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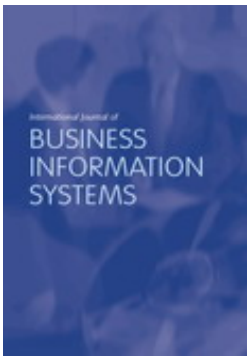

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Message characteristics of tweets and retweets from public and private bank users in Thailand

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Abstract: Analysing user-generated content is crucial for banks to develop their strategies. This study thus explores the message characteristics of user tweets and bank tweets being retweeted by users, differences between public and private banks, and impact on the electronic word-of-mouth (eWOM) behaviour of users. User tweets from seven banks and bank tweets from nine banks in Thailand are collected. Descriptive statistics, chi-square test, Mann-Whitney U, and hierarchical multiple regression are employed. There are differences in message content in terms of place-related, promotion-related, and responsiveness-related content mentioned between private banks' user tweets and public banks' user tweets. Hashtags and price-related content drive eWOM. The results reveal the difference between public-bank and private-bank users in their communications with banks and guide public and private banks' marketers in their social media strategies. This study offers insights into user perceptions of Thai banks through X (previously called Twitter).

Keywords: Twitter; content analysis; social sensing; marketing mix; service quality; banking industry; Thailand.

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1 Introduction

Banks play an essential role in the growth of a country, particularly in developing countries, by introducing different financial products to clients, matching savings and investment needs, offering credit or funds for businesses, managing financial transactions among parties, and providing liquidity for the country's economic development (Ahmad and Khan, 2021; Rootman and Cupp, 2016). Due to the intense competition in the banking market, the banking industry must be customer-oriented. Today, customers judge banking matters based on a bank's ability to help them solve problems related to trade and development. Therefore, a bank relies on customer satisfaction and retention to ensure its success in terms of market share and profitability (Rezapour and Peykani, 2017; Rootman and Cupp, 2016).

In Thailand, the banking sector also plays a significant role in the Thai economy since it provides domestic credit to the private sector (Prayoonrattana et al., 2020). According to the Bank of Thailand (2014), financial service providers can be classified as financial institutions (commercial banks, finance companies, and credit fanciers companies), foreign commercial bank representative offices, asset management companies, and specialised financial institutions (SFIs), and non-banks. This work covers commercial banks and government-owned banks, as in the study of Wonglimpiyarat (2016) but expands the coverage to SFIs. Although commercial banks and SFIs have different core business operations, recent technological and regulatory changes have induced a competitive environment in this industry (Prayoonrattana et al., 2020). Commercial banks that are not owned by the Thai Government are therefore classified as private banks, while a state-enterprise commercial bank and some banks in SFIs are categorised as public banks. Many banks use technologies such as mobile banking, customer relationship management platforms, and social media to improve the capacity and infrastructure of their systems (Sivaraks et al., 2010; Wonglimpiyarat, 2014). Exploring how a bank can create long-standing relationships with its customers through these technologies is thus needed (Wongsansukcharoen, 2022).

Social media (SM) is now a dominant communication channel between consumers and brands, particularly during COVID-19 (Agnihotri et al., 2021; Khanum et al., 2016; McShane et al., 2021). It could help banks reach potential customers and enhance customer satisfaction and retention as well as customer engagement (Afolabi et al., 2017; Ahmed et al., 2022; Al Tenaiji and Cader, 2010; Alamsyah and Indraswari, 2017; Cahyonoa et al., 2020; Khanum et al., 2016; Mavnacıoğlu, 2017; Rootman and Cupp, 2016). Consumer engagement mediates the link between digital marketing and purchase intention. It is important for businesses to create and build sustainable customer relationships (Otopah et al., 2024). Ensuring consumer-brand engagement is a strategic approach in the contemporary marketplace (Millambo et al., 2025). SM could be a forum for banks to get feedback, advertise their products/services, and build or manage social relationships with customers (Afolabi et al., 2017; Al Tenaiji and Cader, 2010; Alamsyah and Indraswari, 2017; Khanum et al., 2016; Kuchciak, 2013; Majekodunmi and Harris, 2016; Seebach et al., 2012; Shakeel et al., 2020). Social media marketing (SMM) activities of digital banks significantly increase brand loyalty, which later affects consumers' intention to continue using digital banking services (Nguyen, 2023). While not every bank is ready to apply social media due to resource constraints, it holds great potential for banks to get closer to customers, improve customer service, and further increase revenues, decrease costs, and enhance efficiencies (Ahmed et al., 2022; Icha,

2015; Khanum et al., 2016; Kuchciak, 2013; Majekodunmi and Harris, 2016; Murray et al., 2014; Nugroho et al., 2015; Shakeel et al., 2020).

Social media has become the preferred channel for customers to express thoughts and complaints (Afolabi et al., 2017; Shakeel et al., 2020). Experiences, opinions, and sentiments from customers may either positively or negatively impact companies' reputation, sales, and the attitudes, perceptions, and decisions of other stakeholders (Ahmed et al., 2022; Al Tenaiji and Cader, 2010; Farina et al., 2014; Hiqmah, 2021). Banks have to follow up with these inquiries, preferences, feedback, and experiences and respond to negative ones quickly, so customer satisfaction, loyalty, and positive word-of-mouth (WOM) could increase (Agnihotri et al., 2021; Ahmed et al., 2022; Al Tenaiji and Cader, 2010; Hafez, 2021; Hiqmah, 2021; Rootman and Cupp, 2016; Sumathi and Sheela, 2017). Since content, timing, and frequency of SM-based conversations among customers are outside companies' direct control. SM also makes customers submit complaints easily. Hence, companies must learn to shape complaints and discussions in a manner consistent with their mission and performance goals (Hiqmah, 2021; Icha, 2015; Nugroho et al., 2015). This community relationship management significantly affects customer engagement, while relationship marketing orientation increases customer engagement, trust, and loyalty respectively (Wongsansukcharoen, 2022).

X (previously called Twitter), launched in 2006, is one of the most widely used social media platforms that banks have established a presence on (Ahmed et al., 2022; Shakeel et al., 2020). X provides a unique platform for companies to understand customer needs and allow them freely interact with companies and other customers (Nugroho et al., 2015). A company could use X for two-way communication with individual customers, develop unique customer relationships, and improve customer loyalty (Al Tenaiji and Cader, 2010). SM such as X is confirmed to be an effective means of presenting banking product information in an engaging and easy-to-understand way (Alfandi et al., 2025). X incorporates functions relating to identity, groups, relationships, sharing, conversation, and reputation, just like other SM (Kuchciak, 2013). Tweets and retweets are considered the online equivalent of WOM communications (Shakeel et al., 2020). X is used by people to express their opinion and sentiments about various topics (Farina et al., 2014). According to Kuchciak (2013), it is the most-used SM in financial institutions, compared to Facebook and YouTube. Shakeel et al. (2020) indicate that the majority of B2B businesses use X as a digital marketing tool and open their market on X, whereas most small and medium enterprises (SMEs) believe that providing customer services on X is crucial.

Although more than 70% of the Thai population are active social media users (Wongsansukcharoen, 2022), there is still a gap between how customers prefer to use SM in the banking industry and the services provided by banks, leading to the need for SM strategies (Khanum et al., 2016). Most banks especially banks in emerging countries rarely develop a comprehensive SM strategy that is crucial and infrequently monitor customer voices on SM (Alamsyah and Indraswari, 2017; Kuchciak, 2013). However, the extent to which customers perceive and engage with banking communication practices remains understudied (Rijal, 2024). Literature research also points out that studies on perceptions and complaints through SM such as X are still limited and require further attention, especially in financial services (Agnihotri et al., 2021; Hiqmah, 2021). The intense competition between public and private banks has resulted in a greater need to identify the drivers of consumer satisfaction (Kaura, 2013). Although there have been a

few comparative studies about the efficiency of public and private banks in Thailand, the literature is scarce on SM strategy in recent years. Businesses need to assess the success of their content strategy and improve it periodically (Alfandi et al., 2025; Wirawan and Lasmi, 2024). Besides, most service quality studies focus on developed countries and have limited works pertaining to the commercial bank context (Hamzah et al., 2017).

Therefore, the purposes of this study are to explore WOM communications from both companies and customers and answer research questions consisting of:

RQ1 What are the message characteristics (features, content, and intention) of tweets from banks that are retweeted by users and tweets from users?

RQ2 What are the differences in message features, content, and intention between tweets by public and private bank customers?

RQ3 Which features or content of tweets by banks draw more customer engagement?

RQ4 Does bank type moderate the relationships in RQ3?

To see the dynamics of communications and address the research questions, this study identifies the message characteristics of company- and user-generated tweets and compares the characteristics of user tweets between public and private banks. This work also explores message features and content of bank tweets that trigger retweets by customers and are possibly modified by bank types. Message content is examined based on the concepts of marketing mix and service quality. This research adds understanding of public and private banks' message characteristics to engage customers as well as customers' perceptions, opinions, or complaints and suggests SM strategy for the banking industry in Thailand.

2 Related research

Seebach et al. (2012) analysed messages about a US bank collected from X. They applied automated sentiment analysis and manual content analysis to demonstrate how social media might challenge corporate reputation and to guide what companies can do to manage corporate reputation and sensing capabilities. Chikandiwa et al. (2013) examined social media adoption and implementation models in South African banks using in-depth interviews. SM is still at the early stage, whereas Facebook and X are the main tools used by banks for reactive customer services and advertising. Findings indicated the need to integrate SM with traditional media because of consumer needs. Alotaibi (2013) tried to understand the social network dynamics of X in the Saudi banking industry by analysing X messages. While tweets could be a source for promotion, conversation, and widespread news among bank clients, there were strong correlations between aggregated tweets. Murray et al. (2014) investigated the advent of SM and its deployment in bank-customer communications. They conducted a content analysis of tweets from financial service providers to clients and classified tweets as customer acquisition, engagement, and retention-oriented messages. Rootman and Cupp (2016) explored social media's influence on the performance of the South African banking industry. The results indicated significant relationships between SM benefits and trustworthy content and customer satisfaction and a significant relationship between customer satisfaction and retention. Majekodunmi and Harris (2016) examined attitudes and preferences for social

media banking among university students using the diffusion of innovation theory. Findings indicated that relative advantage, compatibility, and trialability significantly influenced the attitude towards social media banking. Khanum et al. (2016) explored the power of SM in general and how it can be used to improve products, services, and customer experiences. Sumathi and Sheela (2017) proposed a sentiment index to extract features to classify and analyse loan prices and risks through SM. Alamsyah and Indraswari (2017) conducted the sentiment analysis of X's conversations about Bank Mandiri, Bank Central Asia (BCA), and Bank Negara Indonesia (BNI) to classify their customers' opinions into positive, negative, or neutral classes, which is beneficial for business intelligence purpose to support decision-making. Afolabi et al. (2017) applied text mining to analyse the Facebook and X content of the five largest and leading banks in Nigeria to help the banking industry to understand how to perform SM competitive analysis and transform SM data into knowledge, which the foundation for decision making and internet marketing.

Weerawatnodom et al. (2017) identified features of marketer-generated content (MGC) tweets from banks that led to eWOM in terms of getting retweeted (RT) or favourited (FAV). A set of features that caused RT and FAV was identified by logistic regression, whereas two key features were specified by association rules. Rantanen et al. (2019) developed a multi-dimensional online-specific classification framework and machine learning model to explore online corporate reputation including six dimensions: quality, reliability, responsibility, successfulness, pleasantness, and innovativeness. The convolutional neural network (CNN) achieved an accuracy between 52.7% and 65.2% on real-world data. Cahyonoa et al. (2020) analysed the perception of SM (X) users of SM marketing attempts by Indonesian Islamic banks based on the 7Ps marketing mix. More than 500,000 tweets between 2007 and 2018 were collected. Findings showed that the 'people' factor received the most responses from SM users. Olaleye et al. (2020) collected data from X using X Scraper and analysed data using Textblob, Vader, and SentiStrength. Findings revealed a slight difference between polarities of customer tweets between the international authorisation banking group (eight banks) and the national authorisation group (ten banks). Shakeel et al. (2020) explored customer behaviour on X for five private commercial banks in India. Lexicon-based sentiment analysis, time-series plots, and T-test were applied for analysis. The results indicated unique customer behaviours, i.e., the significance of sentiments on engagement, patterns of tweets and timing, and impacts of banks' activities on sentiments. Hiqmah (2021) investigated complaint types by bank customers and response patterns by banks through banks' X accounts. Findings indicated that the complaints from bank customers were mainly about services and banks in Indonesia used almost the same patterns to respond to these complaints. Ahmed et al. (2022) explored the power of SM and how it can be used by banks to make customer experiences easy and responsive. A framework for SM analytics was proposed.

Hafez (2023) found that SMM efforts significantly enhance overall brand equity in the Bangladeshi banking sector by influencing consumer brand engagement and brand attitude, with brand trust moderating the relationship between SMM and engagement. Pramyswary (2023) found that PT Allo Bank Indonesia's marketing communication strategy effectively enhanced brand awareness among gen Z customers and highlighted the need for more repetitive and consistent actions to strengthen brand engagement. Constantine et al. (2024) found that SMM improves the performance and profitability of

commercial banks in Mwanza, Tanzania, by boosting customer engagement, satisfaction, and loyalty. Rijal (2024) found that demographic and experiential factors significantly influence banking communication awareness, indicating the need for tailored, transparent communication strategies to improve customer engagement and service quality. Wirawan and Lasmi (2024) demonstrated that a strategic Instagram content campaign significantly enhances customer interaction and reach and highlighted the effectiveness of visually engaging and interactive SMM in strengthening client relationships. Alkara (2024) analysed 173 Instagram posts from six banks and found that informative and entertaining content led to higher follower engagement. Masciandaro et al. (2024) examined how major central banks use social media to communicate monetary policy and influence public expectations and financial market behaviour. Ali et al. (2025) found that both user-generated and firm-created communications positively influence customers' behavioural intentions in the Egyptian banking sector. Overall brand equity and brand attitude also mediate these relationships. Alfandi et al. (2025) revealed that CIMB Niaga Bank's SMM raises brand recognition but faces challenges in content consistency and measuring the direct impacts of SMM.

3 Background and hypotheses

3.1 X: tweet and retweet

X is an online social networking and popular microblogging service enabling users to share 280-character messages called 'tweets', which do not count the enriched media such as photos, videos, quoted tweets, GIFs, and polls, as part of the character limitation (Alboqami et al., 2015; Boyd et al., 2010; Fitri et al., 2019; Garg and Rani, 2017; Nugroho et al., 2015; Weerawatnodom et al., 2017). Participants use X to communicate with individuals, groups, or the public (Boyd et al., 2010). Unlike other social networks, its main functions enhance spreading news, ideas, opinions, emotions, comments, complaints, or information instantly (Abunadi, 2015; Chu and Sung, 2015; Icha, 2015; Purohit et al., 2013; Rantanen et al., 2019; Reyes-Menendez et al., 2020; Sahu et al., 2015; Zulfikar et al., 2017). X has a prominent role in current information sharing, e.g., news, travels, and brands and empowers users to participate in message dissemination (Lahuerta-Otero et al., 2018; Stiefel and Vivès, 2021). The X ecosystem is extensive since X makes an API available for developers such as collecting many tweets (Boyd et al., 2010; Culotta and Cutler, 2016; Fitri et al., 2019). According to Kemp (2022), there are 54.50 million Internet users in Thailand in January 2022, whereas there are 11.45 million X users in Thailand in early 2022.

The number of interactions is an SM key indicator for banks (Sumathi and Sheela, 2017). In addition to the tweet, users can 'retweet', 'reply', and 'favourite' any initial tweets. 'Retweet' is a form of forwarding a tweet to others such as their followers. 'Reply' is a direct interaction with the tweet's sender, whereas 'favour' shows users' impressions or positive feelings by keeping a tweet in their profile for reference or others. The creation of 'hashtag', which a user can search, group, and write on a given topic using annotation (#) easily, enables collaboration effectiveness for any users to write and track a specific topic (Abunadi, 2015; Boyd et al., 2010; Farina et al., 2014; Mosley, 2012; Purohit et al., 2013; Rantanen et al., 2019; Weerawatnodom et al., 2017). Profile mention, tweet, retweet, comment, like, and hashtag are major types of X interactions

(Reyes-Menendez et al., 2020). Using X for marketing is necessary due to its growing number of users and marketing applications (Nugroho et al., 2015). Marketing reaction is also significantly positive regarding the launch of the X platform (Chahine and Malhotra, 2018). The impact on purchasing intention and brand awareness of customers from X is also positively confirmed (Weerawatnodom et al., 2017).

X makes WOM marketing easy (Mucan and Özeltürkay, 2014). The number of tweets about a brand, the valence of tweets, and the number of followers show brand awareness. The number of followers and replies reveal brand engagement, while the number of retweets represents WOM (Hoffman and Fodor, 2010). As X users directly receive messages from people in their connections, the impact of eWOM is same as traditional WOM (Kim et al., 2014). Brand-focused eWOM on X becomes an important source of marketing information that should receive attention from researchers and practitioners (Chu and Sung, 2015; Kim et al., 2014). By default, tweets are public and can be seen. X's properties and strengths make it a good platform for eWOM. A set of indicators representing eWOM includes retweets (RT) and favourites (FAV). Many researchers use RT as a main indicator of eWOM. Past research indicates that understanding the influential factors of eWOM success is an interesting issue (Alboqami et al., 2015; Kim et al., 2014; Weerawatnodom et al., 2017). Chu and Sung (2015) also point out that an increase in academic interest in X raises a question: what variables discriminate X brand followers' eWOM behaviours in terms of tweet and retweet patterns? Retweets have a significant and positive correlation with user participation on X (Grover and Kar, 2020). It is also an indicator of engagement (McShane et al., 2021; Shakeel et al., 2020). According to Boyd et al. (2010), people retweet because they want to amplify or spread tweets to new audiences, to entertain or inform a specific audience, to comment on someone's tweet and add new content, to make one's presence as a listener visible, to publicly agree with someone, to validate others' thoughts, to recognise or refer to less visible content, and to save tweets for future personal access, etc.

X enables firms such as banks to connect more deeply with consumers (Bohlin et al., 2018). It has been given more prominence by banks in their SM strategy compared to Facebook (Senadheera et al., 2011). Mainly using X for companies such as banks is important (Mucan and Özeltürkay, 2014). X is actively used by several banks to offer customer support and financial education/services. It leads among three social networks (Facebook, X, and YouTube) in playing a strong role in customer support. It also achieves the highest rank regarding the use of services on the three networks (Bohlin et al., 2018). All SM experts also point out that X and Facebook have the highest usage among banks. Facebook and X are more effective compared to other tools from the views of managers and experts. 80% of managers use these tools mainly for advertising, sales promotion, brand management, and customer service (Chikandiwa et al., 2013). In the study of Murray et al. (2014) in the banking context, X is applied mainly for customer engagement. Engagement such as RT in online brand communities could lead to brand trust and loyalty (Grover and Kar, 2020; Kim et al., 2014). Analysing customer behaviour on X could help bank marketers gain information on customer grievances, concerns, and other issues and improve their service quality (Shakeel et al., 2020). X data is a useful resource for promotion, conversation, and spreading the news among potential clients of Saudi Arabian banks since there is a strong correlation between X and awareness in the study of Alotaibi (2013).

3.2 Message characteristics

3.2.1 Message features

Marketers generate X content to interact with their current and potential customers. They can spread MGC through eWOM and track the RT and FAV counts to evaluate the results (Alboqami et al., 2015). The total number of RT by others indicates retweet influence. Others' willingness to retweet a message makes business communication reach further and shows a business's ability to create content with pass-along value. The total number of RTs, FAVs, and followers also show reciprocity, which means that individuals who follow and share others' content are willing to build a relationship (Aleti et al., 2016). According to Kuchciak (2013) and Senadheera et al. (2011), there are six SM service characteristics including:

a identity

b groups

c relationships

d sharing

e conversation

f reputation,

which are represented by a – account name and design with logo/colour, b – lists, c – following and followers, d/e – RT, tweets, mentions and f – amount of details on homepage contact information on X. According to Alboqami et al. (2015), contextual characteristics consisting of type, hyperlink, hashtag, mention, length, and readability are some of the characteristics of MGC posted on X. According to Weerawatnodom et al. (2017), contextual features include pictures, videos, hashtags, hyperlinks, and mentions. Post format, i.e., image, plain text, link, or video statistically relate to the number of likes, comments, and shares a post receives (Valerio et al., 2015). Posts including images and videos significantly generate higher levels of brand post popularity, as do posts created on weekdays and during business hours (Sabate et al., 2014). Characteristics of MGC content may make the post more likely to be retweeted or favourited (Alboqami et al., 2015). Mention is identifying another user in a user's tweet using an '@' symbol, which will be visible to the public (Mosley, 2012). Photos, videos, hashtags, and mentions show native platform behaviour, which means consumers are more likely to connect with and follow businesses and retweet their content when the content appears native on X (Aleti et al., 2016). However, different MGC tweets receive different RT and FAV. Hence, there should be some characteristics of tweets, which play a more crucial role and gain a greater reaction (Alboqami et al., 2015).

The study of Weerawatnodom et al. (2017) reveals that videos, social actions, and celebrations of important dates significantly positively predict RT, whereas hyperlinks, mentions, foreign language, discount or promotion information, and event news significantly negatively affect RT (Weerawatnodom et al., 2017). Several studies in the literature support the positive impact of mentions on message dissemination. Hashtags could help in quickly sorting and processing information and contribute to an increase in

tweet diffusion as evidenced by several studies (Lahuerta-Otero et al., 2018). They also indicate trending topics since a hashtag-driven topic is immediately popular at a particular time (Icha, 2015). Hashtags, word count, week of the year, and year significantly increase RT, whereas links, character count, day of the week, and month of the year significantly decrease RT (McShane et al., 2021). The study of Lahuerta-Otero et al. (2018) shows the significant effect of mentions and hashtags on getting RT and likes.

3.3 Message content

Creating an official account is important for marketers to interact and provide customers information or news relating to brands, products, services, or promotions and lead them to tweet about the company (Alboqami et al., 2015). Marketers should foster trust using engaging content (Constantine et al., 2024). Ensuring entertainment content, personalised communication, humour, and appealing content enhances consumer engagement (Millambo et al., 2025). More than 80% of managers in the study of Chikandiwa et al. (2013) use Facebook and X for advertising, sales promotion, brand management, and customer services, while 60% of them mainly use X for customer services and customer care. Banks can use SM to run targeted marketing campaigns, use data to gain customer insights, collect customer feedback to improve their products or services, generate leads from customer behaviour on SM, e.g., posts and likes, and increase their brand value by being exposed to a broader range of customers through SM (Khanum et al., 2016). The role of content is crucial (Gavilanes et al., 2018). Both frequency and content of tweets are important for SM campaigns since tweets directly impact sales. User reactions and online engagement also highly depend on tweet content (Grover and Kar, 2020).

3.3.1 Marketing mix

According to the study of Weerawatnodom et al. (2017), MGC could be classified into contextual, entertainment, informational, and brand-related, while informational tweets represent product and service information, information about the company, and promotion/discount information. According to Lee et al. (2015), directly informative content includes brand mention, deal, price comparison, product price, targeted message towards an audience segment, product availability, product location, and specific product mentioned. These direct informative contents significantly affect engagement in terms of comments and likes. Informative content also increases SM engagement when combined with brand-personality-related content (Lee et al., 2015). Informational value or message usefulness stimulates pass along behaviour on SN such as X, especially when combined with informational content (Yuki, 2015). Being informative could also increase audiences' favourable attitudes toward content (Stephen et al., 2015). Most people use SM to find information such as sales, deals, or products, events, and information about businesses (Whiting and Williams, 2013). Information about product, value, and brand could drive attitudinal responses and consequently affect marketing outcomes such as WOM (Stephen et al., 2015). Marketing mix, consisting of 4Ps, is a set of marketing tools used to satisfy a company's marketing goals such as the increase of customer loyalty or sales (Putri, 2015; Sari, 2017). It is a set of controllable and tactical tools to target markets, and its implementation is absolutely important not only for traditional brick-and-mortar but also for e-business (Nugroho et al., 2015; Sari, 2017).

According to Manickam and Sriram (2013), product information relates to performance, brand, reputation, design, quality, and features, whereas price information is about lower price, price discount, special price, ease of payment, and instalment. Promotion information relates to specifications, sales, promotion, exchange offer, free benefits, and buyback offer, while place information indicates availability, dealer, customer service, and dealer warranty. SM can optimise marketing-mix implementation (Cahyonoa et al., 2020). Companies should be more active in updating product information, whereas an online marketing mix decreases the level of distribution channels and creates more flexible prices to fit market conditions. Online promotions also give customers more experiences about a product (Sari, 2017). According to Masciandaro et al. (2024), the ten most liked and retweeted tweets are related to products (i.e., the introduction of new coins or banknotes).

The needs of customers prompt a product's information search (Gavilanes et al., 2018; Sashi, 2012). Companies could assist customers in choosing products or suggest products before needs arise (Sashi, 2012). Brand and product information could drive outcomes such as the propensity to convey detailed information (Batra and Keller, 2016). SN users are willing to look for product information on the platform. Facebook posts by a company about new products significantly increase clicks, whereas Facebook posts about current products significantly drive likes and comments (Gavilanes et al., 2018). Product-related learning is proposed to influence customers' satisfaction with a brand page, which later impacts their positive WOM intention (Chow and Shi, 2015). Regarding the perception of X users in Islamic Banks, people focus mainly on the 'people and product' category, which aligns with factors (i.e., product, place, distribution channel, and bank employees) affecting customers' consideration in choosing Islamic banks in Medan in past research (Cahyonoa et al., 2020). A part of Starbucks' marketing strategy on X is information-sharing content, e.g., practical tips, product introduction/promotion, store introduction/promotion, campaign introduction/promotion, and official announcements (Taecharungroj, 2017). Marketers should empower attention seekers to disseminate content on Facebook by giving them brand information or new products faster as well as exclusive deals (Hodis et al., 2015).

Economic benefits significantly positively affect customers' satisfaction with a brand page, which in turn significantly increases their positive WOM intention (Chow and Shi, 2015). Both price and non-price promotions could help to increase sales, brand usage experience, and brand awareness (Huang and Sarigöllü, 2014). Advertising products or services and promotional offers are some marketing activities to which SM is applied (Al Tenaiji and Cader, 2010). Promotional content (e.g., sweepstakes and sales) offers direct monetary rewards, discounts, or prises to users. Facebook posts by a company that feature sweepstakes significantly increase clicks, comments, and shares, while posts referring to sales significantly enhance clicks and likes (Gavilanes et al., 2018). Price comparison and product videos are suggested content by US bank customers on internet platforms (Kuchciak, 2013). Marketers should fully utilise price promotions and the distribution element to promote brand awareness (Huang and Sarigöllü, 2014). Good-image stores could increase positive WOM (Kim and Hyun, 2011). Monetary factors such as price, frequency of non-price promotions, and product promotion (e.g., ad frequency) affect customer brand preference (Raj et al., 2013). Price negatively impacts advertising responsiveness (Luan and Sudhir, 2010). In the service context, perceived price such as price perception, price fairness, and price equity plays a significant role in decision making (Kaura, 2013). Channel performance, value-oriented price, and

promotion significantly affect brand awareness with associations (Kim and Hyun, 2011). Promotions on Zalora Indonesia's X affect brand awareness (Moeli and Widiasari, 2015). The most common and important marketing activities on SM are holding competitions with coupons, discounts, or gifts and communicating with users daily (Tsimonis and Dimitriadis, 2014).

3.3.2 Service quality

People in terms of employees and their services have a high influence on the service industry such as banks (Cahyonoa et al., 2020; Kaura, 2013). Consumer decisions in choosing banks are largely impacted by the services provided and service management (Cahyonoa et al., 2020; Shakeel et al., 2020). X could be a customer service management platform to address customer issues since people generally make it an ideal place to talk about service queries with brands (Sari, 2017; Shakeel et al., 2020). Most customer service requests also come through X (Shakeel et al., 2020). Customers normally complain after service failures and expect quick responses from service providers (Agnihotri et al., 2021). Handling customer issues and complaints on SM gives banks a chance to effectively communicate and handle customers' complaints at the same time (Agnihotri et al., 2021). Hiqmah (2021) specifies that bank customers' complaints through X are dominated by complaints about services. Many managers use X as their channel for customer services and customer care (Chikandiwa et al., 2013). For user tweets, a company significantly responds to complaining or complementing tweets more than neutral ones (Gunarathne et al., 2015). The study of Agnihotri et al. (2021) confirms that empathy, apology, responsiveness, co-creation, and endurance are complaint handling strategies of banks. Greetings, apologies, offers of help and assistance, performative requests, and denial and disagreement are complaint management strategies used by Indonesian banks in the study of Hiqmah (2021). Companies' responses showing empathy, transparency, and commitment yield positive impacts on customers' perceptions and behaviours (Farina et al., 2014).

Service quality refers to the degree of discrepancy between customers' expectations and their perception of service performance (Ali and Raza, 2017; Mujinga, 2019). It is a requirement for customer satisfaction, which remarkably influences purchase decisions as well as customer retention (Ali and Raza, 2017; Mujinga, 2019; Rezapour and Peykani, 2017; Shakeel et al., 2020). Perceived overall service quality could affect customer trust and bank reputation (Hamzah et al., 2017). There is a significant and positive relationship between e-banking service quality dimensions and customer loyalty (Kaur and Kiran, 2015). There is a significant relationship between service quality factors and the overall satisfaction of internet banking customers (Kumbhar, 2011). There are significant and positive relationships between perceived overall service quality and customer trust, customer satisfaction, and bank reputation (Hamzah et al., 2017). Five dimensions of the SERVQUAL model, the most popular model, consist of reliability, assurance, responsiveness, tangibles, and empathy (Ali and Raza, 2017; Gupta and Agarwal, 2014; Hamzah et al., 2017; Mujinga, 2019; Pakurár et al., 2019). These dimensions significantly increase customer satisfaction in the study of Ali and Raza (2017). Past research indicates that the SERVQUAL model can provide more diagnostic information for the banking sector compared to other service quality measures (Ali and Raza, 2017). In the study of Kheng et al. (2010), reliability, empathy, and assurance significantly

affect customer loyalty, whereas responsiveness, empathy, and assurance significantly increase customer satisfaction.

Examples of service quality in banking are showing courtesy, respecting customers, cultivating trust, being active during transactions, and finding solutions to customers' questions about products or services, etc. (Mavnacıoğlu, 2017). Eight dimensions of service quality, i.e., tangibles, responsiveness, empathy, assurance, reliability, access, financial aspects, and employee competence, impact customer satisfaction in the Jordanian banking sector (Pakurár et al., 2019). Dimensions of service quality (employee behaviour, tangibility and information technology) and dimensions of service convenience (decision convenience, access convenience, transaction convenience, benefit convenience and post-benefit convenience) have a positive impact on both public and private sector banks, except for tangibility for both banks and benefit convenience for private sector banks (Kaura, 2013). Understanding specific dimensions of service quality is crucial for service industries including banks since they need to develop strategies to deliver high quality services, fulfil customers' needs, and achieve business goals (Biswas et al., 2019; Hamzah et al., 2017; Mujinga, 2019).

3.4 Message intention

Identifying and inferring tweet intent categories benefits many commercial applications (Wang et al., 2015). For example, the study of Hollerit et al. (2013) identifies online commercial intentions for annotated tweets as buy, cheap, sell, purchase, bidding, auction, retail, and find. The study by Wang et al. (2015) classifies intent tweets into food and drink, travel, career and education, goods and services, events and activities, and trifle. The study of Pandey et al. (2018) specifies policy-affecting intent topologies in RT messages as accusation, validation, sensation, or none. This study classifies message intent categories as request, question, announcement and sentiment.

Bayhaqy et al. (2018) indicate the necessity of analysing the views and sentiments of e-commerce users. X-based sentiment analysis is a great tool for marketers to retrieve customer feedback on released products (Sahu et al., 2015) and analyse customer opinions about products or services (Fitri et al., 2019) or brands (Culotta and Cutler, 2016). Monitoring positive or negative conversations over SM helps banks proactively engage with customers (Khanum et al., 2016). User-generated content (UGC) with a strong sentiment (positive or negative) significantly receives more RT and likes (Lahuerta-Otero et al., 2018). Du Plessis (2023) points out that financial brands, particularly retail banks, should focus on a positive emotional tone in their SM brand communication. The study of Ehrmann and Wabitsch (2022) also reveals that negative sentiments significantly receive more likes, RTs, and replies. In the banking context, negative tweets significantly gain more user engagement than positive ones as well (Shakeel et al., 2020). Negative messages such as complaining tweets and positive messages such as compliment tweets from followers are significantly responded to by companies more than neutral messages (Gunarathne et al., 2015).

3.5 Public banks versus private banks

Public banks such as government-owned specialised banks and private banks such as commercial banks differ in terms of business structures, management styles, and

customer bases. Therefore, they may operate under different technological infrastructures and environments (Wonglimpiyarat, 2016). Tandon et al. (2016) compare the level of awareness and knowledge, the internet banking transaction, and problems faced by users when doing internet banking between public and private sector banks. The study by Ahmad and Khan (2021) compares the efficiency of public and private banks. While private banks exhibit higher technical efficiency, public banks outperform in scale efficiency by better managing their branches. Private banks, therefore, need to bridge the gap between technical and scale efficiency. Rezapour and Peykani (2017) reveal a significant difference in the website aesthetics and privacy of e-banking services among state, private, and altered banks.

Mishra et al. (2010) compare customer expectations and perceptions of bank performance according to SERVQUAL between private and public sector banks. Their results show a significant quality gap in terms of reliability for private banks (but not for public banks) and empathy for public banks (but not for private banks). The study by Kumbhar (2011) points out a significant difference in perceived service quality in internet banking provided by public and private sector banks. Findings from the study of Singh (2013) regarding service quality indicate high customer satisfaction with reliability and assurance for public banks and high customer satisfaction with responsiveness, tangibles, and assurance for private banks. Kaura (2013) indicates that the positive impact of employee behaviour on customer satisfaction is found more in public banks than in private banks. The positive impacts of decision convenience and access convenience on customer satisfaction are found more for private banks than for public banks. Public banks fall much below their customer expectations in all service quality dimensions, whereas private banks exceed their customer expectations in all dimensions in the study by Gupta and Agarwal (2014). They also reveal that there is a wide perceptual difference in customers' perceived overall service quality between Indian public and private sector banks. Kaur and Kiran (2015) reveal significant differences in service quality among private, public, and foreign banks in several categories, i.e., convenient operating hours, the safety of fund transfers, reasonable service charges, phone banking facility and other IT-based services, and innovative services. In the Indian banking industry, private banks are not inferior to public banks in terms of their services and customer satisfaction (Ahmad and Khan, 2021).

Based on the above arguments, the following hypotheses are made:

H1 There is a significant association between message features of users' tweets in terms of:
   - a media type
   - b weekend
   - c time of the day
   - d working time and bank type (public or private bank).

H2 There is a significant difference in hashtags used in tweets by public and private bank users.

H3 There is an influence of:
   - a hashtags
   - b mentions used in banks' tweets on total retweets by users.

H4 There is a significant association between message content of users' tweets in terms of:
   a product-related
   b price-related
   c place-related
   d promotion-related
   e other content and bank type (public or private bank).

H5 There is an influence of:
   a product-related
   b price-related
   c place-related
   d promotion-related content used in banks' tweets on total retweets by users.

H6 There is a significant association between message content of users' tweets in terms of:
   a tangibles-related
   b reliability-related
   c responsiveness-related
   d assurance-related
   e empathy-related content and bank type (public or private bank).

H7 There is a significant association between message intention of users' tweets in terms of:
   a request
   b sentiment
   c question
   d announcement intention and bank type (public or private bank).

H8 Bank type (public or private bank) moderates the impact of message characteristics of banks' tweets on total retweets by users.

4 Research methodology

Samples in this study were tweets from the marketers and users of public and private banks in Thailand that had an official X account and posted some tweets. Initially, nine commercial banks were targeted and classified as private banks, whereas one state-enterprise bank and five specialised financial institutions (SFIs) were targeted and categorised as public banks. In the data collection stage, data from these banks were retrieved using X scraper tool 'Vicinitas', which was applied in the past studies (Keith, 2021; Ruffer et al., 2020; Ruiz-Alba and Mancinas-Chávez, 2020; Steblyna, 2020). The tool provided basic tweet data, i.e., tweet ID, text name, screen name, UTC, created at, favourites, retweets, language, client, tweet type, URLs, hashtags, mentions, media type, and media URLs. Tweets from users were searched by the 'hashtag/keyword tweets'

option with banks' X official account on 23 November 2020. Generally, the tool yielded a maximum of 2,000 tweets posted in the last 10 days for each search. In sum, 1,699 user tweets (tweet, reply, and retweet types) relating to six private banks and three public banks were acquired. Other banks had no tweets at that time.

Table 1 Variables and their sources used in this study

Variable	*Description*	*Tweet type*	*Source*
Media type	1 = GIF, 2 = photo, 3 = text, 4 = video	User tweets	Derived from media type (Vicinitas)
Weekend	0 = weekday, 1 = weekend	User tweets	Derived from created at (Vicinitas)
Time	1 = morning, 2 = afternoon, 3 = evening, 4 = night	User tweets	Derived from created at (Vicinitas)
Work time	0 = Sat/Sun or not during 9 AM to 6 PM, 1 = Mon–Fri and during 9 AM to 6 PM	User tweets	Derived from created at (Vicinitas)
Hashtag	Total hashtags in a tweet	User tweets/bank tweets	Hashtag (Vicinitas)
Mentions	Total mentions in a tweet	User tweets/bank tweets	Mentions (Vicinitas)
Message length	Message length of a tweet	User tweets/bank tweets	Calculated from text (Vicinitas) using LEN function
Favorites	Total favourites a tweet received	User tweets/bank tweets	Favourites (Vicinitas)
Retweets	Total retweets a tweet received	User tweets	Retweets (Vicinitas)
Retweets	Total retweets a tweet received	Bank tweets	Calculated from duplicate retweets (Vicinitas)
Followers	Total followers of a bank's official account	User tweets/bank tweets	Followers (Vicinitas)
Product-related content	0 = non-product, 1 = product	User tweets/bank tweets	Extracted from text (Vicinitas) using content analysis
Price-related content	0 = non-price, 1 = price	User tweets/bank tweets	Extracted from text (Vicinitas) using content analysis
Place-related content	0 = non-place, 1 = place	User tweets/bank tweets	Extracted from text (Vicinitas) using content analysis
Promotion-related content	0 = non-promotion, 1 = promotion	User tweets/bank tweets	Extracted from text (Vicinitas) using content analysis
Others-related content	0 = non-others, 1 = others	User tweets	Extracted from text (Vicinitas) using content analysis

Table 1 Variables and their sources used in this study (continued)

Variable	*Description*	*Tweet type*	*Source*
Tangibles-related content	0 = non-tangibles, 1 = tangibles	User tweets	Extracted from text (Vicinitas) using content analysis
Reliability-related content t	0 = non-reliability, 1 = reliability	User tweets	Extracted from text (Vicinitas) using content analysis
Responsiveness-related content	0 = non-responsiveness, 1 = responsiveness	User tweets	Extracted from text (Vicinitas) using content analysis
Assurance-related content	0 = non-assurance, 1 = assurance	User tweets	Extracted from text (Vicinitas) using content analysis
Empathy-related content	0 = non-empathy, 1 = empathy	User tweets	Extracted from text (Vicinitas) using content analysis
Request intention	0 = non-request, 1 = request	User tweets	Extracted from text (Vicinitas) using AI for Thai (SSense)
Question intention	0 = non-request, 1 = request	User tweets	Extracted from text (Vicinitas) using AI for Thai (SSense)
Announcement intention	0 = non-request, 1 = request	User tweets	Extracted from text (Vicinitas) using AI for Thai (SSense)
Sentiment intention	0 = non-request, 1 = request	User tweets	Extracted from text (Vicinitas) using AI for Thai (SSense)
Sentiment polarity	Negative, positive or neutral	User tweets	Extracted from text (Vicinitas) using AI for Thai (SSense)

In the data preprocessing stage, tweets in languages other than Thai (th), with no content, or containing only mentions were filtered out. Tweets having 'Tweet' type were kept as user tweets, whereas tweets having 'Retweet' type and text name (tweet message) starting with 'RT' followed by the bank's official X account were categorised as bank tweets. Some data were added, transformed, and preliminary extracted (e.g., day and time) as described in Table 1. Missing values in some fields such as media type consisting of 'animated_gif', 'photo', and 'video' only, so 'text' was filled into the empty cells. Messages (text name) in a Microsoft Excel file were also cleaned, for instance, replacing the % sign with 'percentage' (in Thai) and removing newlines, before using an AI tool to analyse Thai messages (AI for Thai) in the next stage. Duplicate tweets were removed using the 'remove duplicates' feature in MS Excel and retweets were summed up. Finally, there were 78 user tweets to four private and three public banks, and 156 bank tweets (being retweeted) of six private and three public banks.

In the data analysis stage, first, marketing mix-related and service quality-related content was extracted as described in Table 1, using a direct content analysis, in which codes were derived from 4Ps and SERVQUAL theories (Hsieh and Shannon, 2005).

Definitions and example coding for each category were given to two research assistants. Given definitions were as follows. 'Product' [about the bank] mentioned a problem or asked about a bank's products or services. 'Price' [about the bank] addressed a problem or inquiry about a product's price or service charge. 'Place' [about the bank] mentioned a problem or asked about the service location. 'Promotion' [about the bank] mentioned problems or asked about promotions such as discounts, giveaways, freebies, discounts, etc. 'Others' was anything unrelated to the bank or its services. 'Tangibles' [about the bank's services] referred to tangible/physical services such as facilities, equipment, employees, etc. 'Reliability' [about the bank's services] referred to service in terms of reliability or accuracy. 'Responsiveness' [about the bank's service] referred to the service in terms of speed in responding to problems or meeting customers' needs. 'Assurance' [about the bank's services] mentioned the service warranty, certainty, and doing as promises. 'Empathy' [about the bank's service] talked about service concerning care, compassion, and customer understanding. The kappa statistics to test interrater reliability were calculated. According to McHugh (2012), Cohen suggested the kappa values be interpreted as: ≤0 = no agreement, 0.01–0.20 = none to slight, 0.21–0.40 = fair, 0.41–0.60 = moderate, 0.61–0.80 = substantial, and 0.81–1.00 = almost perfect agreement. There were substantial to almost perfect agreements between the two research assistants' judgements, ranging from .726 to 1.000, $p < .001$.

Then, as described in Table 1, message intention and sentiment polarity were extracted using social sensing (SSense) from AI for Thai (http://www.aiforthai.in.th) to process tweets in the Thai language. AI for Thai was developed by the National Electronics and Computer Technology Center (NECTEC). It provided API services for developers and researchers to create applications to benefit both businesses and society. 'SSense' was one of many services in AI for Thai that offered the sentiment analysis to evaluate a message's sentiment and its intent (Khruahong et al., 2020; Tapsai et al., 2019). The tool gave the results for each message intention (sentiment, announcement, request, question) as confidence percentage and classified sentiment polarity either positive or negative. Many state-of-the-art articles on Thai-NLP have also been published by NECTEC (Mookdarsanit and Mookdarsanit, 2021). To use the service, a researcher had to write a Python code to call the SSense API in the developer mode and perform several steps with outputs to convert them into MS Excel format for further analysis.

Last, to explore the message characteristics of user tweets and bank tweets that were retweeted, descriptive statistics were applied. To explore the relationships between categorical variables, i.e., user tweets' message characteristics and bank type, the chi-square test of independence was utilised. To compare whether a message feature, i.e., hashtags differed based on bank type, Mann-Whitney U test was employed due to the non-normal distribution of the data. To investigate the relationships between the characteristics of bank tweets being retweeted and their retweet counts and the moderating impact of bank type, hierarchical regression analysis was conducted as recommended in the past research (Baron and Kenny, 1986; Helm and Mark, 2012; Huo and Kong, 2014). Since the number of followers showed the size of the direct audience of users on the social network (Lahuerta-Otero et al., 2018), it was used as a control variable in the regression analysis. A base 10 logarithmic transformation was also applied to normalise skewed retweet count data.

5 Findings and discussion

5.1 Message characteristics of tweets and retweets

As shown in Table 2, within a span of approximately 10 days, there were 45 user tweets from private banks and 33 user tweets from public banks. Public banks used longer messages than private banks on average. Although most of private banks had more followers than public banks, tweets from users of public banks averagely contained more hashtags and were received more favourites than user tweets related to private banks. On the contrary, user tweets from private banks gain more retweets than user tweets from public banks on average. Users of both bank types applied the same number of mentions in their tweets. User tweets in both bank types utilised text, photos, and videos as the main media types respectively as presented in Table 3. However, users in a public bank (bank #10) used photos and texts equally, while users in another public bank (bank #12) employed photos and videos mainly. As shown in Table 4, unlike users from public banks, users from private banks normally tweeted on weekend more than weekday. Users from both bank types tweeted mainly in non-working time.

Table 2 Message characteristics of users' tweets in terms of average of favourites, retweets, hashtags, mentions and message length per tweet (N = 78)

Bank	*Total tweets*	*Avg. of favourites*	*Avg. of retweets*	*Avg. of hashtags*	*Avg. of mentions*	*Avg. of message length*	*Avg. of followers*
Private	45	0.1	0.1	0.3	1.0	112	454,895
Bank#1	23	0.1	0.1	0.0	1.0	107	647,497
Bank#2	17	0.1	0.1	0.6	1.1	117	302,256
Bank#4	4	0.0	0.3	0.3	1.0	103	109,837
Bank#9	1	0.0	0.0	1.0	1.0	159	145
Public	33	0.2	0.0	0.4	1.0	129	71,059
Bank#10	10	0.2	0.0	0.5	1.1	114	26,109
Bank#11	17	0.2	0.1	0.2	1.0	150	118,218
Bank#12	6	0.0	0.0	1.0	1.0	91	12,357

Table 3 Message characteristics of users' tweets in terms of media type (N = 78)

Bank	*Photo*	*Text*	*Video*	*Total tweets*
Private	11 (24.4%)	34 (75.6%)	(0%)	45 (100%)
Bank#1	4 (17.4%)	19 (82.6%)	(0%)	23 (100%)
Bank#2	7 (41.2%)	10 (58.8%)	(0%)	17 (100%)
Bank#4	(0%)	4 (100%)	(0%)	4 (100%)
Bank#9	(0%)	1 (100%)	(0%)	1 (100%)
Public	11 (33.3%)	20 (60.6%)	2 (6.1%)	33 (100%)
Bank#10	5 (50%)	5 (50%)	(0%)	10 (100%)
Bank#11	2 (11.8%)	15 (88.2%)	(0%)	17 (100%)
Bank#12	4 (66.7%)	(0%)	2 (33.3%)	6 (100%)

Table 4 Message characteristics of users' tweets in terms of timing (N = 78)

Bank	*Day*		*Time*		*Total tweets*
	Weekday	*Weekend*	*Non-work time*	*Work time*	
Private	19 (42.2%)	26 (57.8%)	35 (77.8%)	10 (22.2%)	45 (100%)
Bank#1	9 (39.1%)	14 (60.9%)	19 (82.6%)	4 (17.4%)	23 (100%)
Bank#2	7 (41.2%)	10 (58.8%)	12 (70.6%)	5 (29.4%)	17 (100%)
Bank#4	2 (50%)	2 (50%)	3 (75%)	1 (25%)	4 (100%)
Bank#9	1 (100%)	(0%)	1 (100%)	(0%)	1 (100%)
Public	20 (60.6%)	13 (39.4%)	25 (75.8%)	8 (24.2%)	33 (100%)
Bank#10	7 (70%)	3 (30%)	7 (70%)	3 (30%)	10 (100%)
Bank#11	9 (52.9%)	8 (47.1%)	14 (82.4%)	3 (17.6%)	17 (100%)
Bank#12	4 (66.7%)	2 (33.3%)	4 (66.7%)	2 (33.3%)	6 (100%)

Table 5 Message characteristics of users' tweets in terms of message content: marketing mix (N = 78)

Bank	*Product*	*Price*	*Place*	*Promotion*	*Others*	*Total tweets*
Private	41 (91.1%)	5 (11.1%)	8 (17.8%)	1 (2.2%)	2 (4.4%)	45 (100%)
Bank#1	22 (95.7%)	3 (13%)	4 (17.4%)	0 (0%)	1 (4.3%)	23 (100%)
Bank#2	15 (88.2%)	1 (5.9%)	3 (17.6%)	0 (0%)	1 (5.9%)	17 (100%)
Bank#4	3 (75%)	1 (25%)	1 (25%)	1 (25%)	0 (0%)	4 (100%)
Bank#9	1 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	1 (100%)
Public	29 (87.9%)	2 (6.1%)	16 (48.5%)	6 (18.2%)	2 (6.1%)	33 (100%)
Bank#10	10 (100%)	0 (0%)	3 (30%)	3 (30%)	0 (0%)	10 (100%)
Bank#11	15 (88.2%)	1 (5.9%)	12 (70.6%)	0 (0%)	0 (0%)	17 (100%)
Bank#12	4 (66.7%)	1 (16.7%)	1 (16.7%)	3 (50%)	2 (33.3%)	6 (100%)

Table 6 Message characteristics of users' tweets in terms of message content: service quality (N = 78)

Bank	*Tangibles*	*Reliability*	*Responsiveness*	*Assurance*	*Empathy*	*Total tweets*
Private	9 (20%)	7 (15.6%)	5 (11.1%)	6 (13.3%)	7 (15.6%)	45 (100%)
Bank#1	6 (26.1%)	4 (17.4%)	1 (4.3%)	1 (4.3%)	2 (8.7%)	23 (100%)
Bank#2	2 (11.8%)	1 (5.9%)	3 (17.6%)	2 (11.8%)	5 (29.4%)	17 (100%)
Bank#4	1 (25%)	1 (25%)	1 (25%)	2 (50%)	0 (0%)	4 (100%)
Bank#9	0 (0%)	1 (100%)	0 (0%)	1 (100%)	0 (0%)	1 (100%)
Public	5 (15.2%)	5 (15.2%)	15 (45.5%)	10 (30.3%)	10 (30.3%)	33 (100%)
Bank#10	1 (10%)	0 (0%)	3 (30%)	0 (0%)	4 (40%)	10 (100%)
Bank#11	4 (23.5%)	4 (23.5%)	11 (64.7%)	9 (52.9%)	5 (29.4%)	17 (100%)
Bank#12	0 (0%)	1 (16.7%)	1 (16.7%)	1 (16.7%)	1 (16.7%)	6 (100%)

In terms of message content, users from both banks generally discussed or inquired about products and places, as shown in Table 5. Users from private banks also expressed

concerns about prices, while users from public banks showed greater interest in promotions. Users from private banks referred to tangibles, reliability/empathy, assurance, and responsiveness of services, but users from public banks talked about responsiveness, assurance/empathy, and tangibles/reliability of services respectively, as presented in Table 6. According to Table 7, most user tweets in both bank types asked questions or showed sentiments. Few of them made requests or announcement. Among all sentiment-related tweets, negative sentiments were more frequently observed than positive or neutral ones, regardless of bank type, as shown in Table 8.

Table 7 Message characteristics of users' tweets in terms of message intention (N = 78)

Bank	*Request*	*Sentiment*	*Question*	*Announcement*	*Total tweets*
Private	11 (24.4%)	26 (57.8%)	31 (68.9%)	1 (2.2%)	45 (100%)
Bank#1	6 (26.1%)	14 (60.9%)	13 (56.5%)	1 (4.3%)	23 (100%)
Bank#2	4 (23.5%)	9 (52.9%)	15 (88.2%)	0 (0%)	17 (100%)
Bank#4	1 (25%)	2 (50%)	2 (50%)	0 (0%)	4 (100%)
Bank#9	0 (0%)	1 (100%)	1 (100%)	0 (0%)	1 (100%)
Public	8 (24.2%)	26 (78.8%)	20 (60.6%)	3 (9.1%)	33 (100%)
Bank#10	4 (40%)	8 (80%)	6 (60%)	0 (0%)	10 (100%)
Bank#11	4 (23.5%)	15 (88.2%)	14 (82.4%)	1 (5.9%)	17 (100%)
Bank#12	0 (0%)	3 (50%)	0 (0%)	2 (33.3%)	6 (100%)

Table 8 Message characteristics of users' tweets in terms of sentiment polarity (N = 52)

Bank	*Positive*	*Negative*	*Neutral*	*Total sentiment tweets*
Private	5 (19.2%)	19 (73.1%)	2 (7.7%)	26 (100%)
Bank#1	3 (21.4%)	10 (71.4%)	1 (7.1%)	14 (100%)
Bank#2	1 (11.1%)	7 (77.8%)	1 (11.1%)	9 (100%)
Bank#4	1 (50%)	1 (50%)	(0%)	2 (100%)
Bank#9	(0%)	1 (100%)	(0%)	1 (100%)
Public	6 (23.1%)	20 (76.9%)	(0%)	26 (100%)
Bank#10	1 (12.5%)	7 (87.5%)	(0%)	8 (100%)
Bank#11	2 (13.3%)	13 (86.7%)	(0%)	15 (100%)
Bank#12	3 (100%)	(0%)	(0%)	3 (100%)

For bank tweets that were retweeted by users, as summarised in Tables 9–11, average retweets of bank tweets in around 10 days were greater in private banks than in public banks. Bank tweets from private banks slightly had more hashtags and mentions than bank tweets from public banks, but public bank tweets contained more characters than private bank tweets on average. Unlike user tweets, in the big picture, both bank types tweeted messages with photos, texts, or videos respectively. In terms of content, like user tweets, both public and private banks tweeted about products the most. Private banks also shared information about their promotions, whereas public banks talked about places. These bank messages were retweeted at least once by their users.

Table 9 Message characteristics of users' retweets of bank message in terms of average of favourites, retweets, hashtags, mentions per tweet, and bank's followers (N = 156)

Bank	*Avg. of favourites*	*Avg. of retweets*	*Avg. of hashtags*	*Avg. of mentions*	*Avg. of message length*	*Avg. of followers*
Private	0.0	8.5	2.8	0.4	265	264,104
Bank#1	0.0	1.6	0.4	0.4	279	647,497
Bank#2	0.0	10.1	2.8	0.1	257	302,256
Bank#4	0.0	10.1	3.3	1.6	272	109,837
Bank#9	0.0	1.3	1.0	0.0	256	145
Bank#5	0.0	2.8	4.4	0.9	274	129,790
Bank#8	0.0	10.8	3.8	0.2	280	7,866
Public	0.0	3.7	2.3	0.1	278	72,073
Bank#10	0.0	2.7	1.7	0.0	295	26,109
Bank#11	0.0	5.0	2.8	0.2	267	118,218
Bank#12	0.0	1.3	2.0	0.0	283	12,357

Table 10 Message characteristics of users' retweets of bank message in terms of media type (N = 156)

Bank	*Photo*	*Text*	*Video*	*Total retweets*
Private	53 (48.2%)	49 (44.5%)	8 (7.3%)	110 (100%)
Bank#1	5 (45.5%)	6 (54.5%)	(0%)	11 (100%)
Bank#2	28 (44.4%)	29 (46%)	6 (9.5%)	63 (100%)
Bank#4	9 (60%)	4 (26.7%)	2 (13.3%)	15 (100%)
Bank#9	2 (66.7%)	1 (33.3%)	(0%)	3 (100%)
Bank#5	4 (44.4%)	5 (55.6%)	(0%)	9 (100%)
Bank#8	5 (55.6%)	4 (44.4%)	(0%)	9 (100%)
Public	28 (60.9%)	15 (32.6%)	3 (6.5%)	46 (100%)
Bank#10	14 (93.3%)	1 (6.7%)	(0%)	15 (100%)
Bank#11	8 (33.3%)	14 (58.3%)	2 (8.3%)	24 (100%)
Bank#12	6 (85.7%)	(0%)	1 (14.3%)	7 (100%)

Table 11 Message characteristics of users' retweets of bank message in terms of message content: marketing mix (N = 156)

Bank	*Product*	*Price*	*Place*	*Promotion*	*Other*	*Total retweets*
Private	84 (76.4%)	19 (17.3%)	18 (16.4%)	43 (39.1%)	26 (23.6%)	110 (100%)
Bank#1	7 (63.6%)	2 (18.2%)	1 (9.1%)	2 (18.2%)	4 (36.4%)	11 (100%)
Bank#2	56 (88.9%)	16 (25.4%)	16 (25.4%)	29 (46%)	7 (11.1%)	63 (100%)
Bank#4	10 (66.7%)	1 (6.7%)	1 (6.7%)	6 (40%)	5 (33.3%)	15 (100%)
Bank#9	3 (100%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	3 (100%)
Bank#5	5 (55.6%)	0 (0%)	0 (0%)	4 (44.4%)	4 (44.4%)	9 (100%)
Bank#8	3 (33.3%)	0 (0%)	0 (0%)	2 (22.2%)	6 (66.7%)	9 (100%)
Public	33 (71.7%)	5 (10.9%)	14 (30.4%)	6 (13%)	13 (28.3%)	46 (100%)
Bank#10	10 (66.7%)	0 (0%)	4 (26.7%)	2 (13.3%)	5 (33.3%)	15 (100%)
Bank#11	19 (79.2%)	3 (12.5%)	7 (29.2%)	2 (8.3%)	5 (20.8%)	24 (100%)
Bank#12	4 (57.1%)	2 (28.6%)	3 (42.9%)	2 (28.6%)	3 (42.9%)	7 (100%)

5.2 The relationship between bank type and user tweets' characteristics

Chi-square goodness of fit tests were performed to determine whether the proportions of message features (media type, weekend, time of the day, working time), message content (product, price, place, promotion, other, tangibles, reliability, responsiveness, assurance, empathy), and message intention (request, sentiment, question, announcement) were equal between user tweets in two bank types. The proportions of message features (media type, weekend, time of the day, working time), message content (product, price, other, tangibles, reliability, assurance, empathy), and message intention (request, sentiment, question, announcement) did not differ by bank type.

There was a significant relationship between place-related content and bank type, $X^2(1, N = 78) = 8.43$, $p = .004$. Tweets from public bank users were more likely to be place-related content compared to tweets from private bank users. According to McDonald (2009), if an expected number in the chi-square test is less than 5, an alternative, such as a Fisher's exact test of independence, should be used. For promotion, two cells (50.0%) had expected count less than 5. The minimum expected count was 2.96, so Fisher's exact test was applied. There was a statistically significant association between promotion-related content and bank type ($p = .038$). Tweets from public bank users tended to be related to promotion more than tweets from private bank users. A chi-square test also found that there was a significant association between responsiveness-related content and user tweets in two bank types, $X^2(1, N = 78) = 11.78$, $p = .001$. Tweets from private bank users were less likely to link to responsiveness issues than were tweets from public bank users. Hashtags of private bank users' tweets (Mdn = .00) were equal to those of public bank users' tweets (Mdn = .00). A Mann-Whitney test indicated that this difference was not statistically significant, U (N private banks = 45, N public banks = 33) = 634.00, $z = –1.468$, $p = .142$. Hence, there is enough evidence to support H4c, H4d, and H6c.

5.3 The relationships between banks' message characteristics and RT counts and the moderating role of bank types

To test the relationships between the characteristics of bank tweets that were retweeted and RT and the moderating effects of bank type, hierarchical regression analyses were performed. Three hierarchical regression analyses were conducted as shown in Table 12. The Durbin-Watson value of 2.216 fell between the acceptable ranges of 1.5–2.5, showing no autocorrelation. Tolerance values greater than 0.2 (ranging from .594 to .840) and VIF values less than 10 (ranging from 1.191 to 1.683) indicated no multicollinearity problems (Chatterjee and Simonoff, 2013; Marcoulides and Raykov, 2019; Menard, 2002; O'Brien, 2007). In the first step, the control variable was entered. In the second step, the predictor variables relating to message characteristics and bank type were added into the regression equation. A significant equation was found ($F(8, 147) = 5.027$, $p = .000$). The proportion of the variance of RT counts that was explained by bank tweet characteristics, was 21.5%. It was found that hashtags significantly predicted retweet counts ($\beta = .392$, $p < .001$), as did price-related content ($\beta = .205$, $p < .05$). However, total followers as a control variable, bank type, and other variables did not significantly predict retweet counts. For the third step, the interaction of predictor variables and the moderator was entered. However, the insignificant change in R^2 for the interaction terms suggested a non-existent moderating impact of bank type on the message

characteristics-RT relationships. Therefore, there is enough evidence to support H3a and H5b.

Table 12 The moderating effect of bank type on the relationship between message characteristics of banks' tweets on total retweets by users (N = 156)

	Beta	*t*	*R square*	*R square change*	*F change*	*Sig. F change*
Step 1			.004	.004	.673	.413
(Constant)		7.102				
Followers	–.066	–.821				
Step 2:			.215	.210	5.628***	.000
(Constant)		1.216				
Followers	–.036	–.380				
Hashtags	.392	4.722***				
Mentions	.034	.427				
Price	.205	2.203*				
Place	–.079	–.868				
Promotion	.051	.595				
Other	–.005	–.057				
Bank type	.004	.047				
Step 3			.239	.024	.748	.612
(Constant)		1.151				
Followers	–.044	–.456				
Hashtags	.423	4.480***				
Mentions	.036	.438				
Price	.286	2.486*				
Place	–.118	–.939				
Promotion	.030	.301				
Other	–.073	–.688				
Bank type	–.055	–.283				
Bank type × hashtags	.024	.153				
Bank type × mentions	.018	.211				
Bank type × price	–.166	–1.508				
Bank type × place	.090	.647				
Bank type × promotion	–.022	–.227				
Bank type × other	.120	1.038				

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

5.4 Discussion

The study of Shakeel et al. (2020) indicates that the peak hours when banks received tweets differ among banks. In this study, bank users from both banks tweeted in

non-working time more than working time on average. A past study concludes that both product quality and service quality affect the reputation of Chinese banks (Ali and Raza, 2017). This study reveals both product-related content and service-quality-related content were tweeted by bank users. Product-related content is the top-most issue that bank users mention, which tallies with the study of Seebach et al. (2012) stating 'products and services' as user-discuss relevant topics about corporate reputation (CR). Beneficial, varied, and overpriced or unvaried products are also mentioned by X users of Islamic banks in the study of Cahyonoa et al. (2020). Findings from X analytics to compare SERVQUAL for transportation services in the study of Bijarnia et al. (2020) rank the SERVQUAL dimensions as tangibles, reliability, empathy, assurance, and responsiveness respectively. On the contrary, this study ranks SERVQUAL dimensions in the banking sector according to all user tweets as responsiveness, empathy, assurance, tangibles, and reliability. Many of them have negative tones. The result is in line with the customer complaints in the study of Hiqmah (2021), in which many tweets are about services, customer personal complaints, security and privacy, and service accessibility/loss of funds respectively. Hiqmah (2021) emphasises that customers could submit their complaints due to the failure of banking services too. Questions and sentiments are common intents of user tweets in both bank types, conforming to past research suggesting that asking questions and expressing attitudes/opinions are general topics in tweets (Chu and Sung, 2015). Negative tweets contribute to more than 70% of user tweets in this study. The result harmonises with the study of Seebach et al. (2012), the study of Cahyonoa et al. (2020), and the study of Abunadi (2015) pointing out that the majority of tweets have negative polarity. The study of Cahyonoa et al. (2020) also indicates that most X users express their resentment towards service quality through SM, particularly negative feedback. Unsatisfying bank services are the primary X content highlighting complaints about Islamic banking in their study. Nevertheless, the findings contrast with the study of Alamsyah and Indraswari (2017) about three Indonesian banks showing that the majority of tweets are classified into neutral sentiments.

Unlike the study of Weerawatnodom et al. (2017) which indicates that most tweets have at least one or two RT or FAV no matter what message characteristics they contain, bank tweets and user tweets in this study normally receive less than one RT or FAV. This could happen because those tweets were recently posted not long ago (within 10–14 days). Similarly to the study of Alotaibi (2013), which promotional content appears in the second place in tweets from Saudi Arabian banks, promotional content by private banks being retweeted by their users is in the second place after product-related content. In addition, the study of Alotaibi (2013) reveals that, for National Commercial bank and Al Jazira Bank, promotional content is tweeted at all times of the day compared to other types. Top Instagram posts that received comments in the study of Abadi et al. (2023) are about giveaways. However, although a bank in the study of Pramyswary (2023) provided promotional information about discounts, freebies, financial advice, and additional knowledge or solutions to consumer problems, its posts received low engagement.

The study of Siakalli et al. (2017) reveals significant differences between hotels with specific and non-specific marketing strategies regarding the use of their marketing component of price and promotion, but not about product and place. However, place-related and promotion-related content used in bank messages in this study significantly differs between bank types, but not product and price. The people factor is important for banks since employees provide services to customers (Cahyonoa et al.,

2020). Service quality is thus associated with bank personnel (Ali and Raza, 2017). Service quality has been validated for its importance in customer satisfaction in the Pakistan banking sector (Ali and Raza, 2017). The study of Kaura (2013) emphasises that employee behaviour has a positive impact on customer satisfaction, particularly for public sector banks, which have a significantly greater coefficient than private sector banks. This study supports employee behaviour in terms of their responsiveness being much more talked about by public bank users than private bank users in their tweets. Responsiveness has the highest negative gap among the five SERVQUAL dimensions, followed by reliability and empathy in the study by Mujinga (2019). The study of Ravichandran et al. (2010) indicates the significance of responsiveness and the insignificance of tangibles, reliability, assurance, and empathy as predictors of customer satisfaction. The insignificant difference in other service quality factors between bank types could be explained by the insignificant impact of tangibility on customer satisfaction for both public and private sector banks and the insignificant difference between bank types concerning their coefficients for tangibility and transaction convenience in the study of Kaura (2013). Besides, there are no significant differences between simplicity, speed of action, accountability, and availability of e-banking services among state, private, and altered banks located in Isfahan (Rezapour and Peykani, 2017).

Hashtags significantly enhance RT counts in this study, as in the study of McShane et al. (2021), in which hashtags significantly impact likes and RT when controlling for emoji presence and counts, and the study of Aleti et al. (2016), in which more hashtags are positively associated with RT influence. The insignificant effect of mentions on RT is supported by the insignificant impact of user mentions on RT in the study of McShane et al. (2021) and the negative impact of mentions on RT in the study of Weerawatnodom et al. (2017). Price information significantly affects RT counts, which is consistent with the study of Kaura (2013) showing a positive impact of perceived price and fairness on customer satisfaction for both public and private sector banks. In the study of Lee et al. (2014), content relating to product availability, product location, and product mention receives several likes on Facebook, but product content does not receive significant RTs in this study. This could be explained by the insignificant influence of product-related learning on customer satisfaction with a brand page in the study of Chow and Shi (2015). Products, as informational content, also significantly increase likes and reach in the study of Stephen et al. (2015). Price content receives fewer likes compared to other content. However, price content significantly drives RT in this study. Other insignificant content influencing RT accords with the study of Grover and Kar (2020) indicating no statistical differences in the sharing and liking of tweets of different content types posted by the firms. The insignificant impact of promotional content on RT could be linked to the negative influence of discount or promotion information on eWOM in the study by Weerawatnodom et al. (2017). The insignificant moderating impact of bank type on tweet characteristics-RT relationships could be explained by the mix of banks with high and low efficiency/performance in both bank types and an insignificant difference between public and private banks in terms of coefficients for factors such as perceived price and fairness on customer satisfaction (Kaura, 2013).

6 Conclusions, implications, and future research

6.1 Conclusions

This study provides a rare comparative analysis of user-generated tweets and retweets related to public and private banks on Twitter. It reveals that bank type significantly influences user tweet content and demonstrates that hashtags and price-related content in bank tweets significantly predict retweet counts, regardless of bank type. This work addresses four research questions based on case studies of nine banks in Thailand using X data:

1 What are the message characteristics in terms of features, content, and intention of user tweets and user-retweeted bank messages?

2 Are there any differences in the message characteristics of tweets between public and private bank users?

3 What factors drive bank messages that are retweeted by users?

4 Do bank categories moderate the relationships between message characteristics and RT counts?

Answering these research questions reveals feedback from users, SM marketing strategies among different banks, and the influence of bank type. Data were gathered from 78 user tweets and 156 retweets of bank messages. The results reveal the message characteristics of user tweets and popular bank tweets, the significant differences in place-related, promotion-related, and responsiveness-related content mentioned by users of public and private banks, and the significant effects of hashtags and using price-related content on retweeting bank messages by their users. This study further extends the knowledge of the banking industry regarding message characteristics employed by users and banks, different needs of private and public bank users as shown in their tweets, and message characteristics of bank tweets that influence eWOM in terms of RT.

6.2 Implications

For theoretical implications, few studies on Thai banks have been conducted, but specifically exploring Thai bank SM strategies are inconclusive. Hence, this work contributes to the existing knowledge by providing substantial insight into tweet characteristics and bank categories in banking industry in Thailand. This study expands the existing literature on message content using two established theories: the 4Ps and SERVQUAL, reveals the link between marketing-mix content and eWOM, and shows significant differences in the importance of marketing-mix and service-quality between the two bank types. Marketing-mix and SERVQUAL theories could be applied further to examine tweet content generated both from users and marketers. This work also examines and presents the insignificant moderating impact of bank type on the associations between message features and content and user retweet behaviours, which advances the understanding of bank categories related to eWOM behaviour.

For practical implications, according to Wonglimpiyarat (2016), the average cost inefficiencies of commercial and government banks in Thailand are quite similar. However, according to ur Rehman and Raoof (2010), public and private banks are still

very close competitors in terms of efficiencies. The findings of this study yield managerial insights for bank marketers as follows. In a moment, e.g., ten days, users from nine of 14 banks talk about products or services of those banks through tweets. They employ texts, photos, and videos in their tweets in that order. Users of private banks generally tweet on weekends, while users of public banks communicate with banks on weekdays when they clock off. They normally mention or ask about products or places. Thus, bank marketers should develop a campaign to include content that provides information such as products and places to their customers. Private bank users care about tangibles, reliability/empathy, assurance, and responsiveness, while public bank users refer to responsiveness, assurance/empathy, tangibles/reliability respectively. These user tweets relating to place, promotion, and responsiveness also significantly differ between bank types. Hence, private banks should consider problems about tangibles, reliability/empathy of services, while public banks should improve their services' responsiveness, assurance/empathy. Generally, users intend to express sentiment, ask questions, or make requests to banks respectively. However, most sentiments they show are negative tones (except for one public bank), no matter what content they mentioned except for promotion, which many of them have positive polarity. Hence, both public and private banks must develop strategies to cope with negative opinions such as improving negative service quality aspects that they mention. In terms of bank tweets, in which marketers want them to be distributed as much as possible to generate eWOM, retweeted bank messages contain information mainly about products. For private banks, their RT messages also refer to promotion or other things, whereas many of public banks' RT messages add information about places and others. Both bank tweets being RT use photos, texts, and videos in their message in order. The more hashtags they use, the more RT they receive. Using price content also enhances eWOM behaviour of their users in both bank types. Therefore, bank marketers should add more hashtags and share more information about prices on their tweets rather than product information only. However, bank types are not a significant moderator in this study, which could have happened because although using technology such as X affects customer satisfaction. These impacts do not significant differ between public and private banks (Kaura, 2013). The number of followers does not directly link to RT counts, so banks with fewer followers have an opportunity to compete with popular banks using proper SM strategies to attract more engagement from their customers.

6.3 Limitations and future research suggestions

Limitations of this study are as follows. Although more than one thousand tweets were retrieved, less than a hundred are user tweets. Only nine out of 14 banks had user tweets within the period of study. Second, the average favourites of each tweet in this study are quite low, so factors influencing FAV counts are not explored. Future research thus should collect more tweets, particularly favourite tweets, and data from excluded banks. This research provides only a snapshot of user engagement in banks' X. Further research therefore should adopt longitudinal analysis to validate these findings. Exploring user tweets about offline and online services separately could be added to get more elaborate results. Since negative polarity dominates the results, future research should deeply investigate negative tweets from users by employing other theories to examine their tweets or using root-cause analysis to find the products or services that create problems.

Banks should learn from positive tweets and enhance the positive aspects of their products or services as well. Future studies should also classify user tweets relevant to brands such as brand awareness, brand satisfaction, or brand loyalty. This study shows different results from other studies in Southeast Asian countries, for instance, message polarity. Hence, cross-cultural studies on different countries should be conducted to generalise the findings. Content analysis was applied to extract the message content since tweets are in Thai and they often contain slang or misspellings, which are quite difficult to process. However, advanced methods such as machine learning to classify content automatically should be applied in the future to verify the research results.

Declarations

The author declares that she has no conflicts of interest.

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