New social media and the displacement effect: University student and staff inter-generational differences in Taiwan

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Abstract: This study examines the displacement-reinforcement effects of social media. In referring to research framework of the satisfaction-attitudes-loyalty (SAL) chain, our model is centred on social media users, and tests the causal relationships among three principal variables associated with Facebook (FB) and YouTube (YT) and three associated with FB and Instagram (IG). The surveys were conducted at three large universities in Taiwan and included 392 and 203 valid responses from Millennial undergraduate students and older staff (excluding faculty members), respectively. While our data fit the research model and supported our hypotheses regarding the SAL core model, the hypotheses representing the effects of displacement (or reinforcement) among social media platforms were not supported for the young generation. The results demonstrated that, although IG and YT provide some unique features, they have not displaced FB nor they have become a complementary medium to FB. As for the staff group, the displacement effects between FB and YT as well as between FB and IG were identified, indicating that YT and IG may be adopted as a substitute. In the absence of reinforcement effects, neither YT nor IG was a complementary medium despite users’ favourable attitudes.
towards and frequent use of them. The research limitations and future research directions were also discussed.

Subjects: ICT; Group Communication; Business, Management and Accounting

Keywords: social media choice; intergenerational differences; niche theory; uses and gratifications theory; media displacement and reinforcement

1. Introduction
The emphasis of Web 2.0 on “gathering, sharing, and interacting” has been widely applied in the field of marketing. From a company perspective, social media have been regarded as prime resources for enhancing online visibility, increasing website traffic, boosting membership numbers, and deepening the understanding of the needs and views of online users. In recent years, social media have expanded into new areas, including education and work (Bhandari & Bansal, 2018), which has contributed to the growing variety of social media and their increased usage. Each social media platform provides a unique combination of functions that attract a different set of users (Weller, 2016). A number of studies have indicated that users choose a social media platform to meet their specific needs, with user satisfaction being linked to the media's specific purposes (e.g., Kim & Kim, 2019; Phua et al., 2017a; Shane-Simpson et al., 2018). The ability of social media to cater to users’ requirements therefore increases the competitiveness among various media providers.

In spite of the most-used social media platforms, FB and YT occupying the most prominent positions in the social media landscape, IG is, however, rapidly gaining ground and now has a market share of 35% (Smith & Anderson, 2018). Furthermore, many users have more than one account in accordance with their various needs and preferences. For example, the same user may prefer IG for posting photos but prefer YT for watching videos. The changing profile of social media users deserves careful attention. Research has reported the media rivalry of traditional media versus the Internet (Tsao & Sibley, 2004), that of traditional media versus the wired or wireless (mobile) Internet (Okazaki & Hirose, 2009), and that of online video versus old media (e.g., TV, radio or newspaper; Lee et al., 2016). When the available media equally satisfy users' needs, they are competitors, but when they provide unique functions, their relationship is complementary. Compared with traditional media, the characteristics of an individual social medium are relatively homogeneous. To the authors’ knowledge, no study has focused on the displacement–reinforcement effects, such as changes in attitudes and loyalty, in relation to social media. Our findings account for both new and old media and the public's propensity to continue using them. In addition, age is found to be an influencing factor for platform usage and preference (Smith & Anderson, 2018). Younger age groups use a considerably greater variety of social media, although this is expanding among older age groups. We thus proposed the following question: Is the young generation more likely to switch from FB to YT or IG than the older generations?

This study analyses and compares the preferences of different generations of FB, YT and IG users. The worldwide proliferation of social media has motivated the authors to conduct in-depth analyses of users' perceptions of different social media. Thus, displacement–reinforcement effects among FB, YT and IG have been investigated to explain their competitive and coexisting relationships. Through the adoption of Okazaki and Hirose's (2009) research framework, our model is centred on the satisfaction-attitudes-loyalty (SAL) chain to test the causal relationships among three principal variables associated with FB and YT and three associated with FB and IG among different age groups. This study contributes to the literature by addressing this research gap and providing a theoretical understanding of the phenomenon underlying the usage of social media through multivariate statistical techniques rather than descriptive analyses. As a result of the increasingly crucial role that social media plays in people's daily lives, a deeper understanding of
user behaviour is valuable for companies and organizations operating in the rapidly growing area of human activities.

2. Overview of social media usage

FB currently has the highest number of users, with YT not far behind (Statista, 2020). Most YT users are visitors without an account and are 16 to 24 years old, an age group that is more active on IG than the 55–64 age group (Global Web Index, 2018). A 2018 survey by the Pew Research Center in the United States revealed that age has a major bearing on the likelihood of social media use: the higher the age, the lower the likelihood that an individual uses social media. In the 18–29 age group, 88% of the respondents used social media. The corresponding figures for the 30–49, 50–64, and the 65-and-older age group were 78%, 64%, and 37%, respectively. The most popular social media websites for the 18–24 age group were YT, FB, Snapchat, IG, and Twitter.

As for frequency of use, the 18–24 age group again dominated. For those who only used FB, most were largely in the 25–29 age group, followed by the 18–24 age group. In terms of Snapchat, IG, and Twitter usage, a significant difference was noted between the 18–24 and the 25–29 age groups; for example, 78% and 54% of these age groups used Snapchat, respectively. No significant difference was reported between these two age groups in terms of YT and FB usage. Approximately 59% of respondents stated that they would not find it difficult to give up using social media, 29% said that they would have no difficulty whatsoever, 40% said that it would not be easy, and 14% said it would be very difficult.

Data derived from a variety of sources indicate that social media usage patterns in Taiwan’s population are similar to those in the United States. For example, the most popular six communication and social media websites in both nations include FB, YT, Messenger, and IG (Dataportal, 2020a, 2020b). According to Digital 2018 in Taiwan (Dataportal, 2018), the largest number of FB users (approximately 5.1 million) were in the 25–34 age group, followed by the 35–44 age group (approximately 4.3 million), and the 18–24 age group (approximately 3.6 million). FB has about 19 million active users per month, 95% of whom usually log in using a mobile device, with usage equally divided between men and women (DGcovery, 2018). In regard to IG in Taiwan, 7.4 million people actively use the platform every month, accounting for nearly 31% of Taiwan’s overall population; the ratio of men to women is 47:53. The global average daily use of social media is 2 h and 16 min, and is slightly less in Taiwan at 1 h and 52 min (Hootsuite & We Are Social, 2018). YT is the most popular social media platform in Taiwan, with surveys indicating that 70% of netizens use YT every day. In the 45–54 age group YT usage has increased by 17%, and in the 55–64 age group, 80% watch a YT video at least once per month and 40% watch YT for more than 1.5 h per day. However, the relationship between an age group and YT usage is increasingly unclear. A survey in Taiwan discovered that YT users in the 55–64 age group have tended to start using the platform to watch videos and listen to music, that the age profiles of its users are similar to those of FB, and that its use is expanding amongst older age groups (Google & Ipsos, 2018).

3. Literature review

3.1. Functions and technology attributes of FB, IG and YT

Social media is defined as a group of internet-based applications grounded on the technical foundations of Web 2.0 that are highly interactive and allow the integration of different media within the sphere of content creation and exchange (Kaplan & Haenlein, 2010). Social media platforms have unique architecture, and the commonly used modalities of communication differ across sites. FB provides the largest array of functions, including text-based posts, photo-sharing, and sophisticated privacy settings (e.g., allowing users to decide who can view each post). FB is often employed to search for new and old friends, make contact with current friends, upload photos and “check in” at locations, participate in online communities, play web games, and broadcast live.
IG emphasizes visual image sharing, including photo displaying from fellow users who have been followed, a photo commenting function, and users issuing activity notifications. YT is regarded as a convergence of the traditional entertainment forms of television, music, and film (Shao, 2009). The site offers a variety of functionalities of uploading, viewing and subscribing to video channels and is a popular resource for learning (e.g., “how-to” videos), sharing and watching music videos. YT generates new viewing patterns, allows users to be creative, and provides social interaction features in the form of commenting and information-sharing (Cha et al., 2007).

To sum up, social media platforms promote their unique features, including: typical relationship-oriented social networking sites (SNSs) such as FB, photo-sharing sites such as IG, and video sharing sites such as YT. As a result, users may tend to perceive these sites differently in terms of their unique affordances and their interaction with them.

3.2. **Usage across social media platforms**

Due to the different design and usability features of Facebook compared to other popular SNSs like IG and YT, users of each of these three sites differ in their motives for using them and the gratifications they derived from them. Studies have engaged in behavioural comparisons across SNSs, particularly between FB and IG (e.g., Kim et al., 2017; Phua et al., 2017a). For example, the study by Phua et al. (2017b) indicated that frequent users of FB, Twitter, IG, and Snapchat derived significantly different levels of bridging and bonding social capital from their social media use. Alhobash and Ma (2017) showed that college students spent the most time daily on IG, followed by Snapchat, FB, and Twitter, respectively, and had the highest use intensity for Snapchat and Instagram (nearly equally), followed by FB and Twitter, respectively. Obviously, IG is more popular than FB among young users.

Another study by Jin et al. (2017) indicated that multi-platform usage groups (FB+IG users vs. FB +Pinterest users) had significantly different consumption emotions in using social media, and temporal orientations for visual social media use (IG or Pinterest), but not when using FB. Their findings also implied that multi-platform usage groups seem less favourable FB compared to IG. Kim and Kim (2019) found that users who perceived a certain gratification and had positive attitudes towards FB's or IG's technology attributes were more likely to increasingly use that platform. The findings based on the niche analysis by Cha and Kwoen (2021) echoed the view that the users of FB, IG, and YT had different types of usage and gratifications due to the competitive nature of social media. Given this, we suspect that users differ in terms of satisfaction and attitudes towards these three key social media.

In a study by Sheldon et al. (2021), old users (the generation of baby boomers) illustrated the different usage patterns of FB and IG compared to college students: they tended to use FB for diversion and entertainment whereas Millennials primarily used FB for relationship maintenance (Sheldon, 2008). In addition, Sheldon and Bryant (2016) found that social activity was a significant predictor of the documentation motive, but was not related to any other motive for Instagram use among college students. However, Sheldon et al. (2021) found that social activity was a positive predictor of using IG for relationship surveillance, documentation, and self-promotion among older individuals. These findings reveal the generational differences in FB and IG usage.

Despite the rising popularity of IG and YT, very few cross-site comparisons have included FB, IG and YT. The authors of the present study have also responded to the call of Sheldon et al. (2021) to explore why some social media platforms are more popular than others among users. More research on SNSs’ usage preferences is therefore warranted.

3.3. **Social media use among university students and other age groups**

Currently enrolled university students are members of the Net Generation, those who were born between the years 1982 and 2003 (Roodt & Peier, 2013). They arrived on the heels of Generation X (1965–1976) and, as children of the baby boomer generation, have grown up with the rise of
digital media, technology, and the Internet. Alternative names for this group include Millennials or digital natives (Wesner & Miller, 2008). Because technology has always been part of their lives, they have strong digital literacy and are comfortable using technology on a daily basis (Palfrey & Gasser, 2008). Millennials are accustomed to receiving and delivering content, watching videos, playing games, and surfing the Internet on hand-held devices (Oblinger et al., 2005). They enjoy interacting through various media, such as text, emails, instant messaging and calls, and have no qualms about sharing their personal information (Roodt & Peier, 2013). In addition, digital natives are a visually oriented group who are comfortable in image-rich environments (Oblinger et al., 2005).

In contrast to the digital natives, those who adopted the new technology from its inception have been referred to as digital settlers (Palfrey & Gasser, 2008), which may describe many members of university staffs. Most belong to Generation X and grew up in an analogue-only world in which letters were printed and sent and much communication took place in-person, and in formal situations. Although they are not native to the digital environment, their use of technology is quite sophisticated.

Little is known about the social media behavioural patterns of these older age groups, and few studies have compared the different generations through rigorous empirical research. Bolton et al. (2013) discussed the social media use of Generation Y, which is distinguished from other generational cohorts because of its intense exposure to the Internet. The marked heterogeneity within Generation Y’s social media use is attributable to individual factors, which in turn influence social media usage. Kalmus et al. (2013) reported social media use preferences among different age groups in Estonia. Similarly, Fietkiewicz et al. (2016) demonstrated the divergences in social media usage between different generations. The findings of Berezan, Krishen, Agarwal and Kachroo (2018) indicate that the pursuit of virtual happiness through social media varies with different generations: Millennials (Gen Y) choose social media as a way of pursuing an online identity; those who make up Gen X seek to ensure that their social networking behaviours accurately reflects who they are as individuals and portrays them as independent; while in the case of baby boomers, the recipe for virtual happiness is that they must satisfy the need for competence, having the knowledge and ability to effectively use social media. These differences could be attributed to technological literacy, although the number of older generation users is growing as a result of social media interfaces becoming more user-friendly and intuitive. Thus, the challenge in this study has been to distinguish between the effects of age versus social media usage.

3.4. Theoretical foundation and proposed research model
This study has adopted Okazaki and Hirose’s (2009) displacement-reinforcement framework in a social media context. The model is an extension of Tsao and Sibley (2004), who grounded their work in niche theory. Originally developed in the domain of ecology (Dimmick & Rothenbuhler, 1984), the theory analyses the competition and coexistence of animals in an ecological community with limited resources. Dimmick (1997) argued that people distribute their niche time based on gratifications, which represent the utilities of their decision-making based on their medium and content choices. These gratification opportunities determine the survival of a new medium, and may be regarded as the perception that a certain medium provides greater opportunities for user satisfaction than other media. If two media offer the same gratification opportunities, they are competitors for the shared niche space. The more powerful medium may occupy the spatial area of the niche, or medium displacement may otherwise occur with partial appropriation. When a new medium can provide new solutions to more needs (regardless of whether they are traditional or contemporary), it can prosper. However, complete replacement rarely occurs because of various advantages and disadvantages among the different types of media; therefore, media often coexist with some displacement. On the other hand, two media can overlap in relation to a particular gratification opportunity, but behave differently in regard to specific content.
Based on the rationale of niche theory, Okazaki and Hirose (2009) proposed a causal model with the structural relationships of three variables, namely satisfaction, attitudes and loyalty, associated with different media. Satisfaction is a general construct, defined as an assessment of the overall purchase situation related to consumers’ expectations (Westbrook & Oliver, 1981). Attitude refers to a psychological tendency with some degree of favour (Eagly & Chaiken, 1995). In their study, the performance of each medium leads to different outcomes, through which satisfaction and attitudes may diverge. The hypothesis that satisfaction has positive effects on attitudes in each medium is proposed. Loyalty is related to repeat patronage, which can be described as frequent behaviour (Olsen, 2002) and desire towards a given medium; attitudes and behavioural loyalty are strongly linked. In regard to the displacement effects, when users perceive the gratification opportunities, enthusiastically search for information using a particular medium, and are highly satisfied with the performance of that medium, their attitudes toward other medium are less favourable. Put briefly, users’ satisfaction with one medium adversely affects their attitudes towards other media. Displacement effects have been identified at the level of behaviour. When users perceive similar information needs, they are likely to choose a medium providing greater gratification opportunities, which may negatively influence other media usage. Reinforcement effects can occur at an attitudinal level, indicating that the gratification opportunities of different media can complement each other. Users of a specific medium may hold favourable attitudes toward other media, and the competition between media may not necessarily arise from this attitudinal level.

By adopting and modifying the framework proposed by Okazaki and Hirose (2009) within the context of social media use, the authors proposed that the usage motives of social media users are parallel in a broad sense, but deviate when specific content access is considered. In this study, FB, the first to be established, is regarded as old media, and IG and YT are regarded as new media. We argued that users choose one medium over another as a result of media rivalry. The research model is presented in Figure 1, and illustrates the causal relationships among the following three main variables associated with FB, IG and YT: satisfaction (SFb, SIG, and SYT), attitudes (Afb, AIG, and ATYT) and loyalty (LFb, LIG, and LYT). The attitudes that FB users have towards FB play a vital role in judging whether the new media displace FB or reinforce FB as a result of their overlapping medium functions. For example, the same user may prefer IG for posting photos and YT for watching videos. The research hypotheses are presented below.

Based on the research results of Okazaki and Hirose (2009), user satisfaction has a positive effect on attitudes for each medium. In this study’s context, Fietkiewicz et al. (2016) argued that users actively choose social media that best fulfill their needs, and that the choices are further grounded in past media experiences. Thus, the following hypotheses are proposed:

H1: AFB is directly and positively associated with SFb.

H2: ATYT is directly and positively associated with SYT.

Figure 1. (a) FB vs. IG. (b) FB vs. YT.
H3: \( A_{IG} \) is directly and positively associated with \( S_{IG} \).

Phua et al. (2017a) determined that college students use different SNSs (FB, Twitter, IG, and Snapchat) for various gratifications and for following brands. The SNSs’ tie strength moderates the relationship between the frequent use of each SNS to follow brands and customers’ membership intentions. Tie strength reflects the degree of strength of the bonds among SNS members (Mittal, Hupperetz, & Khare, 2008) and can be regarded as the SNS users’ attitude. Consumers with higher membership intention visit brand pages more regularly, actively upload user-generated content, spread electronic word of mouth, and remain “brand followers” for a longer period of time (Jin & Phua, 2014). Therefore, consumers who are highly committed to a brand community exhibit more brand loyalty (Hollebeek et al., 2014), whose findings indicated that SNS users’ satisfaction may influence their attitudes and loyalty. Similarly, users’ gratifications and attitudes are related to changes in the usage level of FB and IG (Kim & Kim, 2019). Thus, we propose the following hypotheses:

H4: \( L_{FB} \) is directly and positively associated with \( A_{FB} \).

H5: \( L_{YT} \) is directly and positively associated with \( A_{YT} \).

H6: \( L_{IG} \) is directly and positively associated with \( A_{IG} \).

Phua et al. (2017a) reported that frequent users of FB, Twitter, IG, and Snapchat derive different gratifications from their use. Snapchat users scored the highest for passing time, sharing problems, and improving social knowledge, and IG users scored the highest for communicating affection, following fashion, and demonstrating sociability. Twitter users exhibited the highest brand community identification and membership intention, and IG users had the highest brand community engagement and commitment. FB was not the first choice for these young college students. Thus, we postulated that satisfaction with FB has adverse effects on attitudes towards other social media. Thus:

H7: \( A_{YT} \) is directly and negatively associated with \( S_{FB} \).

H8: \( A_{IG} \) is directly and negatively associated with \( S_{FB} \).

YT proved to be effective in relation to brand awareness and purchase intention for young university students (Dehghani et al., 2016), and Orús et al. (2018) illustrated that the use of YT as a teaching vehicle has a positive influence on students’ learning outcomes and satisfaction. Phua et al. (2017a) indicated that FB users may have favourable attitudes towards IG and that the competition between media may not arise from an attitudinal level. Thus, we hypothesize the following:

H9: \( A_{YT} \) is directly and negatively associated with \( A_{FB} \).

H10: \( A_{IG} \) is directly and positively associated with \( A_{FB} \).

Van Zoonen et al. (2018) argued that social media can afford similar behaviours across platforms, but the antecedents and consequences may differ across platforms. In their study, segmentation preferences and identification processes affected ambassadorship behaviors on FB. Phua et al. (2017a) discovered that social media users tend to seek a new medium that offers greater gratification opportunities, but maintain a similar information need. As more innovative
functions and services become available on IG or YT, users may exhibit favourable attitudes toward the new media that can negatively affect FB usage. Therefore, we hypothesize the following:

H11: $L_{YT}$ is directly and negatively associated with $A_{FB}$.

H12: $L_{IG}$ is directly and negatively associated with $A_{FB}$.

4. Research methods

4.1. Questionnaire
To test the proposed model, we developed a data collection questionnaire that was divided into two parts. The first part included questions related to demographic information and the usage of social media. The second part contained 10 questions on the use of FB, IG and YT. The measurement items were mainly adapted from Okazaki and Hirose (2009) and other relevant studies from the social media literature and modified to fit the context of the present study. All items were measured using a 7-point Likert scale (please see the Appendix).

The scale items were initially prepared in English, then translated into Chinese, and finally back-translated into English to ensure the accuracy of the translation. They were revised to incorporate the feedback of three experts and academic scholars in relation to wording and statement modification. The proposed measurement items were pre-tested to ensure their relevance to social media usage. A pilot test was then conducted with 50 qualified participants, whose feedback was used to make further revisions.

4.2. Respondents’ profile
The data for this study were obtained using a traditional paper-based survey. The sample comprised university students and staff members who were social media users, favouring either FB, IG, or YT. The respondents were recruited using a convenience sampling method at three universities in northern and central Taiwan. A total of 392 and 203 valid responses were obtained from the student- and staff groups, respectively. Table 1 details the profiles of the respondents. More than 80% of the university students used LINE and IG every day and, more than 70% used YT. Less than a half of the student respondents reported daily usage of FB, indicating that FB was the least popular of the four social media platforms for the young generation. All student respondents used the three social media platforms, unlike the staff respondents, of whom 194 used FB and YT, and only 136 used FB and IG. Nearly 10% only used FB.

5. Results and discussions

5.1. Statistical analysis
Table 2 describes the survey results for the average frequency of social media platform usage in the previous two weeks prior to the study, and Table 3 illustrates the inter-generational differences in terms of platform usage analysed using the chi-squared test. IG exhibited the highest frequency of usage in the student group, followed by YT and FB. Conversely, the staff group exhibited the lowest usage frequency for IG, with no difference in usage frequency between FB and YT. This supports the conclusions of other research (Sheldon, 2008; Sheldon et al., 2021) that old users tended to use IG less frequently than younger users. Overall, we observed considerable inter-generational discrepancies in social media usage.

The subsequent implementation of t-tests, as presented in Table 4, revealed that university students exhibited equally favourable (or unfavourable) attitudes towards FB as the staff, but the student group used it less frequently. In addition, the young generation valued YT and IG more highly than the staff. These findings are consistent with our expectations.
Table 1. Profile of the respondents

| Students (N = 392) | Staff (N = 203) |
|-------------------|----------------|
| Gender            | Gender         |
| Female            | Female         |
| 70.2%             | 31%            |
| Male              | Male           |
| 29.8%             | 69%            |
| Time period in which use of (any) social media started | In the days before (any) social media were used |
| Elementary school| 5.4%           |
| 51.8%             | 3 years less   |
| Junior high school| 36.2%          |
| 3 years           | 5.4%           |
| Senior high school| 5.4%           |
| 8–10 years        | 5–8 years      |
| University/college| 6.6%           |
| 10 years          | 33.5%          |
| Enrollment status | Age            |
| Freshman          | 17.9%          |
| 10 years          | Below 25 years |
| Sophomore         | 70.2%          |
| 26–30 years       | 17.7%          |
| Junior            | 8.7%           |
| 31–40 years       | 27.6%          |
| Senior            | 2.3%           |
| Graduate school   | 1%             |
| 41–50 years       | 23.6%          |
| 51–60 years       | 16.7%          |
| 61 years old above| 3.4%           |

A series of ANOVA tests demonstrated the social media trends of both groups, for which the results are detailed in Table 5. In general, student respondents preferred YT the most, followed by IG and then FB, which is notably inconsistent with their more frequent usage of IG than YT. In addition, staff respondents had a higher positive score for YT than for FB or IG. However, no significant difference was noted in their reported usage frequency for FB and YT. Obviously, the preference and user behaviour were inconsistent.

The results indicated that YT had become the most popular of the three platforms among the staff respondents, thus contradicting the assumption that they favour FB. Most of those in the staff group were born before 1980 and were digital settlers who had lagged behind in terms of their social media usage compared with Millennials. Although FB has the highest usage in Taiwan, the visual content, such as the photos and short videos, of other social media appeals to both generations. Our finding reflects the rapid increase in YT users, indicating an FB downturn and the relative unpopularity of IG (Datareportal, 2020a, 2020b). In terms of use and satisfaction, it corresponds to previous research findings that FB had the widest niche in terms of sociality and convenience, that YT had the widest niche in routine and entertainment, and that IG had the widest niche in terms of relationships (Cha & Kwoen, 2021).

The above-mentioned findings were based on univariate analysis techniques, which were not able to adequately examine the multiple relationships among a group of variables such as satisfaction, attitudes and loyalty between FB and YT, and to obtain a more complete understanding. Thus, the multivariate technique has been utilized and then the simultaneous analysis of more than two variables can be performed. We will present the associated analytical results in the following sub-section.

5.2. Hypotheses testing
The proposed model and associated hypotheses were tested using structural equation modeling: both the measurement model and structural equation model were tested. The partial least squares structural equation modeling (PLS-SEM) approach was adopted, and the non-parametric bootstrapping technique was also used. SmartPLS 2.0 (http://www.smartpls.de/forum/index.php) software was employed as an analytical tool. Since the assessment of a measurement model must
Table 2. Respondents’ average frequency of using social media in the last 14 days

|            | FB |     | IG |     | YT |     |
|------------|----|-----|----|-----|----|-----|
|            | Students | Staff | Students | Staff | Students | Staff |
| Never used | 9.2% | 6.9% | 2.0% | 37.5% | 1.8% | 4.9% |
| 1–2        | 23.7% | 12.3% | 2.8% | 13.3% | 5.9% | 13.3% |
| 3–4        | 8.4% | 6.4% | 5.1% | 5.9% | 7.4% | 6.4% |
| 2–3 days used | 13.8% | 13.8% | 6.9% | 9.9% | 12.8% | 22.2% |
| Every day used | 44.9% | 60.6% | 83.2% | 33.5% | 72.2% | 53.2% |

Note: Number of student respondents = 392; Number of staff respondents = 203.

Table 3. Values of Chi-square tests for average frequency of using social media

|            | FB vs. IG |     | FB vs. YT |     | IG vs. YT |     |
|------------|-----------|-----|-----------|-----|-----------|-----|
| Student    | 61.48     |     | 36.11     |     | 10.99     |     |
| Staff      | 149.05    |     | 6.68      |     | 55.25     |     |
| Students vs. staff | 12.02 |     | 700.62 |     | 26.66 |     |

Note: $\chi^2(0.95, 4) = 9.49.$

include model reliability and validity, the composite reliability (CR) and average variance extracted (AVE) were calculated to determine the level of internal consistency, in accordance with Fornell and Larcker (1981). Discriminant validity was achieved with the exception of the construct of loyalty to FB (for the staff group). The values of the square root of AVE exceeded those of the bivariate correlations between the main constructs. Table 6 illustrates the results, in which almost all values exceeded the suggested benchmark of 0.7, thereby achieving a satisfactory level of internal consistency.

Table 7 presents the estimation results of the model for the student and staff groups. The data fit the core S-A-L model sequences, with H1 to H6 addressing the direct effects of the satisfaction-attitude-loyalty chain in each social medium. H1 to H3 predicted positive relationships among satisfaction from and attitudes towards, FB, IG, and YT, respectively. H4 to H6 predicted positive relationships between attitudes towards and loyalty to FB, IG and YT, respectively. All standardized path coefficients of the core models for the three social media platforms were statistically significant at the 0.001 level. In addition, the effect size of these paths was extremely strong in both sample groups. Thus, H1 to H6 were supported by the data.

However, the hypotheses representing the effects of displacement (H7 and H8, H11 and H12) and reinforcement (H9 and H10) among social media platforms were not supported for the young generation. Despite preferring YT and IG, they did not abandon FB but merely utilized it less often. YT and IG were neither a substitute for nor complement to FB. The net citizens are likely to be familiar with the characteristics of each medium, acknowledging their utilization to achieve gratification under the circumstances. These research results correspond to previous findings that FB and YT have the greatest overlap in terms of relationship and sociality for the factors of use and gratification, and YT has the biggest overlap with Twitter in the niche analysis (Cha & Kwoen, 2021). Due to having a good understanding of the similarities and differences among these social media, the student group was made up of multiple-platforms users who selected a certain medium to achieve their goal. Thus, no substitution or reinforcement effects were found among young generation.
Table 4. Users’ satisfaction, attitude, and loyalty for different social media between two groups

(A) FB

| Constructs | Users | N  | Mean | SD  | t-value |
|------------|-------|----|------|-----|---------|
| Satisfaction | Student | 392 | 4.58 | 1.20 | -1.597 |
|            | Staff   | 203 | 4.75 | 1.14 |         |
| Attitude   | Student | 392 | 4.69 | 1.18 | -1.621 |
|            | Staff   | 203 | 4.86 | 1.06 |         |
| Loyalty    | Student | 392 | 3.67 | 1.35 | -1.744 |
|            | Staff   | 203 | 3.79 | 1.18 |         |

(b) IG

| Constructs | Users | N  | Mean | SD  | t-value |
|------------|-------|----|------|-----|---------|
| Satisfaction | Student | 392 | 5.64 | 1.00 | 9.283   |
|            | Staff   | 136 | 4.69 | .93  | 8.199   |
| Attitude   | Student | 392 | 5.56 | .91  | 11.212  |
|            | Staff   | 136 | 4.80 | 1.00 |         |
| Loyalty    | Student | 392 | 5.04 | 1.18 |         |
|            | Staff   | 136 | 3.71 | 1.26 |         |

(C) YT

| Constructs | Users | N  | Mean | SD  | t-value |
|------------|-------|----|------|-----|---------|
| Satisfaction | Student | 392 | 5.38 | .86  | 5.65    |
|            | Staff   | 194 | 5.47 | .96  |         |
| Attitude   | Student | 392 | 5.38 | .87  | 4.63    |
|            | Staff   | 194 | 5.52 | .94  |         |
| Loyalty    | Student | 392 | 4.51 | 1.08 | 8.97    |
|            | Staff   | 194 | 4.51 | 1.05 |         |

As for the staff group, the model estimation results indicated that their attitudes towards FB were negatively related to their use of YT and IG (H11 and H12), and displacement effects between FB and YT and between FB and IG were identified. YT and IG may thus have constituted a threat to FB because of their entertainment characteristics. When perceiving the advantages of a new medium, the older generation tended to seek an alternative to FB that provided greater gratification opportunities. Of particular note, in the absence of reinforcement effects (H9 and H10 were not supported), YT and IG were not complementary media to FB. The staff respondents did not intend to reinforce their usage of YT and IG through FB. As for the university staff, YT and IG may have been adopted as substitutes, being represented by the negative association between the staff respondents’ attitudes towards FB and their intention to use the two new media.

Our findings were consistent with previous research results regarding the baby boomers’ use of FB and IG (Sheldon et al., 2021). Although older users tended to prefer FB to IG, those who had higher life satisfaction did not feel that they needed FB to alleviate loneliness or fulfill their need for companionship. In addition, those who tended to travel more and frequently participate in real-world leisure activities were more likely to use IG to monitor their friends’ activities, document their stories, and show off. People working at the universities are generally well-educated, have a higher social-economic status, and share some similarities in terms of corresponding usage patterns. Compared with other studies regarding the displacement and reinforcement effects of media (e.g., Okazaki & Hirose, 2009; Tsao & Sibley, 2004), our research findings did not wholly reflect the expected outcomes but instead identified notable phenomenon regarding users’ social media preferences. However, the effects of displacement and reinforcement may have been rendered
unclear as a result of the relatively similar characteristics and functions of social media, through which comparisons became quite difficult. Nevertheless, future research needs to explore these findings in terms of the gratification opportunities of social media.

6. Conclusion

Our results have supported the basic theoretical hypotheses of the causal relationships among satisfaction, attitudes and loyalty in relation to distinct social media. Compared to previous studies (e.g., Cha & Kwoen, 2021; Sheldon et al., 2021), this study provides a further understanding of social media behaviours through the overlay of both emotional and cognitive outcomes. Users considered these media individually, and particularly, those belonging to the young generation were relatively satisfied with the information provided by FB; thus, they were unlikely to switch to IG or YT as their sole information source. However, no reinforcement effects of attitudes towards FB on attitudes towards IG or YT were noted; similarly, no reinforcement effects were observed in relation to staff users.

In terms of niche theory, IG and YT offer similar gratification opportunities to FB. Despite the media competition, no displacement effects were identified and no substitution occurred between FB and other social media. Those who had already formed a preference for FB rarely abandoned it to switch to IG or YT. Young generation users may choose one medium or the other to satisfy their specific needs, and thus these media operate individually. As for older

Table 5. Users’ satisfaction, attitude, and loyalty among different social media

(a) The student group (N = 392)

|                | Mean | SD | F statistic | Scheffe       |
|----------------|------|----|-------------|---------------|
| Overall        |      |    |             |               |
| FB             | 4.35 | 1.16 | 214.6       | YT> IG> FB    |
| IG             | 5.43 | 0.95 |             |               |
| YT             | 5.77 | 0.87 |             |               |
| Satisfaction   |      |    |             |               |
| FB             | 4.58 | 1.20 | 193.1       | YT> IG> FB    |
| IG             | 5.64 | 1.00 |             |               |
| YT             | 5.96 | 0.86 |             |               |
| Attitude       |      |    |             |               |
| FB             | 4.69 | 1.18 | 157.6       | YT> IG> FB    |
| IG             | 5.58 | 0.94 |             |               |
| YT             | 5.93 | 0.87 |             |               |
| Loyalty        |      |    |             |               |
| FB             | 3.67 | 1.35 | 221.5       | YT> IG> FB    |
| IG             | 5.04 | 1.17 |             |               |
| YT             | 5.38 | 1.08 |             |               |

(b) The staff group

|                | N     | Mean | SD  | F Stat. | Scheffe |
|----------------|-------|------|-----|---------|---------|
| Overall        |       |      |     |         |         |
| FB             | 203   | 4.51 | 1.03| 32.80   | YT> IG, FB |
| IG             | 136   | 4.44 | 1.05|         |         |
| YT             | 194   | 5.20 | .90 |         |         |
| Satisfaction   |       |      |     |         |         |
| FB             | 203   | 4.75 | 1.14| 30.21   | YT> IG, FB |
| IG             | 136   | 4.69 | 1.11|         |         |
| YT             | 194   | 5.47 | .96 |         |         |
| Attitude       |       |      |     |         |         |
| FB             | 203   | 4.86 | 1.06| 28.68   | YT> IG, FB |
| IG             | 136   | 4.80 | 1.00|         |         |
| YT             | 194   | 5.52 | .94 |         |         |
| Loyalty        |       |      |     |         |         |
| FB             | 203   | 3.79 | 1.18| 26.13   | YT> IG, FB |
| IG             | 136   | 3.71 | 1.26|         |         |
| YT             | 194   | 4.51 | 1.05|         |         |
users, the paths from attitudes towards FB to loyalty to IG and YT were negative and significant, suggesting that those with experience of using social media other than FB were willing to change their usage intention. This finding was consistent with the increased usage of IG and YT at an aggregate level (Google & Ipsos, 2018; Hootsuite & We Are Social, 2018). Despite their constituting only a small proportion of the overall sample, the older generation tended to use a more diverse range of media channels.

6.1. Theoretical and practical implications
This study has implications for both scholars and practitioners. The SAL chain model was applied as a theoretical foundation to understand the perceptions of and preferences for social media platforms among intergenerational social media users. Our findings, using both university student and staff samples, provide a simultaneous comparison in contrast to previous studies that were based on a certain type of sample. The evaluation of gratification opportunities presented by the popular social media platforms served as a determinant of the favourable or unfavourable attitude towards a particular medium. The results, therefore, can contribute to the theoretical developments with regard to the displacement or complementary effects of social media. A lack of comparative research on social media has prevented practitioners from understanding why savvy marketers continue to choose FB as their official social media website. This has also justified the use of YT and IG in cross-media campaigns.

Media displacement suggests a negative relationship between the use of new media and the use of older media, including two potential mechanisms of time displacement and functional equivalence (Dimmick, 2003). YT and IG do not entirely replace FB, but become part of the available mix of new media that are successfully grabbing a limited amount of the time and attention of young users. This “inter-media struggle” (Lehman-Wilzig & Cohen-Avigdor, 2004) along with increased access to social media is forcing FB to readjust itself in order to survive in a changing media environment. According to media complementarity theory (Dutta-Bergman, 2004), there is a focus on content complementarity, which suggests that different media types can complement each other. Organizations such as those engaged in tourism or health care may guide their customers to use a combination of social media sources to access information in a domain of interest or on a particular issue.

From a broad perspective, it is worthwhile encouraging the older generations to use newer social media. IG has often been used for documentation and inspiration, to organize events and create

![Table 6. Reliability assessment](image)

| Constructs                | Students   |   |   |   | Staff   |   |   |   |
|---------------------------|------------|---|---|---|---------|---|---|---|
|                           | Alpha values | CR | AVE | Alpha values | CR | AVE |
| Satisfaction from FB (SFB) | .903       | .906 | .763 | .899       | .906 | .764 |
| Satisfaction from IG (SIG) | .892       | .897 | .744 | .900       | .907 | .764 |
| Satisfaction from YT (SYT) | .898       | .900 | .750 | .921       | .922 | .798 |
| Attitudes towards FB (AFB) | .940       | .936 | .786 | .882       | .869 | .624 |
| Attitudes towards IG (AIG) | .917       | .912 | .722 | .924       | .912 | .721 |
| Attitudes towards YT (AYT) | .925       | .922 | .748 | .934       | .931 | .772 |
| Loyalty to FB (LFB)        | .824       | .823 | .614 | .723       | .719 | .482 |
| Loyalty to IG (LIG)        | .756       | .757 | .514 | .797       | .817 | .606 |
| Loyalty to YT (LYT)        | .760       | .797 | .577 | .742       | .740 | .504 |
| Hypothesized paths | Students (N = 392)* | Staff (N = 130)** |
|--------------------|---------------------|-------------------|
|                    | Path coeff. | SD  | t-value | Path coeff. | SD  | t-value |
| H1: S\(_FB\)→A\(_FB\) | .986       | .045 | 22.048*** | .979       | .093 | 9.817*** |
| H2: S\(_IG\)→A\(_IG\) | .932       | .047 | 23.140*** | .979       | .060 | 14.624*** |
| H3: A\(_FB\)→L\(_FB\) | .939       | .050 | 22.870*** | .905       | .108 | 9.334*** |
| H4: A\(_IG\)→L\(_IG\) | .947       | .076 | 13.382*** | .976       | .139 | 7.191*** |
| H5: S\(_FB\)→A\(_IG\) | −.857      | .456 | −1.576 | −.581      | .516 | −1.056 |
| H6: A\(_FB\)→L\(_IG\) | −.029      | .029 | −.824 | −.029      | .062 | −3.680** |

Note 1: S = satisfaction; A = attitude; L = loyalty. The subscript indicates the type of social medium. For example, “S\(_FB\)” stands for the satisfaction from FB.

Note 2: *p < 0.05; **p < 0.01; ***p < 0.001.

Fit indices: a: \(\chi^2 = 648.425, \text{CFI} = .923, \text{TLI} = .923, \text{RMSEA} = .087\); b: \(\chi^2 = 404.011, \text{CFI} = .897, \text{TLI} = .880, \text{RMSEA} = .107\).

| Hypothesized paths | Students (N = 392)* | Staff (N = 130)** |
|--------------------|---------------------|-------------------|
|                    | Path coeff. | SD  | t-value | Path coeff. | SD  | t-value |
| H1: S\(_FB\)→A\(_FB\) | .985       | .045 | 21.969*** | .988       | .081 | 12.390*** |
| H2: S\(_YT\)→A\(_YT\) | .996       | .050 | 21.946*** | .984       | .063 | 17.565*** |
| H3: A\(_FB\)→L\(_FB\) | .937       | .045 | 22.733*** | .923       | .085 | 11.716*** |
| H4: A\(_YT\)→L\(_YT\) | .940       | .093 | 11.312*** | .956       | .103 | 6.826*** |
| H5: S\(_FB\)→A\(_YT\) | −.427      | .249 | −1.240 | −.781      | .796 | −.937 |
| H6: A\(_FB\)→L\(_YT\) | .471       | .265 | 1.373 | .899       | .789 | 1.077 |
| H7: A\(_YT\)→L\(_YT\) | −.016      | .023 | −.533 | −.230      | .033 | −2.625** |

Note 1 & 2: identical to (a).

Fit indices: a: \(\chi^2 = 644.245, \text{CFI} = .923, \text{TLI} = .923, \text{RMSEA} = .087\); b: \(\chi^2 = 366.881, \text{CFI} = .939, \text{TLI} = .929, \text{RMSEA} = .083\).
positive memories that promote life satisfaction among older users (Sheldon et al., 2021). In the case of relationship surveillance, IG entails a passive form of relationship maintenance that follows a friend’s posts rather than directly communicating with the friend, as on FB. Furthermore, it was found that those who had rich social lives were less likely to use FB to make new acquaintances or to pass time when feeling lonely. In other words, the usage of FB or IG becomes an indicator of older users experiencing a lack of social activity in their daily lives, and even a sign of dissatisfaction with their life situations. It would be helpful if new social media could enable the older generations to achieve greater happiness, especially for those who are in nursing homes.

Our empirical analysis may help practitioners to decide on the social media mix that would be most effective in achieving their advertising or promotion objectives. In terms of their objectives, companies should employ cross-media campaigns because consumers are multiple users of social media. The visualised content on FB may guide aged users to the IG and YT information channels. Furthermore, marketing strategies may be extended to characterise the major social media and the user preferences. For example, more text is posted on FB for customer engagement, more photos are placed on IG to attract customers’ attention, and more video films are uploaded on YT to educate customers or inform them of product promotions (Hollebeek et al., 2014; Kim & Kim, 2019; Kim et al., 2017; Phuo et al., 2017a). Furthermore, to improve the effectiveness of an advertisement, a certain social medium will be specifically utilized for the target market. Among Facebook users, whether they use their IG and YT may reflect different audience mindsets in terms of their profiles. Therefore, companies or brands are more effective in reaching the same customers when they have in different mindsets (Jin et al., 2017).

The intergenerational differences provide empirical evidences that organizations can tailor their communication strategies to different social media platforms. Young users are capable of using multiple tools, and of distinguishing their usage based on their specific needs. By contrast, cross-media campaigns that attempt to capture the IG or YT users within the older age group through FB may have some side-effects because users who are dissatisfied with FB may switch to YT or IG for their future usage of social media. These tasks deserve further attention from both practitioners and academics in future research.

6.2. Limitations and future research suggestions

A major limitation of this study should be addressed. A sample comprising university students and staffs was used; therefore, caution should be exercised when generalising beyond this sample. The replication of this sample using other samples could be assessed to re-examine the relationships proposed in this study and provide additional external validity. In addition, the research model used in the present study has involved the adoption of a hands-on framework (Okazaki & Hirose, 2009). However, it may not sufficiently cover some critical issues regarding the similarities and distinctions related to the different social media. It would thus be helpful to develop a new model that describes the competition among these media. Furthermore, the model developed by Okazaki and Hirose (2009), with its focus on examining the users’ affective domain including their attitudes and satisfaction with the use of media, relied on self-reported data such as questionnaires or interviews to report the respondents’ affective outcomes. There may thus exist discrepancies between actual usage and the users’ affection towards social media. Our research results have indicated that the usage patterns of Millennials have tended to be both habitual and unlikely to change. However, for Generation X and Generation Y, changes in user behaviour, while slow, have steadily been taking place. Future research could thus focus on the intra-generational differences and investigate the possible divergences in social media usage based on individual factors. Finally, the findings of this research have been derived using cross-sectional survey data. Displacement effects could continue to occur among the older generation as they use of IG or YT in the future. Berezan et al. (2018) have suggested investigating individual platforms of interest as a variable in itself and have delineated differences in platform preferences across generations. Future research could therefore be conducted to investigate the user behaviour of various social media by means of a longitudinal assessment.
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