


# Do Universities Choose the Right Strategies for X Engagement? The Case of Six Universities in Thailand

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## Abstract

**Objective:** The purpose of this study is to understand how Thai public universities engage their stakeholders on X (the social media platform previously known as Twitter). This article answers the following research questions: 1) What are the X message strategies of six public universities? 2) Do they choose the most effective strategies to drive X engagement in terms of favorites and reposts?

**Method:** Data was automatically collected using an X analytic tool, and the potential variables were extracted semi-automatically using tools appropriate to text mining, sentiment analysis, word cloud, and so on. Posts from six universities in Thailand were investigated.

**Results:** The results show the keywords most often used by all universities and each university individually, the characteristics of posts at each university, and the influential factors embedded in posts employed by universities. The article suggests some revisions for each university's strategy and guides social media administrators of Thai universities.

**Conclusions:** Top keywords from six universities include day, university, university name, etc. Months a post remains accessible, message length, and media type (text) significantly impact favorites at more than half of all universities, while months a post remains accessible, message length, media type (text, video), and sentiment (neutral, negative) positively or negatively influence reposts at more than half of all universities.

**Implications:** New factors, which have rarely been examined in the past, such as nouns or keywords in posts, are also studied. The study helps to understand and confirm the importance of different strategies for different target audiences.

**Keywords:** *Twitter, X, university, communication, engagement, sentiment analysis, content strategy*

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## Introduction

As the higher education institution (HEI) sector becomes increasingly competitive (Johnes, 2013), engaging stakeholders and maintaining a successful presence online is crucial for HEIs (Chauhan & Pillai, 2013; Condie et al., 2018; Mogaji et al., 2021; Yücel & Yücel, 2022). Social media have become essential tools by which HEIs can disseminate important information. More and more students use social media to receive information about universities and academic offers (Almurayh & Alahmadi, 2022; Bularca et al., 2022; Yücel & Yücel, 2022). In response, HEIs are expanding branding activities beyond traditional media to social media, making themselves more visible and accessible to stakeholders, particularly digital natives (Chauhan & Pillai, 2013; Condie et al., 2018; Falahah & Rosmala, 2012; Pringle & Fritz, 2019). Primary social media goals are information sharing, conversation, and relationship building. Among the most well-known social media platforms are Facebook and X (known until July of 2023 as Twitter; Alsufyan & Aloud, 2017; Falahah & Rosmala, 2012; Rennie, 2016).

Statistics reveal that, globally, almost all HEIs are actively involved in some type of social media marketing activities (Bélanger et al., 2014; Yücel & Yücel, 2022). The use of social media in higher education can vary from teaching purposes to communicating with a target audience (Chauhan & Pillai, 2013; Lewis & Rush, 2013; Ufuoma et al., 2022; Yücel & Yücel, 2022). Effective communication through social media, however, particularly two-way communication with students or potential students, can be a challenge (Bularca et al., 2022). HEIs, therefore, should consider tailoring two-way communication to target audiences, not only to attract potential students but also to meet the needs of current students (Bélanger et al., 2014; Bularca et al., 2022; Voss & Kumar, 2013). Since the use of social media by stakeholders is voluntary, identifying strategies to attract followers and engage with stakeholders is essential to success (Almurayh & Alahmadi, 2022; Mogaji, 2019; Palmer, 2013; Yücel & Yücel, 2022).

X is a platform of interest since it has been extensively adopted by HEIs (Almurayh & Alahmadi, 2022; Hamzah & Hidayatullah, 2018; Veletsianos et al., 2017). Chauhan and Pillai (2013) noted that leading business schools had strong communities on Facebook and X, while Bularca et al. (2022) indicated that several institutions are more active on X than on Facebook. X can be used for communications, news, events, public relations, admissions, recruitment, and alumni relations (Bélanger et al., 2014; Hussey, 2011; Kimmons et al., 2017). It provides a convenient means for electronic word of mouth (eWOM) in marketer-generated content (Alboqami et al., 2015; Chu & Sung, 2015; Mucan & Özeltürkay, 2014; Weerawatnodom et al., 2018). Nevertheless, marketers and researchers still do not fully understand message features, tones, and content driving X information diffusion (Alboqami et al., 2015; Kordzadeh & Young, 2022; Sridevi et al., 2020; Veletsianos et al., 2017).

Universities have to be a part of social media in the spaces where their target audiences engage (Bélanger et al., 2014). Engaging and authentic content on social media can be monitored through low-cost analytic tools (Pringle & Fritz, 2019). A higher level of engagement is expected to lead to superior performance outcomes, including loyalty to an organization (Alsufyan & Aloud, 2017; Muñoz-Expósito et al., 2017). Although social media engagement is largely driven by content, the impact of message design and content on wider engagement is still not well understood (Menon et al., 2019). Identifying message strategies to engage with university stakeholders is also vital (Chauhan & Pillai, 2013; Mogaji et al., 2021; Muñoz-Expósito et al., 2017). Understanding how universities can best cultivate engagement, specifically on X, is crucial, as each social media platform plays a different role in developing relationships with brands (Hussey, 2011; Menon et al., 2019; Sridevi et al., 2020).

Social media impact data are still largely unexplored by HEI policymakers (Al Bashaireh et al., 2019; Pringle & Fritz, 2019). Almurayh and Alahmadi (2022) emphasized that every educational institution should develop social media communication policies in a manner that accords with the university's mission, goals, culture,

and community. However, existing literature involving the use of university social media content to improve stakeholder engagement is quite limited (Yücel & Yücel, 2022). There is also a strong need within the academic community to exploit digital trace data (netnography; Malik et al., 2019). Because not enough is known about the general patterns of official institutional X account usage (Veletsianos et al., 2017), institutions should reconsider how they use X and explore more meaningful and effective ways of doing so (Falahah & Rosmala, 2012; Kimmons et al., 2017).

This study seeks to answer the following research questions: 1) What are the X message strategies of six public universities in Thailand? 2) Do they choose the most effective strategies to drive X engagement in terms of favorites and reposts? To answer the questions, I identified the most often used keywords in university posts, examined the characteristics of university posts, identified the influence on engagement of post features, sentiment, and content, and analyzed whether each university employed beneficial message strategies to enhance X engagement.

## Hypothesis Development

In this study, I focus on message strategies in terms of post features, sentiments, and content.

### Post Features

Publishing regularly, using media such as photos and videos, and enhancing interactivity are suggested best practices for an X account (Hougaard, 2017). Previous research has shown that length (number of words and characters), interactivity (hashtags), timing and frequency (including day of the week), and vividness (videos and pictures) are the social media post characteristics that influence user engagement (Kordzadeh & Young, 2022). Length and hashtag are characteristics of marketer-generated content posted on X that may help ensure messages are reposted or favorited (Alboqami et al., 2015). Pictures, videos, and hashtags are contextual features published by marketers to gain customer interaction (Weerawatnodom et al., 2018). For informational messages, reposts are significantly increased by using more average words in a sentence and by using hashtags, whereas more hashtags significantly improve reposts for transformational and promotional messages (Sridevi et al., 2020).

### Message Length

Post length is a lexical feature that plays a significant role in spreading information. According to Nanath and Joy (2021), the number of words in a post significantly increases the repost count. The number of characters positively affected reposts, likes, and replies in both English and German samples (Ehrmann & Wabitsch, 2022).

### Posting Day

More than 70% of public universities post daily, whereas more than 80% of private universities do (Alsufyan & Aloud, 2017). Chauhan and Pillai (2013) proposed that posting on a particular day of the week has a significant effect on likes and comments. Day of the week, word count, and hashtags significantly positively affected likes and reposts in the study by McShane et al. (2021). Time of day also has an impact on engagement (Muñoz-Expósito et al., 2017).

### Hashtags

Hashtags are an X-specific feature that contribute to increased post-diffusion (Sridevi et al., 2020). It is one of the major types of interaction on X used to annotate the topic of posts and make them easier to find using this X search feature (Icha, 2015; Rantanen et al., 2019; Reyes-Menendez et al., 2020). Hashtags significantly predict the number of followers (Veletsianos et al., 2017) and increase interactions and content reach (Muñoz-Expósito et al., 2017). Hashtags allow messages to spread quickly among groups with shared interests and enable wider connections. They are more likely to generate increased public engagement, including reposts

(Zhang et al., 2022). The use of hashtags also influences reposting (Aleti et al., 2016). Users writing hashtags gain significantly in likes and reposts (Lahuerta-Otero et al., 2018).

### **Media Types**

Posts with photos and GIFs may generate the best engagement (Muñoz-Expósito et al., 2017). Texts, web links, images, videos, and combinations of these significantly influence the number of likes and comments (Chauhan & Pillai, 2013). Wang and McCarthy (2021) found in a study in Singapore that posts with videos lead to shares and comments, while posts with photos increase likes and emojis. Photo posts on Instagram receive fewer comments than video posts (Abbas et al., 2021). The positive association between the use of pictures and videos and the number of followers and reposts has been at least partially supported in the literature (Aleti et al., 2016). Text and photos significantly generate more behavioral engagement than text and videos. Consumer behavioral engagement includes liking and sharing brand posts (Tafesse & Wien, 2018). Video is positively associated with reposts (Weerawatnodom et al., 2018).

**H1:** Message length, posting day, hashtags, and media types predict post engagement.

### **Post Sentiment**

Posts can be characterized by sentiments and opinions on various topics, with reposts being considered the strongest indicator of engagement (Shakeel et al., 2020). Social media enables the market to analyze the sentiments or opinions of users by examining their feedback (Hamroun & Gouider, 2020). Sentiments were operationalized using attitudes, emotions, or opinions expressed in a piece of text. In the context of text analysis, sentiments are typically categorized as positive, negative, or neutral.

### **Sentiments**

Content in terms of sentiment is a social media post characteristic that influences user engagement, according to the literature (Kordzadeh & Young, 2022). Negative sentiment significantly affects reposts, likes, and replies in both English and German samples (Ehrmann & Wabitsch, 2022). Users writing with a strong sentiment (positive or negative) significantly receive likes and reposts in a study by Lahuerta-Otero et al. (2018). A company responds significantly more to a complaining post or a complimentary post than to a neutral post (Gunarathne et al., 2015). The number of comments on a post is significantly influenced by the emotion elicited and the tone of the post (Abbas et al., 2021). There was a significant difference between the mean value of the engagement of positive and negative posts in a study by Shakeel et al. (2020).

**H2:** Post sentiments predict post engagement.

### **Post Content**

Post content is important for social media marketing campaigns (Grover & Kar, 2020). Using interesting content is one of the best practices for an X account (Hougaard, 2017). General content themes include informational, conversational, emotional, and persuasive content; these are among the content characteristics driving user engagement (Kordzadeh & Young, 2022). Posts with informational, entertainment, and promotional content significantly increase likes, replies, and reposts (Menon et al., 2019). Product or service information and brand centrality significantly receive favorites and reposts, while readability and news about campaigns for customers significantly affect favorites (Alboqami et al., 2015). Brand centrality refers to whether a brand is the focus of user-generated content. For example, a post asking specifically about Lululemon displays brand centrality, while a video mentioning multiple brands with only a brief reference to Lululemon does not (Smith et al., 2012). Informational content creates more reposts (Menon et al., 2019). Action-inducing posts generate favorites and reposts more than emotion-evoking posts, which receive favorites and reposts more than information-sharing posts (Tafesse & Wien, 2018). Comments on a post are significantly increased by the presence of some content, such as promotional content (Abbas et al., 2021).

### Nouns in a Post

Message formulation and language (i.e., lexical diversity, exclamation marks, and question marks) are proposed to be associated with a higher level of total followers and reposts (Aleti et al., 2016). The number of stop words, pronouns, and verbs enhances reposts in informational messages, while reposts in interactional messages are significantly increased by using more adjectives and adverbs (Sridevi et al., 2020). Personal pronouns and past participle verbs also significantly raise reposts in promotional messages (Sridevi et al., 2020).

### Top University Keywords in a Post

University posts often focus on psychology-related content, including current research in the news, learned concepts and theories, department activities and events, and humor, such as psychology-related memes. Humorous posts and those with images typically generate more interactions, such as reposts and favorites (Condie et al., 2018). The examination of university accounts by Yücel and Yücel (2022) found that top content categories were promotion and information, ceremonies/celebrations and commemorations of special days and persons, organized scientific events, collaborations and projects, and visits made and visitors accepted. The main subjects and questions addressed in posts by the top ten most-followed state and foundation universities on X are primarily about the university (including information on what they produce, services provided, facilities, campus life, and staff), followed by admissions and related announcements, and various other topics, such as scientific data, activities of other institutions, and special messages (Yolcu, 2013). Veletsianos et al. (2017) identified that university's posts receiving high levels of attention often address the normal operations of the university, routine events on campus, university promotion, and support for causes or individuals.

**H3:** Total nouns in posts and top keywords in a post predict post engagement.

## Methodology

This study is part of a larger project involving the analysis of X usage in Thai universities. I explored six public universities listed in the top universities in uniRank (n.d.). Each university had an official presence on X and had posted more than 3,000 messages. An official X account was shown on the university's homepage. The official username of each university was used as the search term. User posts by each university were gathered using the analytic tool Vicinitas, which allowed up to 3,200 recent posts to be exported from the university's official accounts free of charge (Leverston, 2021). This tool was successfully used in previous studies (AlSubousi, 2021; Anton & Duffy, 2022; Dishman & Duffy, 2021; Kanade & Duffy, 2022; Keith, 2021; Kurniawan & Duffy, 2021; Leverston, 2021; Ruiz-Alba & Mancinas-Chávez, 2020). The collected data included posts, reposts, and replies, but only posts using the Thai (th) language were examined. Duplicate messages were removed from the Excel data file. The result was 13,929 posts for text mining and analysis using word clouds.

AI for Thai by NECTEC (n.d.) provides Thai language application program interface services for developers (Khruahong et al., 2020; Tapsai et al., 2019). It was applied to extract information for post sentiments (classifying a post as positive, negative, or neutral), nouns in a message, and top university keywords in a message. The Thai Named-Entity Recognition (TNER) service was applied to extract and classify named entities in posts for nouns in a message and top university keywords, while Social Sensing (SSENSE) was used to identify post sentiments. In text mining, *named entity* refers to real-world objects that can be denoted with proper names. TNER seeks to locate and classify these entities mentioned in unstructured text into predefined categories such as the names of persons, organizations, locations, expressions of times, quantities, monetary values, percentages, and others. Python was used to extract common nouns, proper/specific names, or foreign language nouns, which are outputs from the tool. These nouns were input into a word cloud to identify word frequency, providing an overview of the text content (Heimerl et al., 2014) to show the keywords used most often. The top 20 keywords used by each university and all universities were identified using word frequency. Then, these keywords were applied to count the top university keywords appearing in a message. A post from each university is the unit of analysis whereby the variables are computed for each post. Table 1 shows variables, measures, and their sources. These variables

represent strategies to be used in terms of post features (posting day, hashtags, media types.), sentiments (post sentiments), and content (total nouns in a post, top keywords in a post).

**Table 1.** *Variables, Measures, and Sources*

Variable	Measure/description/definition	Source
Months from posting to data collection	Time between post and data collection period	Calculated from UTC of university posts collected using Vicinitas
Message length	Total number of characters of a post	Extracted from Text of bank posts collected using Vicinitas
Posting day (weekday)	Dummy variable (1 if the post is posted on weekday; 0 otherwise. Posting on weekend is reference category.)	Extracted and calculated from Create At of university posts collected using Vicinitas. Create At contained Date and Time, such as Fri Jun 17 03:00:00 +0000 2022.
Hashtags	Total number of hashtags in a post	Hashtags included in post collected using Vicinitas
Media type (text)	Dummy variable (1 if the post uses text; 0 otherwise. Photo is reference category.)	Extracted from Media Type of university posts collected using Vicinitas
Media type (video)	Dummy variable (1 if the post uses video; 0 otherwise. Photo is reference category.)	Extracted from Media Type of university posts collected using Vicinitas
Sentiment (neutral)	Dummy variable (1 if the post's sentiment is neutral; 0 otherwise. Positive is reference category.)	Extracted from Text of university posts collected using Vicinitas and analyzed for sentiment using AI for Thai
Sentiment (negative)	Dummy variable (1 if the post's sentiment is negative; 0 otherwise. Positive is reference category.)	Extracted from Text of university posts collected using Vicinitas and analyzed for sentiment using AI for Thai
Nouns in a message	Total nouns used in a post	Extracted from Text of university posts collected using Vicinitas and analyzed for noun usage using AI for Thai
Top university keywords in a message	Total top 20 university keywords used in a post	Extracted from Text of university posts collected using Vicinitas, analyzed for nouns using AI for Thai, and matched with keywords via spreadsheet

After choosing only posts with at least one favorite and one repost and removing posts with animated gifs (graphic interchange format) because there were very few of them, 8,240 posts (university #1: 2468, #2: 1446, #3: 985, #4: 1496, #5: 1118, and #6: 727) were retained for descriptive statistics and hierarchical multiple regression analysis. The sample size of each university exceeded the minimum sample size (172 observations) calculated by GPower for 10 predictors, with an actual power of 0.95. Favorites and reposts, two dependent variables, were considered as X engagement (Alsufyan & Aloud, 2017; Shakeel et al., 2020; Watkins, 2017). Many researchers have used reposting as a main indicator of eWOM, while marking a post as favorite (FAV) represents positive feelings or agreement in response to the post (Alsufyan & Aloud, 2017; Weerawatnodom et al., 2018). Sometimes, a FAV could be a sign of eWOM (Alboqami et al., 2015). Since the longer a post was accessible could impact engagement, a control variable was added, *months from posting to data collection*, which was calculated from the date a post was published to the date the data was collected. Nine independent variables were message length, posting day (weekday), hashtags, media type (text), media type (video), sentiment (neutral), sentiment (negative), nouns in a message, and top university keywords in a message. Favorites, reposts, message length, posting day (0 = weekend), hashtags, and media type (0 = photo) were retrieved or derived from Vicinitas data. Sentiments (0 = positive) were evaluated by SSENSE, and total nouns and keywords in a message were processed using TNER, Python, and a word cloud tool, as described above. A spreadsheet was used to compute variables as needed.

## Results

### Descriptive Statistics

#### Keywords Used Most Often in University Posts

Table 2 presents the top keywords from the six universities contributing to 50 percent of all keywords. Several keywords used are specific to universities, such as the university name. Table 3 shows the top 20 keywords of all universities from which unique names are removed. The common 20 keywords of the 6 universities are: day, university, work, group, team, time, details, way, Thai, news, result, activity, Covid, time, sibling, sector, project, ceremony, picture, and subject. Table 3 also reveals the top 20 keywords for each university. These keywords are applied to calculate top university keywords in a message to examine their importance on post engagement for each university. Uncommon top 20 keywords generally are unique names or abbreviations relating to each university.

**Table 2.** Top Keywords from Six Universities Contributing to 50 Percent of All Keywords

day	details	Khon Kaen University	project	personnel	country	Nov.	building
university	Chiang Mai	news	ceremony	institution	academic	information	Capital
Chula	way	result	picture	type	tower	Innovations for	Mar.
work	CMU	activity	Lat Krabang	action	theater	Dr.	person
SWU	Khon Kaen	Covid	subject	nation	society	innovation	disease
group	Thai	time	cmu	Khon Kaen	center	course	floor
team	chula	sibling	reward	cunews	society	Facebook	degree
time	student	sector	register	one	tcas	June	Jan.

**Table 3.** Top 20 Keywords of All Universities and Each University

All	University#1	University#2	University#3	University#4	University#5	University#6
day	Chula	university	Khon Kaen	SWU	day	Lat Krabang
university	day	Chiang Mai	university	team	Ramkhamhaeng	Khon Kaen
work	details	CMU	Khon Kaen University	day	Ramkhamhaeng University	day
group	chula	day	work	student	sector	team
team	work	cmu	group	sibling	time	work
time	time	news	day	university	Mr.	album
details	way	work	Thai	Srinakharinwirot	register	Facebook
way	group	activity	ceremony	swu	group	Post
Thai	cunews	group	disciple	tcas	university	group
news	student	covid	teacher	work	work	institution
result	society	time	result	group	Ram	picture
activity	Innovations for	cmusdg	nation	time	way	Facebook
Covid	cucalendar	way	academic	picture	building	photo
time	Thai	information	news	time	Ramkhamhaeng University	kmitl
sibling	university	university	northeast	torpedo	news	Thai
sector	result	time	project	way	student	King Mongkut
project	Covid	details	kku	one	center	way
ceremony	subject	subject	reward	rights	tower	ceremony
picture	innovation	together	sector	result	Hua Mak	reward
subject	reward	mai	activity	activity	Bud	personnel

**Characteristics of Posts by Each University**

Table 4 shows that the universities rank in number of followers in this order: #1, #4, #2, #3, #5, and #6. Although university #1 has the greatest number of followers, university #4 gains both the maximum number of favorites and reposts per post. Comparing universities #2 and #3 and universities #5 and #6, the more followers they have, the more favorites and reposts they receive. University #5 also performs far better than other universities, except for university #1, in terms of reposts.

**Table 4.** Descriptive Statistics of Posts from Six Universities

Posts' details	University #1	University #2	University #3	University #4	University #5	University #6
Average of followers	244,724	12,747	11,817	58,883	5,958	5,545
Average of favorites	17	7	4	73	10	6
Average of reposts	39	11	7	164	45	10

For media type and sentiment used in a post, as shown in Table 5, four of six universities commonly embed photos in their posts, but two of them post mostly text. Half of them use primarily neutral tones in their posts, while the rest generally use positive sentiments.

**Table 5.** Media Types and Sentiments of Posts From Six Universities

Media type/sentiment	Number of posts (% of total posts for each university)					
	University #1	University #2	University #3	University #4	University #5	University #6
<b>Media type</b>						
Photo	936 (37.9%)	1391 (96.2%)	129 (13.1%)	1116 (74.6%)	650 (58.1%)	488 (67.1%)
Text	1454 (58.9%)	45 (3.1%)	853 (86.6%)	275 (18.4%)	462 (41.3%)	224 (30.8%)
Video	78 (3.2%)	10 (0.7%)	3 (0.3%)	105 (7%)	6 (0.5%)	15 (2.1%)
<b>Sentiment</b>						
Negative	297 (12%)	214 (14.8%)	77 (7.8%)	100 (6.7%)	147 (13.1%)	79 (10.9%)
Neutral	749 (30.3%)	647 (44.7%)	462 (46.9%)	599 (40%)	663 (59.3%)	302 (41.5%)
Positive	1422 (57.6%)	585 (40.5%)	446 (45.3%)	797 (53.3%)	308 (27.5%)	346 (47.6%)

Table 6 shows the mean and standard deviation for each variable. Posts from universities #3, #4, and #5 may cover longer periods than others. Message lengths, including the number of vowels, consonants, and tones, of posts from universities #1, #2, and #6 are slightly longer than others. All of them often post on weekdays. Universities #1 and #2, on average, use one hashtag, while universities #4 and #6 use two to three hashtags on average. Universities #3 and #5 rarely use hashtags. University #1 uses nouns in their posts most often. Others, such as universities #2, #4, and #6, make use of around 13 words (nouns) in posts. University #4 frequently includes the same keywords, particularly the keywords used most by the university in their posts. Universities #1 and #2 also repeatedly apply the same nouns, which are the popular keywords, in their posts.



**Table 6.** Descriptive Statistics of Analyzed Variables From Six Universities

Variable	University #1 (n = 2648)		University #2 (n = 1446)		University #3 (n = 985)	
	Mean	SD	Mean	SD	Mean	SD
Log favorites	.7800	.43348	.5671	.43008	.3620	.39763
Log reposts	.7699	.56996	.6403	.54553	.4461	.45725
Months from posting to data collection	23.53	12.970	26.48	21.989	53.09	20.439
Message length	248.26	43.476	204.48	73.352	140.88	53.820
Posting day (weekday)	.96	.184	.91	.287	.88	.322
Hashtags	1.12	1.061	1.11	2.054	.18	.720
Media type (text)	.59	.492	.03	.174	.87	.341
Media type (video)	.03	.175	.01	.083	.00	.055
Sentiment (neutral)	.30	.460	.45	.497	.47	.499
Sentiment (negative)	.12	.325	.15	.355	.08	.269
Nouns in a message	17.72	4.985	13.42	6.294	10.30	4.929
Top university keywords in a message	3.99	2.332	3.73	2.704	2.50	1.863
Variable	University #4 (n = 1496)		University #5 (n = 1118)		University #6 (n = 727)	
	Mean	SD	Mean	SD	Mean	SD
Log favorites	1.5709	.45306	.5901	.41823	.5390	.42324
Log reposts	1.8615	.56909	.8107	.55806	.6672	.50927
Months from posting to data collection	44.39	16.922	53.95	24.986	38.54	17.103
Message length	181.62	76.572	149.03	69.893	215.17	77.386
Posting day (weekday)	.76	.425	.87	.333	.87	.342
Hashtags	2.56	1.410	.31	.853	2.66	2.116
Media type (text)	.18	.387	.41	.493	.31	.462
Media type (video)	.07	.256	.01	.073	.02	.142
Sentiment (neutral)	.40	.490	.59	.491	.42	.493
Sentiment (negative)	.07	.250	.13	.338	.11	.311
Nouns in a message	13.09	6.348	8.87	5.393	13.57	6.206
Top university keywords in a message	5.30	2.564	2.33	1.977	3.05	2.055

## Findings

### Influential Tweet Post Features, Sentiment, or Content for Engagement

To examine post features, sentiment, and content affecting favorites and reposts, hierarchical regression procedures were performed. The assumptions of normality, linearity, no autocorrelation, and the absence of multicollinearity were checked. Since the distributions of favorites and reposts were non-normal, log transformations were applied to dependent variables. Two hierarchical multiple regression analyses were conducted for each dependent variable and each university's posts. In each hierarchical regression model, the control variable (months from posting to data collection) was entered into the regression model as step 1. Then, all predictor variables were input into the regression equation.

As shown in Tables 7 and 8, significant changes in  $R^2$  for step 2 in all models reveal significant predictor effects. All control variables significantly affect engagement, except for favorites for university #2. The results

investigating drivers of favorites show significant predictors for each university, which are:

- University #1, message length, posting day, and media types
- University #3, posting day and media types
- University #4, message length, hashtags, media types, sentiment, nouns in a message, and top university keywords
- University #5, message length, media types, and nouns in a message
- University #6, message length, hashtags, media types, and sentiment.

For reposts, influential factors for each university are:

- University #1, message length, posting day, media types, sentiment, and nouns in a message
- University #2, message length, media types, sentiment, and top university keywords in a message
- University #3, message length, posting day, media types, and sentiment
- University #4, message length, hashtags, media types, sentiment, and top university keywords in a message
- University #5, message length, media types, sentiment, and nouns in a message
- University #6, hashtags and media types.

**Table 7.** Hierarchical Regression Analysis for Variables Predicting Log Favorites

	Beta					
	University #1 (n = 2468)	University #2 (n = 1446)	University #3 (n = 985)	University #4 (n = 1496)	University #5 (n = 1118)	University #6 (n = 727)
<b>Step 1:</b>						
(Constant)						
Months from posting to data collection	.211***	-.318***	-.522***	-.112***	-.092**	-.341***
<b>Step 2:</b>						
(Constant)						
Months from posting to data collection	.196***	-.309***	-.216***	-.153***	-.030	-.104*
Message length	-.110***	.086	.082	-.144**	.254***	-.138*
Posting day (weekday)	-.108***	.007	-.086***	-.027	-.017	-.050
Hashtags	.004	.011	.038	.136***	.042	.210***
Media type (text)	-.172***	-.048	-.433***	-.158***	-.147***	-.297***
Media type (video)	-.085***	.045	.012	.131***	.047	.081*
Sentiment (neutral)	-.008	.049	.004	-.079**	-.014	-.024
Sentiment (negative)	.008	-.048	.030	.015	.039	-.074*
Nouns in a message	-.056	-.050	-.011	-.106*	-.209***	.040
Top university keywords in a message	-.036	-.052	-.017	.141***	.003	.020
R-squared for Step 1	.045	.101	.273	.013	.008	.116
R-squared for Step 2	.133	.115	.419	.103	.067	.241
R-squared change for Step 2	.089***	.014**	.146***	.090***	.059***	.125***

Note. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

**Table 8.** Hierarchical Regression Analysis for Variables Predicting Log Reposts

	Beta					
	University #1 (n = 2468)	University #2 (n = 1446)	University #3 (n = 985)	University #4 (n = 1496)	University #5 (n = 1118)	University #6 (n = 727)
<b>Step 1:</b>						
(Constant)						
Months from posting to data collection	.188***	.007	-.175***	.125***	.286***	-.270***
<b>Step 2:</b>						
(Constant)						
Months from posting to data collection	.182***	.020	.153***	.106***	.363***	-.087
Message length	-.078**	.126**	.118*	-.142**	.322***	-.115
Posting day (weekday)	-.108***	-.041	-.104***	.023	.007	-.017
Hashtags	-.026	-.048	.008	.103***	.013	.165**
Media type (text)	-.124***	-.057*	-.495***	-.250***	-.156***	-.171**
Media type (video)	-.105***	.027	-.024	.056*	.000	.087*
Sentiment (neutral)	.037	.126***	.046	-.055*	.068*	.024
Sentiment (negative)	.119***	.052	.081**	.075**	.117***	-.002
Nouns in a message	-.129***	-.076	-.098	-.057	-.230***	.052
Top university keywords in a message	-.006	-.090*	-.033	.151***	.003	.081
R-squared for Step 1	.035	.000	.031	.016	.082	.073
R-squared for Step 2	.151	.042	.237	.109	.164	.144
R-squared change for Step 2	.115***	.042***	.206***	.093***	.082***	.071***

Note. \*\*\*  $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$

## Discussion

### Does Each University Employ Beneficial Message Strategies?

For university #1, significant predictors of favorites are months a post remains accessible, message length (-), weekday (-), text (-), and video (-). Months a post remains accessible, message length (-), weekday (-), text (-), video (-), negative sentiment, and nouns in a message (-) are significant drivers of reposts. The longer posts remain available after publication, the more engagement they receive, but at University #1, the period of months a post remains accessible is shorter when compared to that of other universities. The university posts longer messages than others, on average. This is not a good strategy since message length lowers engagement. Normally, University #1 posts on weekdays more often than on weekends, and they should post more on weekends to improve engagement. Many posts by University #1 embed texts with positive tones. The study suggests that the university should use more photos and occasionally negative tones. University #1 frequently applies nouns in their posts, but nouns should be decreased to enhance eWOM.

For University #2, the months a post remains accessible (-) is the only significant driver of favorites, while message length, text (-), neutral sentiment, and top university keywords in a message (-) are significant causes of reposts. University #2 has posts that remain accessible for a shorter time compared to others. They also publish longer messages, which is a wise strategy. The university mainly uses photos, rarely uses texts, and posts in neutral tones, which are all deemed effective. However, they used more top university keywords in posts. These should be lowered since they decreased reposts.

For University #3, months a post remains accessible (-), weekday (-), and text (-) significantly trigger favorites, whereas months a post remains accessible (-), message length, weekday (-), text (-), and negative sentiment significantly cause reposts. The longer publication decreases engagement, which contrasts with other findings in this study. Compared to others, University #3 should adjust its message strategies to post longer posts and post more on weekends than on weekdays. The university embeds so many texts in posts that both favorites and reposts are lowered; posts with photos should be increased. Some negative tones could also be integrated into their posts since these increase reposts.

For University #4, months a post remains accessible (-), message length (-), hashtags, text (-), video, neutral sentiment (-), nouns in a message (-), and top university keywords in a message are catalysts for favorites, while months a post remains accessible, message length (-), hashtags, text (-), video, neutral tones (-), negative tones, and top university keywords in a message significantly influence reposts. University #4 creates posts of average length and uses many hashtags and photos compared to other universities. The suggested strategies for University #4 are to shorten messages, keep using hashtags, keep using photos more than texts, add more videos, keep presenting positive posts more than neutral ones, and use negative tones occasionally. University #4 uses fewer nouns in a message, which is effective, and they should pursue this strategy because nouns negatively affect favorites. Compared to others, University #4 applies many top university keywords, which is a good strategy since those keywords increase engagement significantly.

For University #5, the months a post remains accessible (-), message length, text (-), and nouns in a message (-) significantly increase favorites, whereas months a post remains accessible, message length, text (-), neutral and negative sentiments, and nouns in a message (-) significantly affect reposts. University #5 generally posts short messages, although longer posts gain more favorites and reposts. Hence, the university should increase its message length. University #5 commonly posts photos rather than text, which is a sound strategy. The university uses neutral and positive tones more than negative ones, so they should apply negative tones more often. University #5 employs fewer nouns in a message. This is a helpful strategy because nouns in a message negatively impact reposts.

For University #6, the months a post remains accessible (-), message length (-), hashtags, texts (-), videos, and negative sentiments (-) are significant signs of favorites, while months a post remains accessible (-), hashtags, texts (-), and video are significantly associated with reposts. Months a post remains accessible at University #6 are average, but they should be shortened since they lower engagement. University #6 utilizes a great number of hashtags per post, which is a suitable strategy to improve both favorites and reposts. University #6 uses more texts and fewer videos, which are not useful strategies. The university should decrease texts and increase video content in posts to enhance engagement. Generally, its posts are presented with positive tones, which is good because negative sentiments affect favorites.

## **Comparing and Contrasting With the Literature**

Yolcu's (2013) study showed that both state and foundation universities in Turkey generally use X to share information about the university and admissions, announcements and conditions to access events/services and resources, and other subjects. Universities in Turkey mainly post for the purposes of promotion and sharing information (Yücel & Yücel, 2022). According to Pringle and Fritz (2019), engaging students commonly focuses on research purposes, including the promotion of events and resources for students. However, some universities rarely engage students on topics of research, and other universities share important information about academic deadlines, careers after graduation, and awards. There are differences among those with whom universities choose to engage. The present study also shows different strategies that public universities use to engage stakeholders. Unlike in Pringle and Fritz's (2019) research, my study found that the most frequently used keywords of universities do not relate mainly to research. Bularca et al.'s (2022) study points out that 35.2% of total posts among universities in Europe include content related to the COVID-19 pandemic. The keyword Covid is also found to be one of the top university keywords in the present study.

In terms of post features, the study by Alboqami et al. (2015) reveals insignificant effects of message length on both favorites and reposts, as well as hashtags on reposts. McShane et al.'s (2021) work indicates the significant influences of hashtags and word count on likes and reposts. Nanath and Joy (2021) emphasize the significant influence of the number of words and hashtags on repost counts. My study shows both the significant and positive or negative impact of message length on engagement. However, only two of six cases support the significant influence of hashtags on favorites and reposts. According to the study by Sridevi et al. (2020), using more average words in a sentence significantly increases reposts in the informational message strategy but not in others. On the other hand, using hashtags significantly affects reposts in informational, transformational, and promotional message strategies but not in interactional message strategies. The day of the week negatively affects likes and reposts in the study by McShane et al. (2021). Weekday posting also decreases favorites and reposts in two universities in the present study. However, posting day does not significantly affect likes and comments in the study by Chauhan and Pillai (2013).

In terms of post format, Bularca et al. (2022) indicate that the most frequently used formats for 20 universities on Facebook are photos, links, and videos, and the most frequently used formats on Instagram of those universities are photos and videos, respectively. Texts and web links are the most common content types in Chauhan and Pillai's (2013) study. For X, in the current study, the six universities studied mainly apply photos or texts. However, insignificant effects of media types and post content on engagement could be explained by the study by Menon et al. (2019), who point out that the most recent brand posts gain more attention not because of their design and content but because of their appearance on the tops of pages. Vividness (e.g., images or videos) in their study, however, does not significantly affect likes, replies, and reposts on X. Photos win over texts in several cases in my study, conforming to the significant impact of pictures on favorites and reposts in the study by Alboqami et al. (2015) and the significant effect of pictures on likes, comments, and shares in the study by Kordzadeh and Young (2022). Videos and texts do not significantly predict engagement in their study. But for the present study, video media type (compared to photos) significantly increases both favorites and reposts of two universities, while texts significantly decrease engagement more than photos in almost all cases. Still, more videos compared to photos used by one university in this work decrease engagement, which is supported by the negative effect of videos on reposts in transformational messages in the study by Sridevi et al. (2020).

When it comes to sentiments, being entertaining significantly affects favorites but not reposts in Alboqami et al.'s (2015) study. Being positive significantly drives favorites more than other emotions in two of the six universities studied here, but negative or neutral tones are better than positive moods in enhancing eWOM in this study. All six universities in this research commonly have higher numbers of positive or neutral posts, which agrees with the study by Al Bashaireh et al. (2019), indicating universities primarily use positive or neutral posts, similar to findings by Kimmons et al. (2017) and Abdelrazeq et al. (2015). Interestingly, at four of the six universities, negative sentiments boost reposts more than positive ones do. This is supported by the study by Shakeel et al. (2020) showing that negative posts yield more user engagement than positive posts. The study by Vogler (2020) revealed that posts with negative or positive evaluations of universities do not generate more reactions than neutral ones. In the current research, however, positive posts about a university create engagement significantly more than neutral posts.

In the matter of post content, Sridevi et al. (2020) found that possessive pronouns decrease reposts in informational messages, while proper noun plurals decrease reposts in promotional messages, which could support the significant and negative impact of nouns in a message for two universities in the present study. In addition, all six universities have their names as top university keywords, which significantly positively affects engagement (favorites and reposts) at one university and significantly decreases reposts at another university. In the study by Alboqami et al. (2015), brand centrality significantly influences both favorites and reposts. The insignificant impact of nouns in a message and top university keywords in a message in some cases could be supported by the insignificant differences in liking of posts of different content posted by firms in the study by

Grover and Kar (2020), as well as the insignificant impact of content context (message theme) on likes and comments in the study by Chauhan and Pillai (2013). Besides, message formulation and language in terms of lexical diversity do not significantly affect reposts, nor is the use of question marks or exclamation marks in posts significantly associated with the number of followers and reposts (Aleti et al., 2016).

## Implications

### Implications for Research

Implications for research include the following.

1. This work seeks to examine universities' strategies in the use of X for stakeholder engagement. Several controllable factors in the marketer-generated content produced by the universities' social media administrators are explored. Manifest variables driving engagement at each university are identified and checked with the university's social media strategy.
2. This study confirms the importance of some post features and sentiments employed by other universities that are identified in past research. It also introduces new variables, such as nouns and keywords used in posts.
3. Various autonomous tools to collect and process data were employed, which can provide an example for future studies.

### Implications for Practices

According to Kordzadeh and Young (2022), key decisions organizations must make when developing social media posts are content topics, features (e.g., pictures, videos, etc.), and the best times to post. This article analyzes whether six universities in Thailand employ advantageous message strategies to enhance X engagement and makes recommendations for revising content strategies for each. In addition, the results of the study suggest the following basic guidelines for other universities in their use of X.

1. This study reveals common keywords used by six public universities in Thailand, which could be applied by others. Universities could also mention their names in posts to create brand awareness in their messages. Each university employs its own writing styles and keywords, which could positively affect engagement in some contexts. Thus, universities should examine whether these keywords are sufficient to draw audiences' attention.
2. This study shows differences and similarities in social media strategies of public universities using X. Other universities could investigate each strategy and mimic some communication styles from similar universities, such as the strategies of University #4, which gains the maximum engagement despite not having the greatest number of followers.
3. The results of message length are mixed. However, using around 140 vowels, consonants, and tones in posts or a bit more still shows a positive impact. Universities should also consider posting on weekends since posts on weekdays could decrease engagement. Using two or more hashtags is good for both favorites and reposts in two cases in the current study, so other universities should add hashtags. Although several universities in the study use photos or text most often, the findings suggest that universities should consider using features such as photos and videos more.
4. Universities typically employ positive or neutral feelings in their posts. However, universities could post with negative sentiments sometimes, since they could enhance eWOM.
5. All six universities use 8–17 nouns in a post on average, but more nouns in a post could decrease

stakeholders' engagement, and longer messages in some cases also could decrease engagement. Other universities should carefully choose which nouns to use. The repeat keywords that universities use could positively drive engagement, so universities should examine the influential keywords and keep embedding them in messages. Chauhan and Pillai (2013) stress that brands need to focus on their content strategy and identify the specific content type most likely to improve their audiences' interests. The process of this study could be replicated by universities that already have X data so that they can develop more suitable content strategies to engage their stakeholders.

6. From an ethical standpoint, universities should not boost engagement by spreading false information or misinformation. Although negative sentiments could increase engagement in some contexts, they should be applied ethically and with caution to avoid mental health impacts on audiences.

## Limitations and Future Research

The study was limited in that the data collected and used focuses only on posts originating from the official X accounts of universities and only includes posts written in Thai. However, these could be good representatives of marketer-generated content for public universities in Thailand. The Thai language is very complex, so the accuracy of the automated processing could be limited. Nevertheless, this study applies the AI for Thai platform mentioned by Tapsai et al. (2019) as a new hope for big success in Thai natural language processing. Future research should also analyze marketer-generated content together with user-generated content by university stakeholders or expand to universities' replies and reposts to develop a more complete picture of content strategy for higher education. This study investigates only some post features, sentiments, and content. Future research should add more variables, such as specific content categories, and examine some variables together, e.g., videos alongside negative feelings. The data of this study covers recent studies, which could be retrieved using the Vicinitas tool. Future work should collect data across a time frame of interest and compare it among different universities. This study focuses only on nouns in a message, thus other parts of speech, such as adverbs, adjectives, and verbs, could be examined further. A final limitation is the focus on only Thai public universities posting on X. Further comparative research could be conducted on public universities in Southeast Asia, as well as on other social media platforms to explore the broader social media strategies of HEIs.

## Availability of Data and Material

The datasets generated and/or analyzed during the current study are not publicly available due to their coming from public domain resources but are available from the corresponding author upon request.

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