

# Impact Of Instagram Content On The Emotional Engagement Of Gen Z

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## Abstract

*This article study the role of content and emotion of Instagram posts that most capture the followers' attention, focusing especially on the Gen Z in Malaysia. Gen Z makes up to 26% of Malaysia's population and has unique characteristics that set them apart from the Millennials and Baby Boomers, particularly in the way they consume content and relate to brands. The analysis done contributes to advance the existing feed type in Instagram content by examining the users' engagement on video content virility of entertainment and breaking news feed among Gen Z. Instagram insights is used to extract data on the actual behavior of the "Kini Viral" page, which has 334000 followers. Two interaction metrics involved in this study which are likes and shares. Analysis done using Matlab shown that overall, Gen Z is more triggered by the entertainment content rather than the breaking news content. The followers tend to "like" the content posted, but not necessarily share the posts.*

**Keywords:** Gen-Z, Instagram, emotional engagement, social media.

## 1. INTRODUCTION

According to center of generational kinetics based in USA, Gen Z across America has dominated at 52% on Instagram platform. While in Malaysia, 65% of Gen Z frequented Instagram, which is a high percentage compared to other equivalent social media platform such as Facebook.

What makes a photo or a video goes viral on an Instagram platform? What type of content that engages most the Gen Z in Malaysia? These are the questions that are studied in this research work. Previous related research on virility were presented in [1]-[3].

Study presented in this paper aims to advance existing feed on Instagram content type by examining the effect of video content virility of entertainment and breaking news feed on the engagement behavior of Instagram across Gen Z. Such content and audience engagement study is significant to study the content dynamic and analyze the followers' reaction [4]. Behavioral study with respect to media content allows one to understand the emerging social interaction among the focused audience in a society [5], [6]. Result of social media analysis can be used for target advertising and digital marketing purposes, which are very effective in this modern era where everyone is connected virtually [7]-[11].

In Section II of this paper, research methodology is explained. Data is collected from

Instagram insights of an Instagram page known as “Kini Viral”, which has 334000 followers from different ages and gender. The overall user’s engagement is analyzed, and the focus group of Gen Z consumers is extracted using the Binomial Cumulative Distribution Function (CDF) [12]. K-means clustering [13] is then applied to observe the parametric trends of “likes” and “shares”. In [14] and [15], similar work in analyzing the followers’ engagement were performed using regression and Random Forest methods.

In Section III, result of this research work is presented and discussed. This paper ends with summary and the proposition of future works.

## 2. METHODOLOGY

### A. Research Framework

For this research work (cf. Fig. 1), we start by identifying the software to analyze the data set of Gen Z engagement. Matlab is used for its rich toolboxes. For the experiment setup, two type of media content are posted: entertainment content and breaking news content. Example of entertainment content is funny video, parody and pranks video. For breaking news content: flood, covid-19, etc. For each posted video, the audience engagements (views, like, share, commented) are collected for 7 days. Note that, these collected numbers are from all ages of followers. Thus, then next step is to segment these data set for Gen Z audience only. This is done using the Binomial CDF. The final step is to analyze the engagement trends (of Gen Z) for the parameters of “likes” and “shares” using graphs and K-Means clustering with respect to the media content type.

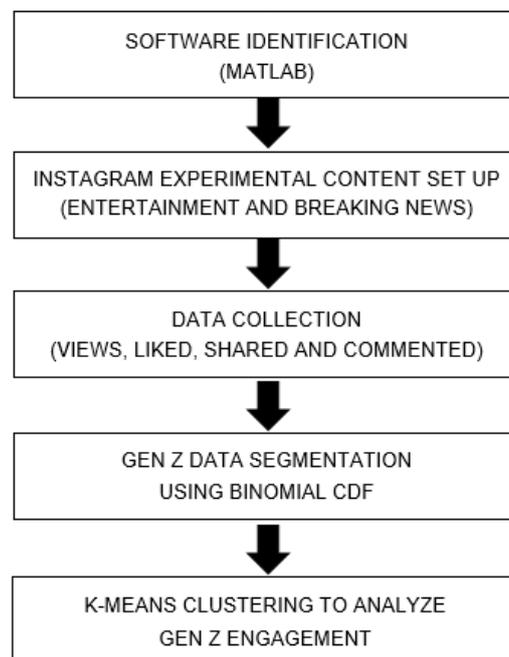


Figure 1: Research flow diagram

### B. The Instagram Insights

Instagram insights (Fig. 2) is a local analytics tool for business account that gives information on page content, page activities, and followers. Content shows all the posted media, while activity summarizes the page reached from unique accounts and the number of

page views (impressions). The third parameter is audience: where it shows the followers demographic consisting of gender, the most active online time in 24 hours, age groups and top location. Fig. 3 depicts the gender and active time charts of the audience. For each posted media content, it gives the number of likes, comments, shares, saved media, profile visits and reaches as shown in Fig. 4.

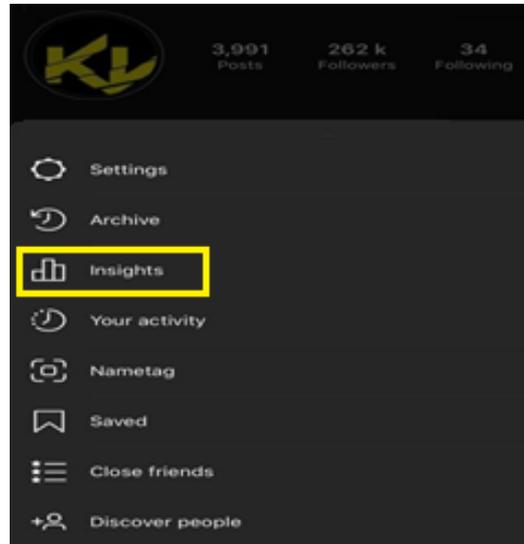


Figure 2: Instagram insights of *Kini Viral* page



Figure 3: Audience demographic of *Kini Viral* page, showing the gender and most active time in 24 hours.



Figure 4: Instagram insights analytic for a single media post

### C. Binomial CDF to Segment the Gen Z Audience

The experiment page “Kini Viral” has 334000 followers from different demographic. To obtain the overall percentage of Gen Z from the overall followers, we use the Binomial Cumulative Distribution Function (CDF). The Binomial CDF [12] allows to obtain the probability of random variable  $X$  observing less than or equal to  $k$  successes in  $n$  trials, with the probability  $p$  of success on a single trial given by:

$$F(k; n, p) = \Pr(X \leq k) = \sum_{i=0}^{\lfloor k \rfloor} \binom{n}{i} p^i (1 - p)^{n-i} \quad (1)$$

Thus referring to (1), in our case: the number of “likes” or “shares” of a post is represented by  $n$ ; and  $p$  is the probability of Gen Z among all of the followers. The Binomial CDF is calculated for each video posts, to estimate the percentage number of Gen Z among all the followers that liked or shared the posted video. Fig. 5 shows an example of the CDF obtained for one posting, where CDF equals to one gives us the estimation value (from axis-x) of number of Gen Z that liked or shared a post. In Fig. 5, we have about 1100 likes, applying the Binomial CDF gives the number of Gen Z that likes around 500 over the total likes.

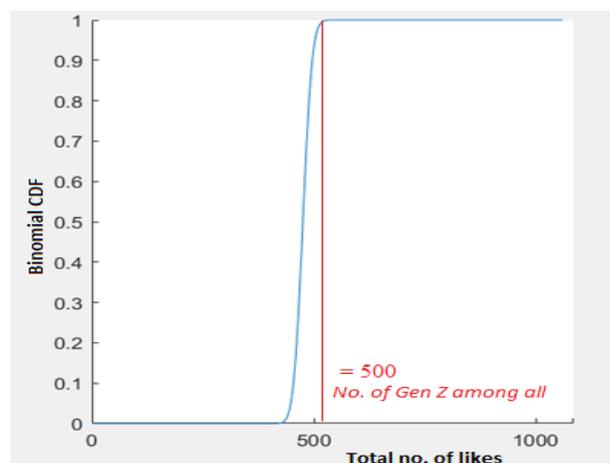


Figure 5: Result of the Binomial CDF that gives estimation number of Gen Z over all of the followers that liked or shared a content posted.

#### D. K-Means Clustering

The K-means clustering algorithm [13] uses a heuristic approach to find centroid seeds for a set of  $n$  observations ( $\mathbf{x}_1, \mathbf{x}_2, \dots, \mathbf{x}_n$ ). K-means improves the running time of Lloyd’s algorithm, and the quality of the final solution. Fig. 6 shows an example of K-means algorithm for  $K = 2$  clusters generated in Matlab using the collected dataset. K-means modelling segments the  $n$  observations into  $k$  sets of  $S$ , where the variance is minimized with respect to the mean  $\mu_i$  of data points in  $S_i$  such that:

$$\arg \min_S \sum_{i=1}^k \sum_{\mathbf{x} \in S_i} \|\mathbf{x} - \mu_i\|^2 \quad (2)$$

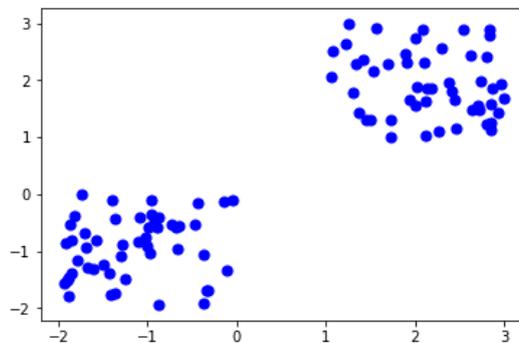


Figure 6: Example of K-Means clustering for  $K = 2$  in Matlab

### 3. RESULT AND DISCUSSION

For the experiment setup, two type of media content are posted: *entertainment* content and *breaking news* content. The data is collected after 7 days for each content posted, and then processed in Matlab to analyze the trends and extract Gen Z engagement behavior using Binomial CDF. Graphs are plotted to study the audience engagement trends. While K-means is applied to the data set to analyze the grouping behavior. The Gen Z engagement response is studied towards two type of content, which is entertainment and breaking news. The number of video posted for this experiment is 64 videos.

The data collected from each video posted is the number of “likes” and “shares” from all ages of audience. The trends for overall audience is analyzed as well. Then, by applying the Binomial CDF, the number of Gen Z for each parameter, and for each content posted is extracted.

Statistic and ratio of entertainment and breaking news content for all audience is shown in Fig. 7. For all the video posted, the number of likes are higher than the number of shares. Hence, when people liked a video, they do not necessarily share it.

Fig. 8 shows the data extracted for Gen Z only. As expected, *entertainment* has more score than *breaking news* for overall testing. Gen Z is more triggered to entertainment content that showing the consistency of reading score compare to breaking news content. The ratio graph means that if the number of entertainment equal to the number of breaking news, it is

equal to 1. Even though breaking news is not consistent, some content from breaking news get higher score, which proves the breaking news still can trigger the emotion towards some Gen Z.

K-means clustering (K=2) of Gen Z data for “likes” and “shares” on entertainment and breaking news is shown in Fig. 9. What we can see on clustering in the figure is that, the different data point between “likes” and “shares” for entertainment and breaking news content. Let say, take a look at data point observation =27. It can be concluded that this video received “unexpectedly high” engagement from the audience. Entertainment content can varies from prank video, funny, parody and animation videos. While breaking news content can varies from Covid-19, news, *Black Lives Matter* and so many more.

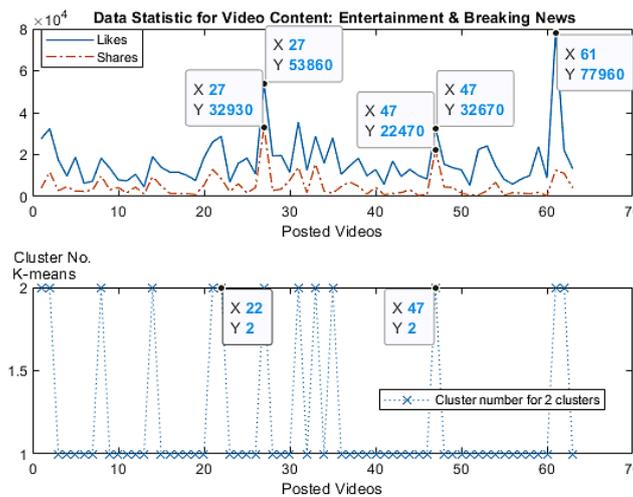


Figure 7: Data statistic of “likes” and “shares” from all audience, and result of K-Means clustering applied to differentiate “likes” and “shares”.

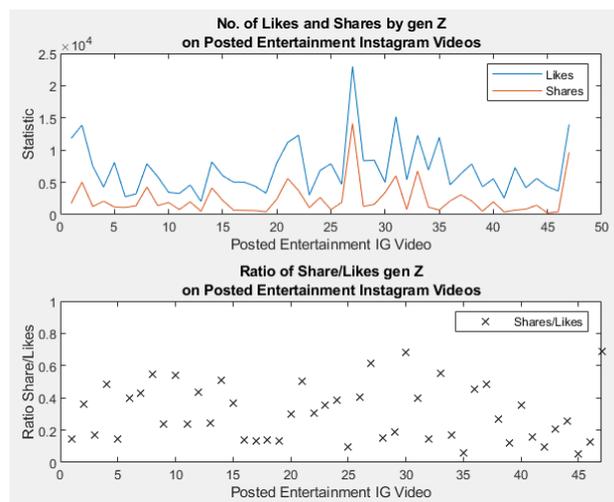


Figure 8: Gen Z engagement ratio

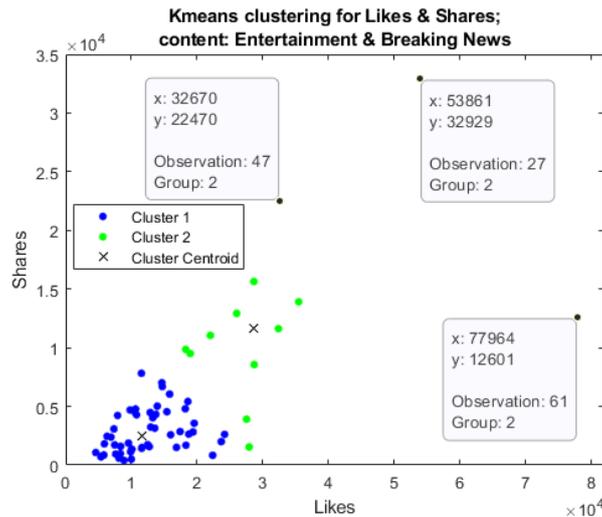


Figure 9: K-Means of “likes” and “shares” over two type of contents. Cluster 1 represents *breaking news*, and Cluster 2 represents *entertainment* videos.

#### 4. CONCLUSION AND FUTURE WORK

Trend and data analysis of an Instagram page called “Kini Viral” is studied in this work. The result has shown that Gen Z is more triggered by *entertainment* content than the *breaking news* content. The audience tends to “like” a post, but don’t necessarily share it each time. The engagement analysis can be used for marketing or advertising purposes. One of the limitations of this work is the number of Gen Z audience is estimated using Binomial CDF from the total number of likes and shares. The accuracy of the data analysis varies with the number of audience engagement per Instagram posting.

This work has plenty of rooms to be improved in the future. The quality of data set captured can be enhanced by implementing controlled optimization parameters. This way, it can filter and cluster automatically the Gen Z audience among all of the followers. Prediction method for media content type can also be implemented in this work, to gain high engagement for digital marketing purposes.

#### REFERENCES

- [1] J Berger and KL Milkman. What makes online content viral?. *Journal of Marketing Research*, 2012; **49**, 192-205.
- [2] Y Hu, L Manikonda and S Kambhampati. What we instagram: A first analysis of instagram photo content and user types. *In: Icwsn*. 2014.
- [3] S Wilde. *Viral marketing within social networking sites: the creation of an effective viral marketing campaign*. Diplomica Verlag, 2013.
- [4] E Ferrara, R Interdonato and A Tagarelli. Online popularity and topical interests through the lens of Instagram. *In: Proceedings of the 25th ACM conference on Hypertext and social media*. 2014, p. 22-34.
- [5] P De Meo, E Ferrara, F Abel, L Aroyo and G-J Houben. Analyzing user behavior across social sharing environments. *ACM Transactions on Intelligent Systems and Technology*, 2013; **5**.
- [6] TH Silva, PO Vaz de Melo, JM Almeida, J Salles and AA Loureiro. A comparison of foursquare and instagram to the study of city dynamics and urban social behavior. *In:*

- Proceedings of the 2nd SIGKDD International Workshop on Urban Computing. 2013, p 4.
- [7] A Sundararajan, F Provost, G Oestreicher-Singer and S Aral. Information in digital, economic, and social networks. *Information Systems Research*, 2013; **24**, 883-905.
  - [8] CY Lin, MD Godes and D Mayzlin. Using online conversations to study word-of-mouth communication, *Marketing Science*, 2004; **23**, 545-560.
  - [9] A Ha. 2015, An experiment: Instagram marketing techniques and their effectiveness.
  - [10] D Brown and S Fiorella. *Influence marketing: How to create, manage, and measure brand influencers in social media marketing*. Que Publishing, 2013.
  - [11] LX Teo, HK Leng and YX Phua. Marketing on Instagram. *International Journal of Sports Marketing and Sponsorship*, 2019.
  - [12] R Durrett. *Probability: Theory and Examples*. Vol 49. Cambridge university press, 2019.
  - [13] S Lloyd. Least squares quantization in PCM. *IEEE Transactions on Information Theory*, 1982; **28**, 129-137.
  - [14] N Segev, N Avigdor and E Avigdor. Measuring influence on Instagram: a network-oblivious approach. *In: The 41st International ACM SIGIR Conference on Research & Development in Information Retrieval*, 2018, p. 1009-1012.
  - [15] L Manikonda, Y Hu and S Kambhampati. Analyzing user activities, demographics, social network structure and user-generated content on Instagram. *arXiv*, 2014.