media analysts, is believed to be one of the key factors of influencing the engagement rates, whereas an analysis of content is missing in the dashboard. As a result, analysts often take much time trying errors to identify what kind of content will bring better engagement rates. Therefore, the research proposes a 'Content Module' method for visualisation to remedy this missing part in the Insights dashboard, aiming to facilitate social media analysts discerning those critical elements in the content that may influence engagement rates.

2. Research Questions

This body of work aims to address the following research questions:

"How to analyse the relationship between the elements in post content and the engagement rates, and how to present this relationship visually?"

Engagement rate is an important aspect to be aware of when managing a fan page, as it closely relates to how far the posts can spread. Facebook Page Insights allows users to see the results of the engagement rates; however, it does not tell users what the influencers are, which results in unpredictable gaps. For instance, some posts are found with high reach rate but with low engagement rate.

The research assumes that the combination of elements in the post content is one of the critical factors affecting the engagement rates, whereas an analysis of the post content is missing in the Facebook Page Insights. Therefore, *how to analyse the relationship between the elements in post content and the engagement rates* becomes one of the questions in this research. Another question to be answered is *how to present this relationship visually*. A relationship is an abstract concept, and visualisation may help convey this concept more efficiently. The challenge here is how to visualise it accurately without distortions.

3. Research Objectives

Stemming from the research question, following are the research objectives this research aims to achieve:

1) *Find a way to analyse the relationship between the elements in post content and the engagement rates.*
2) *Apply visualisation to present this relationship in a clear, undistorted way.*

To fulfil the first objective, a tagging method called ‘Content Module’ is proposed. The ‘Content Module’ is a tagging method to map and analyse what elements are within the post content. The concepts and the design process of “the Content Module” will be elaborated on in chapter three.

To achieve the second objective, a study of data visualisation including its definition, types, criteria, and implementation frameworks will be addressed in chapter two.

4. Research Scope and Limitation

1) The Scope of the Data source

The research uses “Studio Ghibli Animation Exhibition” fan page as a case study and apply its Insights data to implement visualisations using the ‘Content Module’ method. The “Studio Ghibli Animation Exhibition” started from June 17th, 2016 and ended on September 17th, 2017, and its fan page was established in April 2016 and has accumulated 148,078 likes and 148,303 followers according to the record in May 2018. The exhibition took place in three main cities (Taipei, Taichung, and Kaohsiung) in Taiwan, and had brought more than one million attendees.

The research retrieves data during the period from April 19 to May 19, 2017 to implement visualisations using the ‘Content Module’ method. The visualisation focuses on displaying the relationship between the post content and its interactivity rate. The interactivity rate is evaluated based on the daily engagement rate and the post engagement rate.

The scope of the data source results in one of the limitations of the research. The implementation of the research only includes a short period and the data source limits in one thematic exhibition.

2) The Research is Designed Based on Photo-type Posts

The research focuses on analysing the photo-type post. Facebook fan page provides several post types, and every type may lead to different interactive results. Due to the availability, photo-type posts are the type the research could collect the most. Other post types such as video, link, and live are rare or not available; therefore, the research will design the Content Modules and implement visualisation based on the photo-type posts.

Chapter 2: Background Study

In this chapter, two related fields of the research - social media and data visualisation - are explored. First, the concept and the background of social media is introduced as a preface of Facebook fan page's advent, and then will be followed by an introduction of the Facebook fan page and how it works in this social networking era. Next, a brief description of Facebook Insights data explains how fan page is managed and evaluated by using the existing tool. The other topic this chapter focuses on is the data visualisation. The concept and the guidelines of data visualisation are discussed, and then different types of visualisation are presented. Finally, a few visualisation tools available in the market are compared and evaluated.

1. Social Media

1.1. Overview

Social media is an internet-based application based on Web 2.0[4], which enables people to share and generate content. The Web 2.0 concept can be used to understand social media; Web 2.0 contributes to the prosperous creations in the virtual communities, gives people a platform on which to share and exchange ideas, and allows people to interact and collaborate.

The idea of social media is old. According to Kaplan and Haenlein (2010), the era of social media can be traced back to 1998 when Bruce and Susan Abelson created the 'Open Diary[5]' website that allowed diary authors to gather in an internet-based virtual community.

Over several decades, the Internet has become widespread with speedier connections. The benefits of improving the Internet include allowing people to spend more time online, the emergence of social networking, and the creation of digital platforms such as Facebook and Twitter, which has brought us to the social media era.

As social media platforms have emerged, there is a vast amount of content generated and shared every day. However, everyone's attention and time spent on social networking platforms is limited. According to the statistics from Infodocket[6], the average time people spend on Facebook in one visit is 20 minutes. The algorithms that operate the mechanism of the platform mean that people can only see a small amount of content on their wall every day; from social media curators' perspective, it is imperative to distinguish what elements in content can bring better interactivity, so that the posts can have a better exposure rate on a user's wall. Therefore, the task of analysing those who may be influencers to make posts spread better and to bring a better engagement rate is becoming increasingly important.

[4] http://en.wikipedia.org/wiki/Web_2.0

[5] http://www.opendiary.com/

[6] http://infodocket.wordpress.com/

1.2. Facebook Fan Page

A Facebook page[7], also known as a fan page, is a platform created specifically for businesses, brands, celebrities, and events. Unlike a personal profile, a fan page gains 'fans' rather than 'friends'. The definition of 'fans' for Fan pages is those who have 'liked' the page. A fan page can have an unlimited number of fans, whereas a personal profile can have at most five thousand friends. The primary function of a fan page is to update statues and spread news, which will appear on the page itself and on fans' personal walls. Fans can interact with fan pages by giving likes, sharing posts, or commenting on posts; it is important to increase fans' interactions with the page because the engagement rate is closely related to how posts are spread.

The concept of how Facebook fans link together may come from Stanley Milgram's 'Six Degrees of Separation[8]' theory. 'According to this theory, any two strangers in the world can be connected with a chain of "a friend of a friend of a friend…etc."' with a maximum of six steps. The theory conveys the concept that a communication bridge is required to make a connection between two strangers, and fan pages are one such bridge that may gather people who share similar interests. The 'Six Degrees of Separation' also implies the importance of interactivity. If posts on a fan page have greater interactivity, based on the 'Six Degrees of Separation,' the posts' reach may be multiplied by applying the 'a friend of a friend…' chain.

1.3. Facebook Insights Data

Facebook Insights is a web page monitor dashboard created for fan pages. It allows users to keep track of information, such as fan statistics, page views, wall posts, and post reach through several interactive information charts. The information is gathered on a daily basis, which allows administrators to observe daily and monthly statistics.

Facebook Insights data is raw data exported from the Insights dashboard, which provides more detailed information. The information charts in the Insights dashboard are visualised based on the raw data, and this research also uses the raw data to implement visualisations.

- How to Export data from Facebook Insights

Facebook offers an intuitive way to export fan page data. The following are the steps to export and download data from Facebook Insights:

(1) Go to Facebook Insights, and click on 'Export Data' at the top right of your page *(See Figure 2)*.

[7] http://www.facebook.com/business/products/pages

[8] http://en.wikipedia.org/wiki/Six_degrees_of_separation

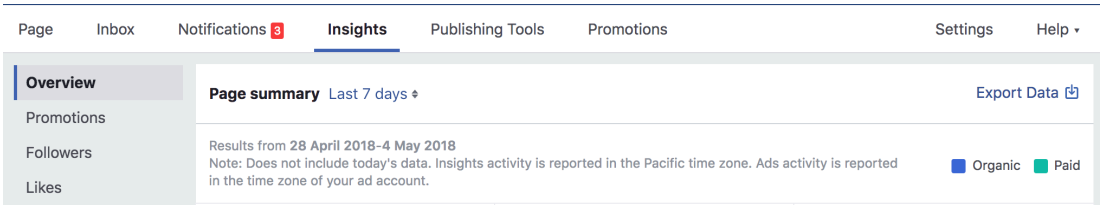

Figure 2: Facebook Insights Tab

(2) Next, a dialogue box will pop up, in which there are a few options to choose for the data format. People can choose between page, post, and video data types. In the implementation section of this paper, we will need the page and post data to measure the research results *(See Figure 3)*.

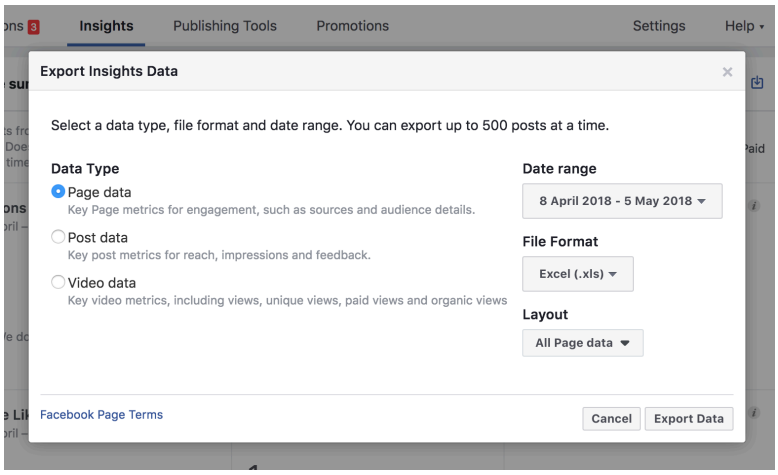

Figure 3: Dialogue box

(3) Select a date range based on the duration the visualisation will present. Next, choose a file format. There are two file formats offered – Excel and CSV. The research will use the CSV format for the implementation, although the Excel format is also acceptable

(4) The 'Layout' option in the bottom left allows users to edit or make a customised layout for the data if necessary.

1.4. Facebook Engagement Rate

For Facebook fan page, engagement is a unit of audience response, such as likes, shares, comments and sometimes clicks. The engagement rate is a metric that measures the level (degree) of engagement of the audience with a specific part of the published content (Popsters, 2018). The engagement rate for a fan page can be of two types: the daily engagement rate and post engagement

rate. This research will focus on how the elements in the post content relate to both the daily engagement rate and the post engagement rate.

A simple calculation is needed to obtain the engagement rate. There are no absolute standardised equations, while there are two most commonly used ones to attain the daily engagement rate[9]:

A. (Total reactions for day / Followers[10]) * 100%

B. (Total reactions for day / Reach[11]) * 100%

The equations to acquire the post engagement rate are similar:

A. (Total reactions for day by post / Followers) * 100%

B. (Total reactions for day by post / Reach) * 100%

Which equation to choose depends on the needs of the fan page. In most cases, the curator will choose an equation at the beginning and will keep using the same one to make the comparison standard consistent. In this research, equation A will be applied to calculate the daily engagement rate, and equation C will be applied to calculate the post engagement rate.

2. Data Visualisation

2.1. Overview

The information era's advent has brought us an excessive amount of data, and data becomes useful when we apply various methods to derive insights (Murray, 2010). However, the sheer overwhelming amount of data available often makes communication difficult. Data visualisation allows people to understand complex data more easily and to communicate with others intuitively.

Regarding the types of visual form that can be regarded as visualisation, Kosara (2007) gave a guideline containing the three minimum criteria that every visualisation should follow:

First, it should be based on (non-visual) data. The data source for a visualisation should come from datasets rather than images. If source data is an image, it should be called image processing rather than data visualisation.

9 https://popsters.us/blog/post/er-how-to-calculate-engagement-rate

10 Followers: The number of people who have liked the fan page.

11 Reach: The number of people who have responded to the post (or ad) at least once

Second, it should produce an image. Specifically, the visualisation should be the primary means of communicating and conveying data. Other elements, such as labels and subtitles, can be part of a visualisation, but the visualisation itself should be the key method used to represent the data.

Third, the result should be readable and recognisable. The visualisation should be clear enough for people to understand. Moreover, the visualisation should be recognisable from the underlying data and should avoid misrepresentation.

A picture is apparently worth a thousand words, which implies that data visualisation provides a better way for humans to perceive the information behind data as our brain processes visual forms more efficiently than text. More literally, visualisation is a process of mapping information to visuals (Murray, 2010). According to the authors of *A Tour Through the Visualisation Zoo*[12], the goal of visualisation is to help our understanding of data by leveraging the human visual system's highly-tuned ability to see patterns, spot trends, and identify outliers (Heer, Bostock, & Og Ievetsk, 2010). The features mentioned above mean that data visualisation is often used to discover patterns, trends, clusters, outliers, and gaps in data (Shneiderman & Plaisant, 2010).

2.2. Visualisation Design

The goal of data visualisation is to aid our understanding of complex data with the use of visual representations. A well-designed visualisation can reduce cognitive friction and improve comprehension by clearly describing and conveying the message from the input data. The following are a few directions to help develop an effective visualisation (Ward, Grinstein, & Keim, 2015).

- The mappings from the data to a visualisation should be intuitive. An intuitive mapping can shorten the interpretation process.
- The result should be clear, attractive, functional and informative at the same time.
- The information should be balanced and only display the most important details, or too much information at a time will lose its focus.
- Additional features, such as labels, keys and colours, can be included in the visualisation to help people comprehend it more easily.

To obtain the best results from the visualisation, it is worthwhile to start by trying different forms of visualisation of the data to see which one is most suitable. An appropriate type of visualisation depends on what information the audience needs and what features the data has, which may lead the result to be a form of comparison, distribution, composition, or relationship.

[12] https://queue.acm.org/detail.cfm?id=1805128

2.3. Visualisation Types

Many types of data visualisation have been developed; the following content will discuss some of the most common visualisation types and their usage. The Research Guide on Data Visualisation from Duke University13 introduced seven taxonomies of visualisation types based on the taxonomy from Shneiderman (1996):

1) **1D linear data:** The 1D linear data type lists data items that can be organised sequentially by a single feature, such as alphabetical lists of names.
2) **2D map data:** 2D map data can be used to visualise geographic maps, and is not necessarily rectangular. This visualisation type can be used to find adjacent items or paths between items. Examples of this category are cartograms and choropleth maps.
3) **3D world data:** 3D world data is used to display items that have complex relationships with other items, such as molecules or architectural drawings. Creating this type of visualisation should utilise advanced 3D applications.
4) **Multidimensional data:** Multidimensional data displays items with n attributes, which become points in an n-dimensional space. Many of the most common types of data visualisation extend from this category, such as pie charts, histograms, and scatter plots.
5) **Temporal data:** Temporal data has a start and finish time, and items may overlap. It can be used to identify or compare events in a time-based period. Examples of this category are: connected scatter plot, polar area diagram, and time series.
6) **Tree data:** Tree data has a hierarchical or tree structure, which means that items may have child nodes or parent nodes. Examples of this category are dendrograms, radial trees, and hyperbolic trees.
7) **Network data:** Network data shows how datasets relate to one another within a network. Some examples in this category are alluvial diagrams, subway maps, and node-link diagrams.

2.4. Visualisation Tools

There are several visualisation tools available in the market, and the ways to utilise the tools are diverse. Some of the tools, such as Excel, provide partial or full options to tailor the pre-defined charts; this allows us to create charts without having to start from scratch. These kinds of tools offer templates containing well-defined colour schemes, graphs and even some simple interactions. It is convenient to visualise the data with these types of tools; however, if the data has a complex structure or the requirements of the visualisation are beyond the scope of the existing templates, the customisation will be a difficult task to conduct with these tools. On the other hand, some

13 https://guides.library.duke.edu/datavis/vis_types

visualisation tools enable customisation, such as Tableau[14] and D3.js[15]. However, the challenge of these types of tools is that they are usually not easy to learn for beginners.

The following chart lists the most common visualisation tools and their corresponding pros and cons.

Table 1: Visualisation tools comparison

Tool	Category	Pros	Cons
Excel	Document processing Application	1. Easy to use 2. Most of the people are familiar with the user interface	1. The existing templates are limited 2. It is not easy to tailor the charts 3. It is not able to create an advanced visualisation
Tableau	Visualisation Service	1. Professional user interface 2. Provides many templates to use 3. Allows users to create customisable visualisations 4. Allows users to handle complicated data 5. Allows users to connect to the database	1. The user interface is not very intuitive for beginners 2. Beginners may experience a steep learning curve 3. Basic database knowledge is required to integrate different data sources 4. Expensive
D3.js	Libraries	1. Many third-party resources and examples on the Internet 2. Allows developers to create web-based interactive visualisation 3. Allows developers to customise the visualisation to fulfil special requirements	1. Beginners may experience a steep learning curve 2. Basic programming knowledge is required
Illustrator	Graphic Design Tool	1. The existing charts tool allows people to create aesthetic charts in a intuitive way 2. The style of the chart is highly customisable	1. Beginners may experience a steep learning curve 2. It cannot be applied to a web application directly

[14] http://www.tableau.com/

[15] http://d3js.org/

Chapter 3: State-of-the-art

The purpose of this chapter is to try proposing a 'Content Module' method to analyse post content. In this chapter, the process of designing "Content Modules" is explained in detail. Next, the two content modules designed for this research are elaborated on in the aspects of the definitions, the guidelines, and the concepts.

1. Design "Content Modules" For Visualisation

1.1. Preparation

Before entering the visualisation process, the primary goal of the visualisation should be targeted. During this stage, the following questions are worth considering:

- What is the purpose of creating this visualisation?
- What is the topic the visualisation is trying to present?
- Who will be the target viewer of the visualisation?
- What question would the target viewers like to find the answer to from the visualisation?

Answering the above questions may be helpful for framing the topic of the visualisation more explicitly. After targeting the primary purpose of the visualisation, the following steps help to concretise the visualising work.

1.2. Collecting Data

The next step is to collect data. The data can be from different sources and in different formats. Among the various formats, CSV (comma-separated values)[16] is one of the most commonly used formats, and almost every visualisation framework supports it. RDF (Resource Description Framework)[17] is a type of data used for the semantic web, which has been gaining popularity, and a few frameworks support its format to visualise data. JSON (JavaScript Object Notation)[18] is another popular data format that is widely used by web developers. JSON makes the communication between different data sources easier, which benefits the development of converting the raw data to a web-based interactive visualisation chart.

In this research, the data will be exported from Facebook Insights, and the data will use the CSV format.

[16] http://en.wikipedia.org/wiki/Comma-separated_values

[17] http://www.w3.org/RDF/

[18] http://www.json.org/

1.3. Analyse The Data

Visualisation helps reflect the enormous amount of textual data through a visual presentation. To present the data appropriately without distortion, data analysis is a necessary step. To analyse the raw data, a study of the domain knowledge is needed. The basic understanding of the domain knowledge helps find the valuable things to visualise and also decreases the possibility of creating misleading work. The primary purpose of the visualisation in this research is to observe the relationship between the post elements and the engagement rates on a Facebook fan page; therefore, a study of what the engagement rate means to Facebook and how it is calculated is a necessity.

Next, the raw data should be filtered and rearranged based on the needs and the understanding of the domain knowledge. Filtering and rearranging the data help to clarify the relationship between the different sources and make the purpose of the visualisation more focused.

The following columns will be filtered from Facebook Insights based on the equations to fulfil the objective of this research.

Table 2: Columns for Calculating Engagement Rates

Data Source	Column	Definition / Notess
Page Data	Date	The overall duration for the visualisation. (Unique Date)
	Daily Page Engaged Users	Daily: The number of people who engaged with your page. Engagement includes any click or story created (unique users)
	Lifetime Total Likes	The total likes the page has accumulated on a particular date
Post Data	Permalink	The link that gives access to the post. (*The permalink enables us to access the post to retrieve the media attachment that comes with the posts, as the data exported from Facebook Insights does not provide such information.)
	Post Message	The content of the post
	Posted	The time the post was released
	Lifetime Post Total Reach	Lifetime: The total number of people your Page post was served to. (Unique Users).
	Lifetime Engaged Users	Lifetime: The number of unique people who have engaged with your page post in certain ways, such as by commenting on, liking, sharing, or clicking on particular elements of the post (unique users).

After filtering the columns, a rearrangement is required to facilitate calculation. The rearranged columns for the daily engagement rate and post engagement rate along with the corresponding data format are as follows:

Table 3: Daily Engagement Rate Column Format

Date (Unique)	Lifetime Total Likes	Daily Page Engaged Users	Daily Engagement Rate
Format: *Date*	Format: *General*	Format: *General*	Format: *Percentage (2 digits)*

Table 4: Post Engagement Rate Column Format

Date (Based on Posted Time)	Lifetime Total Likes	Lifetime Engaged Users	Daily Engagement Rate
Format: *Date*	Format: *General*	Format: *General*	Format: *Percentage (2 digits)*

1.4. Tagging The Post With Content Modules

In this stage, the post will be given attributes by using the 'content module'. The 'Content module' defines different content types, and it includes a set of topics and tags. A fan page can have several modules if needed. The topic and the tags in the modules are self-defined so that the user can create different topics and tags based on the requirements. Topics are essential aspects related to the fan page, and the topics may differ based on the theme of the fan page. In this paper, the theme of the fan page is a thematic exhibition; therefore, the topics are designed for the thematic exhibition.

Tags are the subset items in the topic. Each topic and tag has a unique ID, and the Tag ID can be created by combining the Topic ID and a sequential number. Aside from the ID, a tag consists of a description and a guideline. The description explains the content of the tag, and the guideline gives users directions for how to use the tag. The description and the guideline can also be self-defined according to the requirements. In this research, two content modules are designed for the use case, which will be elaborated on in the next section.

2. Textual Content Module Design

The 'Textual Content Module' is designed for the textual part of the post. There are five topics and 23 tags in this module, and they will be described in the following sections.

Table 5: Textual Content Module Topics List

Topic ID	Topic
TP01	Exhibition Information
TP02	Activity Information
TP03	Interactivity
TP04	Ghibli Animation
TP05	Text Types

Table 6: Textual Content Module Tags list

Topic	Tag ID	Tag Description	Guidelines
Exhibition Information	TP01-01	The content includes information on the exhibition.	The text mentions the duration, opening hours, and location of the exhibition.
	TP01-02	The content includes information on tickets.	1. All kind of tickets can be categorised in this tag, such as pre-sale tickets, early-bird tickets, and promotional tickets. 2. Any information about tickets mentioned in the post can be categorised in this tag, such as where to buy tickets, how to get discounts, and if the tickets are sold out or not.
	TP01-03	The content includes information on souvenir(s).	This content includes details, price, and use of the souvenir(s).
	TP01-04	The content includes a live report about the exhibition.	This text includes emergency news and events happening during the exhibition.
Activity Information	TP02-01	The content includes information about an “activity”.	It includes the date, prize, and rules for an activity.
	TP02-02	The content includes the winner list of an “activity”.	The list notes who won an activity and whether it was a lucky draw or a competition.
	TP02-03	The content mentions an anecdote during an “activity”.	The anecdote tells a fun story or anything else that may have happened during an activity.
Interactivity	TP03-01	The curator invites fans to tag their friends.	
	TP03-02	The curator invites fans to answer a question.	
	TP03-03	The curator invites fans to leave comments.	

	TP03-04	The curator invites fans to share their photos.	
Exhibition Theme - Ghibli Animation	TP04-01	The content includes the element(s) from the animation, *My Neighbour Totoro*.	The displayed element can be a quote, a story, or a character, such as Totoro, Satsuki, Mei…etc.
	TP04-02	The content includes the element(s) from the animation, *Kiki's Delivery Service*.	The displayed element can be a quote, a story, or a character, such as Kiki, Jiji, Osono…etc.
	TP04-03	The content includes the element(s) from the animation, *Ponyo*.	The displayed element can be a quote, a story, or a character, such as Ponyo, Hiroki, Tomoko…etc.
	TP04-04	The content includes the element(s) from the animation, *Spirited Away*.	The displayed element can be a quote, a story, or a character, such as Chihiro, Haku, Yubaba…etc.
	TP04-05	The content includes an element(s) from the animation, *Howl's Moving Castle*.	The displayed element can be a quote, a story, or a character, such as Sophie, Howl, Witch of the Waste…etc.
Text Types	TP05-01	The content includes “call-to-action” text.	“Call-To-Action” text tries to persuade people to buy tickets or attend the exhibition, i.e., “Click the link to buy the ticket when you are ready!” or “Don’t hesitate. Buy your ticket today!”
	TP05-02	The content includes “localisation” text.	This tag can mention anything specific about the location of the exhibition. For example, “Formosa Boulevard Station” is mentioned when the exhibition took place in Kaohsiung.
	TP05-03	The content includes “hashtag description” text.	The hashtag should be an independent element. The post should NOT be labelled with this tag when the hashtag is included in other topic. For example, in this context: *“Get the prize by sharing a picture with Ponyo and leave the hashtag #I visited Ponyo in Kaohsiung!”* The hashtag is part of the description of an activity; therefore, it should not be labelled with this tag.

Topic 1: Exhibition Information

The topic includes four tags, which represent the content: the information on an exhibition, tickets, souvenirs and a live report.

- Information on the exhibition

Many people join a fan page to receive up-to-date information on an exhibition, such as a grand opening day, or the location of an exhibition. Besides a fan page, there are other ways to obtain this information, such as from online ticket platforms, newspaper ads or posters. Facebook fan pages, compared with the ways above, provide a more efficient way for people to be informed, which motivates them to join the fan pages. Therefore, we expect that *posts containing exhibition information will gain more attention.*

- Information on the Tickets

An exhibition may have different types of tickets along with different prices and vacancies. The best deal for the tickets, the selling date and the relevant conditions are valuable information for people who want to go to the exhibition. The 'Studio Ghibli Animation Exhibition', for instance, provided several types of tickets, such as pre-sale tickets, early-bird tickets and promotional tickets. Tickets are one of the main reasons many people join a page; therefore, we expect that *posts containing ticket information will receive more attention.*

- Information on the Souvenirs

According to the theory of 'Experiential Marketing[19]', after the customers have viewed the animations or had relevant life experiences, they will feel more connected to the animation both cognitively and emotionally, and this psychological state will convert to the desire to buy related products (Schmitt, 1999). Take the 'Studio Ghibli Animation Exhibition' for example. To many people living in Asia, the Ghibli animations were part of their childhood or adolescent years, and this feeling of nostalgia may become one of the motivations for them to buy exhibition souvenirs.

For many people who like Ghibli Animations, collecting souvenirs is one of the main reasons for attending the exhibition. Likewise, obtaining information on the souvenirs may be one of the motivations for people to join the fan page for the exhibition. Therefore, we expect that *posts containing souvenir information will receive more attention.*

The information above may be what people would like to obtain from the fan page, and that may convert to the reason for people to interact with the page. Therefore, we assume that *if the content includes more exhibition information tags, it will lead to a higher engagement rate with the post.*

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[19] https://en.wikipedia.org/wiki/Engagement_marketing

Topic 2: Activity Information

During an exhibition period, there are many activities on a fan page for the fans to participate in, and free prizes or gifts may be a motivation that drives people to join the page. Take the fan page of 'Studio Ghibli Animation Exhibition' for example; there were activities asking people to take photos and check-in at a particular spot in the exhibition, and those who completed the task could claim a gift after they showed the photos to the staff. Another type of activity asked people to share a photo taken in the exhibition under the post, and the curator would select the best photo regarding the topic of the activity and give the winner a prize. People like to receive prizes; moreover, to some people, the opportunity to present themselves and the expectation of being accepted by people in the same virtual community motivate them to become involved in these activities.

The purpose of an activity is to attract people to participate in and interact with the post and, as a result, to enhance the engagement rate of the fan page. There are three tags for this topic representing the information, the winner list and anecdotes on the activity. The research supposes that if the post belongs to the topic of an activity, it should stimulate people's interest to fulfil the purpose. Therefore, the research assumes that *if the content includes more activity information tags, it will lead to a higher engagement rate with the post.*

Topic 3: Interactivity

Fan pages create many different forms of interactivity to connect with fans. This paper categorises the following four kinds of interactivity and makes them tags for this topic: 'inviting fans to tag their friends', 'answering a question', 'leaving a comment' and 'sharing a photo'. Take the 'Studio Ghibli Animation Exhibition' fan page for example. When the exhibition was taking place in Kaohsiung, the curator posted a photo where two Totoros were standing in front of a tourist spot. The curator asked the fans to guess where the Totoros were based on the photo. In another post, the curator asked fans to recommend some local tourist spots in Kaohsiung to visit.

The interactivity in a post aims to enhance the relationship between the curators and the fans. We assume that when a post contains more interactive elements, people will have a reason to interact with the post more. Therefore, we assume that *when a post has more interactivity tags, it will lead to a better engagement rate.*

Topic 4: Exhibition Theme - Ghibli Animation

Every exhibition has a specific theme. The theme of 'Studio Ghibli Animation Exhibition', as its title suggests, is Ghibli animations. Studio Ghibli has created several well-known animations over the decades, and its animations have gained many fans worldwide. Ghibli animations are famous for their soft aesthetic style, beautiful background music and in-depth narratives that immerse people in their imaginative stories. The core value of Studio Ghibli animations is to convey positive and meaningful messages to the audience, and this value makes the animations suitable for people of all ages.

There are five tags under this topic representing elements related to five different animations that have been popular over time, respectively: *My Neighbour Totoro, Kiki's Delivery Service, Ponyo, Spirited Away*

and *Howl's Moving Castle.* Due to the popularity and positive image Studio Ghibli animations have gained over the decades, the research supposes that *content mentioning the characters or scenes from these classic animations will attract people to read it.*

Regarding which animation tends to produce a better engagement rate, since Totoro is the studio's mascot, which makes 'My Neighbour Totoro' the most famous and iconic animation of Studio Ghibli, the research assumes that *if the content mentions elements related to 'My Neighbour Totoro', it will lead to the highest engagement rate with the post compared with other animations.*

Topic 5: Text Types

This topic attempted to test which text type brings better engagement. In this research, the text is divided into three categories: 'call to action', 'localisation', and 'hashtags'.

- Call to Action

Call to action text is a short phrase written in the imperative mood, which gives the audience a clear and direct command. Call to action text is a common element in posts, acting as a signpost to persuade the user to take action on something desired by the curator.

The ultimate goal of the 'Studio Ghibli Animation Exhibition' fan page is to boost ticket sales; therefore, many posts contain call to action text to persuade people to buy tickets, such as 'Click the link to buy tickets!', 'Don't hesitate! Buy tickets today!', 'The discount is only for today!'. The emotional tone of the call to action text often influences people's decisions, leading people to purchase the tickets. The research assumes that *posts containing call to action text will lead to a better engagement rate because the emotional words will affect people's mental states and increase their interest in interacting with the post.*

- Localisation

Localised content for social media is an excellent strategy to encourage greater interaction and to build better connections with local audiences who may be converted to loyal fans in the long term by utilising words that bring a sense of familiarity to them. The challenge here is to integrate the main topic for the local elements within the text while at the same time keeping the story and tone consistent across the board.

A proper translation is essential for localised content. There was a notorious example of localisation failure in integration by losing the meaning in the translation. During the 1960s, Pepsi launched the slogan 'Come alive with the Pepsi generation'. It is claimed that when the slogan was transported to Taiwan, the direct translation 'Pepsi will bring your ancestors back from the dead[20]' made the marketing fail.

Another method for conducting the localisation strategy is adding elements specific to the location in the content. On the 'Studio Ghibli Animation Exhibition' fan page, many posts were found to have elements that

[20] Quoted from "*Brand Failures: The Truth about the 100 Biggest Branding Mistakes of All Time" by* Matt Haig. page 162.

specifically referred to the area where the exhibition took place. For example, when the exhibition was taking place in Kaohsiung, several posts mentioned a few tourist spots in Kaohsiung.

Because of the sense of familiarity that the localisation text may bring to the audience, we suppose that *posts including localisation elements will lead to a better engagement rate.*

- Hashtags

Adding hashtags is a way to manage the post content. They are searchable and clickable and help fans find conversations about particular topics or events quickly. They also create new digital marketing possibilities by inviting people to share the same hashtags, which may reinforce the bond with the audiences and also create an opportunity to identify the target audiences of the fan page more effectively.

Another way the hashtags are used in a post is for sharing opinions. On the 'Studio Ghibli Animation Exhibition' fan page, the curator often shares opinions related to the exhibition, such as how adorable they think the souvenirs are or how excited they are to see fans share their photos.

Hashtags sometimes accompany an activity. For example, an activity invited people to take a photo with the Ponyo model at the National Science and Technology Museum (NSTM) where the exhibition took place. Next, they were asked to share the photo along with the hashtag '#I encountered Ponyo at NSTM' under the post. By clicking this tag, we can see photos shared by different fans taken at the same place. As a result, the hashtag seems to have created a 'sub-society' within the fan page that gathers fans who are interested in the same activity.

Above are some different ways to use hashtags. To avoid confusion about what is influencing the engagement rate, the 'hashtag' tag will focus on ones that are used independently for opinion sharing or a description. A hashtag used as part of an activity, such as the '#I encountered Ponyo at NSTM' tag mentioned in the last paragraph, will not be counted in the discussion scope of this tag.

The text types in the post content can vary by categorisation. In this research, three types were found to be commonly used on the 'Studio Ghibli Animation Exhibition' fan page. The research makes these three types into tags and elaborate how they were used in the fan page in the paragraphs above. We assumes that *if the content includes more tags under categorised text types, it will lead to a better engagement rate with the post.*

3. Image Content Module Design

"Image Content Module" is designed to label the image of the post. There are seven topics and 12 tags under this module, and the following content will give more details about these topics and tags.

Table 7: Image Content Module Topics List

Topic ID	Topic
TPM01	The Colour Scheme of the Image
TPM02	People in the Image - Gender
TPM03	People in the Image - Age
TPM04	Ghibli Animation - Characters
TPM05	Ghibli Animation - Scenes
TPM06	Exhibition
TPM07	Text In The Image

Table 8: Image Content Module Tags List

Topic	Tag ID	Tag Description	Guidelines
The Colour Scheme of the Image	TPM01-t01	The colour scheme of the image is cold.	1. Upload the image to the website http://mkweb.bcgsc.ca/color-summarizer/?analyze and see the colour clusters of the image 2. Pick the primary three colours in the colour clusters and compare them to the colours shown on the colour wheel below to determine the temperature of your image. 3. Black will be defined as a warm colour and white will be defined as a cold colour. 4. If the difference between the percentages of warm colour and cold colour are less than 5%, the image can be tagged both as a warm colour and a cold colour image. 

Topic	Tag ID	Tag Description	Guidelines
	TPM01-t02	The colour scheme of the image is warm.	
People in the Image - Gender	TPM02-t01	The image includes people who visually look like male(s).	People should look like real human beings.
	TPM02-t02	The image includes people who visually look like female(s).	
People in the Image - Age	TPM03-t01	The image includes people who visually look under 20 years old.	
	TPM03-t02	The image includes people who visually look between 21 ~ 64.	
	TPM03-t03	The image includes people who visually look older than 65.	
Ghibli Animation - Characters	TPM04-t01	The image includes character(s) from the animation, *My Neighbour Totoro*	1. The character should be one of the main topics shown in the image. 2. The character that appears on the souvenir should not count in this tag.
	TPM04-t02	The image includes character(s) from the animation, *Kiki's Delivery Service*	
	TPM04-t03	The image includes character(s) from the animation, *Ponyo*	
	TPM04-t04	The image includes character(s) from the animation, *Howl's Moving Castle*	
	TPM04-t05	The image includes character(s) from the animation, *Spirited Away*	

Topic	Tag ID	Tag Description	Guidelines
Ghibli Animation - Scenes	TPM05-t01	The image includes a scene from the animation, My Neighbour Totoro	The scenes could be either models in real life or illustrations from the animations.
	TPM05-t02	The image includes a scene from the animation, *Kiki's Delivery Service*	
	TPM05-t03	The image includes a scene from the animation, *Ponyo*	
	TPM05-t04	The image includes a scene from the animation, *Spirited Away*	
	TPM05-t05	The image includes a scene from the animation, *Howl's Moving Castle*	
Exhibition	TPM06-t01	The image includes a souvenir of the exhibition	The souvenir should be the main topic of the image.
	TPM06-t02	The image shows part of the exhibition.	
	TPM06-t03	The image includes a localisation element that is specific to the location of the exhibition.	A tag can be used to mention anything related to something specific about the location of the exhibition. For example, “Formosa Boulevard Station” is mentioned in a post because the exhibition took place in Kaohsiung.
Text In The Image	TPM07-t01	The text in the image includes a name list.	There is a name list, such as the winners in an activity and whether it is a lucky drawing or a competition.
	TPM07-t02	The text in the image includes information about the exhibition.	The text mentions the duration, time, and location of the exhibition.
	TPM07-t03	The text in the image includes information on an activity.	The text mentions the duration, time, and location of that activity.
	TPM07-t04	The text in the image includes information about tickets.	The text includes the price, ticket type, and purchase guidelines for the ticket.

Topic 1: The Colour Scheme of the Image

The colour scheme of an image may influence how people feel about the post. By understanding how colour can affect users’ perception of the value of that item or service, we can persuade users more effectively (Mannheim, 2015).

HubSpot conducted an A/B test[21] to experiment with how colour influences users' interactivity with a post. The test used a green button and a red button to determine which one would bring better interactivity. Conventionally, green is thought to represent something that is 'accessible' or 'allowed', while red is considered to stand for 'stop' or 'forbidden'. The website assumed that the green button would bring better interactivity, but, surprisingly, after testing over two thousand visitors, the red button received more clicks. However, the experiment could not guarantee the result would be the same if the test were applied to different areas, times, or user groups. If a more accurate result is required, an enormous amount of data over a longer period is needed to prove the research findings.

Facebook fan pages are the platform this research will observe, and the primary colour scheme of the platform is blue and white, which are cold colours. Therefore, the images of the posts will be discussed based on cold colours as the background.

Ghibli Animation is famous for its warm, soft hand-drawn style; therefore, we suppose that fans of the page will prefer images with warm colours. Based on this, the research assumes that *images with a warm colour scheme will lead to a better engagement rate with the post.*

Topic 2: People in the Image - Gender

Research from the Massachusetts Institute of Technology and Harvard University suggests that people find faces and human-centric scenes easier to remember than landscapes (Cooke, 2015).

Another piece of research from Adobe Marketing Cloud also concluded that people in images might bring a better result. The Adobe Marketing team conducted a project in 2012[22] in which they analysed over 1,700 Facebook ad images including topics from different industries and across Europe, the US, Australia and Asia. They found that the presence of people in an image could bring more interactivity. If the people in the image were women, it could even result in twice as many clicks compared with an image of men.

Based on the research above, we assume that: 1. Images that include people will have a better engagement rate than images without people. 2. Among people-included images, those that include women will bring a better engagement rate with the post than those that include men.

Topic 3: People in the Image - Age

Aside from gender, the age of the people in the image may influence the engagement rate. Therefore, we created another topic to discuss the age of the people in the image to differentiate this from the gender factor.

In this paper, age is divided into three groups – people under 20, 21–64, and over 65. Because of privacy issues, it is not easy to determine people's real ages; therefore, people will be categorised based on their appearance.

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[21] http://en.wikipedia.org/wiki/A/B_testing

[22] https://blogs.adobe.com/digitaleurope/digital-marketing/facebook-ads-top-5-creative-ways-to-achieve-higher-ctr/

According to statistics from Statista[23] on the Facebook users in the United Kingdom in January 2018, the largest group of Facebook users was 25–34 years old and the smallest group was 13–17 years old.

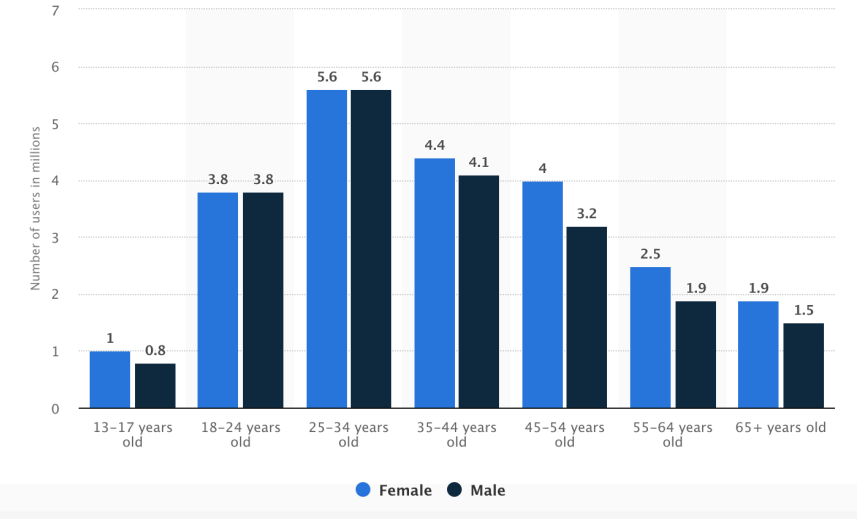

Figure 4: Total number of Facebook users in the United Kingdom (UK) in January 2018, by age group and gender (in millions)

Based on the result of the statistic, the paper assumes that: *1. Images include people have better engagement rate than images without people inside. 2. Posts that are tagged with people look between 21 to 64 may have better engagement rate than the other two age tags.*

Topic 4 & 5: Ghibli Animation - Characters & Scenes

Similar to the 'Ghibli Animation' topic of the textual content module, we believe that the images that contain characters or scenes from the animations will attract people's attention. There are also five tags on the topic that represent five famous Ghibli animations, respectively: *My Neighbour Totoro, Kiki's Delivery Service, Ponyo, Spirited Away* and *Howl's Moving Castle.* For the same reason that Totoro is the iconic symbol of Studio Ghibli, the paper assumes that *among the five animations, images that contain elements from My Neighbour Totoro will produce the highest engagement rate.*

Topic 6: Exhibition

•Reveal Part of Exhibition

[23] https://www.statista.com/statistics/507417/number-of-facebook-users-in-the-united-kingdom-uk-by-age-and-gender/

As Hal Niedzviecki described in his book *'The Peep Diaries: How We're Learning to Love Watching Ourselves and Our Neighbors*[24]*'*, we have entered the age of 'peep culture': a tell-all, show-all, know-all digital phenomenon that is dramatically altering notions of privacy, individuality, security and even humanity (Hal Niedzviecki, 2009).

As a human being, it is normal to have the desire to snoop out of curiosity. In this digital age, social networking has laid this aspect of human nature bare in virtual space. Fan pages often release posts that reveal unknown things to intrigue peoples' interest. For example, in the 'Studio Ghibli Animation Exhibition' fan page, several posts have revealed parts of an exhibition before its grand opening or described the kinds of tasks the exhibition staff had behind the scenes. The revelation only told part of the story to avoid losing people's interest, while unknown fragments may have activated people's curiosity and motivated them to attend the exhibition.

Based on this natural human phenomenon, this paper assumes that if an image includes a part of an exhibition, it may bring a greater engagement rate to the post.

- Localisation

The Studio Ghibli Animation exhibition took place in three cities in Taiwan: Taipei, Taichung and Kaohsiung, and each city has distinct features. Posts showed featured local spots on the fan page; for example, when the exhibition took place in Kaohsiung, there was a posted image that showed two Totoros visiting the famous tourist spot 'Formosa Boulevard Station' in Kaohsiung *(See Figure 5)*.

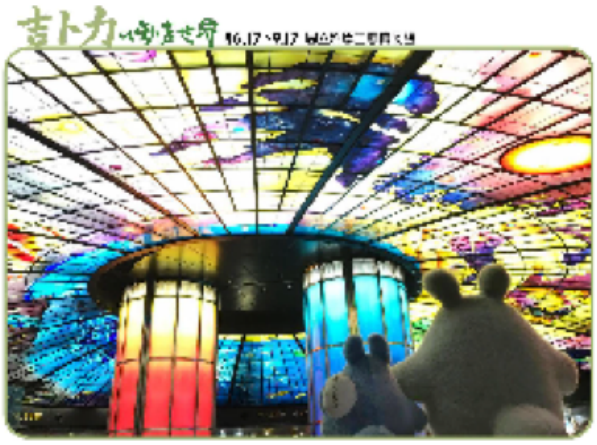

Figure 5: Two Totoros at Formosa Boulevard Station in Kaohsiung

Totoro is a virtual character who appears in the animation 'My Neighbour Totoro' that is set in the Japanese countryside, while the two Totoros visiting the iconic local spot created a sense of familiarity and connection to the people in Kaohsiung.

24 http://www.amazon.com/Peep-Diaries-Learning-Ourselves-Neighbors/dp/0872864995

The famous 2015 Pixar animation 'Inside Out' also used the 'localisation' technique in scenes in their international marketing strategy. In one scene, Riley, a five-year-old girl, looked disgusted by broccoli on the dining table and refused to eat it. However, in Japan's cut for the scene, broccoli was replaced by bell peppers. Pete Docter, the Tech director of Pixar, explained the decision behind this change. "We learned that some of our content would not make sense in other countries. For example, in Japan, broccoli is not considered gross. Kids love it. So we asked them, 'What's gross to you?' They said green bell peppers, so we remodelled and reanimated three separate scenes replacing our broccoli with green peppers."[25]

'Localisation' is considered a way to enhance people's interest because it is human nature to approach something that brings a sense of familiarity. Therefore, the assumption in the research on this topic is that *if the image is tagged as having a 'localisation' element, it may bring a post a better engagement rate.*

Topic 7: Text In The Image

Although not encouraged by Facebook, an image in a post must sometimes include text. Facebook's current policy regarding text in images is the less the better and each image is rated before release[26]. Users can upload their images to the Facebook Image Checking tool to see how their images are rated; there are four quality ratings for image text according to Facebook: OK, LOW, MEDIUM, and HIGH. The rating's function is not to approve or reject an image; instead, it will be one of the factors that affect the post's reach. If the image is rated 'HIGH' in the text, it will not reach your target audience unless an exception is accepted.

However, while the exhibition was taking place, the image text policy was running with the old one in Taiwan, the only restriction of which was that images should be < 20% text, and the result would be either be approved or rejected. Since posts in this paper's data source were released, they all were supposed to be qualified images. Therefore, the percentage of text in images in this paper will not be considered; instead, we will focus on what content elements can influence the engagement rate.

There are three tags in this topic; they respectively stand for the text including a name list, information about the exhibition, information on an activity, and information about tickets. Since the last two pieces of information can be known from other places, the research assumes that *an image including the text of a name list will be the type that brings the highest engagement rate.*

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[25] http://uk.businessinsider.com/why-inside-out-has-different-scenes-in-other-countries-2015-7?r=US&IR=T

[26] https://instapage.com/blog/facebook-20-text-rule

Chapter 4: Implementation

This chapter applies visualisation to the Insights data of "Studio Ghibli Animation Exhibition" fan page. The data are processed in advance with the use of "Content Modules" method discussed in chapter three. During the implementation process, Excel and Illustrator are used to visualise data.

1. Daily Engagement Rate Visualisation

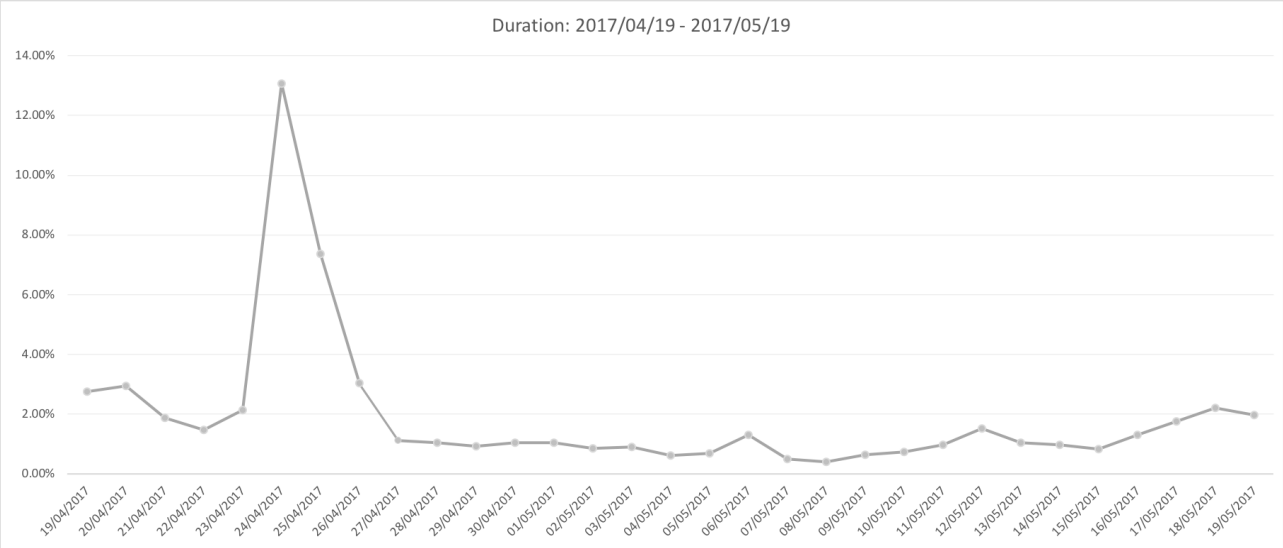

Figure 6: Daily Engagement Rate Visualisation

The chart visualises the daily engagement rate. This chart is used to observe the trend of engagement rate on a daily bases. A temporal timeline plus a line graph are chosen to visualise the daily engagement rate because a temporal timeline is a great presenting way to display a daily-based data, and a line graph is suitable for observing the continuous trend. Excel is used as the visualisation tool to create a line graph. Following are the steps to create the visualisation:

Step 1: Import the formatted data to Excel.

Step 2: Select the scope of the data and visualise it by inserting a line chart.

Step 3: Change the style of the line.

The reason to change the line colour in step 3 is that the chart will be used as a base to compare with other data source in the next section; therefore, it would better to be displayed with muted colour such as grey to avoid the distraction.

The x-axis represents the duration. Every tick on x-axis stands for one day, and the tick starts from the first day of the duration and ends with the last day of the duration. The y-axis, on the other hand, represents the daily engagement rate. The ticks on the y-axis starts from the minimum value of the interval where the

smallest engagement rate locates and end with the maximum value of the interval where the highest engagement rate locates.

The engagement rate each day is visualised as a point at the corresponding position in the temporal timeline, and every point will link to each other to form a graph line. By observing this graph line, we can see how the engagement rate changes day by day during the shown period.

2. Daily Post Count Visualisation

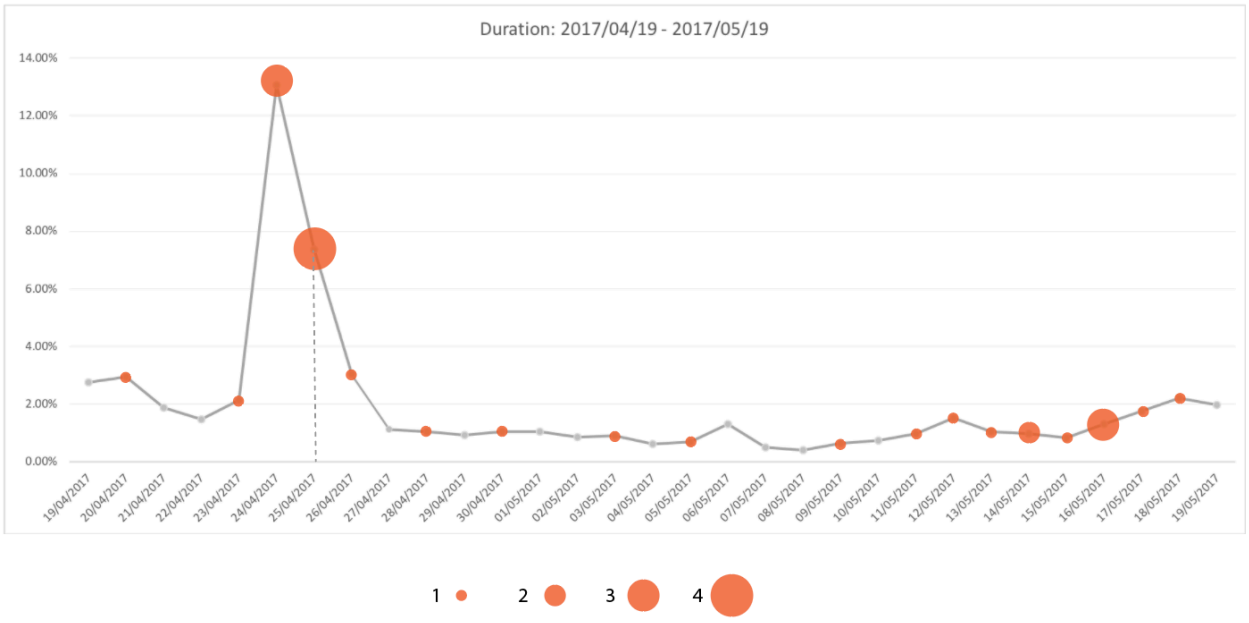

Figure 7: Daily Post Count Visualisation

The amount of the released posts every day is visualised in the form of bubbles. The reason to choose bubble as the way to visualise is that the bubbles are suitable for illustrating the non-consistent feature of post count, as the fans page did not release posts every day. In addition, the sizes of the bubbles are adjustable which provides a distinctive way to explain the concept of post count.

The daily engagement rate chart from the previous section is used as a base chart, and we use Adobe Illustrator to create the bubbles. Following are the steps to visualise daily post count:

Step 1: Paste the daily count of the post(s) chart in Adobe Illustrator.

Step 2: Draw the bubbles. The radius of the bubbles are based on the post count.

Step 3: Place the bubbles to the corresponding positions on the base chart.

In step 3, the centre point of the bubble should match the daily engagement rate point, so that the users are able to check the posted date by pointing down to the value of x-axis. What we can tell from this

visualisation is that the count of the released posts will influence the daily engagement rates. The more the posts have been released, the higher the engagement rate will be.

3. Textual Content Module Topics Visualisation

The visualisation will be applied to each topic in the Textual Content Module. The research selects histograms to present the topic because it allows users to compare discrete values, which is a suitable type for visualising noncontinuous post engagement rate.

Following are the steps to visualise the topics in Textual Content Module:

Step 1: Import the mapped data into Excel.

Step 2: Select columns including Post ID, post engagement rate, and the mapped topic data. The Post ID is self-defined in advance to facilitate the display. It can also be replaced by the posted date.

Step 3: Insert a histogram from Excel.

Step 4: Style the bars based on the mapped data.

In step 4, posts without labelled with tags will be coloured in light grey (#ededed), and posts with tags will be coloured in the sequence as follows to facilitate cross-topics comparisons:

N/A :	Light grey (#ededed)
Tag 1:	Blue (#0070c0)
Tag 2:	Yellow (#ffc001)
Tag 3:	Green (#92d050)
Tag 4:	Orange (#ed7d30)
Tag 5:	Pink (#ff7bac)

Topic 1: Exhibition Information

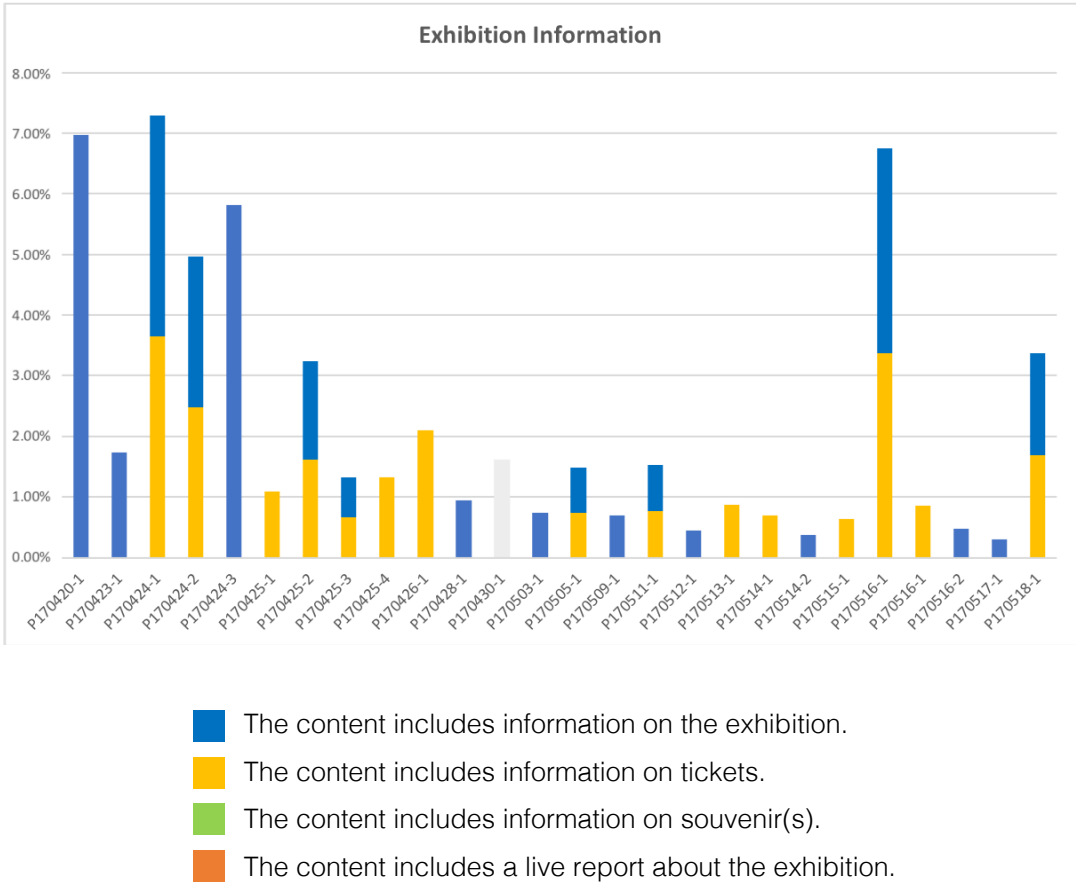

Figure 8: Exhibition Information Visualisation

Assumption:

The research assumes that posts containing either tag in this topic will gain more attention; therefore, if the content includes more exhibition information tags, it will lead to a higher engagement rate with the post.

Result:

According to the visualisation *(See Figure 8)*, the posts with more tags (presented as more colours) have better engagement rate than those have only one or without tags.

Topic 2: Activity Information

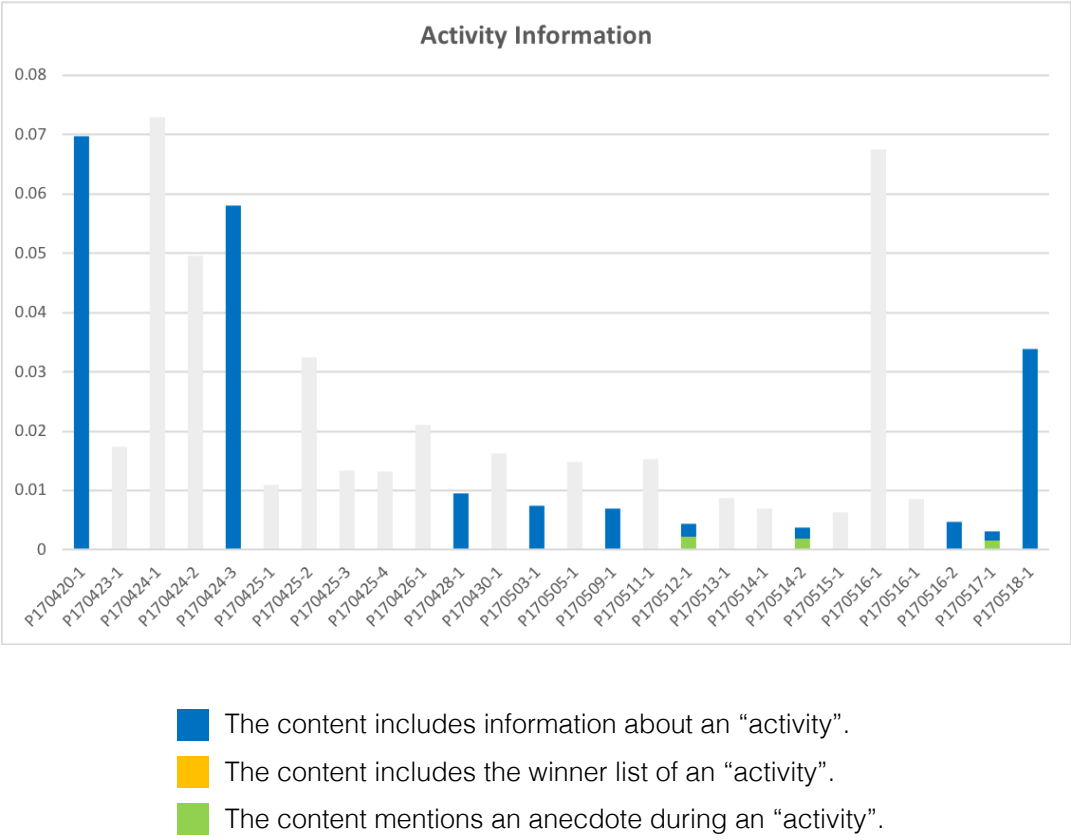

Figure 9: Activity Information Visualisation

Assumption:

If the content includes more activity information tags, it will lead to a higher engagement rate with the post.

Result:

According to the visualisation *(See Figure 9)*, the posts with more tags (presents as more colours) have worse engagement rate than those have only one or without tags.

Topic 3: Interactivity

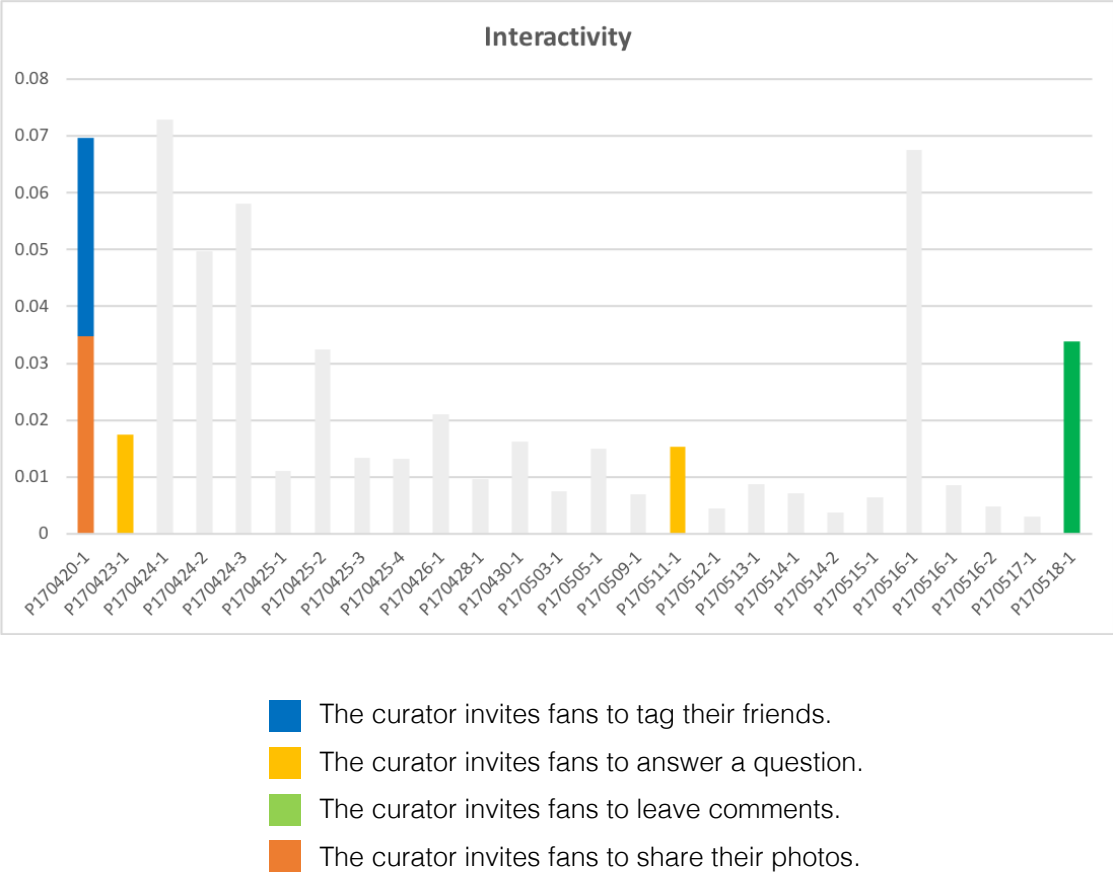

Figure 10: Interactivity Visualisation

Assumption:

When a post has more interactivity tags, it will lead to a better engagement rate.

Result:

According to the visualisation *(See Figure 10)*, the posts with more tags (presents as more colours) have better engagement rate than those have only one or without tags.

Topic 4: Exhibition Theme - Ghibli Animation

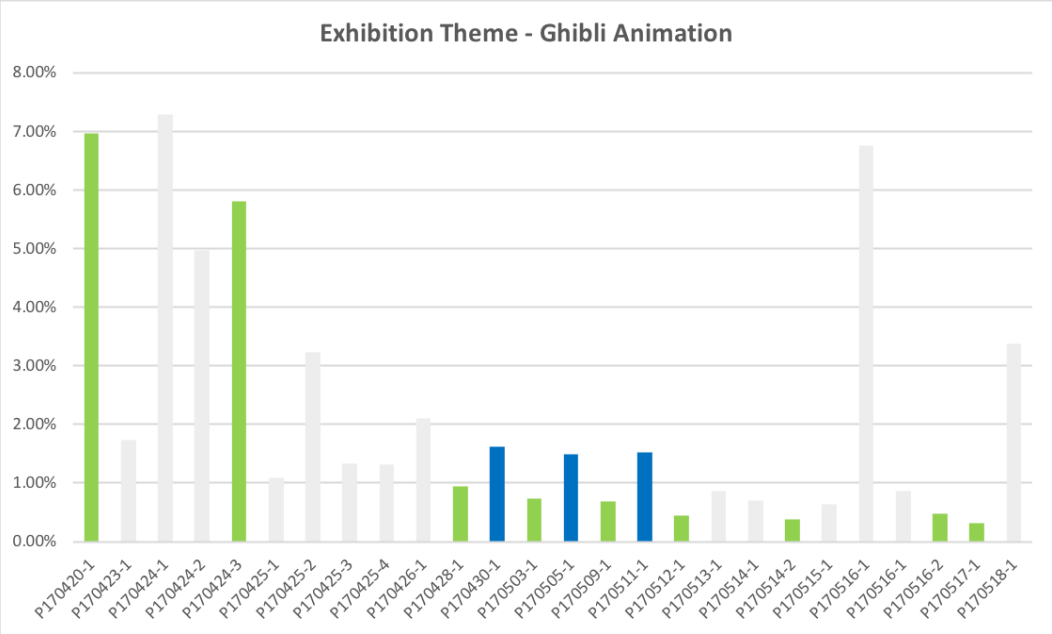

Figure 11: Exhibition Theme - Ghibli Animation Visualisation

Assumption:

1. *Content mentioning the characters or scenes from these classic animations will attract people to read it.*
2. *If the content mentions elements related to 'My Neighbour Totoro', it will lead to the highest engagement rate with the post compared with other animations.*

Result:

1. According to the visualisation *(See Figure 11),* the engagement rates of the posts mentioning elements from the animation (bars with colours) do not have notable difference compared with other posts.
2. According to the visualisation *(See Figure 11)*, the posts include elements of *"My Neighbour Totoro"* (coloured in blue) have less post engagement rates than the posts include elements of *"Ponyo"* (coloured in green). The reason might be that there was an activity *"I met Ponyo at National Science and Technology Museum(NSTM)"* taking place during this period; therefore, people cared more about the posts related to "Ponyo".

Topic 5: Text Types

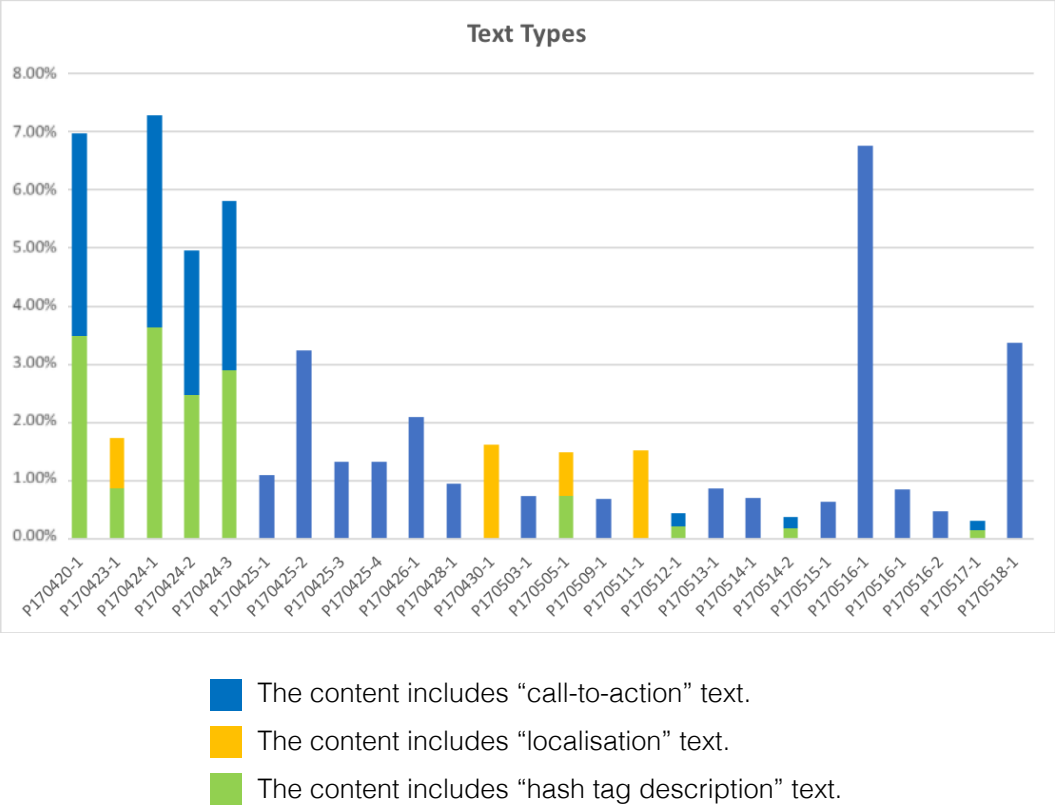

Figure 12: Text Types Visualisation

Assumption:

If the content includes more tags under categorised text types, it will lead to a better engagement rate with the post.

Result:

According to the visualisation *(See Figure 12)*, the posts with more text type tags have better post engagement rates in general than those have only one or without tags. Besides, one of the posts include call-to-action text has the highest engagement rate.

3. Image Content Module Topics Visualisation

Similar to Text Content Module, the topics in Image Content Module will be visualised to histograms because it allows users to compare discrete values, which is a suitable type for visualising noncontinuous post engagement rates.

Topic 1: The Colour Scheme of the Image

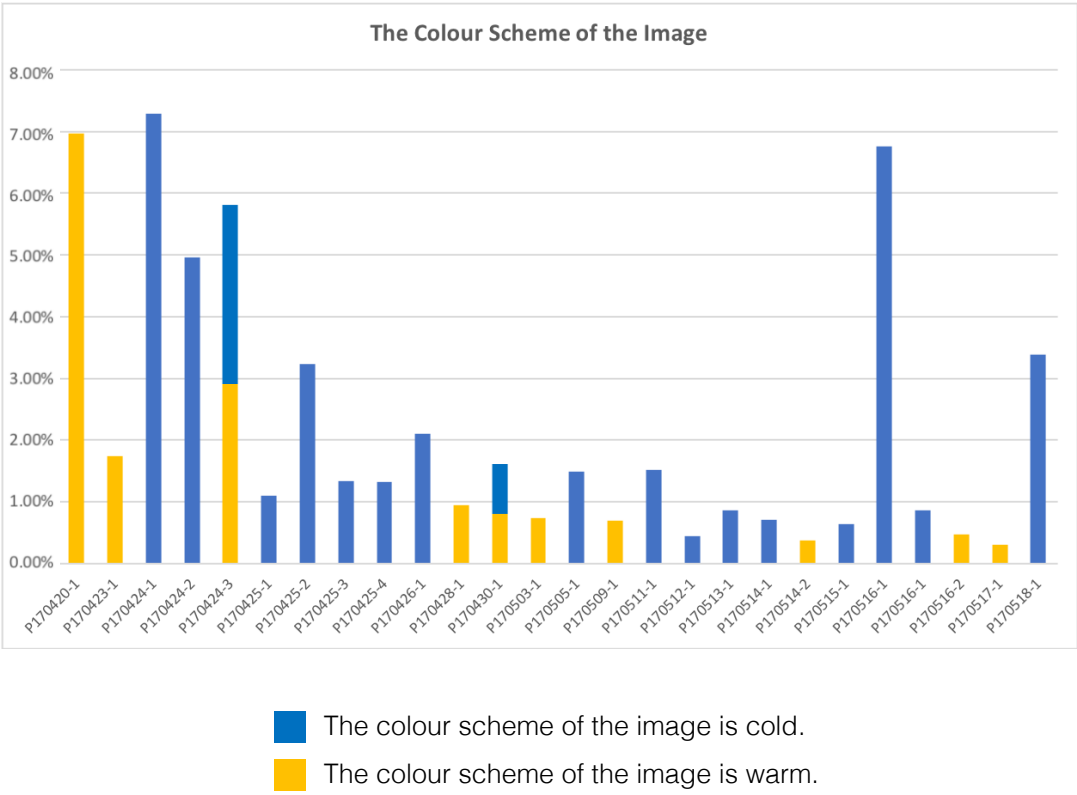

Figure 13: The Colour Scheme of the Image Visualisation

Assumption:

Images with a warm colour scheme will lead to a better engagement rate with the post.

Result:

According to the visualisation *(See Figure 13)*, the image with cold colour scheme have better post engagement rate in general.

Topic 2: People in the Image - Gender

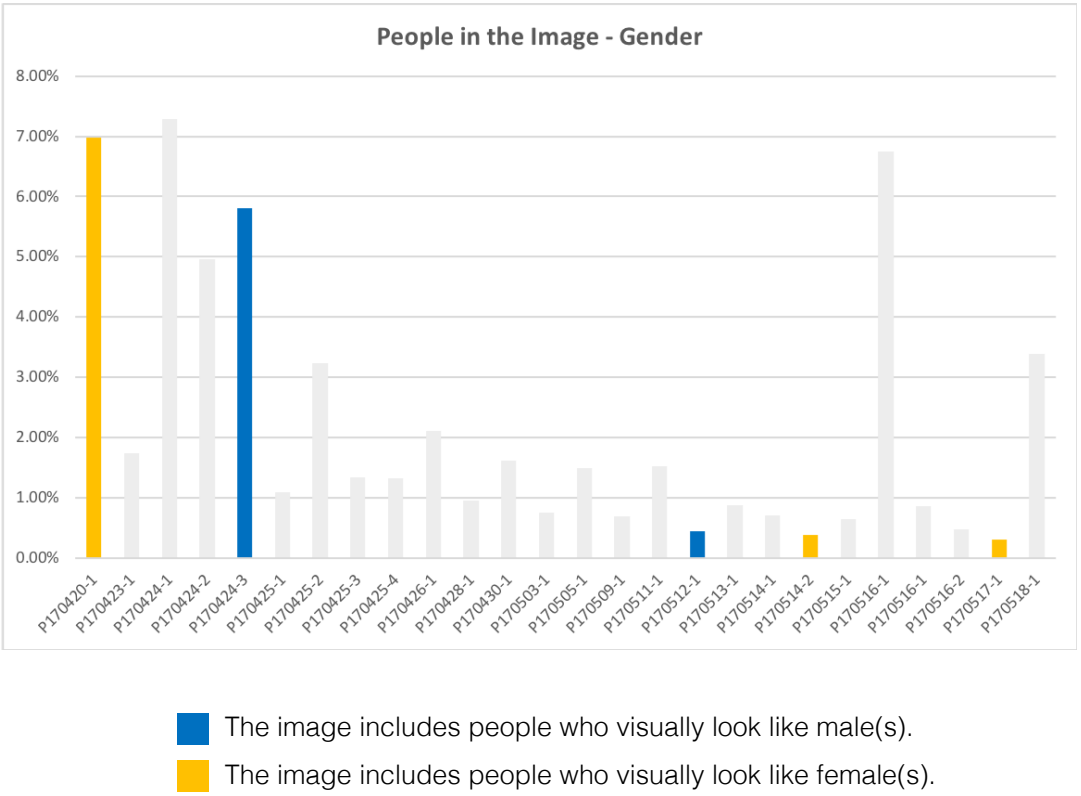

Figure 14: People in the Image - Gender Visualisation

Assumption:

1. *Images that include people will have a better engagement rate than images without people.*
2. *Among people-included images, those that include women will bring a better engagement rate with the post than those that include men.*

Result:

1. According to the visualisation *(See Figure 14)*, whether there are people in the image does not influence the post engagement rates much.
2. According to the visualisation *(See Figure 14)*, the gender of the people in the image does not influence the post engagement rates much.

Topic 3: People in the Image - Age

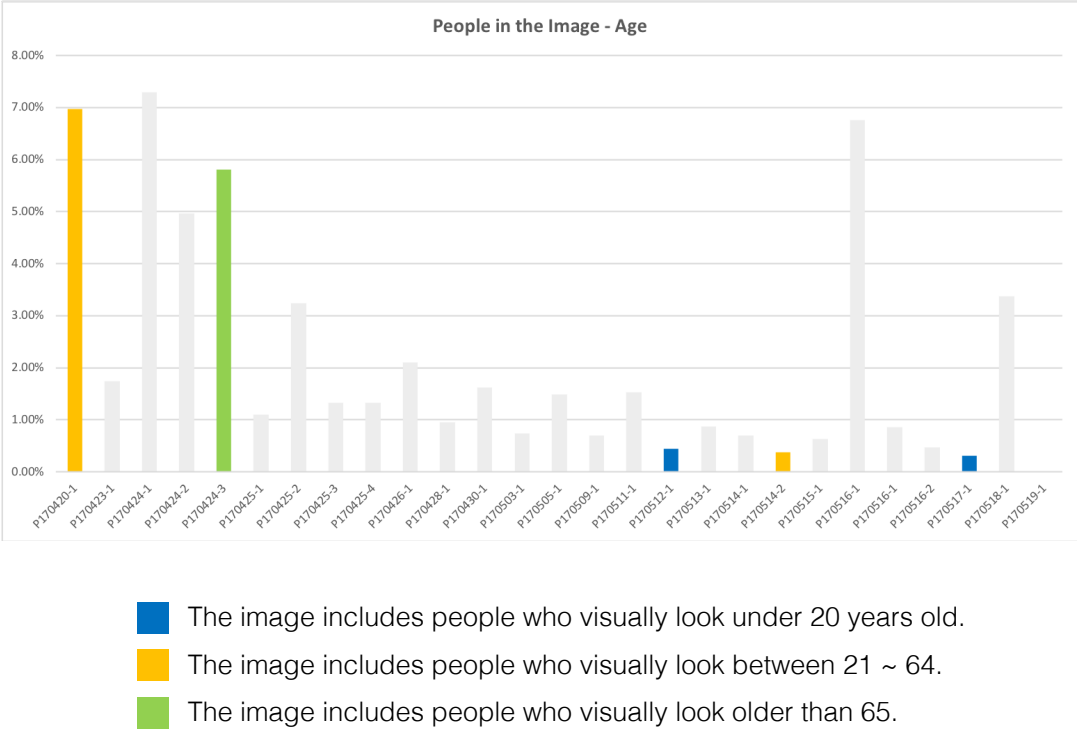

Figure 15: People in the Image - Age Visualisation

Assumption:

1. *Images include people have better engagement rate than images without people inside.*
2. *Posts that are tagged with people look between 21 to 64 may have better engagement rate than the other two age tagsImages that include people will have a better engagement rate than images without people.*

Result:

1. According to the visualisation *(See Figure 15)*, whether there are people in the image does not influence the post engagement rates much.
2. According to the visualisation *(See Figure 15)*, one post tagged with people between 21 to 64 (coloured in yellow) has the highest post engagement rate compared to other age groups. However, one of the least post engagement rate also includes in this age group.
3. Image that includes people over 65 years old has the second highest post engagement rate.

Topic 4: Ghibli Animation - Characters

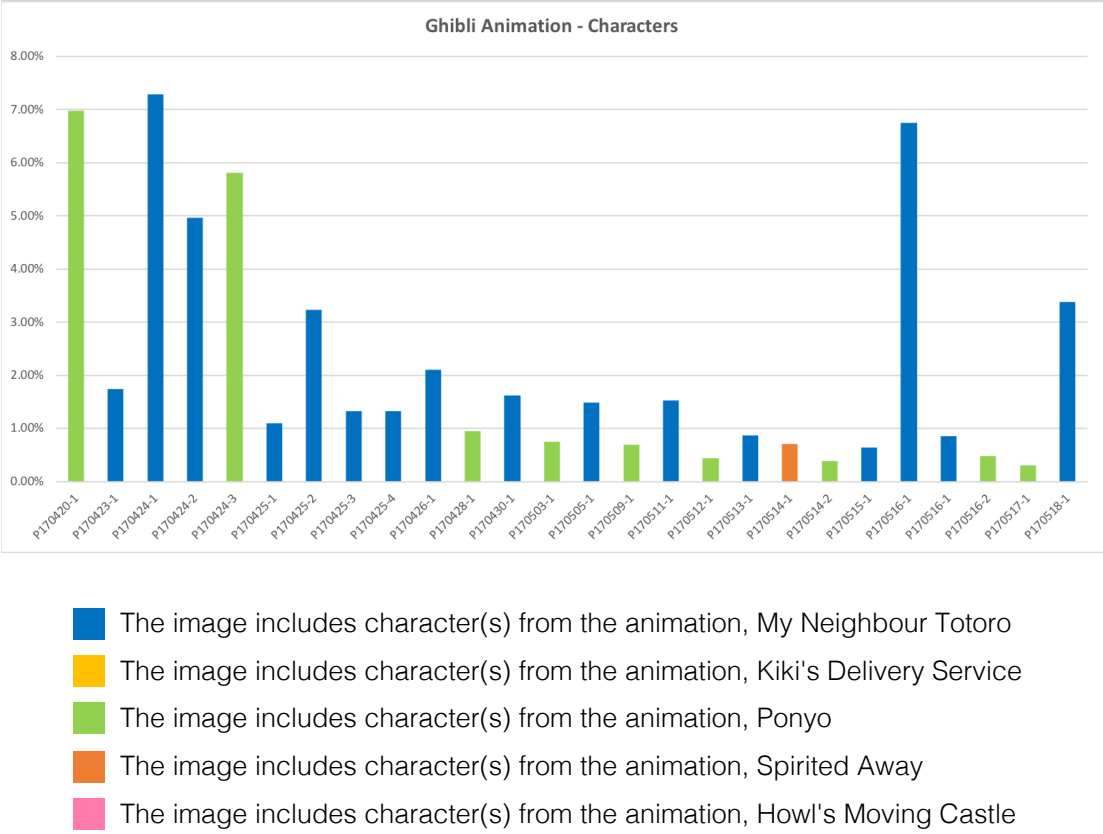

Figure 16: Ghibli Animation - Characters Visualisation

Assumption:

Among the five animations, the image includes character(s) from "My Neighbour Totoro" may bring the most engagement rate.

Result:

According to the visualisation *(See Figure 16)*, posts with character(s) from *"My Neighbour Totoro"* in the image (coloured in blue) have better engagement rate in general.

Topic 5: Ghibli Animation - Scenes

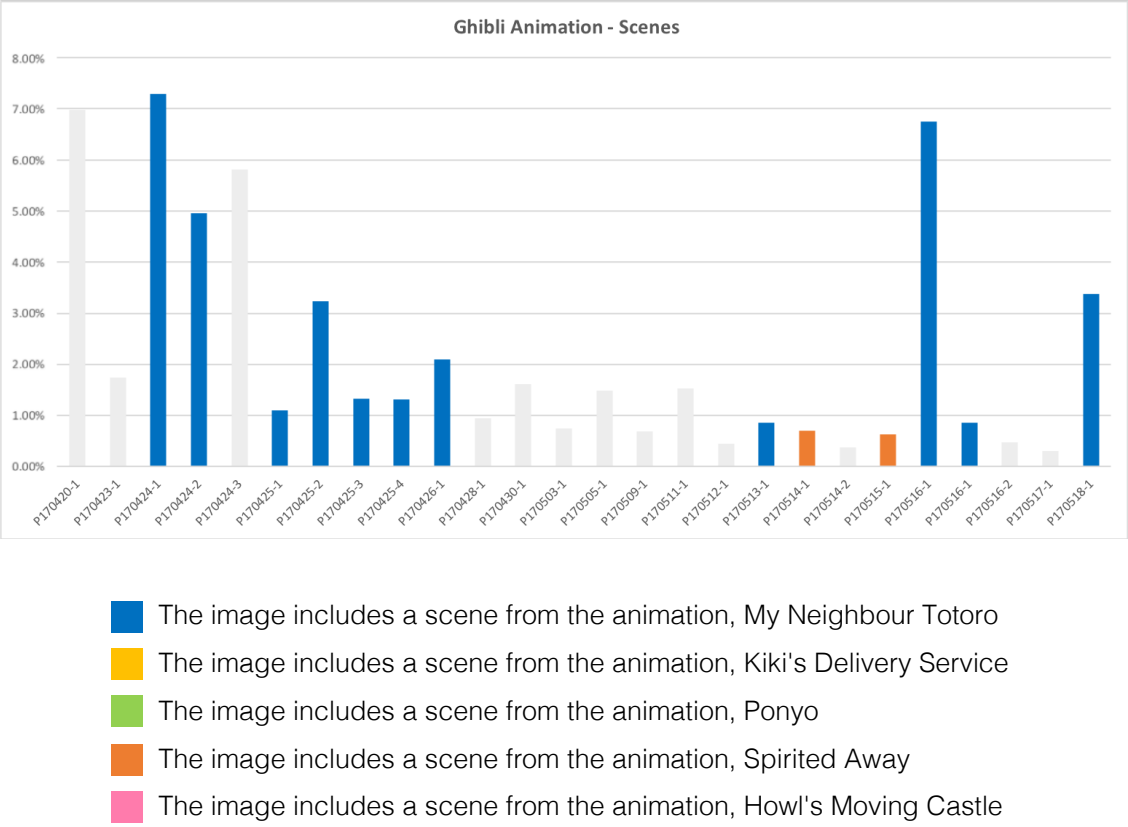

Figure 17: Ghibli Animation - Scenes Visualisation

Assumption:

Among the five animations, images that contain elements from My Neighbour Totoro will produce the highest engagement rate.

Result:

According to the visualisation *(See Figure 17)*, we see posts including an image with a scene from *My Neighbour Totoro* have better engagement rates than a scene from *Sprinted Away*.

Topic 6: Exhibition

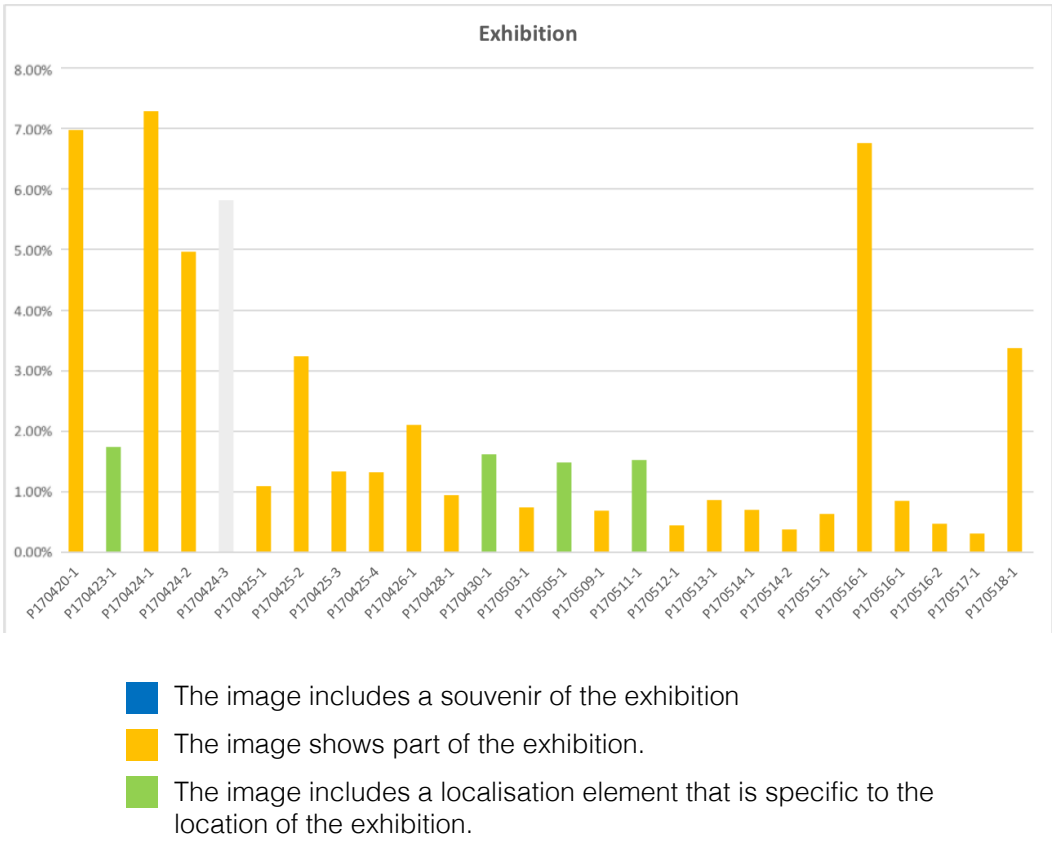

Figure 18: Exhibition Visualisation

Assumption:

1. *If the image includes a part of the exhibition, it may bring greater engagement rate to the post.*
2. *If the image is tagged as having a 'localisation' element, it may bring a post a better engagement rate.*

Result:

1. According to the visualisation *(See Figure 18)*, the posts with an image that show a part of the exhibition have better post engagement rate in general.
2. According to the visualisation *(See Figure 18)*, whether there are localisation elements in the image does not affect post engagement rates much.

Topic 7: Text in The Image

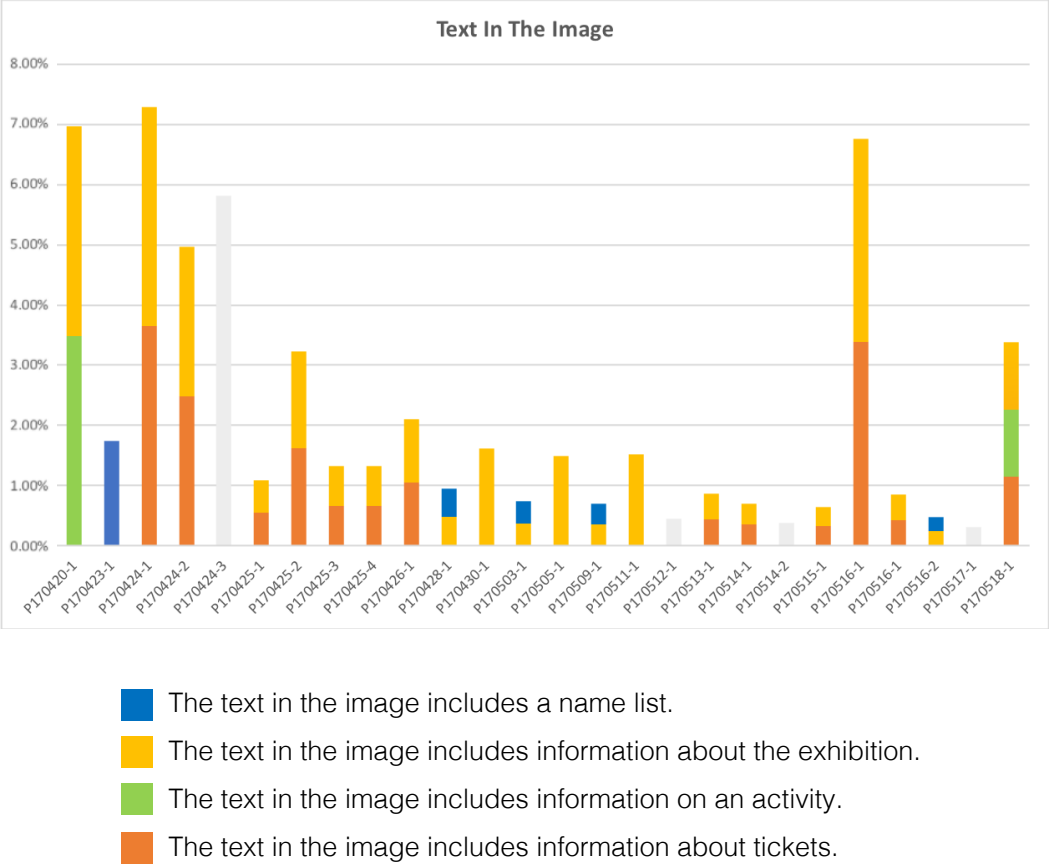

Figure 19: Text in the Image Visualisation

Assumption:

Among the types of text in an image, an image including the text of a name list will be the type that brings the highest engagement rate.

Result:

According to the visualisation *(See Figure 19),* posts with an image containing a name list (bars in blue) have the least post engagement rate. Instead, text about the exhibition and tickets in the image appear the most frequently and have the highest post engagement rate.

Chapter 5: Conclusion

This chapter evaluates how the research results meet the requirements of the objectives. In addition, a few suggestions for future works are addressed.

1. Evaluation

Now lets retrospect to the research objectives mentioned in chapter one:

1) *Find a way to analyse the relationship between the elements in post content and the engagement rates.*
2) *Apply visualisation to present this relationship in a clear, undistorted way.*

In the research, we used the 'Content Module' method to retrieve several topics that were worth exploring in the data source and labelled the posts with the tags under these topics to analyse what elements were included in the posts. Next, we used these elements as new datasets for applying visualisation. Visualisation types had been considered based on the features of these new datasets, and the implementation results showed that the chosen types had clearly illustrated the relationship between the elements in the post content and the engagement rates.

The assumptions made during the design process of 'Content Module' simulated people's expectations of the elements in the posts; however, the implementation results showed that the assumptions are not always correct. Some of the elements we assumed to be influential did not affect the engagement rates, or it was another element that led to the effect.

The discerning of the gap between people's assumptions and the actual results is what makes this research valuable. The existing visualisation tools for monitoring social media such as Facebook Page Insights and Tableau do not provide ways to analyse what elements are included within the post, while it is often these 'ingredients' in the content influencing the interactivity rate.

Although there are a few limitations mentioned in chapter one that might affect the results of the implementation, the research succeeds in achieving these two research objectives.

2. Future works

1) The connection between post engagements charts in different topics can be improved. One of the challenges encountered during the implementation process of the research was that, although we could see how the content related to the engagement rates in a single topic, the connections between topic to topic were ignored. However, the connections and the relationships between the topics should have been considered or will easily have misleading analysis. For example, images including Totoro were found to have good post engagement rates. If we only observe a single chart, we may conclude that it is because of the popularity of Totoro that caused the result. However, if we compare

it to the chart about textual tickets information, we will find those posts with good engagement rates include tickets information as well, which means the real influencer could be the ticket information instead of Totoro.

2) What can be improved in the visualisation is the connection between the daily engagement rates and the post engagement rates. In this research, the daily engagement rates and the post engagement rates were presented distinctively; however, if two rate types can integrate into one chart, it will facilitate users to distinguish the critical influencers of the interactivity.

3) During the implementation process, many steps are found standardised. It would be useful to create an application to handle these steps automatically.

4) The visualisation can be implemented by using web-based visualisation frameworks such as D3.js or Hicharts.js to create interactive functions.

5) The process can try using data from different social media platforms such as Twitter or Instagram to test if the process is applicable. The research process should be tailored gradually by testing different data sources to enhance reusability.

6) The research focuses only on photo-type posts. As the video type and the live type become more and more popular today, it will be valuable to design a set of Content Modules to analyse these two post types. To design the content modules for video or live types, a study of how to evaluate engagement rate for video type is required, because the way to evaluate the interactivity of video and live (such as how long the users play the video) is different from that of an image.

7) The research targets on observing the engagement rates, while there are still many topics related to social media waiting to be discussed to solve the ‘gaps’ mentioned in the introduction part.

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Appendices

Post Content Links

Date	Post ID	Permalink
2017-04-19	-	-
2017-04-20	P170420_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1702742186694282:0
2017-04-21	-	-
2017-04-22	-	-
2017-04-23	P170423_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1702734163361751:0
2017-04-24	P170424_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1705337463101421:0
2017-04-24	P170424_2	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1705338986434602:0
2017-04-24	P170424_3	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1705256669776167
2017-04-25	P170425_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1706145816353919
2017-04-25	P170425_2	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1705844993050668:0
2017-04-25	P170425_3	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1706177839684050:0
2017-04-25	P170425_4	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1706240296344471
2017-04-26	P170426_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1706558672979300
2017-04-27	-	-
2017-04-28	P170428_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1707154392919728:0
2017-04-29	-	-
2017-04-30	P170430_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1702734880028346:0
2017-05-01	-	-
2017-05-02	-	-
2017-05-03	P170503_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1709818779319956:0
2017-05-04	-	-
2017-05-05	P170505_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1705818249720009:0
2017-05-06	-	-

Date	Post ID	Permalink
2017-05-07	-	-
2017-05-08	-	-
2017-05-09	P170509_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1712033275765173:0
2017-05-10	-	-
2017-05-11	P170511_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1705816679720166:0
2017-05-12	P170512_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1712486165719884
2017-05-13	P170513_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1713938112241356
2017-05-14	P170514_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1714300745538426
2017-05-14	P170514_2	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1712487752386392
2017-05-15	P170515_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1714682655500235
2017-05-16	P170516_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1712501452385022:0
2017-05-16	P170516_2	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1715099728791861
2017-05-16	P170516_3	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1714745895493911:0
2017-05-17	P170517_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1712491475719353
2017-05-18	P170518_1	https://www.facebook.com/TheWorldofStudioGhiblisAnimation/posts/1712891199012714:0
2017-05-19	-	-

Daily Engagement Rate

Date	Lifetime Total Likes	Daily Page Engaged Users	Daily Engagement Rate	Count
19/04/2017	130884	3612	2.76%	0
20/04/2017	131341	3880	2.95%	1
21/04/2017	131555	2454	1.87%	0
22/04/2017	131766	1930	1.46%	0
23/04/2017	131999	2815	2.13%	1
24/04/2017	132768	17335	13.06%	3

Date	Lifetime Total Likes	Daily Page Engaged Users	Daily Engagement Rate	Count
25/04/2017	133114	9815	7.37%	4
26/04/2017	133242	4039	3.03%	1
27/04/2017	133366	1491	1.12%	0
28/04/2017	133461	1400	1.05%	1
29/04/2017	133559	1247	0.93%	0
30/04/2017	133642	1402	1.05%	1
01/05/2017	133725	1388	1.04%	0
02/05/2017	133834	1154	0.86%	0
03/05/2017	133904	1218	0.91%	1
04/05/2017	133977	819	0.61%	0
05/05/2017	134037	910	0.68%	1
06/05/2017	134097	1742	1.30%	0
07/05/2017	134159	679	0.51%	0
08/05/2017	134205	552	0.41%	0
09/05/2017	134267	857	0.64%	1
10/05/2017	134305	998	0.74%	0
11/05/2017	134374	1303	0.97%	1
12/05/2017	134465	2030	1.51%	1
13/05/2017	134509	1402	1.04%	1
14/05/2017	134535	1294	0.96%	2
15/05/2017	134590	1103	0.82%	1
16/05/2017	134600	1746	1.30%	3
17/05/2017	134630	2354	1.75%	1
18/05/2017	134693	2971	2.21%	1
19/05/2017	134748	2663	1.98%	0

Post Engagement Rate

Date	Lifetime Total Likes	Lifetime Engaged Users	Post Engagement Rate
19/04/2017	130884	-	0.00%
20/04/2017	131341	9157	6.97%
21/04/2017	131555	-	0.00%
22/04/2017	131766	-	0.00%
23/04/2017	131999	2291	1.74%
24/04/2017	132768	9679	7.29%
24/04/2017	132768	6589	4.96%
24/04/2017	132768	7712	5.81%
25/04/2017	133114	1456	1.09%
25/04/2017	133114	4307	3.24%
25/04/2017	133114	1770	1.33%
25/04/2017	133114	1758	1.32%
26/04/2017	133242	2796	2.10%
27/04/2017	133366	-	0.00%
28/04/2017	133461	1269	0.95%
29/04/2017	133559	-	0.00%
30/04/2017	133642	2161	1.62%
01/05/2017	133725	-	0.00%
02/05/2017	133834	-	0.00%
03/05/2017	133904	993	0.74%
04/05/2017	133977	-	0.00%
05/05/2017	134037	1990	1.48%
06/05/2017	134097	-	0.00%
07/05/2017	134159	-	0.00%
08/05/2017	134205	-	0.00%
09/05/2017	134267	931	0.69%
10/05/2017	134305	-	0.00%
11/05/2017	134374	2046	1.52%
12/05/2017	134465	596	0.44%

Date	Lifetime Total Likes	Lifetime Engaged Users	Post Engagement Rate
13/05/2017	134509	1164	0.87%
14/05/2017	134535	945	0.70%
14/05/2017	134535	509	0.38%
15/05/2017	134590	857	0.64%
16/05/2017	134600	9091	6.75%
16/05/2017	134600	1152	0.86%
16/05/2017	134600	639	0.47%
17/05/2017	134630	414	0.31%
18/05/2017	134693	4551	3.38%
19/05/2017	134748	-	0.00%

Posts Mapping By Textual Content Module

Date	PostID	Post Engagement Rate	TP01	TP02	TP03	TP04	TP05
19/04/2017	P170419-1	0.00%	-	-	-	-	-
20/04/2017	P170420-1	6.97%	TP01-t01	TP02-t01	TP03-t01, TP03-t04	TP04-t03	TP05-t01, TP05-t03
21/04/2017	P170421-1	0.00%	-	-	-	-	-
22/04/2017	P170422-1	0.00%	-	-	-	-	-
23/04/2017	P170423-1	1.74%	TP01-t01	-	TP03-t02	-	TP05-t02, TP05-t03
24/04/2017	P170424-1	7.29%	TP01-t01, TP01-t02	-	-	-	TP05-t01, TP05-t03
24/04/2017	P170424-2	4.96%	TP01-t01, TP01-t02	-	-	-	TP05-t01, TP05-t03
24/04/2017	P170424-3	5.81%	TP01-t01	TP02-t01	-	TP04-t03	TP05-t01, TP05-t03
25/04/2017	P170425-1	1.09%	TP01-t02	-	-	-	TP05-t01
25/04/2017	P170425-2	3.24%	TP01-t01, TP01-t02	-	-	-	TP05-t01
25/04/2017	P170425-3	1.33%	TP01-t01, TP01-t02	-	-	-	TP05-t01
25/04/2017	P170425-4	1.32%	TP01-t02	-	-	-	TP05-t01

Date	PostID	Post Engagement Rate	TP01	TP02	TP03	TP04	TP05
26/04/2017	P170426-1	2.10%	TP01-t02	-	-	-	TP05-t01
27/04/2017	P170427-1	0.00%	-	-	-	-	-
28/04/2017	P170428-1	0.95%	TP01-t01	TP02-t01	-	TP04-t03	TP05-t01
29/04/2017	P170429-1	0.00%	-	-	-	-	-
30/04/2017	P170430-1	1.62%	-	-	-	TP04-t01	TP05-t02
01/05/2017	P170501-1	0.00%	-	-	-	-	-
02/05/2017	P170502-1	0.00%	-	-	-	-	-
03/05/2017	P170503-1	0.74%	TP01-t01	TP02-t01	-	TP04-t03	TP05-t01
04/05/2017	P170504-1	0.00%	-	-	-	-	-
05/05/2017	P170505-1	1.48%	TP01-t01, TP01-t02	-	-	TP04-t01	TP05-t02, TP05-t03
06/05/2017	P170506-1	0.00%	-	-	-	-	-
07/05/2017	P170507-1	0.00%	-	-	-	-	-
08/05/2017	P170508-1	0.00%	-	-	-	-	-
09/05/2017	P170509-1	0.69%	TP01-t01	TP02-t01	-	TP04-t03	TP05-t01
10/05/2017	P170510-1	0.00%	-	-	-	-	-
11/05/2017	P170511-1	1.52%	TP01-t01, TP01-t02	-	TP03-t02	TP04-t01	TP05-t02
12/05/2017	P170512-1	0.44%	TP01-t01	TP02-t01, TP02-t03	-	TP04-t03	TP05-t01, TP05-t03
13/05/2017	P170513-1	0.87%	TP01-t02	-	-	-	TP05-t01
14/05/2017	P170514-1	0.70%	TP01-t02	-	-	-	TP05-t01
14/05/2017	P170514-2	0.38%	TP01-t01	TP02-t01, TP02-t03	-	TP04-t03	TP05-t01, TP05-t03
15/05/2017	P170515-1	0.64%	TP01-t02	-	-	-	TP05-t01
16/05/2017	P170516-1	6.75%	TP01-t01, TP01-t02	-	-	-	TP05-t01
16/05/2017	P170516-1	0.86%	TP01-t02	-	-	-	TP05-t01
16/05/2017	P170516-2	0.47%	TP01-t01	TP02-t01	-	TP04-t03	TP05-t01
17/05/2017	P170517-1	0.31%	TP01-t01	TP02-t01, TP02-t03	-	TP04-t03	TP05-t01, TP05-t03
18/05/2017	P170518-1	3.38%	TP01-t01, TP01-t02	TP02-t01	TP03-t03	-	TP05-t01
19/05/2017	P170519-1	0.00%	-	-	-	-	-

Posts Mapping by Image Content Module

Date	PostID	Post Engagement Rate	TPM01	TPM02	TPM03	TPM04	TPM05	TPM06	TPM07
19/04/2017	P170419-1	0.00%	-	-	-	-	-	-	-
20/04/2017	P170420-1	6.97%	TPM01-t02	TPM02-t02	TPM03-t02	TPM04-t03	-	TPM06-t02	TPM07-t02, TPM07-t03
21/04/2017	P170421-1	0.00%	-	-	-	-	-	-	-
22/04/2017	P170422-1	0.00%	-	-	-	-	-	-	-
23/04/2017	P170423-1	1.74%	TPM01-t02	-	-	TPM04-t01	-	TPM06-t03	TPM07-t02
24/04/2017	P170424-1	7.29%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
24/04/2017	P170424-2	4.96%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
24/04/2017	P170424-3	5.81%	TPM01-t01, TPM01-t02	TPM02-t01	TPM03-t03	TPM04-t03	-	-	-
25/04/2017	P170425-1	1.09%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
25/04/2017	P170425-2	3.24%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
25/04/2017	P170425-3	1.33%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
25/04/2017	P170425-4	1.32%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
26/04/2017	P170426-1	2.10%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
27/04/2017	P170427-1	0.00%	-	-	-	-	-	-	-
28/04/2017	P170428-1	0.95%	TPM01-t02	-	-	TPM04-t03	-	TPM06-t02	TPM07-t01, TPM07-t02
29/04/2017	P170429-1	0.00%	-	-	-	-	-	-	-

Date	PostID	Post Engagement Rate	TPM01	TPM02	TPM03	TPM04	TPM05	TPM06	TPM07
30/04/2017	P170430-1	1.62%	TPM01-t01, TPM01-t02	-	-	TPM04-t01	-	TPM06-t03	TPM07-t02
01/05/2017	P170501-1	0.00%	-	-	-	-	-	-	-
02/05/2017	P170502-1	0.00%	-	-	-	-	-	-	-
03/05/2017	P170503-1	0.74%	TPM01-t02	-	-	TPM04-t03	-	TPM06-t02	TPM07-t01, TPM07-t02
04/05/2017	P170504-1	0.00%	-	-	-	-	-	-	-
05/05/2017	P170505-1	1.48%	TPM01-t01	-	-	TPM04-t01	-	TPM06-t03	TPM07-t02
06/05/2017	P170506-1	0.00%	-	-	-	-	-	-	-
07/05/2017	P170507-1	0.00%	-	-	-	-	-	-	-
08/05/2017	P170508-1	0.00%	-	-	-	-	-	-	-
09/05/2017	P170509-1	0.69%	TPM01-t02	-	-	TPM04-t03	-	TPM06-t02	TPM07-t01, TPM07-t02
10/05/2017	P170510-1	0.00%	-	-	-	-	-	-	-
11/05/2017	P170511-1	1.52%	TPM01-t01	-	-	TPM04-t01	-	TPM06-t03	TPM07-t02
12/05/2017	P170512-1	0.44%	TPM01-t01	TPM02-t01	TPM03-t01	TPM04-t03	-	TPM06-t02	-
13/05/2017	P170513-1	0.87%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
14/05/2017	P170514-1	0.70%	TPM01-t01	-	-	TPM04-t04	TPM05-t04	TPM06-t02	TPM07-t02, TPM07-t04
14/05/2017	P170514-2	0.38%	TPM01-t02	TPM02-t02	TPM03-t02	TPM04-t03		TPM06-t02	
15/05/2017	P170515-1	0.64%	TPM01-t01	-	-	TPM04-t04	TPM05-t04	TPM06-t02	TPM07-t02, TPM07-t04
16/05/2017	P170516-1	6.75%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04
16/05/2017	P170516-1	0.86%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t04

Date	PostID	Post Engagement Rate	TPM01	TPM02	TPM03	TPM04	TPM05	TPM06	TPM07
16/05/2017	P170516-2	0.47%	TPM01-t02	-	-	TPM04-t03	-	TPM06-t02	TPM07-t01, TPM07-t02
17/05/2017	P170517-1	0.31%	TPM01-t02	TPM02-t02	TPM03-t01	TPM04-t03	-	TPM06-t02	-
18/05/2017	P170518-1	3.38%	TPM01-t01	-	-	TPM04-t01	TPM05-t01	TPM06-t02	TPM07-t02, TPM07-t03, TPM07-t04
19/05/2017	P170519-1	0.00%	-	-	-	-	-	-	-